2011 CSTE ABSTRACT BOOK

The abstract book contains all abstract accepted for presentation as of the print deadline on March 25, 2011. Abstracts are sorted alphabetically by presentation type, then committee, then presenting speaker's last name.

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Abstract ID: **1059662** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A mentoring program for state health departments to enhance chronic disease epidemiology**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Building epidemiology capacity for CD/MCH/OrH (e.g., mentorship, training, models from states)**

Keywords: **Challenges and Opportunities, Chronic diseases, Epi / Lab capacity**

Abstract Text

Background:
The percentage of state health departments with minimal chronic disease surveillance increased from 8% in 2001 to 18% in 2009 according to survey data from the Council of State and Territorial Epidemiologists (CSTE). The CSTE, Centers for Disease Control and Prevention (CDC) and the National Association of Chronic Disease Directors (NACDD) has implemented a program whereby junior-level chronic disease epidemiologists at Departments of Health receive mentoring from senior-level chronic disease epidemiologists. It is expected that with competency- and project-based mentorships lasting between six and twelve months, chronic disease epidemiology capacity at state health departments will be enhanced.

Methods:
In September, 2010, a CSTE, CDC, and NACDD Steering Committee matched applicants forming seven mentee and mentor pairs (MMPs). Each MMP developed project designs on the basis of state needs, priorities and feasibility and are carrying them out. The program sponsors will evaluate the projects according to how useful the activities are considered to be by the respective states and whether the mentee skill level is judged to have improved by independent mentor and mentee assessments.

Results:
MMPs designed projects with a deliverable product, each approved by the mentee's supervisor. Mentors also conducted a site visit to the mentee's health department. By 2011, 6 of 7 MMPs had defined projects and three had begun project implementation. Mississippi had two MMPs and three projects: one developing geographic distributions of CVD mortality and selected CVD risk factors, one updating a Burden of Diabetes document, and a third designing a data collection system for tracking CVD and diabetes patients. The Nebraska MMP completed a draft report of analyzed BRFSS data that included tobacco use, diabetes and CVD. The project in Iowa focused on development and evaluation of a program to address childhood obesity. In Florida, methodologies were developed to assess chronic disease interventions, with evaluation and marketing components. In Idaho, design and piloting a statewide hospital discharge data system was planned. In New York City, data for evaluating two tobacco-related policies were being analyzed.

Conclusions:
The initial steps in expanding this competency- and project-based chronic disease epidemiology mentoring program from pilot to broader implementation have been successful. Final deliverable products are expected to be completed by the fall of 2011. Because funding is available to create six additional MMPs, continuation of the program in 2012 is expected.

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Abstract ID: **1056900** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Mental health and chronic disease: Results from the population-based Georgia Behavioral Risk Factor Surveillance System**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of other CD/MCH/OrH risk factors**

Keywords: **Chronic diseases, Co-morbidity, Mental health**

Abstract Text

Background:
Mental illnesses are leading causes of morbidity and mortality in the United States. In Georgia, suicide associated with a diagnosable psychiatric disorder ranks among the leading causes of death in adults. Chronic diseases such as cancer, heart disease, cerebrovascular disease, diabetes, chronic liver disease and chronic lung disease are among the top ten leading causes of deaths among adults in Georgia. Several epidemiologic investigations have shown that mental illness and chronic conditions are comorbid. Utilizing data from a population-based surveillance system, this study aimed to measure the association between poor mental health and chronic disease among adult residents of Georgia after adjusting for demographic characteristics, health risk factors and access to health care.

Methods:
A cross-sectional study utilizing self-reported data (n= 13,599) from 2007 and 2009 Georgia Behavioral Risk Factor Surveillance System (BRFSS) were analyzed. Poor mental health described as Serious Psychological Distress (SPD) was assessed by Kessler-6 Questionnaire; respondents with Kessler-6 score of ≥ 13 were defined as having SPD. Chronic disease conditions measured included: lifetime diagnosis of diabetes, cardiovascular disease, asthma and arthritis. Multivariable logistic regression analysis was conducted to derive adjusted odds-ratios (AOR) of chronic disease conditions among individuals with or without SPD after adjusting for demographic characteristics, health risk factors and access to health care. Data analysis was conducted using SAS- callable SUDAAN.

Results:
Overall, 4 % of adults in Georgia had SPD. The prevalence of SPD was higher among males, African-Americans, individuals with less than high-school education, unemployed and lower income groups. SPD was also associated with obesity, current smoking, binge drinking, physical inactivity, lack of health insurance, and not having accessed a doctor due to cost. Multivariable regression analysis results indicated that individuals with SPD were 4 times more likely to be diagnosed with diabetes (AOR: 4.3, 95 % C.I: 1.92-9.46) and asthma (AOR: 4.5, 95 % C.I: 2.2-9.1). The presence of SPD also increased the risk of CVD by approximately 3 times. A statistically significant dose-response association was observed between SPD and chronic disease conditions.

Conclusions:
Poor mental health and chronic diseases were co-morbid conditions among adults in Georgia. Results from this study will be extremely useful to public health practitioners in planning and designing

interventions and to clinical practitioners in effective disease management.

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Abstract ID: **1061394** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Assessing the impact of socioeconomic status on cardiovascular disease in Georgia using a spatial filtering framework**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Applying new analytic methods and measures for CD/MCH/OrH epidemiology**

Keywords: **Cardiovascular disease, Epidemiologic methods, Geographic Information Systems**

Abstract Text

Background:
A common problem in public health analyses is the lack of adjustment for arbitrary boundaries placed on spatial data. County-level regression model parameters may be stochastically and spatially autocorrelated; spatial filtering provides a method to account for this. In this study we investigated if socioeconomic indicators and cardiovascular disease in Georgia counties meet the conditions for spatial filtering.

Methods:
We conducted a descriptive and regression analysis using socioeconomic data from the US Census and US Bureau of Labor Statistics and incidence of cardiovascular disease (CVD) using the 2008 Georgia Hospital Discharge dataset. CVD incidence was obtained by geocoding county-level hospital discharges by patient's residence. Socioeconomic indicators such as (1) family income, (2) white collar employment, (3) education level, (4) unemployment and (5) poverty were analyzed. Each indicator was classed on a scale from 0 to 9, with '0' being the least advantageous and '9' being the most advantageous.
Spatial filtering protocol was followed to ensure that the following conditions hold: (1) no spatial autocorrelation exists in the non-spatial component of each filtered variable; (2) spatial autocorrelation exists in the spatial component of each filtered variable; (3) errors of models with filtered variables are not spatially autocorrelated, and (4) appropriate variables should be significant following filtering.

Results:
In 2008, 111,887 residents were discharged from a hospital with CVD as the principle diagnosis. County incidence ranged from 229 - 2,308 per 100,000 residents (mean = 1,428). The most economically advantaged groups had 0.5 to 0.69 times lower risk of CVD incidence as the least economically advantaged groups.
Each variable exhibited global spatial autocorrelation before spatial filtering. Following filtering, each

variable had near zero global spatial autocorrelation. The regression procedure met the conditions to warrant spatial filtering. The parameters of education level and unemployment rate were significant predictors of CVD incidence.

Conclusions:
Our results demonstrate Georgia's existing disparity in CVD incidence based on economic situation. Spatial filtering successfully parsed out the embedded spatial dependence. This project demonstrates that spatial series data may be dependent and that this dependence may be filtered out. Future public health research may benefit from making use of the spatial filtering procedure.

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Abstract ID: **1062484** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Prevalence of untreated decay - Results from Wyoming's 2009-2010 oral health screening among third grade students**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Oral health epidemiology: surveillance, data systems, or capacity building**

Keywords: **Children and adolescents, Data/Surveillance, Oral health**

Abstract Text

Background:
A population level census screening has never been conducted to describe oral health in Wyoming's children. In order to assess the oral health of Wyoming children and identify sub-groups in greatest need, the Wyoming Department of Health (WDH) collaborated with the Wyoming Dental Association to conduct an oral health screening of all Wyoming third graders.

Methods:
All schools in Wyoming with a third grade class were asked to participate in this observational, cross-sectional, census-sampled study (192 schools). Passive consent for third grader participation was obtained from parents. Volunteer dentists and WDH staff screened children according to Association of State and Territorial Dental Directors guidelines for the presence of untreated decay. Data were aggregated by school. Data about the following school characteristics were collected: percentage of students eligible for free and reduced lunch (FRL), enrollment by race/ethnicity, rural/urban status, and water fluoride level. Data about county characteristics included federal healthcare provider shortage area (HPSA) designation (yes/no) and dentist to child ratio. All variables were dichotomized based on either median splits (untreated decay, FRL, race/ethnicity), the state average (ratio of children to providers), or recommended level (fluoride). The association between school/county characteristics and untreated decay was evaluated using chi square analyses and univariate odds ratios.

Results:
The participation rate among public schools was 90.1% (174 schools) and among participating schools, 78.9% (5300 students) of enrolled third grade students participated. The prevalence of untreated decay

was 27.2%. Schools with a high proportion of students eligible for FRL were more likely to have a high prevalence of untreated decay (OR= 2.35, 95% CI: 1.23-4.50) than schools with low proportions of students eligible for FRL. Rural schools were more likely to have a high percent of untreated decay than urban schools (OR=2.75, 95% CI: 1.38-5.50). Schools in counties with a high ratio children per provider were more likely to have a high prevalence of untreated decay (OR= 2.44, 95% CI: 1.31-4.56) than schools in counties with low proportion of children per provider. The relationship between untreated decay and fluoride level, minority enrollment, and low income HPSA was not statistically significant.

Conclusions:
Almost one third of Wyoming third graders had untreated decay. Partnerships should be enhanced between community oral health coordinators, community dentists and schools to target oral health prevention, screenings and treatment for schools that are in greatest need, i.e., those that are rural, high poverty, or have low access to care.

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Abstract ID: **1056329** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Alcohol outlet density and alcohol-related hospitalizations in New York City**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Tobacco, alcohol, and substance use epidemiology**

Keywords: **Alcohol, Built environment Â**

Abstract Text

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Abstract ID: **1056426** Presentation Type: **Breakout Presentation - Single Speaker**

Title:	**Factors associated with smoking cessation counseling during prenatal care among Missouri women**
Committee:	**Chronic Disease/Maternal and Child Health/Oral Health**
Topic:	**Tobacco, alcohol, and substance use epidemiology**
Keywords:	**MCH Epidemiology, Pregnancy, Smoking**

Abstract Text

Background:
Missouri ranks fourth highest among states for women of childbearing age who currently smoke. The prevalence of smoking during pregnancy has not improved over the past decade and continues to be higher than the nation's. Smoking cessation counseling during prenatal care is recommended to promote quitting and prevent relapse. This study aims to identify factors associated with smoking cessation counseling during prenatal care. This represents the first such assessment among Missouri women.

Methods:
The Missouri Pregnancy Risk Assessment Monitoring System (PRAMS) surveyed 1,373 women with a recent live birth in 2009. The 11 smoking cessation counseling items were used to assign women into the three counseling groups: general, referral/pharmaceutical, or none. Smoking cessation counseling was assessed for 454 women who smoked during the three months before pregnancy and had prenatal care. Polychotomous logistic regression was conducted to estimate the adjusted odds ratio (AOR) and 95% confidence interval (CI) for general counseling and referral/pharmaceutical counseling. Each was compared with no counseling, adjusting for socio-demographic and behavioral characteristics. SUDAAN was used to account for complex sampling design.

Results:
Among women in the study, 38.6% received only general counseling, 20.6% received referral/pharmaceutical counseling, and 40.9% received no counseling. Heavy smoking in the three months before pregnancy and light smoking during pregnancy were associated with receipt of general counseling alone with AORs of 2.00 (95% CI: 1.06-3.77) and 2.67 (95% CI: 1.45-4.93), respectively. Referral/pharmaceutical counseling was more likely among women who received prenatal care at a location other than an MD/HMO office (AOR: 2.12, 95% CI: 1.08-4.17), had Medicaid as their prenatal care payer (AOR: 5.52, 95% CI: 2.00-15.24), or were light (AOR: 6.21, 95% CI: 2.88-13.39) or heavy smokers (AOR: 8.86, 95% CI: 2.80-28.05) in the last three months of pregnancy.

Conclusions:
Smoking cessation counseling efforts reached women at higher risk of continuing to smoke throughout pregnancy: heavy preconception smokers, maternal smokers, and Medicaid recipients. Although women with Medicaid were more likely to receive referral/pharmaceutical counseling, the smoking rate in this population remains high. Recent Missouri Medicaid policy changes provide coverage for smoking cessation during prenatal care, including both behavioral and pharmacologic interventions, which are expected to enhance the availability, quality, and intensity of cessation counseling for these women.

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Abstract ID: **1061999** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Asthma among older adults in Massachusetts: Using surveillance data to prompt action**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of aging**

Keywords: **Aging, Asthma, Surveillance**

Abstract Text

Background:
Asthma affects people of all ages and is a significant public health problem in the United States (US) and Massachusetts (MA). Of the estimated 16.4 million US adults with asthma in 2008, 15.9% were aged 65 and older (i.e. older adults). This age group has consistently had the second highest hospitalization rate and highest mortality rate due to asthma. The Strategic Plan for Asthma in Massachusetts 2009 - 2014 highlighted older adults as a group needing increased clinical and public health attention. The purpose of this analysis was to address a gap in information by providing an epidemiologic overview of asthma among older adults in MA. Findings will inform a task force of experts charged with developing recommendations for targeted asthma interventions for this age group.

Methods:
MA estimates are based on data from the Behavioral Risk Factor Surveillance System, the Adult Asthma Call-back Survey, the Massachusetts Hospital Discharge Database, and Massachusetts Registry of Vital Records and Statistics. Findings are compared to national estimates where possible. Analyses were conducted using SAS v9.2.

Results:
In 2009, ~ 70,000 (8.4%) adults aged 65 and older in MA had asthma. Current asthma prevalence among older adults significantly increased from 2000-2009 and was significantly higher among those aged 65-79, women, and Hispanics. Only 1 in 5 of older MA adults with asthma had well-controlled asthma.
An average of 9,475 asthma hospitalizations in MA occurred each year from 2006-2008; 23.2% were among older adults. The asthma hospitalization rate among older adults increased 56% from 2000-2008, reaching 27.6 per 10,000 in 2008. The rate for older adult females was 1.5 times the rate for males. Rates for both Hispanics and Black, non-Hispanics were about three times higher than the rate for Whites.
From 2000- 2007, 53.2% of the 615 deaths due to asthma in MA were among older adults. Although the asthma mortality rate among older adults has been declining, it has been consistently higher than the rate among younger MA residents.

Conclusions:
Findings highlight the disparate burden of asthma experienced by MA residents aged 65 and older. These statistics combined with the large and growing number of older adults in MA underline the need for effective interventions for older adults with asthma. The MA Department of Public Health and the Asthma and Allergy Foundation - New England are convening a taskforce of stakeholders to review these findings along with relevant clinical and public health research to develop state-specific recommendations.

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Abstract ID: **1060619** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A comprehensive hemoglobinopathy surveillance system as statewide long-term follow-up across the life span - Michigan experience**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Lifecourse epidemiology**

Keywords: **Evidence based practice, Health disparities, Surveillance**

Abstract Text

Background:
Newborn screening (NBS) for hemoglobinopathies (HGB) has substantially improved survival during childhood; less is known about cases detected by NBS beyond age five. We use the surveillance system process for obtaining, analyzing, interpreting and disseminating information about HGB cases as statewide long-term follow-up across the life span.

Methods:
Multiple databases and other state resources are used to meet the goal of expanding HGB follow-up across the lifespan through surveillance. The two-dimensional concept of lifespan is applied, recognizing that health and well-being along with other exposures and risks occur over a continuum from conception to death (horizontal dimension) but also have an impact on offspring (vertical dimension). Case identification is based on NBS data supplemented with physician reports and information from other statewide systems. To assess the burden of HGB including healthcare utilization and costs, different data sources are used (i.e., hospital discharge, Medicaid, Women, Infants and Children) and linkages performed. Death certificate data are used to evaluate mortality pre- and post-newborn screening.

Results:
From 1987 to 2009, 1,504 newborns were diagnosed with sickle cell disease (SCD) through NBS, leading to a cumulative incidence rate of 1:2,057. Through the linkages, approximately 97% of newborns delivered in 2004-2008 were matched with live births and immunization data were available for 90%. For children with sickle cell the completion rate for all vaccines listed above was 66.0% among those 19-35 months and 71.3% among those 3-6 years of age.
According to hospital discharge data, 4,570 hospital stays occurred in 2007 where sickle cell disease was recorded as a diagnosis. In 2007 sickle cell disease or trait was a primary or contributing cause of death for 21 individuals (1 - 89 years old).

Conclusions:
A surveillance system across the lifespan can further public health knowledge and inform policy makers by consolidating the use of multiple data sources and record linkage with epidemiological skills and strong partnership with a statewide network of providers.

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Abstract ID: **1062086** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A population based survival analysis of heart attack patients transported by ambulance: What can we do better**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of other CD/MCH/OrH risk factors**

Keywords: **Cardiovascular disease, Emergency response, Health care**

Abstract Text

Background:
Public health interventions are population based, yet many studies of emergency medical service (EMS) are hospital based that focus on one or two conditions. In this study, we examine the effects of EMS response time on survivals among patients with congestive heart failure, heart attack and ischemic stroke.

Methods:
The study is based on a recently generated dataset that linked EMS data, hospital discharge data and vital statistical data for 2005 to 2009 in Nebraska. Survival rates were estimated and survival curves were constructed using the Kaplan-Meier method.

Results:
Separate analyses of dispatch time to scene and transport time to hospital show different impacts. While both types of time are related to type of procedures that performed for these patients, the survival rate of ischemic stroke inversely related to the duration from dispatching to admission, the dispatch time to the scene was more critical for congestive heart failure and heart attack patients, especially for those died at the scene.

Conclusions:
In addition to establishing a relationship between survivals and EMS time, the study identified a number of factors for EMS and CVD programs improvements, such as communications between EMS dispatchers and patients, procedures used by EMS responders, and rural-urban differences.

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Abstract ID: **1061522** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Evaluation of maternal smoking surveillance through the Massachusetts Pregnancy Risk Assessment Monitoring System and the Massachusetts birth certificate**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Enhancing or evaluating existing CD/MCH/OrH surveillance systems**

Keywords: **Maternal and Child Health, Smoking, Surveillance**

Abstract Text

Background:
Maternal smoking during pregnancy has been associated with adverse maternal and infant outcomes, including intrauterine growth retardation, sudden infant death syndrome, and premature delivery. Reducing infant mortality and improving maternal health are priorities for Massachusetts (MA). Data informing maternal smoking have been gathered on the MA birth certificate (BC) since 1986. The initiation of the MA Pregnancy Risk Assessment Monitoring System (PRAMS) in 2007 presents another opportunity to collect maternal smoking data. These data sources have not been compared regarding maternal smoking information. This surveillance evaluation seeks to understand how the MA BC and MA PRAMS compare in capturing maternal smoking before, during, and after pregnancy.

Methods:
Data on maternal smoking before, during, and after pregnancy from 2007-2008 MA PRAMS respondents were linked with MA BC data (n = 2,997 respondents). These data were analyzed for frequency of cigarette consumption, prevalence estimates, and Kappa (κ) coefficients using SAS 9.2 and SUDAAN 10.0.

Results:
From 2007-08, the prevalence of maternal smoking before pregnancy was 14.0% according to the MA BC and 17.6% according to MA PRAMS. The overall κ between the two data sources was 0.65 (95% C.L.: 0.60-0.69), indicating a good level of agreement. Combining data sources, 18.8% (95% C.L.: 16.9-20.9) of mothers smoked prior to pregnancy. Also, 7.2% of mothers reported smoking during pregnancy on the MA BC compared to 9.3% on MA PRAMS. These data sources had good agreement with κ = 0.68 (95% C.L.: 0.62-0.74). When data were combined, 10.2% (95% C.L.: 8.7-12.0) of mothers indicated smoking during pregnancy. There was a moderate level of agreement when examining the change in cigarette consumption before and during pregnancy between the MA BC and MA PRAMS with a κ of 0.53 (95% C.L.: 0.49-0.57). Only MA PRAMS collected maternal smoking behaviors post-partum, with 12.6% indicating tobacco use after pregnancy.

Conclusions:
MA PRAMS captured more maternal smoking prior to and during pregnancy than the MA BC. While the κ coefficients were in good agreement for both of these indicators, combining the data revealed a greater percentage of maternal smoking than either source alone. Furthermore, MA PRAMS offers data on smoking after pregnancy. As maternal smoking behaviors are associated with adverse infant and maternal health outcomes, surveillance systems are critical for policy and program development. MA PRAMS offers a new data source on maternal smoking and reveals a larger burden of maternal smoking when combined with MA BC data.

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Abstract ID: **1057624** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Cervical cancer screening in the U.S.-Mexico border region**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of other CD/MCH/OrH risk factors**

Keywords: **Border / International health, Cervical cancer, Risk factors**

Abstract Text

Background:
In the United States-Mexico border region cervical cancer mortality is high; in 2000, 9.4 deaths/100,000 women occurred in Mexican border counties and 3.7/100,000 occurred in U.S. border counties compared with 3.3/100,000 in the entire US. The goal of this study was to describe the prevalence of and covariates associated with having a Papanicalaou test in the past year among women in the 44 U.S. and 80 Mexican counties that comprise the border region.

Methods:
We analyzed similar cross-sectional data from the 2006 Mexican National Survey of Health and Nutrition (in-person, collected every six years) and the 2006 U.S. Behavioral Risk Factor Surveillance System (telephone; collected annually). Both employ stratified probability samples to produce state-level estimates; we used the weights assigned in these surveys. Women ages 20-77 without previous hysterectomy, living in the U.S. (n=8,451) and Mexican border states (n=3,670) were studied. We computed weighted proportions and chi-squares for Pap test within the past year and covariates, including age, education, employment, marital status, health insurance, health status, risk behaviors and Hispanic ethnicity. We used multivariate logistic regression to compute crude and adjusted odds ratios (AOR). We also combined the data sets to calculate the AOR of Pap testing In the U.S. versus Mexico.

Results:
Sixty-five percent (95%CI=60.3-68.6) of women in U.S. border counties and 33% (95%CI=29.4-35.9) in Mexican border counties had a Pap test within the previous year. Among women in U.S. border counties, younger age, health insurance, and marriage were associated with a Pap test (AOR=1.5, 95%CI=1.06-2.27; 2.17, 95%CI=1.35-3.47 and 1.60, 95%CI=1.10-2.35, respectively). Among women in Mexican border counties, insurance and marriage were positively associated with a test (AOR=1.64, 95%CI=1.28-2.10 and 1.88; 95%CI=1.41-2.51, respectively), while college education was negatively associated (AOR=0.49; 95%CI=0.30-0.79). In the combined analysis, adjusting for covariate differences between the US and Mexico, U.S. women were more likely than Mexican women to have had a recent Pap (AOR=3.48, 95%CI=2.75-4.39).

Conclusions:
Marriage and health insurance were associated with a recent Pap test on both sides of the border, suggesting that binational improvements in insurance coverage and/or cost reductions might increase testing among unmarried and uninsured women, leading to earlier diagnosis of and reduced mortality

from cervical cancer in the region.

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Abstract ID: **1062088** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Use of surveillance data to design and evaluate worksite programs to address cardiovascular disease in New York State**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Evaluating CD/MCH/OrH programs**

Keywords: **Chronic diseases, Data/Surveillance, Workforce**

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Abstract ID: **1060546** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Using community health profiles to understand and improve the health of urban American Indians and Alaska Natives**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Generating and using county and local-level data for CD/MCH/OrH epidemiology**

Keywords: **American Indians, Community health assessment, Health disparities**

Abstract Text

Background:
Local health data is an essential tool for decision making, advocacy, and education. It drives the allocation of health resources, offers insight into the health dynamics affecting vulnerable populations, and highlights health disparities in need of innovative solutions. However, the lack of standardized collection practices for the urban American Indian and Alaska Native (AI/AN) population creates

challenges in retrieving and analyzing local health data. In response to these challenges, the Urban Indian Health Institute (UIHI) developed a series of community health profiles (CHP) for the network of thirty four urban Indian health organizations (UIHO). The CHP provide an overview of the health status of the AI/AN population in each specific community, examining preventable causes of illness, death, access to care, and burden of disease.

Methods:
Preliminary discussions with UIHO staff on data needs drove the development of a comprehensive list of core indicators and respective data sources to be included in the CHP. Nineteen final indicators from five distinct topics (census overview, mortality overview, reported health and health influencing behaviors, barriers to care, and the health of mothers and children) were selected. Prior to data analysis, each of the thirty four UIHO was surveyed to finalize a list of service areas (county level) for their clinic. For each CHP, U.S. census data, vital statistics data, and behavioral risk factors surveillance system (BRFSS) data were analyzed. Each analysis provided data across two comparison groups, AI/AN and the general population (all races combined). Notes on data use and limitations in the data including racial misclassification were included in each CHP.

Results:
Aggregate analysis of all UIHO service areas found alarming health and economic disparities among urban AI/AN when compared to the general population. In the aggregate analysis, 24% of urban AI/AN are living in poverty compared to 13.3% of the general population. Over 23% of AI/AN in the urban areas served UIHO report that they are current smokers and over 31% of AI/AN report being diagnosed as obese. Significant barriers to care were identified through the BRFSS analysis including 20.5% of urban AI/AN reporting that they could not see a doctor because of cost, and over 27% reporting that they had no health insurance in the past 12 months. Over 14% of urban AI/AN women reported smoking during pregnancy, and 8.2% reported having late or no prenatal care.

Conclusions:
The CHP utilize available local and national data so that UIHO staff have access to relevant, up-to-date information about their community's health. Having access to local data can mobilize urban AI/AN communities for collaborative identification of health problems and successful activism to address these problems. Specifically, the CHP can be used to support grant writing, program expansion, and are a critical resource for understanding and addressing the health disparities of urban American Indians and Alaska Natives (AI/AN).

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Abstract ID: **1060613** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Competencies and skills assessment of state heart disease and stroke epidemiologists and evaluators**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Building epidemiology capacity for CD/MCH/OrH (e.g., mentorship, training, models from states)**

Keywords: **Chronic diseases, Epidemiology capacity, Professional development**

Abstract Text

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Abstract ID: **1056678** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Population attributable risks for low birth weight among singleton births in Colorado, 2007-2009**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Other chronic disease, maternal & child health, or oral health epidemiology**

Keywords: **Birth outcomes, MCH Epidemiology, Pregnancy**

Abstract Text

Background:
The Colorado low birth weight rate of 8.9 percent was the twelfth highest in the nation in 2008. Low birth weight is associated with increased risk of mortality in the first year of life and long-term health and developmental complications. A prior population attributable risk analysis using singleton Colorado births in 1995-1997 revealed inadequate maternal weight gain and smoking during pregnancy as the two largest contributors to low birth weight that were also preventable. The purpose of a new 2007-2009 analysis was to determine if the same risk factors still contribute to low birth weight.

Methods:
Birth certificate data on 202,498 singleton births to Colorado residents in 2007-2009 were used to conduct a population attributable risk analysis to determine the proportion of singleton low birth weight births that could be attributed to select risk factors including inadequate weight gain, smoking, premature rupture of membranes, eclampsia, short interpregnancy interval, no prenatal care, and others.

Results:
Inadequate weight gain during pregnancy remained the largest contributor to low birth weight, accounting for 1 out of every 8 low weight births, for a population attributable risk of 12.9 percent (95% CI = 12.0-13.9). Smoking during pregnancy accounted for 1 out of every 14 low weight births, 7.1 percent (95% CI = 6.4-7.7). The contribution of smoking fell 40 percent from 11.9 percent to 7.1 percent. Smoking prevalence among pregnant women declined 25 percent, from 11.6 percent in 1995-1997 to 8.7 percent in 2007-2009. The contributions of other risk factors were smaller and similar to the results of the first analysis.

Conclusions:
Both inadequate maternal weight gain and smoking during pregnancy still contribute to low birth weight in Colorado, and inadequate weight gain remains the largest contributor. Smoking during pregnancy, however, has declined substantially in its contribution to low birth weight; a drop in smoking prevalence underlies this change. Both factors are amenable to intervention, but progress has been made only in

reducing smoking in the population.
Public health prevention efforts for pregnant women should continue to promote appropriate weight gain during pregnancy and smoking cessation to reduce the risk of low birth weight and improve infant health. Population attributable risk is one method for identifying those factors which contribute to low birth weight.

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Abstract ID: **1060811** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Automated surveillance for diabetes prevalence and care using electronic health record systems**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Emerging CD/MCH/OrH surveillance: new systems, methods, or use**

Keywords: **Diabetes, Informatics, Surveillance**

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Abstract ID: **1057446** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Integrating science, policy, and practice: The Maternal and Child Health Epidemiology Program (MCHEP) in states**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Building epidemiology capacity for CD/MCH/OrH (e.g., mentorship, training, models from states)**

Keywords: **Epidemiology capacity, MCH Epidemiology, Workforce development**

Abstract Text

Background:

The recent Council of State and Territorial (CSTE) assessment of MCH capacity indicates that as a field MCH epidemiology has increased substantially over the past decade, a promising trend. However, this success is based on long-term development of capacity-building programs. As a response to limited capacity over two decades ago, the Maternal and Child Health Epidemiology Program (MCHEP) was established in 1986 by both the Centers for Disease Control and Prevention, and the Health Resources Services Administration. The purpose of the program is to build capacity and increase the infrastructure of MCH epidemiology in states, tribes, localities, and territories.

Methods:
The MCHEP partners with states to place senior level MCH epidemiologists in health departments and public health agencies. The MCHEP assignments are 80% funded by the hosting state agency and 20% funded by CDC. The MCHEP program recently reviewed reports of current assignments to describe the duration and scope of assignee work.

Results:
In the history of the program, the MCHEP has provided support to over 33 states and three regions. Currently, the MCHEP includes 12 assignees in nine states, the US/Mexico border region, urban centers, and tribes. The program has maintained a steady number of assignees for the last 24 years, but has not exceeded the current rate of 12. The distribution of participating states and agencies includes 42% with a continuous assignment over five years, 33% with an assignment of between two and five years, 25% with an assignment of one year or less. The program has enabled states to obtain access to fellowships offered by federal agencies; initiate statewide collaborations; dedicate resources to developing statewide strategic plans and scientific agendas; develop an evidence base for updating policies, implementing programs, and initiating surveillance systems; and train state staff in epidemiologic methodology and analysis. Assignees are responsible for working to impact the state MCH priorities by prioritizing projects in a work plan and reporting progress annually to CDC. The MCHEP also works closely with CSTE to provide mentoring and jointly develop training opportunities for MCH fellows in state assignments.

Conclusions:
The MCHEP has increased capacity for MCH epidemiologic work in states. Although the program has expanded to support multiple states and regions, an assessment of the program in states that have steadily maintained assignees, lost assignees, and have newly acquired assignees would provide more detail regarding assignee policy, program, and scientific accomplishments in states and the factors influencing assignment duration and activities.

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Abstract ID: **1054093** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Asthma prevalence among lesbian, gay, and bisexual men and women in California**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of other CD/MCH/OrH risk factors**

Keywords: **Asthma, Health disparities, Tobacco**

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Abstract ID: **1057746** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Linking mortality and inpatient records: Developing and comparing deterministic and probabilistic methodologies**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Enhancing or evaluating existing CD/MCH/OrH surveillance systems**

Keywords: **Cardiovascular disease, Data/Surveillance, Information databases**

Abstract Text

Background:
We seek to create new data resources for the surveillance of cardiovascular disease (CVD) and treatment outcomes by combining inpatient discharge records with death certificates. Many states have rich databases of mortality records and hospital inpatient discharge abstracts. Chronic disease epidemiologists could realize significantly enhanced surveillance analysis opportunities from databases that merged these two sources. For example, survival rates for patients with different demographics, co-morbidities or procedures could be compared and evaluated.

Methods:
We applied two alternative methodologies - deterministic and probabilistic - to the task of de-duplicating three years of statewide inpatient records and linking the resulting patients to mortality records from the same period. We developed algorithms, using SAS software, to iteratively match records with deterministic methods and to evaluate the results. We then replicated that effort using the LinkSolv software's sophisticated probability-based methodology. Finally, we developed analyses that compared and evaluated the results of both methods.

Results:
Using the deterministic linkage approach, one combination of elements was found to create reasonably complete and valid de-duplicated patients from the inpatient records. Two sets of iterative algorithms were developed to link (1) in-hospital death and inpatient records and (2) other deaths and inpatient records. The probabilistic linkage software generated a comparative set of de-duplicated patients and identified those with a high probability of matching particular mortality records. Each method produced generally similar results.

Conclusions:
Valid and reasonably complete links between mortality and hospital patient records may be created by either deterministic or probabilistic linkage methodologies. The results provide new data resources for the surveillance of CVD and other chronic diseases.

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Abstract ID: **1057690** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **An examination of stressful life events and intimate partner violence as risk factors for self-reported postpartum depression among American Indian/Alaska Native mothers**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Examining social determinants of health and health disparities in CD/MCH/OrH**

Keywords: **Depression, Health disparities, Native Americans**

Abstract Text

Background:
The prevalence of stressful life events (SLEs) and intimate partner violence (IPV) is disproportionately high among American Indian/Alaska Native (AI/AN) women in Oregon, which may contribute to the similarly high prevalence of postpartum depression within these communities.

Methods:
Analysis was conducted using linked data from Oregon birth certificates, Oregon's Pregnancy Risk Assessment Monitoring System (PRAMS), and PRAMS-2 (Oregon's PRAMS follow-back survey). 1,911 women responded to PRAMS-2 in 2006-2007 shortly after their child's second birthday, 226 of whom were AI/AN. The PRAMS-2 weighted response rate was 56.7% for 2006-2007. PRAMS-2 asks mothers to report symptoms of depression, thirteen separate SLEs, and five types of IPV, occurring 13-24 months after the birth of their child. The SLEs were divided into four categories: partner-related, traumatic, financial, and emotional. Prevalence rates of postpartum depression, SLEs, and IPV were calculated among all racial/ethnic groups. Bivariate and multivariate logistic regression models were created to examine risk factors for postpartum depression among AI/AN mothers only. The final multivariate logistic regression model was limited to risk factors with a p-value less than 0.05. All statistical analysis was conducted using STATA 11.0, to account for the complex sampling design of PRAMS and PRAMS-2.

Results:
29.4% of AI/AN mothers reported experiencing symptoms of depression in their baby's second year of life. During this time period, 41.9% of AI/AN mothers reported experiencing partner-related SLEs, 35.4% reported traumatic SLEs, 66.3% reported financial SLEs, 65.5% reported emotional SLEs, and 19.5% reported IPV. The prevalence rates of all categories of SLEs and IPV were higher among AI/AN mothers than among any other racial/ethnic group. The final multivariate model included two categories of SLEs which were statistically significantly associated with increased odds of postpartum depression among AI/AN mothers in this sample. These were partner-related SLEs (Adjusted odds ratio (AOR) = 3.75, 95% Confidence Interval (CI) 1.88-7.50) and traumatic SLEs (AOR = 2.89, 95% CI 1.44-5.85).

Conclusions:
AI/AN mothers experience the highest prevalence of SLEs and IPV in Oregon, indicating an important

racial health disparity, and highlighting a dire need for interventions which address these issues. AI/AN mothers in Oregon also experience a high prevalence of postpartum depression, for which partner-related and traumatic SLEs are statistically significant risk factors. Interventions to address the high levels of postpartum depression among AI/AN mothers in Oregon could focus on either prevention or screening. Interventions focusing on preventing partner-related or traumatic SLES from occurring may help lower the prevalence of postpartum depression. Alternatively, screening for postpartum depression among AI/AN mothers who are known to have experienced partner-related or traumatic SLEs may lead to increased diagnosis.

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Abstract ID: **1057660** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Comparison of the predictors of overweight and obesity between American Indian/Alaska Native children and non-Hispanic white children**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Physical activity, nutrition, and obesity epidemiology**

Keywords: **Health disparities, Native Americans, Obesity**

Abstract Text

Background:
Childhood overweight/obesity is a public health crisis in the United States that disproportionately affects American Indian/Alaska Native (AI/AN) children. There is a higher prevalence among AI/AN children than children of other race/ethnicities, and interventions targeting overweight/obesity have been less effective among these children. This analysis examines the predictors of overweight/obesity among AI/AN children, and compares them to predictors among non-Hispanic white children. We hope that once risk factors for overweight/obesity among AI/AN children are better understood, that effective interventions can be tailored to suit this population.

Methods:
We analyzed data on 10 to 17 year old children from the 2007 National Survey of Children's Health, which is a population-based cross-sectional survey. The analysis was limited to only the seven US states that reported AI/AN race as a distinct category, resulting in a sample size of 386 AI/AN children and 4956 non-Hispanic white children, and an average response rate of 53.3%. Bivariate associations between overweight/obesity (body mass index at the 85th percentile or higher for age and sex) and demographics, socioeconomic characteristics, neighborhood environment, household environment, and the child's behavior were assessed using pooled and race-stratified logistic regression. Multivariate logistic regression was conducted using a model including selected race-interaction terms, and all variables with significant odds ratios in the pooled bivariate regression. All analyses were conducted in SAS (version 9.2) using complex survey procedure.

Results:

The prevalence of overweight/obesity was 29% (95% Confidence Interval (CI) = 26.2%-31.8%) among non-Hispanic white children and 48.3% (95% CI = 38.7%-58.0%) among AI/ AN children (p<0.0001). The results of the multivariate logistic regression were that younger age, male sex, household income less than 400% of the federal poverty level, family structure other than two parents or a single mother household, lack of perceived neighborhood support, and TV viewing, were all statistically significantly associated with a higher odds of overweight/obesity among both AI/AN children and non-Hispanic white children. Lack of sports participation was the only variable which was statistically significantly associated with higher odds of overweight/obesity among AI/AN children, but not among non-Hispanic white children. Among AI/AN children, not participating in a sports team led to a 2.7 times greater odds of overweight/obesity (95% CI = 1.3-5.2).

Conclusions:
Correlates of overweight/obesity did not differ between AI/AN and non-Hispanic white children, with the exception of sports participation. This indicates that the same risk factors need to be addressed in AI/AN communities as in others to prevent childhood overweight/obesity, although particular attention could be paid to encouraging AI/AN children to engage in school or community sports teams. Future research could be directed towards examination of the effectiveness of interventions, as aspects such as cultural sensitivity may need to be assessed.

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Abstract ID: **1055748** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Body mass index measurement in schools: Partnering with oral health**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Emerging CD/MCH/OrH surveillance: new systems, methods, or use**

Keywords: **Obesity, Oral health, School health**

Abstract Text

Background:
To control costs and minimize school disruption, measuring height and weight in conjunction with oral health surveys is emerging as a mechanism to implement ongoing body mass index surveillance among school-aged children. Although previous reviews have examined state surveillance/legislation of childhood obesity and body mass index measurement in schools, no review has specifically examined combined oral health/ body mass index surveillance. Therefore, the purpose of this review was to determine which states are collecting body mass index surveillance data in conjunction with oral health and to assess methodological similarities, differences, and outcomes in such states.

Methods:
An inquiry was sent to the Association of State and Territorial Dental Directors listserv seeking states with combined oral health/body mass index surveillance and without state legislated school-based body mass index measurement programs. Qualitative data on surveillance methods by state were collected and summarized.

Results:
Nine states met inclusion criteria (CO, GA, IL, ME, NH, ND, OH, WI, WY). All states collected surveillance data among 3rd grade children, with each state selecting a random, stratified sample of elementary schools. All states used state-specific body mass index protocols, including use of standardized, calibrated equipment to measure height/weight. Many states also used local support to implement the survey and used external sources for statistical support. However, differences included types of incentives used, mode of consent, and parties involved in the collaboration. The most common uses of the body mass index data include: assessing the magnitude of the problem and changes over time; informing programs; allocation of resources; identification of priority areas for prevention research; support for grant applications; and program evaluation.

Conclusions:
This review showed that combining oral health and body mass index surveillance is a feasible, adaptable method that controls costs and minimizes school disruption. Interested states can use specific examples from this review to initiate discussions at their own agencies on methods to employ and partners to engage.

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Abstract ID: **1056841** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Reliability and validity of Ohio's childhood body mass index surveillance data**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Enhancing or evaluating existing CD/MCH/OrH surveillance systems**

Keywords: **Evaluation, Obesity, Surveillance**

Abstract Text

Background:
Recent increases in the prevalence of childhood overweight and obesity have led to increased local efforts to monitor changes in body mass index (BMI). The Ohio Department of Health has been directly measuring height and weight among 3rd graders since the 2004-2005 school year. To make county-level data collection cost feasible, local health care professionals from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), local health departments, and schools were recruited and trained on state-developed protocols to serve as volunteer height and weight measurers. The measures were taken using standardized and calibrated equipment; however, these data have yet to be validated for their accuracy against a gold standard.

Methods:
A random sample of schools (n=30) was selected from those participating in the overall 2009-2010 Oral Health/BMI survey (n=377). Children in this reliability sample (n=1189) were each measured by a gold standard and by a volunteer measurer. Overweight was classified as BMI for age 85th-<95th percentile of the 2000 sex-specific CDC growth charts; obesity was classified as >95th percentile. Mean differences for height, weight, and BMI percentiles were calculated by subtracting gold standard from volunteer values. Reliability was estimated by (1) Pearson's correlation and (2) percent agreement between BMI classifications using McNemar's test and Kappa statistic. Validity was determined by estimating sensitivity and specificity using gold standard measures as the reference.

Results:
Overall mean differences (standard deviation) were 0.4 (0.5) cm for height, 0.02 (0.07) kg for weight, and 1.2 (1.6) kg/m2 for BMI. Pearson's correlation for all 3 measures was 0.9 ($p<0.01$), indicating a strong positive association between gold standard and volunteer measures. BMI category classifications showed substantial reliability ($p=0.3$; Kappa=0.96). Specifically, percent agreement among children classified as overweight was 99.5% (17.5% gold standard vs. 17.6% volunteer); and percent agreement among children classified as obese was 98.1% (21.4% vs. 21.8%, respectively). Sensitivity and specificity were 96.5% and 98.5% for overweight and 100% and 99.7% for obesity, respectively. All indicators were similar by sex.

Conclusions:
In this study, reliability and validity for height, weight, BMI percentile and BMI classification were very high, illustrating the feasibility of anthropometric data collection by multiple trained measurers in large-scale epidemiological studies

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Abstract ID: **1056810** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Prevention strategies for the perinatal period among Nebraska birthing facilities, 2010**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Surveillance of policies, environments, and systems changes for CD/MCH/OrH**

Keywords: **Maternal and Child Health, Policy/Policy Development**

Abstract Text

Background:
The perinatal period is a key time to implement interventions to prevent high-morbidity diseases in infants, including rubella, varicella, pertussis, hepatitis B, and human immunodeficiency virus (HIV). Birthing facilities can increase delivery of these interventions through written policies (WPs) and standing orders (SOs); we assessed whether Nebraska birthing facilities had such WPs/SOs.

Methods:
During July 2010, we conducted an Internet-based survey of perinatal coordinators at each of Nebraska's 59 birthing facilities to determine existence of rubella-, varicella-, pertussis-, hepatitis B-, and HIV-specific comprehensive WPs/SOs. For each disease, we classified WPs/SOs as comprehensive if they required a minimum set of recommended interventions (e.g., intrapartum maternal screening/prophylaxis, postpartum infant prophylaxis, and postpartum maternal/infant vaccination) based on prenatal maternal serologic screening and vaccination status. For each disease, we calculated the proportion of facilities with a comprehensive WP/SO and proportion of Nebraska's 2009 live births at these facilities.

Results:
All 59 facilities participated (median 2009 live births per facility,100; range 0-3500); >90% answered all

questions regarding each disease. The following proportions of responding facilities had a comprehensive WP/SO: for rubella, 69% (representing 90% of 2009 Nebraska births); for varicella, 7% (18%); for pertussis, 63% (85%); for hepatitis B, 50% (63%); and for HIV, 5% (25%). Only for pertussis was the proportion of facilities with a comprehensive WP/SO substantially different in facilities with ≥100 births versus <100 births (76% vs. 48%).

Conclusions:
Existence of comprehensive WPs/SOs varied considerably by disease and was lowest for varicella and HIV. Although adherence to WPs/SOs must also be assessed, all Nebraska birthing facilities should have WPs/SOs in place for these diseases. Nebraska perinatal coordinators should be educated on the importance of WPs/SOs.

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Abstract ID: **1062056** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Linking cardiovascular disease related EMS data to hospital discharge data: Lessons for other states**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Enhancing or evaluating existing CD/MCH/OrH surveillance systems**

Keywords: **Cardiovascular disease, Data/Surveillance, Health information systems**

Abstract Text

Background:
Public health agencies maintain or use many different databases, however, they tend to use each database separately for analysis. Linking various databases can help programs work together for public health interventions. This paper summarizes the experience of linking cardiovascular disease (CVD) related emergency medical services (EMS) data to hospital discharge data and to mortality data, a project funded by the CDC via the Council of State and Territorial Epidemiologists.

Methods:
The project is based on the probabilistic data linkage method, where common linkage variables among the two datasets are name, birth date, sex, and the date of service/admission.

Results:
There were four challenges in the linkage process. First, there are four separated databases collecting about 100,000 EMS runs each year, and we had to create a common identifier to integrate them to streamline the linkage process. Second, since both hospital discharge data and EMS data are event-based, and each person can appear in these databases several times, matching service dates with admission dates probabilistically often require additional information, such as destination name, travel time, and admission hospital. Third, a fair amount of data cleaning effort is needed to tap rich information from EMS data, and, ideally; such work should start immediately with the linkage process

rather than at the end of linkage process. Finally, a perennial problem associated with data linkage, or data quality improve projects is lack of data analysis for related programs. However, a concerted effort was made to include the CVD program in all phases of the project. As a result, we were able to answer several key program questions, and to build a relationship between public health support unit, which carried out the linkage and much of the analysis, and the CVD program, which provided inputs for various analyses for their public health interventions.

Conclusions:
Active collaboration between programs is the key to success in this data linkage project. By working closely between programs, we also demonstrated several benefits or value-added components of linked dataset that otherwise would not be able to realize.

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Abstract ID: **1055442** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Using PRAMS data to identify disparities in access to prenatal care in Wisconsin by Medicaid status and race**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Examining social determinants of health and health disparities in CD/MCH/OrH**

Keywords: **Health disparities, Maternal and Child Health**

Abstract Text

Background:
Wisconsin's African American infant mortality rate remains one of the highest in the country, and more than 80% of these deaths are among Medicaid births. In response, the Wisconsin Medicaid program is focusing payments and incentives for managed care organizations on improved birth outcomes. The purpose of this study was to identify baseline prevalence of access to prenatal care by mothers' Medicaid status and race.

Methods:
Data from the 2007-2008 Wisconsin Pregnancy Risk Assessment Monitoring System (PRAMS), a population-based, complex survey of a random sample of new moms, were analyzed to determine insurance status and access to care in this cross-sectional, descriptive study. Medicaid status was based on mother's report of prenatal care payer(s). Differences in access to prenatal care by Medicaid status were examined for the entire sample and separately for non-Hispanic blacks and whites. Access to prenatal care was defined as not getting first trimester care, not getting care as early as wanted, and reported barriers such as not having transportation, child care, or time off work. Univariable analyses allowed for comparison of prenatal care access across groups (SAS v9.1.3).

Results:
Nearly a third (30.0%; CI: 26.2-33.7) of Medicaid mothers did not receive first trimester prenatal care, compared to only 13.9% (CI: 11.8-16.0) of other mothers. Medicaid mothers were twice as likely to report not receiving care as early as wanted compared with non-Medicaid mothers (22.7% vs. 10.9%; p<0.0001). Medicaid mothers more frequently reported every barrier that was asked compared with non-Medicaid mothers; not having enough money (14% vs. 4%), not being able to get an appointment (14% vs. 6%), and not having a Medicaid card (13% vs. 2%) were the barriers most commonly reported by Medicaid mothers.
While 23.0% of white Medicaid mothers and 11.0% of white non-Medicaid mothers were lacking first trimester care, the frequencies for black mothers were higher at 36.5% and 33.0%, respectively. More black Medicaid (28.5%) and non-Medicaid (19.8%) mothers did not receive care as early as wanted compared to white mothers (20.6%, 8.7%). Nearly all barriers to care were reported more often by white Medicaid mothers than white non-Medicaid mothers. However, many of the barriers to prenatal care were present for all black mothers regardless of insurer, and usually at higher levels than for white mothers.

Conclusions:
PRAMS data illustrate disparities in access to prenatal care by Medicaid status and race; this information should be incorporated into Medicaid planning efforts for outreach to high-risk women.

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Abstract ID: **1062367** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **How far is too far?: How distance from mother's residence to hospital is associated with birth in a high-level neonatal facility among very low birth weight infants in Texas**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Other chronic disease, maternal & child health, or oral health epidemiology**

Keywords: **Barriers to care, Geographic Information Systems, Neonatal**

Abstract Text

Background:
Mortality rates among very low birth weight (VLBW) infants are improved when birth occurs in a hospital with a high level of neonatal care. Delivery of VLBW infants in such hospitals has been identified as a national priority with a Healthy People 2020 objective to increase the percentage of VLBW infants born at level III hospitals, as well as a related Maternal and Child Health Bureau Title V performance measure. The distance a mother must travel to deliver in a high-level facility may play an important role in whether a VLBW infant receives appropriate neonatal care.

Methods:
Birth certificate data on 2007 VLBW singleton births occurring in Texas hospitals to Texas residents were linked to 2007 American Hospital Association annual hospital survey data. Since no standard definitions of neonatal care levels exist in Texas, hospitals with a high-volume neonatal intensive care unit (HV-NICU), admitting ≥100 infants annually, were designated as providing a high level of neonatal care. ArcGIS® software was used to measure straight-line distance from mother's residence to the nearest HV-NICU and hospital of birth. Univariate and multivariate analyses were conducted to assess the factors associated with delivery of a VLBW infant in a HV-NICU hospital.

Results:
Approximately 78.7% of VLBW infants were born in facilities with a HV-NICU. About one-quarter of VLBW births occurred at the closest hospital to the mother's residence. Approximately 73.8% of mothers of VLBW infants lived <10 miles from a HV-NICU and 11.0% lived 30+ miles away. Mothers whose closest hospital had a HV-NICU were 2.5 times more likely (AOR 2.50, 95%CI: 2.04-3.04) to deliver in a HV-NICU facility than mothers whose closest hospital lacked a HV-NICU. Women who lived 30-59 miles from a HV-NICU were about half as likely (AOR 0.47, 95%CI: 0.34-0.65) and women who lived 60 or more miles away were nearly 3 times less likely (AOR 0.35, 95%CI: 0.22-0.53) to deliver in a HV-NICU, compared to mothers who lived less than 10 miles away.

Conclusions:
Distance from mother's residence to a high-level neonatal facility is an important factor associated with delivery of a VLBW infant in an adequately equipped facility. Formalized partnerships, networks and referral policies and protocols should be explored by hospital and public health stakeholders in Texas. Improved perinatal referral systems between facilities could extend the reach of larger high-level hospitals and may facilitate improved care for the 11% of VLBW infants who are geographically inhibited in receiving adequate neonatal services.

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Abstract ID: **1061527** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Preconception health indicators among Appalachian women**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Other chronic disease, maternal & child health, or oral health epidemiology**

Keywords: **MCH Epidemiology, Pregnancy, Vulnerable populations**

Abstract Text

Background:
Preconception health among reproductive-aged women may impact pregnancy outcomes. To assess and monitor preconception health and health care, a multi-state working group defined state preconception health indicators (PCHIs) in domains covering demographics, health status, behaviors, and social determinants of health. Women living in Appalachia generally have disparate health and birth outcomes; examining PCHIs could suggest targets for improvement. Therefore, we compared

PCHIs among reproductive-aged women residing in Appalachian and non-Appalachian counties.

Methods:
Data from the 1997-2005 Behavioral Risk Factor Surveillance System, an annual cross-sectional survey, were used to estimate the prevalence of PCHIs among non-pregnant women aged 18-44 years residing in 13 states with ≥1 Appalachian county (Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia and West Virginia). The Appalachian Regional Commission designates counties as Appalachian (n=33,727 interviewed women) or non-Appalachian (n=81,286). PCHIs available from BRFSS included measures of: education, general and mental health, health insurance, annual checkup, Papanicolaou test, tobacco and alcohol use, fruit/vegetable consumption, body mass index, physical activity, chronic conditions, and influenza vaccine uptake. For each PCHI, a multivariate logistic regression model adjusted for age, race/ethnicity, income, education (not adjusted for in the PCHI model for education) and state, was used to examine differences by Appalachian county residence.

Results:
Compared to non-Appalachian women, Appalachian women were significantly less likely to have > high school education [90.4% vs. 91.8%, adjusted odds ratio (AOR) 0.84, 95% confidence interval (CI) 0.77-0.91], excellent/good general health (89.9% vs. 91.1%, AOR 0.88, 95% CI 0.82-0.94), health insurance (81.0% vs. 83.4%, AOR 0.89, 95% CI 0.84-0.96), a recent checkup (71.5% vs. 75.1%, AOR 0.89, 95% CI 0.84-0.96) or Papanicolaou test (93.3% vs. 95.4%, AOR 0.83, 95% CI 0.75-0.93) and be overweight/obese (45.3% vs. 44.2%, AOR1.05, 95% CI 1.01-1.09). Appalachian women were significantly more likely to smoke (31.3% vs. 26.0%, AOR 1.08, 95% CI 1.03-1.14) but less likely to participate in heavy (4.2% vs. 5.1%, AOR 0.72, 95% CI 0.63-0.84) or binge drinking (8.9% vs. 12.1%, AOR 0.69, 95% CI 0.59-0.81) or have asthma (13.3% vs. 14.1%, AOR 0.88, 95% CI 0.82-0.93).

Conclusions:
Although self-reported, the results describe regional-specific disparities, and could inform targeted preconception health improvements among reproductive aged women living in Appalachia. BRFSS alone provides an incomplete description of preconception health, therefore, future work should include additional data sources identified by the multistate working group.

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Abstract ID: **1061847** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Building chronic disease epidemiology capacity in states: CDC's STEPPS program**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Building epidemiology capacity for CD/MCH/OrH (e.g., mentorship, training, models from states)**

Keywords: **Chronic diseases**

Abstract Text

Background:
The State-Based Epidemiology for Public Health Program Support (STEPPS) program has operated at the CDC's National Center for Chronic Disease Prevention and Health Promotion since 1991. The purpose of the program is to help state health departments sustain the epidemiology capacity necessary to develop sound, data-driven public health programs and policies that promote health and quality of life by preventing illness and disability from chronic diseases.

Methods:
The cornerstone strategy of the STEPPS program is to help states that lack adequate chronic disease epidemiology capacity hire a fully trained doctoral-level chronic disease epidemiologist. The epidemiologist may be a) a state employee hired with partial salary support obtained through CDC's cooperative agreement with the National Association of Chronic Disease Directors (NACDD), or b) a CDC assignee. If the epidemiologist is a CDC employee, the intent is for the state to transition the position to a state FTE within about four years.

Results:
Since its inception in 1991, STEPPS has provided staff or salary support for new chronic disease epidemiology positions in 33 states. Of the 28 states no longer receiving support from CDC, about two-thirds have made the successful transition to having one or more state-supported positions for chronic disease epidemiology that function independently of financial support from CDC's STEPPS activity. In addition to providing chronic disease epidemiology capacity at these states, STEPPS epidemiologists have contributed to nationwide capacity building efforts by CSTE and NACDD. These activities include CSTE's position statements on developing chronic disease epidemiology capacity, nationwide surveys of chronic disease epidemiology capacity, and white paper on Essential Functions of Chronic Disease Epidemiology in State Health Departments, as well as the Chronic Disease Indicators website which is supported by both CSTE and NACDD.

Conclusions:
The STEPPS program has made substantial contributions to state-based chronic disease epidemiologic capacity as well as to nationwide infrastructure that will continue to help develop and sustain capacity.

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Abstract ID: **1060606** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **State-specific alcohol-attributable deaths and years of potential life lost due to excessive alcohol use from 2001-2005**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Tobacco, alcohol, and substance use epidemiology**

Keywords: **Alcohol Use, Data/Surveillance, Epidemiology**

Abstract Text

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Abstract ID: **1061787** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A strong suite: Project based training, geographic information systems (GIS), and chronic disease surveillance**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Building epidemiology capacity for CD/MCH/OrH (e.g., mentorship, training, models from states)**

Keywords: **Chronic diseases, Geographic Information Systems, Training**

Abstract Text

Background:
Project based GIS training within health departments (HDs) creates opportunities for chronic disease specialists to leverage their expertise while building a new core capacity, and quickly make an impact. In 2007, the US Centers for Disease Control and Prevention (CDC) and the National Association of Chronic Disease Directors (NACDD) initiated a project in partnership with Duke University entitled: Geographic Information Systems (GIS) Training for Surveillance of Heart Disease, Stroke and Other Chronic Disease. The goal of this project is to enable GIS based surveillance of heart disease and stroke, in collaboration and partnership with a variety of chronic disease-related public and private organizations at the state and local levels.

Methods:
The project is centered on a modular training curriculum designed to meet the needs of participating training teams. The training curriculum culminates with the development of a GIS application that is grounded in each HD's chronic disease context and linked to specific program objectives. HDs are competitively selected for participation in the project. Selected HDs receive a GIS needs assessment; comprehensive live and virtual training in GIS; required software; and web-based help as GIS applications are designed, developed, and implemented. In turn, SHDs commit personnel (4 staff members) composing the training team, establish and maintain hardware, software and data infrastructure, and develop and implement GIS applications.

Results:
Currently, eight (8) state HDs have completed the training program. Participants from have gained considerable understanding of GIS concepts and their application in the chronic disease context. Within a timeframe of six months, the project based GIS training curriculum allows participants to capitalize on their chronic disease knowledge, and take advantage of the visualization, data management and organization, and analysis features; these features are in fact unique to GIS and well suited for surveillance activities. Two (2) training cohorts have completed the training curriculum. Phase I included teams from Colorado and Michigan. Phase II included teams from Arkansas, Massachusetts, Montana, Minnesota, North Carolina, and Utah. The two final phases of this project will train an additional ten (10) state teams and also involve selected local HDs.

Conclusions:
Lessons learned from the first two phases will inform the remaining phases of this project. Considered broadly these lessons offer valuable information on: key components of GIS Capacity for chronic disease epidemiology; essential structural/organizational requirements for GIS sustainability within health departments; and the guidelines for building GIS capacity in chronic disease units across the country.

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Abstract ID: **1056263** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Differences between landline and cell phone respondents in the 2008 Washington State Behavioral Risk Factor Surveillance System survey**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Enhancing or evaluating existing CD/MCH/OrH surveillance systems**

Keywords: **Data/Surveillance, Epidemiologic methods, Indicators**

Abstract Text

Background:
The Behavioral Risk Factor Surveillance System (BRFSS) is a valuable source of data on health-related behaviors. The BRFSS website notes that for many states, it is the only source of such data. Currently, most published BRFSS findings are derived from state-level, random samples of non-institutionalized adults living in households with landline telephones. The 2008 Washington State BRFSS (WA-BRFSS) included respondents with cell phones who lived in households with no landlines. This study assessed the impact of WA-BRFSS cell phone respondents on statewide estimates.

Methods:
We compared percentages of selected health indicators for landline and cell phone respondents, overall and stratified by age and sex. We also compared statewide estimates derived from landline respondents to those developed from landline and cell phone respondents combined. We used SUDAAN version 10.0.1 to account for the sampling design, weighting for probability of selection (design weights) and age and sex distribution of Washington adults (post-stratification weights).

Results:
There were 754 cell phone respondents, representing 3% of the 2008 WA-BRFSS respondents. After weighting, cell phone respondents comprised almost 15% of the sample. Differences between landline and cell phone respondents were large enough for some health indicators that the statewide estimates changed when including cell phone respondents. For example, for all age groups except the youngest, the percent of cell phone respondents reporting not having a health care provider was about double that of landline respondents (overall: 43% [95% confidence interval (CI):39%,47%] and 19% [CI:19%,20%], respectively). The statewide percentage increased to 23% (CI: 22%,24%) when combining landline and cell phone respondents. Binge drinking had a similar pattern overall with the landline estimate of 25% (CI:23%,26%) increasing to 28% (CI:27%,29%) when including cell phone

respondents. The patterns by age group, however, were more complex with statistically significantly more binge drinking among cell phone respondents at ages 25-34 and 45-54.

Conclusions:
While the statistically significant increases noted for these two factors might not be large in an absolute sense, differences of three or four percentage points are notable when assessing trends. Estimates of the percent of households without landlines vary, with the National Health Interview Survey recently indicating almost one-quarter of households in the western U.S. without landlines. Thus, even weighted to 15% of the sample, cell phone respondents might be underrepresented in WA-BRFSS and the combined percentages noted above might underestimate true prevalence. Incorporating a cell phone component into BRFSS is becoming increasingly important for accurate estimates.

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Abstract ID: **1056820** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Fruit and vegetable consumption in Washington State**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Physical activity, nutrition, and obesity epidemiology**

Keywords: **Data/Surveillance, Indicators, Nutrition**

Abstract Text

Background:
Nutritious dietary practices that include sufficient intake of fruit and vegetables promote heath and reduce risk for chronic diseases. The Dietary Guidelines for Americans, issued by U.S. Departments of Health and Human Services and Agriculture, recommend four servings of fruit and vegetables daily for those consuming 1000 calories to 13 servings for those consuming 3200 calories. The 2006-2007 Washington Adult Health Survey (WAHS) was designed to measure risk factors for cardiovascular disease among a random sample of Washington State residents aged ≥25 years. Survey participants completed a full food frequency questionnaire (FFQ). We assessed whether respondents met the dietary guidelines for fruit and vegetable consumption for their reported caloric intake.

Methods:
The FFQ, developed by the Fred Hutchinson Cancer Research Center (FHCRC), asks how often participants eat each of approximately 120 individual food items and includes summary questions for fruit and vegetables. FHCRC processed the FFQs and provided caloric intake and two measures of fruit and vegetable intake: measure 1 used only individual fruit and vegetable items; measure 2 combined the summary questions with individual fruit and vegetable items excluded from the summary questions. Because the method using only individual items tends to overestimate and the method using summary questions tends to underestimate consumption, we used both methods to determine a range of daily servings of fruit and vegetables. We classified participants who ate the recommended servings

for their caloric intakes as meeting recommendations. We used Satterthwaite-adjusted chi-square tests to examine differences among groups and SUDAAN® version 10.0.1 to account for sampling design.

Results:
Depending on the method for calculating fruit and vegetable consumption, approximately 14%-22% of participants met the guidelines for fruit, 11%-15% for vegetables, and 5%-6% for both fruits and vegetables. Approximately 15%-16% of participants aged ≥64 years and 3%-4% of younger participants met recommendations for both fruit and vegetables (P <0.02 and <0.06 for measures 1 and 2, respectively). Approximately 8%-9% of females and 3%-4% of males met the recommendations for both fruit and vegetables (P <0.03 and <0.07 for measures 1 and 2, respectively). Participants who were not overweight tended to be more likely to meet recommendations than those with measured body mass indexes ≥25.0 kg/m^2.

Conclusions:
Despite decades of public health attention, the vast majority of Washingtonians do not consume the recommended amount of fruit or vegetables daily. These findings underscore the need for developing and evaluating new approaches to address barriers to increasing fruit and vegetable consumption.

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Abstract ID: **1061914** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Elective delivery prior to 39 weeks gestation in Florida: Differences by maternal and hospital characteristics**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Other chronic disease, maternal & child health, or oral health epidemiology**

Keywords: **MCH Epidemiology**

Abstract Text

Background:
In the United States and Florida, the percent of live births between 37 and 38 weeks gestation has increased dramatically. Part of the increase in early term births has been attributed to increases in labor inductions and cesarean sections. Many of these obstetrical interventions occur without medical indications. The objective of this study is to describe the maternal and hospital characteristics associated with elective early term birth.

Methods:
We used the 2007 Florida linked hospital discharge and birth certificate data. The study was restricted to singleton live births born in a hospital at 37 weeks gestation or more, without maternal or fetal medical indications potentially requiring early delivery. Elective early term birth was defined as a live birth by induction and/or cesarean at 37 or 38 weeks of gestation without a medical indication, as

defined by The Joint Commission. Maternal characteristics included age, race, ethnicity, education, marital status, insurance, WIC, parity, BMI, and smoking. Hospital characteristics included hospital perinatal care level, obstetric residency program, ownership, percent deliveries by nurse midwives, and percent Medicaid deliveries. Risk ratios were simultaneously adjusted for maternal and hospital factors and were calculated using generalized estimating equations regression to account for correlated data for infants born in the same hospital.

Results:
Of 103,933 study births, 14,582 (14.0%) were elective early term births. For maternal characteristics, women with an elective early term birth were more likely to have private insurance (ARR: 1.26, 95% CI: 1.13, 1.41) or Medicaid (ARR: 1.16, 95% CI: 1.04, 1.29), have a high school education (ARR: 1.10, 95% CI: 1.04, 1.18) or greater than a high school education (ARR: 1.17, 95% CI: 1.08, 1.27), and be Non-Hispanic White (ARR: 1.35, 95% CI: 1.23, 1.47) or Cuban (ARR: 1.47, 95% CI: 1.20, 1.80). For hospital characteristics, these births were more likely to be delivered in a hospital that was a level 2 perinatal care hospital (ARR: 1.59, 95% CI: 1.10, 2.30) or level 1/other perinatal care hospital (ARR: 1.47 95% CI: 1.01, 2.14), and in a hospital where less than 20% of births are delivered by nurse midwives (ARR: 1.63, 95% CI: 1.36, 1.95) or 25-74% of births are delivered by nurse midwives (ARR: 1.38, 95% CI: 1.10, 1.74).

Conclusions:
Elective early term births occur in Florida, and vary substantially by both maternal and hospital characteristics. The state's new perinatal quality improvement program can use this information in promoting current perinatal quality improvement efforts.

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Abstract ID: **1058764** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Utah health status by race and ethnicity: 2010 compared to 2005**

Committee: **Cross Cutting**

Topic: **Translating health disparity data into public health actions**

Keywords: **Chronic diseases, Maternal and Child Health, Minority Health**

Abstract Text

Background:
In 2005 and 2010, the Utah Department of Health (UDOH) published comprehensive reports of public health data available about Utah racial and ethnic groups at each time period. UDOH compared the health status of Utah minorities reported in 2010 to the baselines established in the 2005 report.

Methods:
Data were compiled from birth and death certificates, statewide surveys, and mandated reporting of certain diseases and conditions by health organizations. Change was defined as follows: The

estimated rate reported in 2005 does not fall within the 95% confidence intervals for 2010 status. When appropriate, age-adjusted rates were used to determine if there was a change over time or a difference from the statewide rate.

Results:
More Pacific Islanders and Hispanics lacked health insurance than in 2005. However, Hispanics reported higher rates of prenatal care and colon cancer screening and Pacific Islanders reported higher rates of colon cancer screening and blood cholesterol screening.
Hispanics had the lowest health insurance coverage rate in the state.
The Hispanic and Black/African American infant mortality rates dropped. However, Blacks/African Americans and Pacific Islanders continued to have nearly double the infant mortality rate of the statewide population.
Hispanics saw declines in several diseases, including gonorrhea, tuberculosis, arthritis, and cancer. This ethnic group also had lower rates of death from diabetes, coronary heart disease, and stroke than in 2005.
Blacks/African Americans reported improvements in overall physical and mental health.
The American Indian motor vehicle traffic crash death rate improved. However, American Indians continued to have the lowest life expectancy in the state.
The majority of Utahns were overweight, but American Indians, Blacks/African Americans, Pacific Islander and Hispanic Utahns had even higher overweight rates.
In contrast, Asians had a low overweight rate and the highest life expectancy in the state.
The lung cancer rate rose among Blacks/African Americans and the breast cancer rate rose among American Indians and Blacks/African Americans.
As with all Utahns, all minority groups for whom data were available saw a rise in chlamydia rates.

Conclusions:
Based on the results of this study, UDOH identified three priority areas for minority health outreach: improving access to healthcare among all Utah minority groups; obesity prevention among Blacks/African Americans, Pacific Islanders and Hispanics; and improving birth outcomes among Blacks/African Americans and Pacific Islanders. The results of the study were used to apply for a federal grant, raise media awareness of minority health issues and create the Utah Multicultural Health strategic plan.

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Abstract ID: **1056783** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Examination of differences in disaster preparedness levels by race/ethnicity**

Committee: **Cross Cutting**

Topic: **Health disparities due to socioeconomic factors**

Keywords: **Disasters, Minority Health, Preparedness**

Abstract Text

Background:
Racial and ethnic minorities are more vulnerable to disasters than non-Hispanic whites for many reasons including socioeconomic status, language barriers, distrust of government and preference for particular information sources. The objective of the study was to examine the preparedness levels of various racial and ethnic groups in the U.S.

Methods:
Data from the general preparedness module of the Behavioral Risk Factor Surveillance System (2006-2008) were used to examine differences in preparedness levels between racial and ethnic groups. Four household preparedness items were assessed including 3 day supply of water, 3 day supply of non-perishable food, battery-operated radio, and flashlight with batteries. We additionally examined presence of a family evacuation plan and 3 day supplies of medication for all family members requiring medication. All analyses were conducted using STATA and estimates were weighted.

Results:
Presence of all 4 household preparedness items and family evacuation plan did not vary between race/ethnic groups. Percents of non-Hispanic whites, non-Hispanic Blacks, and Hispanics reporting 3 day supplies of medication for all family members requiring medication were 90.2%, 82.6%, and 69.8%, respectively, ($p<0.001$). Multivariate analyses did not reveal significant differences in reporting of all 4 household preparedness items and family evacuation plans between race/ethnic groups. However, compared to non-Hispanic whites, non-Hispanic blacks (OR=0.67, 95% CI = 0.54, 0.82) and Hispanics (OR=0.36, 95% CI = 0.27, 0.49) were less likely to maintain 3 day supplies of medication for all family members requiring medication.

Conclusions:
While there were no differences between the race/ethnic groups regarding presence of 4 household preparedness items and family evacuation plans, non-Hispanic blacks and Hispanics were less likely to maintain 3 day supplies of medications for all family members requiring medication compared to non-Hispanic whites. Hurricane Katrina highlighted medication procurement as an important challenge for patients and providers. Effective and culturally relevant health risk communication about natural disasters is crucial to improving preparedness levels among these populations.

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Abstract ID: **1057759** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Caffeinated alcoholic beverages: Recent successes and ongoing challenges**

Committee: **Cross Cutting**

Topic: **Assessing the impact of public health laws and policies**

Keywords: **Binge drinking, Emerging health issues, Policy/Policy Development**

Abstract Text

Background:
Caffeinated Alcoholic Beverages (CABs) are premixed products that are often sold in high-volume (e.g., 23.5 ozs) cans or bottles with alcohol concentrations 2-3 times greater than that of a typical beer, thus enabling binge drinking (consuming ≥4 drinks for women or ≥5 drinks for men per occasion). CABs also include caffeine and other stimulants, often at high levels, that can mask the depressant effects of alcohol, and are heavily marketed in youth-friendly media. Scientific studies and case reports have shown that CABs increase the risk of alcohol-attributable harms, including impaired driving, sexual assault, and alcohol poisoning.

Methods:
In 2008, thirteen State Attorneys General and the San Francisco, CA, City Attorney initiated an investigation of CABs; two CAB producers subsequently agreed to remove all stimulants from their products. In 2009, the Food and Drug Administration (FDA) initiated an investigation into the safety of CABs, and specifically asked manufacturers to submit evidence that the addition of caffeine to these products was “generally recognized as safe”. The FDA also requested assistance with this investigation from other federal agencies, including the Centers for Disease Control and Prevention (CDC).

Results:
In November 2010, the FDA sent warning letters to four CAB manufacturers informing them that their products were “unsafe” and “adulterated” under federal law and therefore illegal. The U.S. Trade and Tax Bureau (TTB) also informed wholesalers that the interstate shipping of CABs is illegal under federal law. Many states subsequently banned the sale of CABs, and all four manufacturers announced they were removing caffeine from their products. The volume and alcohol content of the reformulated products were generally not affected by this change.

Conclusions:
The investigation by State Attorneys General, the FDA, and other federal agencies led to the removal of caffeine from caffeinated alcoholic beverages, thus reducing the risk of binge drinking and related harms. However, the high alcohol content of the reformulated products remains a public health concern. Evidence-based strategies to increase the price and reduce the availability of alcohol need to be combined with beverage-specific consumption monitoring and regulation to reduce excessive alcohol consumption, including binge and underage drinking, and related harms. Youth exposure to alcohol marketing also needs to be reduced.

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Abstract ID: **1060783** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Using data from the Indian Health Service General Data Mart to describe the burden of asthma in Minnesota's American Indian population**

Committee: **Cross Cutting**

Topic: **Tribal epidemiology**

Keywords: **American Indians, Asthma**

Abstract Text

Background:
The Minnesota Department of Health Asthma Program is conducting several projects with American Indian tribes in Minnesota. This work has prompted requests for data on asthma in this population; however, few sources of data are available to describe the burden of asthma among American Indians in Minnesota. For example, statewide hospital discharge data does not include claims from Indian Health Service (IHS) hospitals. We examine the feasibility of using data from the IHS General Data Mart (GDM), a relatively new source of encounter data for users of tribal health care, to develop measures of asthma.

Methods:
In collaboration with the Bemidji Area IHS Office statistician, we developed several asthma queries. First, we developed a query to identify patients with asthma based on patterns of health-care utilization and medication use. We tested two definitions ("any asthma" and "persistent asthma") and three time windows for period prevalence. Second, we developed measures of asthma control. The queries were run by the IHS statistician in SPSS. We tested two different denominators, active user population and IHS census-based service population estimates, for rates and prevalence estimates. All measures were run for the state and by region of the state.

Results:
The overall prevalence of asthma among users of tribal health care in Minnesota for the years 2008-2009 was 7.0% for "any asthma" and 3.8% for "persistent asthma" using the active user denominator. Prevalence estimates increased with increasing time window; for any asthma, prevalence was 5.5% for 2009, 7.0% for 2008-2009, and 8.0% for 2007-2009.
Strengths of the GDM include the breadth of the information available (e.g., prescriptions filled, diagnoses, procedures, clinical measures). Lack of direct access to the GDM is a limitation because the time to obtain results is dependent on IHS staff availability, but it is also a strength since IHS staff provide knowledge about the population and querying the GDM. A major limitation of the GDM is that it only includes information on individuals who use tribal health care services; in Minnesota, this means that most American Indian residents of the Twin Cities metropolitan area are not included.

Conclusions:
The IHS GDM represents a new source of health information for American Indians. Because access is limited, obtaining the data becomes an opportunity to collaborate with IHS staff and benefit from their knowledge of the data.

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Abstract ID: **1061966** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Strategic Prevention Framework State Incentive Grant (SPF-SIG) epidemiological outcomes: Kansas communities reducing underage alcohol use**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Alcohol Use, Community health, Program evaluation**

Abstract Text

Background:
The Kansas State Epidemiological Outcomes Workgroup (SEOW) and SPF-SIG grants have increased the capacity to assess and prioritize needs; plan and focus attention on reducing underage drinking, and implement and evaluate prevention programs at both the State and community levels. Following the SPF model and using outcomes generated from the SEOW, 14 Kansas communities were selected to receive funding to engage in strategic planning to successfully implement evidence-based programs, policies, and practices to reduce underage drinking. Preliminary underage drinking outcomes are positive for SPF funded Kansas communities.

Methods:
Data from the Kansas Communities That Care (KCTC) student survey and other SPF-SIG instruments were analyzed for all 14 communities. The State priority of reducing underage drinking is measured by past 30 day alcohol use and two week binge drinking in 6th, 8th, 10th, and 12th grade students. In 2010, SPF communities had 16,068 students participate in the KCTC with an overall participation rate of 86%. Across SPF communities the number of new evidence-based strategies implemented ranged from 2 to 6 (average = 3.5) with targeted objectives ranging from 2 to 10 (average = 5). Data analyses include both within and across SPF community change in alcohol consumption and percentage point reduction from pre implementation (2008) to two-year post implementation (2010).

Results:
Pre implementation, the percent of students in SPF communities who reported drinking in the past 30 days ranged from 25.9% to 42.1%. Two years after implementation, the percent ranged from 23.2% to 34.3%. Compared to baseline, 12 of the 14 communities showed a reduction in 30-day alcohol use two years after implementation. The average reduction across all 14 SPF communities was 3.9% compared to the average state reduction of 1.6%. Pre implementation, the percent of students in SPF communities that reported binge drinking in the past two weeks ranged from 14.5% to 26.3%. Two years after implementation, the percent ranged from 11.4% to 23.3%. Compared to baseline, 11 of the 14 communities showed a reduction in 30-day alcohol use two years after implementation. The average reduction across all 14 SPF communities was 3.0% compared to the average state reduction of 1.4%.

Conclusions:
Conclusions: Two-year post implementation data indicate that the prevalence rate of underage drinking in SPF funded communities is starting to decrease. Intentional implementation of evidence-based programs, policies, and practices in these communities may have contributed. Additional data in subsequent years will help validate this conclusion. Further analyses of data from matched comparison groups are also planned.

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Abstract ID: **1060393** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Improving access to health care services for Kansans living with disabilities 2009 Behavioral Risk Factor Surveillance System**

Committee: **Cross Cutting**

Topic: **Health disparities due to socioeconomic factors**

Keywords: **Barriers to care, Disability, Health care**

Abstract Text

Background:
People with disabilities have been shown to have lower rates of medical use compared to those without disabilities. Understanding the distribution of barriers that hinder the access of people living with disabilities to health care services is needed for the development of public health programs and policies for improving the quality of life for this group.

Methods:
Questions related to restriction to health care were included in the 2009 Kansas BRFSS survey. Prevalence of disability was determined among adults 18 years and older by using the BRFSS questions that define disability for individuals as having limitations in any activity or having a health problems that require use of special equipment. Restriction in any way to health care services such as physician visit, hospital inpatient care, dental visit, or mental health services was determined among adults with disability. The reasons for the restriction such as physical accessibility barriers, lack of communication aids, and another person (personal attendant or family member) were also assessed. Any unfair treatment by health-care provider or the provider's staff because of a disability among those experiencing restrictions to needed services was also assessed. The weighted data analysis was done using SAS 9.2.

Results:
Twenty-one percent of Kansans reported that they had a disability in 2009. One in ten Kansans living with a disability were restricted to health care services such as physician visit, hospital inpatient care, dental visit, or mental health services. Of those experiencing restriction to needed services, 14% were restricted due to physical access barriers; 6% were due to lack of communication aids; 11% were due to another person; 27% were treated unfairly by a health-care provider or the provider's staff because of their disability.

Conclusions:
Kansans with disabilities face different barriers when it comes to receiving health care. The Kansas Disability and Health Program created an online continuing education course about disability competency for healthcare professionals and staff. This course will assist providers how to deliver high quality care to adults and children with physical and sensory disabilities. By informing future or practicing healthcare professionals these estimates, we can decrease many of the restrictions people living with disabilities face.

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Abstract ID: **1057443** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Comparing the largest number of drinks consumed with binge drinking intensity among U.S. adult binge drinkers in 14 states in 2008**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Alcohol, Binge drinking, Surveillance**

Abstract Text

Background:
Binge drinking (consuming ≥4 drinks for women or ≥5 drinks for men per occasion) is responsible for >44,000 deaths in the U.S. annually. Binge drinking harms increase with binge intensity (i.e., number of drinks consumed). The Behavioral Risk Factor Surveillance System (BRFSS) binge drinking module has been used to assess binge intensity, but the module is not used annually or in every state. The BRFSS core measure of largest number of drinks consumed during the past 30 days may be a useful proxy for binge intensity, but the relationship between binge intensity and largest number of drinks consumed among binge drinkers is unknown.

Methods:
We analyzed data from 14 states that used the 2008 BRFSS binge drinking module to assess the utility of the largest number of drinks consumed for estimating binge intensity. We compared past 30 day mean and median largest number of drinks consumed among binge drinkers to mean and median binge intensity calculated using the binge module (N=7,815 respondents), stratified by demographic characteristics, drinking patterns, and state. Pearson correlation coefficients were used to compare mean drinking measures, stratified by demographic characteristics and drinking patterns, and by state. Independent logistic regression models were used to calculate adjusted odds ratios (AOR) and confidence intervals (CI) of consuming ≥mean number of drinks within the past 30 days, controlling for demographics and drinking patterns, for both drinking measures. To examine the relationship between respondent characteristics and binge intensity, odd ratios were computed and adjusted for potential confounders.

Results:
The mean largest number of drinks consumed by binge drinkers was 8.2 drinks, (median=5.9); and the mean binge drinking intensity was 7.5 drinks, (median=5.5). These intensity measures were strongly correlated across all demographic and drinking categories (range r-scores 0.38 - 0.66), except among those with less than a high school education (r=0.29). The correlation between these measures was weakest among Georgia respondents (r=0.33) and strongest for Delaware respondents (r=0.73). Males (AOR=5.2, 95% CI=3.7-7.2); 18-34 year olds (AOR=3.7, 95% CI=2.3-5.8); and those reporting ≥5 binge episodes (AOR=7.0, 95% CI= 4.9-9.8) were most likely to report consuming an average of ≥8.2 drinks per binge episode.

Conclusions:
The largest number of drinks consumed among binge drinkers is a useful proxy for binge intensity and can be used to help plan and evaluate evidence-based strategies for preventing binge drinking, including increasing alcohol excise taxes and regulating alcohol outlet density.

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Abstract ID: **1056497** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Chronic hepatitis B and social stigmatization in Orange County, Florida**

Committee: **Cross Cutting**

Topic: **Health disparities due to socioeconomic factors**

Keywords: **Behavioral research, Chronic communicable diseases, Health disparities**

Abstract Text

Background:
Among U.S. residents with chronic hepatitis B virus (HBV) infections, up to 70% are foreign-born and half of all newly recognized cases are in people of Asian or Pacific Islander origin. Social stigma and cultural preferences may hinder people from informing others about their status. The aim of this study is to describe the chronic HBV infected population in Orange County, Florida, identify social stigma perceptions, and recognize barriers to care.

Methods:
A questionnaire was administered to 101 newly diagnosed or newly identified laboratory or physician-confirmed chronic hepatitis B patients reported to the Orange County Health Department from January to November of 2010. Descriptive statistics and chi-square tests were conducted.

Results:
The majority of those infected with chronic HBV were foreign-born (85%) and Asian (52%). Sixty-one percent of foreign-born patients moved to the United States 15 to 19 years ago. Sixty percent of patients had not heard of HBV prior to diagnosis.
Forty-one percent had not informed others about their HBV status at the time of interview. Among those that did share it, 98% informed family and 41% informed friends. All were asked why they did not inform others, and the majority (30%) reported it was private. Other reasons included: being afraid of being treated differently (9%), thinking there was no risk of transmission (9%), and not wanting to worry others (4%).
Barriers to care included: language (30% of patients speak little or no English), lack of health insurance (22%), and the cost of treatment (9%).
Comparing the two largest groups of patients, people of Asian origin (38 out of 49) were more likely to

inform others about their status than were people of Caribbean origin (8 out of 23), RR=2.0, CI:1.1-3.6, p=0.004. Years of residence in the U.S. does not seem to increase the likelihood of informing others; however, younger age (≤40 years old) does (RR=1.5, CI:1.1-2.1, p=0.02).

Conclusions:
The majority of those infected with chronic HBV inform others about their health status. Those of Asian origin are more likely to inform others than those of Caribbean origin. This difference may be because of Asian awareness campaigns or the high prevalence of infection in Asian countries. More awareness campaigns among Caribbean populations are necessary in Florida because of the large influx of immigrants. Social stigmatization continues to hinder communication of health status and increased awareness among all populations is necessary.

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Abstract ID: **1059524** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Collaborating to improve access to public health data for community stakeholders**

Committee: **Cross Cutting**

Topic: **Public health/academia collaboration**

Keywords: **Collaboration, Community health assessment, Electronic data**

Abstract Text

Background:
In 2010, Benton County created a web-based Health Status Report to disseminate public health data. This Report is a compilation of primary and secondary county health indicator data as well as Healthy People 2010 targets and statewide data when available. In addition to describing the county's health status, the web-based Health Status Report was intended to facilitate community involvement and cross discipline coordination in addressing public health issues.
However, the complexity of the data and charts on the online Report raised staff concerns that community members may struggle to understand much of the material. Therefore, an academic collaboration was established to review the Report for readability and usability from the perspective of communication coherence.

Methods:
Print versions of the online pages were analyzed for reading level using three standard formulas. The text and data charts were reviewed independently by three investigators who then discussed each section's challenges for everyday readers and jointly agreed on remedies. Furthermore, one topic section received further analysis from the perspective of web-based technical communication to address layout and organization.

Results:
In general, the Report was overly complex in text and data presentation to be of best use to community users. For example, under three different methods of analysis, the reading level of the online Report

ranged from grade level 10 to 18, with higher levels most common across topics. Most often, the text repeated the information found in data tables without adding value for the reader. The writing style followed scholarly conventions (e.g., in-text citations) rather than a more reader-friendly format. Data charts were overly complex in text and graphics and lacked adequate source citation. This is particularly problematic for users who may want to cut and paste material to use in community grant applications.

Conclusions:
The Health Status Report is being improved through a three step process. First, a style template is being developed for text and data charts so that a user-friendly format can be consistently used. Second, text and data is being revised; 'plain language' is replacing the vernacular of public health and data tables and charts are being improved graphically. Third, the revisions will be tested with key community users to measure improvements in readability and usability before appearing online during Summer 2011.

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Abstract ID: **1059634** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Housing conditions associated with asthma in California American Indians and Alaska Natives**

Committee: **Cross Cutting**

Topic: **Tribal epidemiology**

Keywords: **American Indians, Asthma, Epidemiology**

Abstract Text

Background:
American Indians and Alaska Natives (AIAN) in California experience a higher asthma prevalence than other races. Mold and other exposures in the home have been linked to the development and/or aggravation of asthma in the general population. However, little is known about the affect of a wide array of exposures in or near housing on asthma prevalence in AIAN.

Methods:
We evaluated the association between environmental exposures in or near housing and asthma in AIAN adults in California. Data from the Tribal Asthma Survey Project, collected from a sample of the California AIAN population between 2009 and 2010, were used to fit log-binomial models and to estimate prevalence ratios (PRs) and 95% confidence intervals (CI) by gender. Asthma was defined as a self-report of ever being diagnosed with asthma by a health professional. Exposures in or near housing included pets with fur or feathers or seeing or smelling mold in the home, and pesticide use outside the home.

Results:
Among 588 participants, 129 (22%) had asthma, with higher prevalence observed in women than men. After controlling for age and smoking, the prevalence of asthma in women was 1.85 (CI: 1.27, 2.68) times as high in those who had seen mold in the home and 1.52 (CI: 1.05, 2.20) times as high in those who had smelled mold or a musty odor in the home compared to those who had not seen or smelled mold in the home in the past 30 days. Women with pets with fur or feathers in the home in the past 6 months were more likely to have asthma (PR: 1.70, CI: 1.18, 2.47) compared to those who did not. Asthma prevalence in women was 1.68 (CI: 1.08, 2.60) times as high in those with homes where pesticides or chemicals to kill plant, animal or insect pests in the yard or garden had been used at least once in the past 12 months, compared to those who did not. In men, only smelling mold or a musty odor in the home in the past 30 days was associated with asthma prevalence (PR: 2.46, CI: 1.13, 5.39).

Conclusions:
Our findings suggest that seeing or smelling mold in the home, the presence of pets with fur or feathers, and pesticide use near the home are associated with asthma in AIAN women, and smelling mold is associated with asthma in AIAN men.

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Abstract ID: **1026794** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Use of a check-box on the 2006 New Mexico death certificate for public health surveillance of alcohol-related death**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Alcohol, Data/Surveillance, Injury**

Abstract Text

Background:
New Mexico has consistently had among the highest alcohol-related chronic disease and injury death rates in the United States. In 2006, a check box for alcohol-related deaths was added to the NM death certificate to better estimate alcohol-related death.

Methods:
NM Bureau of Vital Records and Health Statistics (BVRHS) death certificate data were analyzed. The

number and proportion of alcohol-related deaths identified by the check box (“Yes” or “Probably” selected) in 2006 were compared to the alcohol-induced and alcohol-related death categories using the alcohol attributable fractions (AAFs) from the Centers for Disease Control and Prevention’s Alcohol-Related Disease Impact (ARDI) site. Additionally, the NM Office of the Medical Investigator (OMI) death files from 2006 were linked to BVRHS death certificate data of in-state death occurrences to obtain blood alcohol content (BAC) results for NM resident injury deaths. The number and proportion of alcohol-related injury deaths identified by the check box were also compared to estimates of alcohol-related injury deaths based on BAC testing from OMI (BAC>=0.10).

Results:
There were 352 alcohol-induced deaths in New Mexico in 2006. The alcohol check box was marked “yes” or “probably” for 326 (93%) of these deaths, ranging from 82% for alcohol abuse deaths to 100% for alcohol cardiomyopathy. Based on ARDI AAFs, there were an estimated 526 alcohol-related injury deaths. Only 205 deaths in the ARDI alcohol-related injury categories (39% of the ARDI estimate) had an alcohol check box designation. BAC testing was completed on 65% of deaths in the ARDI injury categories, ranging from 9% of fall injury deaths to 92% of non-alcohol poisoning deaths. Only 2% of homicides had the alcohol check box marked, whereas 22% had a BAC level>=0.10, and the ARDI AAF is 47%. Similarly, for motor vehicle traffic crash deaths, only 6% had the alcohol check box marked, but 25% had a BAC>=0.10, and the ARDI AAF is 33%. Finally, the alcohol check box was marked for 6% of suicides, whereas 23% had a BAC>=0.10, equivalent to the ARDI AAF.

Conclusions:
The alcohol check box was effective in identifying alcohol-induced deaths, but was not an accurate and reliable method for estimating alcohol-related injury deaths in NM compared to estimates based on ARDI and OMI BAC test results. These findings will be used to develop a systematic approach for alcohol check box completion when injury is the cause of death and reliable BAC testing data are available.

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Abstract ID: **1051067** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Career Epidemiology Field Officer (CEFO) Program: Contributing to epidemiologic capacity and public health preparedness**

Committee: **Cross Cutting**

Topic: **Epidemiology capacity**

Keywords: **Epidemiology capacity, Preparedness, Workforce development**

Abstract Text

Background:
The Career Epidemiology Field Officer (CEFO) Program was established in 2002, following the 2001 terrorist attacks. The program’s purpose is to place CDC epidemiologists in state, territorial, and major metropolitan health departments to help address critical gaps in public health preparedness by strengthening epidemiologic capacity.

Methods:
The CEFO Program works with requesting health departments to define priorities and work plans for potential assignments and to coordinate recruitment and selection of CEFOs. Assignments are for a two-year minimum and may be renewed annually. CEFO positions are funded entirely through direct assistance from requesting health departments' Public Health Emergency Preparedness (PHEP) cooperative agreements. We reviewed records of duration of CEFO assignments and reports by CEFOs of their activities and accomplishments.

Results:
The CEFO program began with 11 assignments in 2002 and has grown to 30 assignments in 23 states in 2010. Six of the 23 state and metropolitan areas that currently have CEFOs began participating relatively recently (since 2008); among the 17 longer-term participants, 12 (71%) have participated five or more years. Six states, two territories, and two metropolitan areas that formerly had CEFOs have stopped participating in the program. Examples of the many CEFO contributions include: developing statewide policy to coordinate hospital disaster response; leading the transition to electronic laboratory reporting for all clinical laboratories in a major metropolitan jurisdiction; designing and implementing a state's electronic surveillance system for health effects related to the Gulf oil spill; building an academic-practice public health partnership to strengthen epidemiology training of local health department staff; designing and conducting a statewide assessment of epidemiology workforce capacity to document critical shortages, and subsequently helping agency management secure external funding to allow nearly doubling agency staff for epidemiologic activities and enhanced surveillance; and creating a disaster epidemiology workgroup to coordinate disaster-related epidemiologic activities statewide.

Conclusions:
CEFOs have made substantial contributions to epidemiologic capacity and public health preparedness in their assigned jurisdictions. While program growth and repeated renewal of assignments may be indicators of perceived value, an assessment of differences in epidemiologic capacity and public health preparedness in states before and after assignment of CEFOs, and in states that do and do not have CEFOs, could provide more quantitative evidence of their impact.

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Abstract ID: **1062289** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Negative consequences of alcohol use and prevalence of use in Florida: An apparent disconnect**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Alcohol, Injury surveillance, Substance abuse**

Abstract Text

Background:

Previous analyses of Florida emergency department and hospital inpatient data showed a dramatic increase in negative consequences of alcohol use in recent years. Specifically, principal diagnoses of alcohol intoxication or poisoning increased 19% between 2005 and 2008, and alcohol-related injury diagnoses increased 21% over the same time span. To further investigate this finding, we examined trends in other available Florida indicator data. Prevalence data was examined in addition to consequence data to determine if more people were drinking, or if those that were drinking were drinking in an increasingly detrimental manner.

Methods:
Consequence data included Florida ED and inpatient hospital visits, and Florida medical examiner cause of death data. The Florida Agency for Health Care Administration provided all ED and hospital data for the years 2005 through 2009. Medical examiner data was obtained from the Florida Department of Law Enforcement for the same years. Substance use prevalence data sources included the National Survey on Drug Use and Health, the Behavioral Risk Factor Surveillance System survey, and the Florida Youth Substance Abuse Survey.

Results:
The increase in ED and inpatient hospital visits for alcohol intoxication or poisoning seen from 2005-2008 continued with the 2009 data. Similarly the increase in alcohol-related injury diagnoses continued. Medical examiner data showed a similar pattern, with the number of deaths caused by alcohol increasing from 201.4 per 100,000 deaths in 2005 to 329.1 in 2009 (63%). However, the rate of deaths where alcohol was present but not the cause remained unchanged. Similarly, prevalence of current alcohol use did not change meaningfully as assessed by the NSDUH, BRFSS or FYSAS. Surprisingly, there was also little change in the portion of surveyed Floridians that reported binge drinking. These trends were generally similar across demographics.

Conclusions:
The increase in negative alcohol-related consequences seen previously in ED and hospital inpatient data is corroborated by medical examiner cause-of-death data. However, there was no change in deaths where alcohol was merely present, or in the portion of people that reported recent alcohol use. This apparent inconsistency is likely due to more dangerous drinking behaviors among those that do drink. Although the portion of the population that reported binge drinking did not change, the average number of drinks above the binge threshold may have increased. More detailed analyses of some of the data may shed light on this phenomenon.

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Abstract ID: **1054936** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Sociodemographic disparities in binge drinking among U.S. Adults**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Binge drinking, Health disparities, Surveillance**

Abstract Text

Background:
Binge drinking (i.e., ≥4 drinks for women or ≥5 drinks for men per occasion) is a risk factor for many adverse health and social outcomes and is responsible for over half of the 79,000 deaths and two-third of the 2.3 million years of potential life lost in the U.S. each year. The prevalence of binge drinking is known to vary by race/ethnicity and household income; however limited information is available on the frequency and intensity of binge drinking among various demographic groups.

Methods:
We used data from 408,845 participants in the 2009 Behavioral Risk Factor Surveillance System to assess the prevalence; frequency (average number of episodes); and intensity (average largest number of drinks consumed) among U.S. adults who reported ≥1 episode of binge drinking in the past 30 days. Results were stratified by sex, age, race/ethnicity, education, household income, and disability status, and binge drinking measures for various sociodemographic groups were adjusted for sex and age.

Results:
Binge drinking was more common among men (prevalence: 20.8%, frequency: 4.6 episodes, intensity: 8.5 drinks) than women (prevalence: 10.0%, frequency: 3.1 episodes, intensity: 5.7 drinks). Binge drinking prevalence (25.6%) and intensity (9.1) was the highest among persons aged 18-24 years, but frequency (5.4) was the highest among binge drinkers aged ≥65 years. After sex- and age-adjustment, binge drinking prevalence was the highest among whites (17.5%), while the highest intensity was reported by American Indians/Alaska Natives (AI/ANs) (8.4). Respondents with < high school education reported the lowest binge drinking prevalence (12.5%), but had the highest frequency (4.9) and intensity (7.8). In contrast, respondents with household incomes ≥$50,000 had the highest binge drinking prevalence (18.5%), but significantly lower frequency (3.6) and intensity(6.5) than those with household incomes <$50,000. Respondents with disabilities had a significantly lower prevalence of binge drinking (14.3%), but a higher frequency (4.6) and intensity (7.2).

Conclusions:
Binge drinking is common among U.S. adults, especially among males, whites, persons aged 18-24 years, and those with household incomes ≥$50,000.; and occurs most frequently among binge drinkers with lower households incomes and with greatest intensity among binge drinkers who are AI/ANs. Community Guide-recommended strategies for preventing binge drinking (e.g., increasing alcohol excise taxes and regulating alcohol outlet density) should be widely implemented. The frequency and intensity of binge drinking should also be routinely monitored and used to guide development and evaluation of culturally-appropriate binge drinking prevention strategies for groups at greater risk.

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Abstract ID: **1060677** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Influenza vaccination among foreign-born adults - California, 2007**

Committee: **Cross Cutting**

Topic: **Health disparities due to socioeconomic factors**

Keywords: **Influenza / Pandemic influenza, Migrant health, Vaccination**

Abstract Text

Background:
Influenza infections are associated with 3,000-49,000 deaths annually in the United States, 90% occurring among adults aged ≥65 years. Foreign-born persons have been documented as having less access to care and using fewer health services, including vaccinations. Foreign-born persons comprise 26% of California's population. Forty-four percent of California's foreign-born population report Mexico as their country of birth. The California Health Interview Survey is a population-based, random-digit-dial telephone survey administered biennially since 2001. We analyzed data from the 2007 California Health Interview Survey to estimate coverage and factors associated with influenza vaccination among foreign-born adults.

Methods:
Bivariate associations between influenza vaccination and nativity (United States-born or foreign-born), duration of U.S. residence, and English-language proficiency were examined by using chi-square. A multivariate logistic regression model included additional measures for sex, age, health insurance, pregnancy, and high-risk medical conditions for influenza-associated complications including symptomatic asthma, heart disease, diabetes, and body mass index ≥40.

Results:
Of 51,048 respondents aged ≥18 years, 34% of U.S.-born adults reported influenza vaccination during the previous 12 months, compared with foreign-born adults (30%; $P < 0.01$). By country of origin, Mexican-born adults had the lowest vaccination rate (23%; $P < 0.01$). Foreign-born adults reporting <15 years U.S. residence had lower vaccination rates compared with those reporting ≥15 years residence (24% vs. 33%; $P < 0.01$). In multivariate analysis, having health insurance (odds ratio [OR]: 2.2; $P < 0.01$), a high-risk medical condition (OR: 1.8, $P < 0.01$), or being among an older age group (50-64 years, OR: 2.0; ≥65 years, OR: 7.7; $P < 0.01$) remained statistically significant.

Conclusions:
Although disparities exist by birth country and duration of U.S. residence, influenza vaccination was associated with insurance status, older age, and having a high-risk medical condition. Implementing targeted vaccination programs for uninsured or Mexican-born adults might improve overall vaccination coverage and reduce health disparities.

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Abstract ID: **1032551** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Cost barriers to healthcare utilization during the economic downturn, in South Carolina**

Committee: **Cross Cutting**

Topic: **Health disparities due to socioeconomic factors**

Keywords: **Barriers to care, Health care, Social determinants**

Abstract Text

Abstract Text
Omitted from display per the Author's request

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Abstract ID: **1056271** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Comparison of quality of life in persons with mood disorders, anxiety disorders, or both**

Committee: **Cross Cutting**

Topic: **Mental health epidemiology**

Keywords: **Depression, Health care, Mental health**

Abstract Text

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Omitted from display per the Author's request

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Abstract ID: **1060710** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Asthma surveillance: Capacity building for California's American Indian and Alaska Native population**

Committee: **Cross Cutting**

Topic: **Tribal epidemiology**

Keywords: **Asthma, Epidemiology capacity, Tribal epidemiology**

Abstract Text

Background:
American Indians and Alaska Natives (AIAN) have the highest asthma prevalence of any race/ethnicity group in California (22%, as compared to 14% for non-AIAN) and significantly elevated asthma mortality rates. A 2007 survey of California AIAN examining health priorities found asthma is one of the top 5 chronic conditions of concern for this population. However, few AIAN organizations prioritize asthma in their program activities, in part because little data on asthma severity, exposure to triggers, and co-morbidities exist for California AIAN.

Methods:
California Breathing (CB), an asthma program of the California Department of Public Health, built programmatic capacity for asthma in two major California AIAN health organizations as follows. CB worked with the California Tribal Epidemiology Center (CTEC) to develop an extensive, culturally appropriate survey to gather data on asthma outcomes and housing conditions from AIAN adults at tribal events held throughout the state. CB worked with the California Area Indian Health Service (CA-IHS) and three of its Tribal Health Programs to collect new data on asthma severity and triggers for adult and child patients with asthma using the infrastructure of an existing electronic health record system.

Results:
Data from 610 CTEC surveys show that 17% of this population has very poorly controlled asthma and that mold in the home is significantly associated with diagnosed asthma. Data from over 300 CA-IHS patients with asthma document relevant triggers, such as high rates of smoking in the home, and co-morbidities, such as high rates of obesity.
As a result of CB's work with these organizations, CTEC has initiated its own work on issues surrounding asthma epidemiology and healthy housing, and participating CA-IHS Tribal Health Programs have incorporated asthma screening, case management and data collection into their routine clinical practice.

Conclusions:
Through these two projects, CB and its collaborators were able to confirm the high asthma prevalence, further characterize the asthma severity, and identify problematic environmental exposures for California AIAN. Further, these projects involved the collection of data that can be used in future interventions and educational efforts for a population on which little data previously existed, and built the capacity for AIAN health organizations to address issues of asthma more effectively in the future. Other state asthma programs can build epidemiologic capacity for AIAN asthma surveillance by partnering with similar organizations in their state, as there are regional IHS offices and CDC-funded Tribal EpiCenters covering all states.

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Abstract ID: **1048708** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Enhancing epidemiology capacity for communicable disease management: North**

Carolina's hospital-based public health epidemiologist program

Committee: **Cross Cutting**

Topic: **Epidemiology capacity**

Keywords: **Communication, Epidemiology capacity, Surveillance**

Abstract Text

Background:
Recognizing the need for enhanced surveillance and better communication with hospitals, the North Carolina Division of Public Health (NCDPH) established the public health epidemiologist program in 2003. Eleven public health epidemiologists are based in the state's largest hospitals, covering approximately 39% of general/acute care beds and 30% of emergency department visits. An assessment of the program was conducted in 2010 to identify unique services public health epidemiologists provide to local health departments, hospitals, and NCDPH.

Methods:
Data were collected from public health epidemiologists via an electronic survey, CDC/CSTE Applied Epidemiology Competencies Tier 1 and 2 evaluation forms, and an interview. Data on services provided to local health departments were collected from communicable disease nurses via an electronic survey. Hospital supervisors participated in interviews focused on the role of public health epidemiologists within their hospital. Through interviews, NCDPH described how the state utilizes public health epidemiologists for surveillance and communicable disease management. A mixed-methods approach was used to conduct a descriptive, multi-level analysis of the program in which quantitative and qualitative data were used.

Results:
Public health epidemiologists identified 14 Tier 1 and 2 Applied Epidemiology Competencies as important for their position. Public health epidemiologists spend 46% of their time conducting syndromic surveillance of community-acquired infections and potential bioterrorism events. They monitor patient emergency department visits using the North Carolina syndromic surveillance system and also monitor hospital-based data systems, including admissions, death, and lab reports. They spend 20% of their time assisting local health departments with public health investigations by providing 11 services, including reporting communicable disease cases, facilitating access to physicians, and informing local health departments of unusual communicable disease cases/clusters. Public health epidemiologists spend 13% of their time enhancing communication among hospitals and the public health system, and listed local health departments, NCDPH, and their hospital's infection control department, lab, and infectious disease physicians as key partners. The remainder of their time is spent educating clinicians and conducting special studies.

Conclusions:
Stakeholders place high value on the public health epidemiologist program. Local health department nurses report that the program increases communication with hospitals and enhances the timeliness and completeness of communicable disease reporting. Hospital supervisors report that public health epidemiologists help hospital staff appreciate the need to partner with public health to promote community wellness. NCDPH reports that public health epidemiologists are their bridge to the state's largest hospitals, increasing the timeliness and completeness of information flow around communicable disease management.

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Abstract ID: **1059451** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A mixed methods study on the health and service needs of residents in an African American community in Acres Homes, Houston, Texas**

Committee: **Cross Cutting**

Topic: **Local epidemiology**

Keywords: **Community health, Community health assessment, Health promotion**

Abstract Text

Background:
Acres Homes (AH) is one of the oldest African American neighborhoods in Houston, Texas. It is also one of the most economically distressed neighborhoods with high crime rates, low rates of home ownership and with a large proportion of families living below the Federal poverty level. This study explores the health and social service needs of AH residents and identifies their strengths to help build capacity to address those needs.

Methods:
As a first phase of the Assessment, Intervention and Mobilization (AIM) project, we conducted a community-based participatory research study using a mixed methods approach, surveying 302 adults, for the quantitative portion of our study, and conducting 7 focus group discussions with residents of diverse backgrounds, for the qualitative portion of our study. We performed descriptive statistical analysis for our quantitative data and thematic analysis for our qualitative data.

Results:
Survey results indicate that, access to health care (e.g. only two thirds had health care coverage and percentage of residents reporting fair or poor health was 28.5), low level of health promoting behaviors among residents (e.g. soda drinking-33%, current smoking-17%, alcohol consumption-9%), neighborhood safety (fear of crime among 60% residents), environmental health (e.g. majority of residents do not feel comfortable drinking tap water) related services and employment (e.g. more than 50 % unemployed or retired). Focus group discussion findings revealed that the most important service needs in AH community includes education, social services, mentorship for youth. Among the strengths of AH residents included their engagement in the community-as evidenced by the presence of more than 18 actively engaged civic clubs, and persistent efforts to improve their community. The challenges in the AH community include disenchantment, violence, drugs, juvenile delinquency, aging population with poor health, limited healthy food options, limited access to health care, lack of safe housing, lack of community events and joblessness.

Conclusions:
Study findings suggest that the AH community would benefit from an increase in the number of community events focusing on health promotion. Social service coordinators who work with the community to overcome barriers (e.g health care access), and to find referrals, and lay-health navigators aiding in outreach efforts can be useful strategies. Re-engaging the civic clubs of the area with a focused vision of better health outcomes in their community can be useful in making incremental changes in the health of the community.

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Abstract ID: **1062255** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **HIV across Houston/Harris County Texas: Time, space and race**

Committee: **Cross Cutting**

Topic: **Best epidemiologic practices to show health disparities**

Keywords: **Geographic Information Systems, Health disparities, HIV/AIDS**

Abstract Text

Background:
Previous studies across the nation that have focused on determining risk factors for HIV infection have found that incidences were higher in communities with a larger percentage of person living in poverty, a larger percentage of unemployment, and fewer high school graduates. In 2010, the Houston Department of Health and Human Services (HDHHS) initiated a project to enhance HIV surveillance data collected across its jurisdiction. The project involves the geocoding and linking of HIV diagnoses information to social determinants of health (SDH) data. Maps were created using ArcGIS 9.3.1 for visual presentation.

Methods:
Residential addresses of HIV cases newly diagnosed in 2008 and 2009 were geocoded to the census tract level. Researchers selected six social determinants of health variables from the 2000 U.S. Census based on focus group discussions and an extensive literature review. SDH variables include the percentages of linguistically isolated households, residential instability, education levels, unemployment, and poverty for each tract. In addition, researchers included the percent of census tract residents who are black/African American. Correlation analysis detected significant associations between the SDH variables and the number of new HIV diagnoses in a census tract.

Results:
Of the 754 census tracts, 525 contained at least one residential address of a person newly diagnosed with HIV. The percent of black/African American residents in the census tract population is correlated with both the number of new HIV diagnoses per census tract ($r=0.327$, $p<0.0001$) and poverty ($r=0.549$, $p<0.0001$). Bivariate analyses detected significant linear associations between residential instability, unemployment, the percent of persons living in extreme poverty and the number of residents newly diagnosed with HIV. Of the significant associations, the greatest magnitude is poverty and the number of residents newly diagnosed with HIV ($r =0.279$, $p <0.0001$).

Conclusions:
These results indicate a significant linear relationship between the number of people newly diagnosed with HIV, poverty and the racial ethic composition of a census tract. The results of this study are consistent with the findings of previous studies on health disparities. Future analysis will determine if

these associations represent successful outreach or service gaps.

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Abstract ID: **1060554** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Mental illness and stigma status in Kansas - 2009 Kansas Behavioral Risk Factor Surveillance System (BRFSS)**

Committee: **Cross Cutting**

Topic: **Mental health epidemiology**

Keywords: **Epidemiology, Mental health, Social inequalities**

Abstract Text

Background:
Mental health disorders are associated with increased risk of morbidity, mortality and poor quality of life. Healthy People 2010 and Healthy Kansans 2010 plans provide comprehensive objectives and indicators related to disease prevention and health promotion. Both plans recognize mental health as one of the major public health concerns and include it to monitor the population health. The Kansas Department of Health and Environment (KDHE) identify the need to assess status of mental health of Kansans. Following this need, KDHE included Mental Illness and Stigma Module compromised of 10 questions, this information was collected for the first time in Kansas in 2007 and again in 2009 Kansas BRFSS.

Methods:
Objective: To assess status of mental illness in Kansas.
Methods: 2009 Kansas BRFSS data were analyzed to assess status of Serious Psychological Distress (SPD) in various population subgroups. SPD was defined as a score of ≥ 13 points on the K6 scale. The severity score was created using the six questions that asked respondents how often they feel ‘nervous’, ‘restless’, ‘hopeless’, ‘worthless’, ‘depressed’, or that ‘everything was an effort’ during the past 30 days from Kansas BRFSS. The K6 scale was developed by Dr. Ronald C. Kessler, Professor in Department of Health Care Policy at Harvard Medical School. Also the percentage of Kansans receiving treatment for SPD and attitude towards mental illness and stigma was examined. SAS 9.2 software was used for analysis.

Results:
An estimated 52,845 (2.5%) adults have SPD and nearly 139,510 (6.6%) are probable cases of mild-moderate psychological distress. Higher prevalence of SPD was seen among adults with lower income and lower education. SPD was also high among current cigarette smokers, among adults with current asthma, diabetes, arthritis, hypertension and stroke, those who did not participate in physical activity, those without health care coverage and who could not see a doctor because of cost. Nearly two-thirds of all people with diagnosable mental disorders do not seek treatment.

Conclusions:
Serious psychological distress is a prevalent mental health issue in Kansas. Disparities are also seen with respect to various socio-demographic sub groups and among those with other chronic diseases. Two- third of the adults with SPD do not seek treatment. These population based information indicated the need of public health strategies to address issues related to SPD and its treatment among Kansas adults.

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Abstract ID: **1059107** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Cross-site evaluation of first two cohorts of SAMHSA's Strategic Prevention Framework State Incentive Grants program**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Evaluation, Federal initiatives, Substance abuse**

Abstract Text

Background:
SAMHSA's Strategic Prevention Framework is a public health approach that supports the delivery of effective programs, policies and practices to prevent mental and substance use disorders and promote mental health. CSAP’s initiative to advance the concept of Strategic Prevention Framework through a series of grants to States has been in existence for more than five years. In this paper we describe the evaluation design present preliminary findings from its baseline administration.

Methods:
As a part of the effort to assess effectiveness of SPF program, an evaluation plan has been implemented with a multilevel, multi-method quasi-experimental design. The scope of the evaluation encompasses national, state, community, and participant levels. The design uses both quantitative and qualitative data, the latter providing process data and systems outcomes at the state and community levels, as well as context for analyzing the NOMs and other epidemiological outcomes. One component of the cross-site evaluation, an instrument was developed to assess state prevention system infrastructure in order to measure infrastructure change and examine the role of state infrastructure in achieving prevention-related outcomes.

Results:
States and territories were found to vary substantially with respect to their organizational structure and each of six functional domains. Across the six domains, states scored highest on data systems and lowest on strategic planning. Positive correlations were observed among the domains, indicating that states with high capacity on one domain generally have relatively high capacity on other domains as well. The findings also suggest that state prevention infrastructure development is linked to both funding from state government and the presence of a state interagency coordinating body with

mandate authority.

Conclusions:
Results of the study represent first 26 States and Territories funded through the SPF SIG program. There are now three more cohorts of jurisdictions that are funded through the program. The methodology and baseline findings presented here will be used to inform the ongoing cross-site evaluation of the SPF SIG.

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Abstract ID: **1062263** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Epidemiology Workforce Assessment - West Virginia, 2010**

Committee: **Cross Cutting**

Topic: **Workforce development**

Keywords: **Competency, Epidemiology, Workforce development**

Abstract Text

Background:
During 2006-2009, the number of epidemiologists working at the state level decreased 10% in the United States. This trend is concerning because epidemiology is a core function of public health. The Applied Epidemiology Competencies (AECs), developed by the Council of State and Territorial Epidemiologists and the Centers for Disease Control and Prevention, are intended to improve the practice of epidemiology and provide a basis for developing career-development plans. Four tiers, or skill sets, are described by the AECs ranging from entry-level epidemiologists to leaders/managers or subject matter experts. Using the AECs, West Virginia's Bureau for Public Health (WVBPH), in collaboration with the University of North Carolina at Chapel Hill's Center for Public Health Preparedness, conducted an assessment to identify training needs among the state's epidemiology workforce.

Methods:
WVBPH has a decentralized epidemiology system, meaning that epidemiologists work in subject matter divisions under different supervisors. All epidemiologists (N=36) at the state and regional levels within WVBPH and other state government agencies were asked to complete an electronic assessment tool. Participants self-selected their state epidemiology classification (epidemiologist I-IV) and were directed to respond to the AEC tier that corresponded to that classification (entry-level, mid-level, senior). For each competency, participants used Likert scales to rank their skill level, the importance of the competency, and how frequently they use the competency. Additional questions were asked related to use of statistical software, satisfaction with previous epidemiology trainings, and

preferred training methods. To encourage participation in the assessment, outreach to epidemiologists and their supervisors was conducted through in-person and email communications.

Results:
As of December 17, 2010, 34 (94%) of 36 epidemiologists responded to the survey. Preliminary analysis indicated that the median epidemiology working experience among the respondents was 5 years (range 1-30 years). As expected, mid-level and senior epidemiologists reported higher overall skill levels than entry-level epidemiologists. Approximately 80% of respondents requested training for a single statistical software program.

Conclusions:
This assessment is part of an ongoing WVBPH workforce development project and the final survey results will be used to develop a training program for epidemiologists; use of statistical software might be an important component of this program. Anticipated outcomes of the assessment and training program include raising awareness of the AECs, increasing the epidemiology capacity, promoting professional growth, and creating a more supportive working and learning environment among the epidemiology staff.

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Abstract ID: **1061711** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Effectiveness of message delivery systems for public health emergency preparedness and response communications**

Committee: **Cross Cutting**

Topic: **Public health/academia collaboration**

Keywords: **Communication, Emergency preparedness**

Abstract Text

Background:
At every stage of a public health emergency, health care providers (HCPs) play a significant role in planning, event detection, response, and communication with the public. The effectiveness of HCPs thus depends in part on the effectiveness of public health communication; that is, communicating in a

way that maximizes the likelihood that a public health message is delivered, received, and deemed credible. The objective of the REACH study is to compare public health communication strategies and attempt to identify the most effective methods of communication of public health alerts between public health agencies and providers in the context of emergency preparedness.

Methods:
Using a randomized controlled trial design, HCPs were recruited for participation in King County, WA. Provider types included primary care and emergency physicians, Advanced Registered Nurse Practitioners, Physician Assistants, pharmacists and veterinarians (n=530). Providers were randomized to receive public health alerts via email, fax, short message service (SMS or cell phone text messaging) or to a control group that did not receive messages. For one year, alerts based on real events of public health interest were sent quarterly with follow-up telephone interviews conducted 5-10 days after the delivery date. The interview consisted of approximately six questions that elicited information about the message receipt, recall of its content, and message and source credibility. In addition, provider access to online alert information and delivery time of messages was collected.

Results:
Frequency of receipt; timeliness; content awareness; and perceived credibility were measured and will be compared across communication delivery systems. Final analyses will measure differences between each of the three groups (fax, SMS and email) using intent-to-treat methods. In addition to reporting on our recruitment and enrollment strategy and success partnering with Public Health-Seattle and King County, we will report on initial findings from analysis of the data collected from King County, including differences between provider types, and age, and will also report on evidence of alert fatigue arising during the initial stages of the H1N1 pandemic.

Conclusions:
By systematically evaluating the relative effectiveness of public health message delivery systems for emergency preparedness and response communications, this study will contribute to and develop the evidence base for improving public health practice. As a bonus, the occurrence of the H1N1 pandemic during the course of this trial provides the opportunity to examine alert fatigue effects associated with the increased number of alerts sent out during the initial stages of the pandemic.

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Abstract ID: **1062058** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Using emergency department data to describe alcohol-related morbidity in a rural New Mexico county**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Alcoholism, Co-morbidity, Hospital data**

Abstract Text

Background:
New Mexico has among the highest rates of alcohol-related mortality in the United States. The burden of alcohol-related morbidity has been less well described. Until recently, data were unavailable to characterize morbidity associated with emergency department (ED) utilization. To address this gap, New Mexico has been developing an electronic reporting system for ED encounter data. Data have now been collected from some participating hospitals for almost one year. These data support better characterization of chronic and acute alcohol-related morbidity. The system includes a lifetime person identifier, enabling better understanding of the longitudinal burden that alcohol-related problems place on individuals and the healthcare system. Preliminary analyses will be shared, and challenges and opportunities associated with using ED data for alcohol epidemiology will be discussed.

Methods:
One year of ED data from the only hospital ED in a rural New Mexico county was analyzed. Each ED encounter record included up to ten International Classification of Disease (ICD-9) codes and ten External Cause of Injury codes (E-codes). These diagnostic data were analyzed to identify whether the encounter involved diagnoses of alcohol dependence or abuse; of other alcohol-related chronic diseases or alcohol-related injuries (per the CDC's Alcohol-Related Disease Impact categories); and of injury based on ICD-9 codes (800-999). A diagnosis of alcohol dependence or abuse was used to identify a person as having an alcohol-use disorder. The association of alcohol use disorders with injury and alcohol-related chronic disease co-morbidities was assessed by comparing the alcohol-use-disorder cohort to all other ED patients. The association of alcohol use disorders with repeat ED visits and with more severe morbidity (as estimated by the number of diagnoses per encounter) was also assessed.

Results:
During 2010, 3.6% of new ED patients were diagnosed with an alcohol use disorder. This cohort was significantly more likely than other new ED patients to have multiple ED visits (OR=3.6, CI: 2.8, 4.5); and it received almost twice as many diagnoses per ED visit (4.1 vs. 2.2, $p < .0001$). During the year analyzed, this cohort was also significantly more likely to have received an ICD-9 injury diagnosis (OR=1.6, CI: 1.3, 2.0); or another alcohol-related chronic disease diagnosis (OR=4.0, CI: 3.2, 5.1).

Conclusions:
Hospital ED data describe the serious burden of chronic disease and injury co-morbidity associated with alcohol use disorders. Development of alcohol-attributable fractions for emergent alcohol-related morbidity could help support a more complete characterization of the burden of alcohol-related injury and chronic disease that presents in the ED setting.

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Abstract ID: **1048817** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Comparative effectiveness research in public health**

Committee: **Cross Cutting**

Topic: **Translating health disparity data into public health actions**

Keywords: **Prevention, Research, Underserved Populations**

Abstract Text

Background:
In this presentation we provide some background on CER; the rationale for implementing CER in public health; examples of how CER is applied in public health prevention research conducted in communities; and how public health CER can help reduce health disparities.

Methods:
In the clinical setting, comparative effectiveness research (CER) compares the effectiveness of two or more treatment options for a certain medical condition for a particular set of patients. The goal of CER in the clinical setting is to provide evidence-based information on the effectiveness, benefits, and risks of different treatment options to help clinicians, patients, and policymakers make informed decisions. Clinical CER compares medications, medical devices, diagnostic tests, surgical procedures, or ways to deliver clinical care.
CER is also implemented in public health to provide similar information about population- and community-based disease prevention interventions. Awareness and discussion of the role of CER in public health is growing. The Federal Coordinating Council on Comparative Effectiveness definition of CER includes language regarding population health: “CER is the generation and synthesis of evidence that compares the benefits and harms of alternative methods to prevent, diagnose, treat, and monitor a clinical condition or to improve the delivery of care. The purpose of CER is to assist consumers, clinicians, purchasers, and policy makers to make informed decisions that will improve health care at both the individual and population levels.”

Results:
The goal of public health CER, especially when conducted in communities, is to compare prevention interventions to provide information about which interventions yield the most benefit in which populations or communities. When these interventions target underserved populations or communities, the research must incorporate the complex interaction of cultural norms, linguistic differences, organizational variation, lack of trust in the medical profession, and lack of resources and infrastructure. The research may be complex, with non-traditional designs such as randomized “uncontrolled” trials, quasi-experimental designs, natural experiments, interrupted time-series, observational studies, and system modeling.

Conclusions:
Community-level CER with the goal of addressing and preventing chronic diseases and serious health issues can contribute to increasing scientific knowledge and reducing health care costs. Knowing which of several interventions or strategies are best in preventing disease and disability in underserved populations is an important and complex component of reducing health disparities in chronic diseases.

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Abstract ID: **1060489** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A â€˜vision' for the future: Integration as a model to promote eye health and reduce risk factors for vision loss and other adverse outcomes**

Committee: **Cross Cutting**

Topic: **Translating health disparity data into public health actions**

Keywords: **Data/Surveillance, Disease prevention, Health promotion**

Abstract Text

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Abstract ID: **1057798** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Strategic Prevention Framework (SPF): A practical and effective data driven model for contributing to community-level change**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Outcome Measures, Prevention, Substance abuse**

Abstract Text

Background:
Since 2004 SAMHSA/CSAP has funded 5 Cohorts of Strategic Prevention Framework State Initiative Grants (SPF SIG). There are now 77 funded states, territories and tribes/tribal organizations which have funded over 600 subrecipient communities. The cornerstone of the SPF SIG program is the implementation of the 5-step SPF at the grantee and community levels. Through innovative funding support for State Epidemiological Outcome Workgroups (SEOW) that enhance data accessibility for decision making, increased sharing by communities, and lessons learned at federal, state and community levels, it is believed that later cohorts will move more quickly through the SPF process while achieving comparable changes in community-level outcomes. This paper compares Cohort I and II with Cohort III subrecipient communities in the execution of the SPF process and improvement on targeted outcomes.

Methods:
Data from community-level instruments were analyzed for the following numbers of grantees and subrecipients: 20 and 291 in Cohort I, 5 and 92 in Cohort II, and 13 and 149 in Cohort III. This sample accounts for approximately 50% of grantees and 80% of subrecipient communities funded to date across all 5 cohorts. Cohorts (I & II vs. III) were compared on the percentages of subrecipients reaching key SPF milestones on the first four steps and on the mean number of days between subrecipient funding and first post-funding implementation. Chi square tests compared cohorts (I & II

vs. III) on binary items; t-tests compared cohorts on time intervals. In FY 2009, community-level baseline estimates were available from a total of 434 communities receiving funds from grantee in Cohorts 1 through 3 with post implementation data provided by only 154 communities; all funded by Cohort I grantees. Communities provided data on an average of 8 outcome measures. In assessing community-level improvement, an outcome measure's most recent value prior to implementation was compared to its most recent value after the onset of funded implementations. A community that improved on at least two of its outcome measures was considered to have improved.

Results:
Roughly 2 years after subrecipient funding, Cohort III reported significantly greater progress completing key steps of the SPF process including the identification of priorities (Needs Assessment-Step 1), completion of strategic plans (Strategic Planning-Step 3), and implementation of strategies (Implementation-Step 4). A greater percentage ($p < 0.05$) of Cohort III subrecipients (82.6%) than of Cohort I/II subrecipients (73.6%) identified a target consumption or consequence outcome. Correspondingly, a greater percentage of Cohort III grantees reported using available SEOW data (60.4% vs 43.1%, $p < 0.001$) in completing the needs assessments. Also within the first 2 years of being funded, a greater percentage of Cohort III subrecipients completed their strategic plans (68.5% vs. 48.8%, $p < 0.001$) and had it approved by grantee-level personnel (55.7% vs 41.0%, $p < 0.01$). Most noteworthy, Cohort III subrecipients took less time after being funded to implement strategies than did those in Cohorts I/II (M=181 vs. M=343 days, $p < 0.001$). Among Cohort 1 funded communities providing post-implementation community estimates, 113 of 154 communities (73.4%) showed improvement on community-level outcomes. Updated results using FY 2010 are forthcoming.

Conclusions:
Results confirm the hypothesis that communities funded in later cohorts showed significant efficiencies moving through the SPF process. Preliminary data from Cohort I grantees also suggest that the SPF model contributes to community-level improvements in targeted outcome measures. These findings suggest that the SPF model is a practical and effective data driven prevention model when implemented at the community-level. Factors contributing to the enhanced momentum reported by Cohort III grantees are being explored and could include greater efficiencies by Federal project officers who are more familiar with the process, grantees who benefit from lessons learned from grantees funded previously, or possibly other factors yet to be identified.

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Abstract ID: **1061605** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Unique usage of community assessment for public health emergency response to identify behavioral health needs after Gulf oil spill**

Committee: **Environmental Health**

Topic: **Disaster epidemiology: best practices, long term studies, and lessons learned**

Keywords: **Behavioral health, Disasters, Emergency response**

Abstract Text

Background:
Along with the 11 oil workers who died on April 20, 2010, countless others were affected in the Gulf Region when the Deepwater Horizon drilling rig exploded. As millions of liters of crude oil spewed into the waters it became one of largest environmental disasters in U.S. history. With each day the catastrophic spill continued the devastation grew exponentially among the families, businesses and communities in the gulf region. Public health issues became a concern for local, state and federal authorities.
The Mississippi Department of Mental Health partnered with the state health department and Centers for Disease Control in a unique use of the Community Assessment for Public Health Emergency Response (CASPER) to assess the behavioral health needs of the Mississippi Gulf Coast.
The Mississippi Department of Mental Health was awarded funds from British Petroleum to be used for prevention and mitigation of mental health problems associated with the oil spill. Shortly after the disaster local mental health services providers on the Mississippi Gulf Coast revealed that they continue to suffer from the disruption of Hurricane Katrina and felt overwhelmed by the potential increased need for services associated with the spill. The literature on previous oil spill disasters has consistently demonstrated negative mental health outcomes in affected communities.

Methods:
Through collaboration among agencies, the CASPER was utilized in a rather unique manner in Mississippi to assess behavioral health needs of the coastal communities. The only variation from the typical CASPER protocol was the addition of standardized behavioral health questions to better identify adult and children's behavioral health needed.

Results:
The specific results of the CASPER findings are beyond the scope of this particular presentation and are reported in a separate proposal. The Department of Mental Health received valuable information concerning the behavioral health needs in the effected area which guided the allocation of BP grant funds to address risk factors, prevention and mitigation of mental health issues associated with the Gulf oil spill. Specific interventions were developed based on the findings of the CASPER.

Conclusions:
This unique project has increased awareness of providers in the value of integration of behavioral health surveillance and intervention within the broader public health arena. The widely known interactions between physical and behavioral health is often overlooked due to governmental turfs or responsibilities. This project opens the door to conversations that would benefit the citizens we all serve.

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Abstract ID: **1060521** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Using data to inform public health interventions and messages: Drinking water quality and private well testing in Wisconsin**

Committee: **Environmental Health**

Topic: **Environmental Public Health Tracking**

Keywords: **Water**

Abstract Text

Background:
In Wisconsin, approximately 30% of the population gets water from private wells and the majority of them drink plain tap water. Despite potential risks to public health, very little objective data are available to practitioners in local health departments (LHDs) to identify risks of exposure to contaminants in these wells. Local health partners have consistently indicated a need for more complete and detailed data related to private well drinking water quality. The overall objective for this project was to better define the data needs of our LHDs, inventory the data sources throughout the state, and assess the potential for partnering with multiple data stewards to fill data gaps.

Methods:
Wisconsin Environmental Public Health Tracking staff and a trained facilitator conducted two full day workshops in the spring of 2010 with attendees that included local public health practitioners from across the state and representatives from a number of agencies with private well water testing data, including the Department of Agriculture, Trade, and Consumer Protection (DATCP); the State Laboratory of Hygiene; and a private laboratory representative. The first workshop included structured, interactive exercises to identify the types of data local health personnel would like, and gather examples for how those data could be utilized. The second workshop further delineated the types of datasets that would be useful and the potential for data stewards to collaborate and deliver such a dataset.

Results:
During the workshops, participants agreed that data would be used in activities aimed at: educating the public about drinking water quality issues, increasing the number of people that test their wells, and identifying specific contaminants as priorities for certain geographic areas. The collaborative spirit of all participants was evident and it was agreed that a pilot project was needed. As a result, representatives from DATCP and the Central Wisconsin Groundwater Center agreed to pilot test the feasibility of integrating their respective datasets and making those data available to public health partners via an innovative mapping tool.

Conclusions:
LHDs are very interested in a comprehensive private well drinking water quality database. They have several concrete ways to use the data for surveillance, public health education, and other outreach activities. Statewide workshops designed to convene diverse stakeholders including both data users and data stewards proved to be an effective way to identify and define data needs, as well as generate the momentum necessary to pilot test dataset integration.

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Abstract ID: **1059077** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Surveillance of acute health effects among the general population during the Deepwater Horizon oil spill**

Committee: **Environmental Health**

Topic: **Lessons learned in epidemiology response to the Gulf coast oil spill and other Gulf-related environmental health issues**

Keywords: **Disasters, Environmental exposures, Surveillance**

Abstract Text

Background:
On April 20, 2010, an explosion of the Deepwater Horizon oil rig in the Gulf of Mexico caused the largest marine petroleum release in history and raised concerns about potential human health effects among those residing in the impacted coastal regions. In response to the public health concerns, public health officials from CDC's Division of Environmental Hazards and Health Effects collaborated with four Gulf Coast state partners to track acute health effects potentially associated with environmental exposures to the oil spill among the general population.

Methods:
National and state-based surveillance systems were used to track symptoms and complaints potentially related to oil, dispersants, or contaminated seafood through inhalation, dermal contact, or ingestion. These health effects included worsening of asthma, cough, chest pain, headache, and nausea. The National Poison Data System (NPDS) was used to track health effects of oil-spill related calls received by all US poison centers (PCs), including the seven PCs in 4 affected Gulf Coast states. BioSense, a national program that conducts electronic surveillance of health information, tracked more than 80 specific syndromes (groupings of signs and symptoms) such as rash from the 86 federal healthcare facilities in five Gulf States, including Texas. State-based surveillance systems were created or modified to assist health departments in detecting possible oil-spill related health impacts on communities. The individual surveillance systems used data collected from emergency departments, urgent care facilities, and PCs.

Results:
This collaborative effort permitted the timely sharing of data between CDC and Gulf Coast state partners. CDC summarized and shared weekly reports with Alabama, Florida, Louisiana, Mississippi, and Texas which included data from national and state-based surveillance activities. From these data, it was observed that headache and nausea were the most common reported symptoms, but other clusters of symptoms such as rash were also identified. Using these data, state health officials were able to identify groups of people with symptoms and investigate as needed to determine whether these symptoms were associated with the oil spill.

Conclusions:
Partnerships with state public health authorities and PCs allowed CDC to rapidly develop a flexible and expandable approach to monitor oil spill-related health effects among the general population immediately following the Deepwater Horizon explosion. These coordinated efforts were beneficial to emergency response activities and allowed CDC and the state health departments to respond promptly to specific requests that arose from the public, media, and senior government officials.

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Abstract ID: **1060482** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Meta-analysis of health effects associated with proximity to traffic emissions**

Committee: **Environmental Health**

Topic: **Environmental justice**

Keywords: **Air pollutants, Cardiovascular disease, Policy/Policy Development**

Abstract Text

Background:
A growing body of research suggests an association between residential proximity to traffic emissions and various health outcomes, including asthma and respiratory symptoms, cardiovascular disease, adverse reproductive outcomes, and premature mortality. Additionally, low-income and minority populations are more likely to live near heavily trafficked roadways. However, there are no national policies and very few state policies designed to reduce these exposures and the associated health effects. To address this issue, the Centers for Disease Control and Prevention conducted a systematic review and meta-analysis to assess the body of scientific evidence and quantify the health burden associated with exposure to traffic emissions.

Methods:
We searched 15 electronic databases for original peer-reviewed articles, abstracts, and dissertations published during 1980-2008. Each article was screened for inclusion, abstracted, and assessed for study quality independently by two authors. Separate meta-analyses were conducted for each health outcome. We calculated weighted pooled odds ratios for health outcome categories with a sufficient number of unique studies, assessed heterogeneity among studies, conducted subgroup analyses by study design, exposure assessment, and quality score, and assessed the potential for publication bias. A random effects model was used to address variability in study characteristics, such as population, location, and exposure assessment.

Results:
We identified 149 articles addressing various health outcomes: 84 respiratory and allergic diseases, 22 cancer, 10 cardiovascular diseases, 9 reproductive outcomes, 8 mortality, and 16 other. The results of this meta-analysis will be available by June 2011.

Conclusions:
Living near heavy traffic is associated with a significant burden of disease in the United States and this burden is disproportionately shared by low-income and minority populations. Findings from this study can be used to develop national, state, and local policies to improve population health and address health disparities. For example, the estimate for the total US population that lives within 500 feet of the

National Highway Planning Network's roads designated as interstates, US highways, and state highways is 30,295,465. Additionally, approximately 12 percent of all public and private schools in the US are located within 500 feet of an interstate or highway. Further study is needed to identify effective mechanisms to reduce exposure for these populations, such as constructing highway barriers with vegetation. Policies that would reduce exposure to traffic pollution include restricting the siting of schools and other facilities used by vulnerable populations near busy roads and reducing motor vehicle traffic on roads near populations.

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Abstract ID: **1060451** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Mental health needs assessment after the Gulf Coast oil spill - Alabama and Mississippi, 2010**

Committee: **Environmental Health**

Topic: **Lessons learned in epidemiology response to the Gulf coast oil spill and other Gulf-related environmental health issues**

Keywords: **Community health assessment, Emergency response, Mental health**

Abstract Text

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Abstract ID: **1058335** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Public health consequences from chlorine released at a metal recycling facility - California, 2010**

Committee: **Environmental Health**

Topic: **Preparedness and environmental epidemiology**

Keywords: **Chemical and biological exposures, Environmental exposures, Occupational exposure**

Abstract Text

Background:

Among other adverse health effects, chlorine gas can cause severe respiratory symptoms. On June 8, 2010, chlorine gas unintentionally released from a ruptured 1-ton, low-pressure tank at a California recycling facility. This accident affected 29 persons; 23 were admitted to seven area hospitals. The California Department of Public Health (CDPH), with assistance from the Agency for Toxic Substances and Disease Registry (ATSDR) and the Centers for Disease Control and Prevention (CDC), began immediately to determine the total extent of exposure from the chlorine gas release and associated health effects.

Methods:
We interviewed exposed persons for demographic information, exposure characteristics, symptoms experienced, health services used, and medical history. To do this we used ATSDR's Assessment of Chemical Exposures (ACE) survey. We also obtained medical charts for exposed persons treated at area hospitals. We used Chi-square analyses to compare exposure characteristics of hospitalized and non-hospitalized persons.

Results:
We used the ACE survey to interview 27 (93.1%; 16 employees, 11 non-employees) of 29 exposed persons. Of the 27, thirteen (48.1%) were exposed to chlorine gas for ≥30 minutes before decontamination, and 23 (85.1%) reported experiencing acute health effects within 24 hours of the chlorine release. Of all 29 exposed persons, 23 (79.3%) received care at a hospital; 17 (58.6%) were treated and discharged from the emergency department, 6 (20.7%) were hospitalized. All hospitalized persons received nebulized β2-agonists, 5 (83.4%) received oxygen, and 1 (16.7%) required mechanical ventilation for 4 days. We observed no statistically significant associations between exposure time, proximity to the explosion, or preexisting medical conditions and hospitalization.

Conclusions:
The rapid investigation revealed significant morbidity associated with the accidental release of chlorine gas and described exposed persons' characteristics. The CDPH created and mailed a Chemical Release Alert to >1200 recycling facilities in California to educate them on how to prevent future incidents and health effects from releases—whether accidental or intentional—of hazardous chemicals.

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Abstract ID: **1059415** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Recent estimates from the national surveillance framework for unintentional, non-**

fire related carbon monoxide poisoning

Committee: **Environmental Health**

Topic: **Other Emerging Environmental Epidemiology Issues**

Keywords: **Environmental exposures, Epidemiology, Surveillance**

Abstract Text

Background:
Unintentional, non-fire related (UNFR) carbon monoxide (CO) poisoning is a leading cause of poisoning in the US. Due to the event frequency, outcome severity, exposure preventability, and effectiveness of simple preventive measures, CO poisoning is a critical issue for public health surveillance. To more comprehensively depict the national burden of CO, the Centers for Disease Control and Prevention (CDC) developed a national surveillance framework for UNFR CO poisoning through the identification and analysis of data from several sources.

Methods:
The data sources identified for national estimates of CO-related morbidity and mortality include: National Poison Data System (NPDS), Health Care Utilization Project's Nationwide Inpatient (NIS) and Nationwide Emergency Department (NEDS) Samples, reports from hyperbaric oxygen treatment facilities, and National Vital Statistics System. CDC analyzed data from NPDS, NEDS, NIS, and hyperbaric oxygen facilities. Rates were calculated using US Census Bureau population estimates.

Results:
From 2000 to 2009, there were 68,316 calls to US poison centers for UNFR CO exposure. The greatest number of calls regarded exposures in children <18 years (18,896 [28%]). Fifty percent (N=34,356) of calls regarded females that were exposed, 44% regarded males (30,257), and gender was not noted for 6%.Two hundred thirty-five deaths were reported.
In 2007, there were an estimated 21,304 emergency department visits (71 visits/million, 95% CI: (69, 72)) and 2,302 hospitalizations (8 stays/million, CI: (6, 9)) for confirmed UNFR poisonings. The highest rate of emergency department visits was among those 18-44 years (87 visits/million, CI: (79, 96)); the highest hospitalization rate was among those ≥85 years (18 stays/million, CI: (9, 27)). Females visited emergency departments more than males; males were more likely to be hospitalized. The estimated overall cost of CO-related hospitalization was >$23 million.
From August 2008-January 2010, 864 patients received hyperbaric oxygen treatment for UNFR CO poisoning. The majority of patients were male (57%), non-Hispanic white (54%), aged 18-64 (71%), with a high school education or less (49%). English was the primary language for 81% of those treated. Forty-one percent of patients were hospitalized after treatment and 55% were discharged.

Conclusions:
This analysis of UNFR CO exposures represents the first summary that includes a ten-year period of CO poison center data, the most comprehensive and recent national estimates of emergency department visits and hospitalizations, and the most detailed information on patients treated with hyperbaric oxygen. Findings from this surveillance system are crucial for prevention efforts as the results will contribute to a better understanding of CO poisoning in the US.

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Abstract ID: **1062553** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Alabama Department of Public Health's surveillance for public health effects following the 2010 Gulf Oil Spill**

Committee: **Environmental Health**

Topic: **Lessons learned in epidemiology response to the Gulf coast oil spill and other Gulf-related environmental health issues**

Keywords: **Community health assessment, Environmental Health hazards, Surveillance**

Abstract Text

Background:
On April 20, 2010, the Deepwater Horizon rig exploded in the Gulf of Mexico, releasing oil and chemicals of public health concern off the shores of Texas, Louisiana, Mississippi, Alabama, and Florida. The Alabama Department of Public Health (ADPH) utilized several mechanisms during the five months of surveillance for monitoring direct and indirect health effects, as well as impact on the local healthcare system due to increase in patient volume: drop-in surveillance at emergency departments, urgent care facilities, and community health centers; worker safety incidents reports; reports of Poison Control Center calls; review of ambulance run data logs; and anomaly reports from BioSense. This report will focus on ADPH's efforts from the drop-in surveillance and what we learned.

Methods:
On May 14, ADPH implemented a drop-in surveillance system in two coastal areas, Baldwin and Mobile Counties, in order to detect healthcare visits attributed to affects from the oil spill. Twenty-five ambulatory care providers volunteered to provide daily reports to ADPH May 14 through October 1, 2010. A line list form was provided to the facilities to record total number of patients seen each day and details about patients reporting symptoms due to known or suspected exposure: type of exposure, age, resident status, worker status, and symptoms reported/exhibited.

Results:
In the 1,726 reports received from the 25 participating facilities, 285 of 104,168 patients (0.27%) reported health effects due to known or suspected, direct or indirect exposure. Among the patients with reported exposure (PWRE), indirect was the most common single route reported (61.4%), followed by inhalation (20.0%), contact (13.7%), and ingestion (1.8%). Multiple routes were reported by 3.2% of the patients. Most PWRE were in the 25-49 year old age group (47.7%), followed by 5-24 yrs (22.5%) and 50-64 yrs (19.3%). Respiratory symptoms were the most prominent (44.6%). Other reported symptoms included skin irritations, nausea/vomiting, headaches, mental health conditions, and cardiac issues. No burden on the healthcare system was detected.

Conclusions:
ADPH's drop-in surveillance system successfully monitored the health effects reported at the community-level in the Gulf Coast areas and surge on the healthcare system. Although not comprehensive, the information received from the participating facilities provided adequate insight into the effects on the community.

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Abstract ID: **1062698** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Biomonitoring California: Moving towards a representative California sample**

Committee: **Environmental Health**

Topic: **Biomonitoring**

Keywords: **Biomonitoring, Chemical and biological exposures**

Abstract Text

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Abstract ID: **1060334** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Investigating the health effects of an ammonia release at a refrigeration facility - Alabama, 2010**

Committee: **Environmental Health**

Topic: **Preparedness and environmental epidemiology**

Keywords: **Chemical and biological exposures, Emergency response, Environmental exposures**

Abstract Text

Background:
In August 2010, a pipe ruptured on the roof of an Alabama refrigeration facility, releasing an estimated 250-600 gallons of anhydrous ammonia. The incident occurred across a canal from two facilities involved in clean-up after the Deepwater Horizon Oil Spill. In response to the release, the county health department requested assistance from the Agency for Toxic Substances and Disease Registry Assessment of Chemical Exposures (ACE) program to determine the health effects associated with the exposure.

Methods:
Investigators gathered information on exposure, treatment, and outcome through interviews of persons exposed at their place of employment using the ACE questionnaire. Medical chart abstractions were performed at the hospitals identified as treating patients exposed to the ammonia. Data analysis included a descriptive analysis and a comparison of symptom data obtained from questionnaires and medical record reviews for patients both interviewed and treated at a hospital.

Results:

In addition to a few persons exposed at the company and those present on 2 ships docked at the facility, 801 oil spill clean-up workers were potentially exposed to the ammonia. A convenience sample of 116 oil spill workers was interviewed. The most commonly reported symptoms were headache (77%), shortness of breath (72%), coughing (69%), and burning of the nose, throat, or lungs (68%). One hundred fifty-two persons sought medical care at 5 local hospitals: 121 were treated in emergency departments and 31 were admitted for a mean of 2 nights (range 1-7). There was poor agreement between symptoms recorded on medical records and those reported during interviews for the 36 patients whose symptoms were obtained by both methods (kappa=0.21). Medical records had a 29% sensitivity for listing symptoms that were described during interviews. In contrast, there was excellent agreement (kappa=0.80) and a sensitivity of 92% for medical records reporting current smoking status and preexisting medical conditions (high blood pressure, diabetes, asthma, cancer).

Conclusions:
A large number of persons were exposed to ammonia in this accidental release, with many experiencing symptoms and requiring medical care for their health effects. Medical records are considered a good source of data on health effects of chemical release events since they are not subject to recall bias; however, for various reasons they may fail to capture all symptoms experienced. Therefore, the best method of obtaining information on symptoms resulting from a chemical exposure is an interview conducted soon after the incident.

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Abstract ID: **1054767** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Reportable diseases imported to Florida from Haiti following the 2010 earthquake**

Committee: **Environmental Health**

Topic: **Natural disasters: surveillance and monitoring**

Keywords: **Disasters, International, Surveillance**

Abstract Text

Background:
On 1/12/10 an earthquake struck near the Haitian capital of Port-au-Prince, creating enormous devastation. Florida's close proximity to Haiti resulted in >22,000 people entering Florida from Haiti as part of federal repatriation and humanitarian parolee efforts. Travel between Florida and Haiti is

common and reportable diseases introduced by travelers returning from Haiti are identified every year. Due to the anticipated large influx of persons into Florida from Haiti post-earthquake, Florida enhanced surveillance efforts.

Methods:
Merlin, a statewide, web-based surveillance system used to routinely capture reportable disease data for Florida residents, was used to document cases of reportable diseases in people coming to Florida who were in Haiti at the time of or after the earthquake. Cases were documented in both Florida residents and non-residents. A user-driven, flexible module within Merlin allows users to create survey questions that are immediately accessible to all other users. This module was used to capture data on Haiti travel, medical condition upon entry into the U.S., and citizenship. The distribution of reportable diseases acquired in Haiti during the post-earthquake period (1/12/10-3/12/10) was compared to a 2009 reference period (1/12/09-3/12/09).

Results:
Only 20 reportable disease cases imported from Haiti were recorded during the 2009 reference period, with malaria accounting for 15 (75%) and giardiasis two (10%). During the post-earthquake period, 51 cases were recorded; lead poisoning accounting for 21 (41%) cases and malaria 15 (29%). An additional 31 cases in non-Florida residents were recorded during the post-earthquake period, with malaria contributing 13 (42%) and lead poisoning 6 (19%).
Survey data was collected for 64 cases. Upon arrival, 38% of the people with reportable diseases needed acute medical care; of those, 64% required care for their suspected infectious illness, 18% for trauma/injury, 9% for dehydration/malnutrition, and 10% for other reasons.
Malaria cases continued to be imported throughout 2010, with >60 imported cases in Florida residents and non-residents.

Conclusions:
Having a dynamic statewide reportable disease system allowed Florida to capture cases of disease imported from Haiti in both Florida residents and non-residents, and provided an efficient way to gather additional data on those cases, which could be used for important public health messaging. The influx of people arriving from Haiti resulted in a substantial increase in reportable diseases. A significant minority of cases were detected in people who sought care for other reasons. This type of information may be useful in response planning for similar events in the future.

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Abstract ID: **1062625** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Effects of particulate air pollution on cardiovascular health: A population health risk assessment**

Committee: **Environmental Health**

Topic: **Air and water quality related to environmental epidemiology**

Keywords: **Air pollutants, Assessments, Cardiovascular disease**

Abstract Text

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Abstract ID: **1062328** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Climate Change Adaptation: Addressing heat related morbidity and mortality among seniors in New York City**

Committee: **Environmental Health**

Topic: **Climate change epidemiology and public health**

Keywords: **Climate change, Elderly, Interventions**

Abstract Text

Background:
On average, more U.S. residents die from extreme heat events (EHE) than all other natural disasters combined. Considering predicted climate change and increased severity of EHEs, adaptive strategies to minimize excess mortality are required. In such large cities as New York City (NYC) urban heat island effect and social isolation of low-income seniors further contribute to adverse outcomes. Investigations of fatalities following EHEs in NYC identified key risk factors, including age >65 years, having multiple medical conditions or a psychiatric disorder, and lacking home air conditioning. A recent investigation noted that half of decedents lived with someone and almost all had relatives in the metro area.

Methods:
Starting in 2008, the NYC Department of Health and Mental Hygiene piloted an adaptive strategy to prevent heat-related mortality among low-income adults aged >65 years. Strategy components include: (1) Targeted education and outreach through the media, community based leaders, public health detailing, mailings, print and web-based materials to heighten awareness and perceived risk and to provide links to resources; (2) Promoting structural interventions, such as opening of cooling centers and provision of free air conditioners (3) Releasing notifications, including modification of the National Weather Service heat advisory threshold and health alerts and; (4) Ongoing surveillance, including monitoring of use of emergency medical services and heat stroke death investigations.

Results:
Overall, this strategy reached a large proportion of the NYC population with the assistance of over 1000 faith-based leaders, over 230 health care providers, over 100 community based organizations and hundreds of additional special service providers. Over 65,000 pieces of educational materials were distributed and about 6,000 air conditioners were installed in the homes of low income seniors.

Conclusions:
A diversified approach to outreach combined with surveillance and structural interventions is a necessary adjunct to heat emergency planning in large urban areas to reach vulnerable populations.

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Abstract ID: **1059046** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Enbridge oil spill: Public health surveillance investigation of acute health effects**

Committee: **Environmental Health**

Topic: **Preparedness and environmental epidemiology**

Keywords: **Disasters, Environmental Health, Preparedness**

Abstract Text

Background:
On July 26, 2010, Enbridge Energy Partners, L.P., reported the burst of their 30-inch pipeline near Marshall, Michigan, in Calhoun County. An estimated 819,000 gallons of crude oil spilled into the Talmadge Creek, a waterway that feeds the Kalamazoo River. The contamination ultimately affected 30 miles of the creek and river. On July 26, individuals living near the spill began reporting strong, noxious odors and associated health symptoms to the Calhoun County Public Health Department and the Michigan Poison Control Center (PCC). To characterize the health impact of the oil spill on exposed communities, the state and local health departments developed and implemented a public health surveillance system to collect data on individuals reporting adverse health outcomes from exposure to spilled oil and its vapors.

Methods:
The surveillance system included three components: (1) active surveillance of health care provider reports, under legal authority of the Public Health Code, (2) monitoring daily counts of self-reported illnesses based on calls to the PCC, and (3) door-to-door health surveys in August in four communities impacted by the spill and one comparison community. The PCC acted as a central data repository for the health care provider reports. Community household survey and health care provider data were analyzed to calculate frequencies related to demographics, types of symptoms, health effects, and related information. Differences in reported symptoms between exposed and comparison communities were tested for significance using a two-tailed chi-square test.

Results:
The surveillance system received 147 health care provider reports on 145 patients. Neurological (64.8%), gastrointestinal (59.3%), and respiratory (46.9%) clinical symptoms were reported most frequently by patients. A total of 41 calls were received from the public by the PCC. Health information was collected from 201 households in the four exposed communities, with 320 (58.2%) of 550 individuals reporting adverse health effects. Headache (34.5%), respiratory (29.6%), and gastrointestinal (21.6%) symptoms were the symptoms exposed individuals most predominantly reported. The proportion of exposed residents reporting any symptom was significantly greater than the proportion in the comparison community ($p < .0001$).

Conclusions:
The multi-component surveillance system allowed for a comprehensive and timely response to assess the short term health outcomes related to the oil spill. Utilization of the PCC as the repository for health care provider reports served as an innovative and efficient method for collecting data. Symptoms reported by community residents were consistent with published reports of health effects associated with acute exposure to crude oil.

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Abstract ID: **1062535** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Exposure roster process for population tracking during and following a large scale emergency**

Committee: **Environmental Health**

Topic: **Preparedness and environmental epidemiology**

Keywords: **Data collection, Emergency preparedness, Epidemiology**

Abstract Text

Background:
Planning for collection of population exposure information and clinical samples for communities located immediately around the Umatilla Chemical Weapons Depot in North Central Oregon created an opportunity for Oregon Public Health Division (OPHD) to develop and exercise a special "Exposure Rostering System" to be used if there was an accidental release of chemical warfare agents stored and processed for disposal on site. The Exposure Rostering and Laboratory Sampling plan was created to improve situational awareness and populate ongoing tracking. It was tested during a recent community-wide workshop and exercise. This presentation will focus on the process of exposure rostering as part of Oregon's disaster epidemiology capabilities.

Methods:
Beginning with a 2008 exercise, OPHD began developing an exposure rostering system. Information to be gathered on all impacted individuals includes 1) core identifiers, 2) normal and alternate contact data (physical and electronic addresses and phone), 3) location during the incident, and 4) injury status. Plans deploy roster teams to data on paper forms at likely contrgating areas (hospitals, shelters and decontamination centers). In addition to the data, collection of clinical samples (if determined necessary) would also be carried out to the extent practical. A web-based version of the form was developed for those sheltering in-place or who self-evacuate.

Results:
Twenty organizations participating in the workshop and exercise were familiarized with the exposure rostering and laboratory sampling plan. The plan was applied to a challenging hazmat scenario that

tested its many elements. Potential gaps in planning, processes, resources and supporting materials related to rostering and sampling were identified.

Conclusions:
Major observations included: 1)An on-going need to exercise the Exposure Roster /Lab Sampling Plan at frequent intervals; 2) more effective means to notify local and jurisdictions on rostering and tracking of affected individuals in transit need to be developed (including adjacent communities and states); and 3) public information requirements related to exposure rostering / lab sampling are intensive and need to be refined, e.g., prescripted messages. The exposure rostering process has been formally included in the State All-Hazard Response Plan.

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Abstract ID: **1060436** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Climate change and respiratory hospitalizations in New York State: Estimating the current and future health burden of increasing temperature**

Committee: **Environmental Health**

Topic: **Climate change epidemiology and public health**

Keywords: **Climate change, Respiratory diseases: Non-influenza**

Abstract Text

Background:
The global average surface temperature is likely to rise by 2 to 11.5°F at the end of 21st century relative to 1980-1999, and heat waves will be more intense, frequent and longer in the future warmer climate. Although several studies have projected heat-related mortality, few have evaluated morbidity and other public health burden. A number of studies have demonstrated a strong relationship between respiratory hospitalizations and extreme heat. Because it is important for public health preparedness, our objective was to assess the excess current and future public health impacts (50 years and 100 years) of respiratory disease attributable to extreme heat in summer, including the number of hospitalizations, treatment costs, and lost workdays in New York State and its geographic regions.

Methods:
Previously, we reported the apparent temperature (AT) threshold and percent risk change above the threshold for New York State and its regions. Here we projected change in temperature and other climate properties using a global climate model under various climate scenarios. The scenarios are plausible future trajectories for social, economic and technological development. The future climate was derived by shifting the baseline climate distribution according to these changes. Effects of extreme high AT in summer on respiratory hospitalizations, treatment costs, and lost workdays in 1991-2004, 2046-2065 and 2080-2099 were estimated according to the risk change and the increased AT above threshold under three climate scenarios.

Results:
The New York State public health burden of respiratory disease attributable to extreme high AT in summer was estimated to be 100 hospitalizations, $1 million in treatment costs, and 615 lost workdays per year in 1991-2004. The LaGuardia region had the highest burden, and health impacts were much higher in females than in males. According to the three climate scenarios, the 100-year projection of public health burden attributable to extreme high AT was estimated to range from 259-796 hospitalizations, $2.7-$8.3 million in treatment costs, and 1587-4833 lost workdays per year for respiratory diseases.

Conclusions:
This study estimated a 2.6 to 8-fold increase in the public health burden of respiratory hospitalizations due to global warming in the coming 100 years. If combined with other diseases and mortality, the health impacts would be more evident. As climate change is anticipated to increase the frequency and intensity of extreme heat events, public health agencies need to monitor heat-related health effects in order to prevent, mitigate, or plan for the increased public health burden due to increasing temperature.

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Abstract ID: **1059375** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Carbon monoxide alarm ordinance: Who's aware and who adheres?**

Committee: **Environmental Health**

Topic: **Other Emerging Environmental Epidemiology Issues**

Keywords: **Environmental exposures, Epidemiology, Public health law**

Abstract Text

Background:
Unintentional carbon monoxide (CO) poisoning is a leading cause of poisoning in the United States. Most poisoning cases occur in residential settings and the presence of a working CO alarm may prevent many of these events. The use of a CO alarm is mandated in many parts of the country; however, little is known about the compliance and adoption of such ordinances at the population level. Since 2000, Mecklenburg County, NC (MC) has had an ordinance mandating CO alarms in residences. The objective of this study was to determine the overall prevalence of CO alarms in MC as well as to identify socio-demographic factors associated with having a CO alarm.

Methods:
A random sample of households stratified by housing type (e.g., single family house, multi-family homes) was included in a cross-sectional survey. One adult respondent from each household was administered a questionnaire that included information on socio-demographic and household characteristics, presence of a CO alarm, awareness of the CO ordinance, and history of CO exposure in the household. Data were analyzed using univariate statistics and multivariate stratified conditional

logistic regression.

Results:
Among 214 participating households, 145 (67.8%) reported having at least one working CO alarm in their home and 79 (36.9%) respondents reported being aware of the CO ordinance. Awareness of the CO ordinance was not associated with any socio-demographic (e.g., age, sex, race, education, income) or household (e.g., home ownership, year of home construction) characteristics. However, respondents who were aware of the CO ordinance were more than nine times (95% confidence interval [CI] = 3.3, 25.9) more likely to report having a working CO alarm in their home compared to those who were not aware of the ordinance. Also, households with attached garages had more than two times higher odds (95% CI =1.0, 6.2) of having a CO alarm compared to those without attached garages.

Conclusions:
The proportion of households in MC reporting having a CO alarm was higher than the reported national average (30%-40%). The ordinance may have played a role in the installation of a CO alarm and participants were more likely to comply if they were aware of the ordinance. There is, however, a continued need for public health education and communication so that awareness reaches a larger segment of the population. Public health efforts can benefit from enacting similar regulations aimed at population-level adoption of preventive health behaviors.

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Abstract ID: **1059355** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Disaster-related carbon monoxide exposures: Surveillance, epidemiology, and opportunities for prevention**

Committee: **Environmental Health**

Topic: **Preparedness and environmental epidemiology**

Keywords: **Disasters, Environmental exposures, Epidemiology**

Abstract Text

Background:
Unintentional, non-fire-related (UNFR) carbon monoxide (CO) poisoning is a leading cause of mortality and morbidity in the wake of natural disasters. Poisonings commonly occur during power outages as a result improper placement of gasoline powered generators and use of alternative fuels for heating and cooking, such as the use of space heaters and charcoal grills/briquettes indoors. Understanding the overall magnitude of the problem, affected populations, sources of exposure, and the time and place

that these exposures occur can help to identify prevention opportunities and develop public health messages.

Methods:
We conducted a literature review to characterize disaster-related UNFR CO poisonings in the United States from 1990-2009. The primary literature search was conducted using major scientific literature databases (e.g., MEDLINE, Science Direct) and applying appropriate search methods based on well-defined keywords (e.g., Carbon monoxide, storms/hurricanes). Additional searches were conducted on PubMed, Google, and other internet search engines. Forty-three articles were identified and 28 articles were selected for review based on relevance and completeness of data.

Results:
Data from 24 different disaster events were represented (e.g., hurricanes, ice/winter storms, and floods) in the review. A total of 1,880 UNFR CO poisonings were reported; of which, 4% (n=75) were fatal, 6% were hospitalized, and 20% were reported to have received hyperbaric oxygen therapy. Headache (73%) and nausea (54%) were the most commonly reported symptoms. Most poisonings (78% fatal; 58% non-fatal) occurred within three days of disaster onset. Fatalities were primarily among adults (≥18 years) (88%) and men (79%). In contrast, 58% of the non-fatal poisonings were among females. Hispanics and Asians, as well as immigrant, non-English speaking minorities were disproportionately affected by CO poisoning. Over all, improper placement of generators was the predominant source of exposure for both fatal (85%) and non-fatal (55%) poisonings. However, indoor use of charcoal grills was the most common source of exposure (73%) during ice/winter storms. Poisonings primarily occurred (91%) in residential settings.

Conclusions:
These estimates are likely an underestimation of the overall burden of disaster-related UNFR CO exposures due to limited reporting of CO poisoning cases. Our findings suggest that culturally sensitive interventions and multilingual warning labels on generators, charcoal grills, or other fuel-burning appliances and tools may reduce the risk of disaster-related CO exposures in some communities. Pre-disaster communication and promotion of installation of battery operated CO alarms and safe appliance use at home may be effective as most of the exposures occur at home within days of disaster onset.

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Abstract ID: **1062855** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Minnesota's Biomonitoring Pilot Program: Successes and challenges**

Committee: **Environmental Health**

Topic: **Biomonitoring**

Keywords: **Biomonitoring, Environmental exposures**

Abstract Text

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Abstract ID: **1062163** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Two Vermont scenarios of drinking water contamination from pentachlorophenol-treated utility poles**

Committee: **Environmental Health**

Topic: **Other Emerging Environmental Epidemiology Issues**

Keywords: **Chemical and biological exposures, Environmental Health, Water**

Abstract Text

Background:
Pentachlorophenol (PCP) is an organochlorine wood preservative commonly used to treat utility poles in the United States. In 2009, the Vermont Department of Health (VDH) received two unrelated phone calls from residents who were concerned about an odor in their private drinking water. Utility poles had recently been replaced at both properties in close proximity to shallow onsite water sources. VDH advised residents not to use their water for drinking or bathing. In both instances, laboratory tests confirmed the presence of PCP in the drinking water sources.
The objectives of this report are to describe the details of how PCP-treated poles may have contaminated the two private drinking water sources, and to raise awareness of this possible exposure and potential health effects.

Methods:
Interviews were conducted with state agency staff involved in managing the two scenarios. Records and literature were reviewed.

Results:
PCP is water-soluble and can migrate from treated poles to drinking water sources under certain environmental conditions. In both instances described, PCP migrated from treated utility poles into the private drinking water sources. Initial samples of the residents' tap water had 2,060 parts per billion (ppb) and 6 ppb PCP respectively. The current EPA Maximum Contaminant Limit (MCL) for PCP in drinking water is 1 ppb. A coordinated state agency response identified regulatory limitations.

Conclusions:
With increasing development and focus on service reliability, utility poles in Vermont are being relocated from relatively uninhabited areas to road rights-of-way, which are closer to homes and private drinking water sources. This could result in increasing exposure to PCP. The toxicity of PCP has been

extensively studied, and a multitude of acute and chronic health effects of PCP have been observed. Health professionals should be aware of treated poles as a possible source of PCP exposure. Vermont agencies will continue to work together to address regulatory limitations to protect the population of Vermont.

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Abstract ID: **1062611** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Six month follow-up after a chlorine gas release at a recycling facility - California, 2010 (Rachel Roisman will present in place of Kate Kelsey)**

Committee: **Environmental Health**

Topic: **Preparedness and environmental epidemiology**

Keywords: **Chemical and biological exposures, Environmental Health hazards, Occupational injury and death**

Abstract Text

Background:
On June 8, 2010, chlorine gas was released from a ruptured 1-ton tank at a California recycling facility affecting 29 employees, customers, and bystanders and sending 23 (85.1%) to local hospitals with acute health effects. While chemical releases garner immediate widespread media attention, often little is known about the presence of longer-term sequelae and the quality of medical care received in the aftermath of these events. Following the release, the California Department of Public Health (CDPH), with assistance from the Agency for Toxic Substances and Disease Registry and the Centers for Disease Control and Prevention, interviewed 27 (93.1%) victims and reviewed their medical records to assess exposure and immediate health effects. Six months later, CDPH re-interviewed victims and reviewed medical records to assess longer-term health effects and the adequacy of medical care received.

Methods:
The 27 victims initially interviewed were contacted six months later and asked to complete a questionnaire over the phone. The questionnaire inquired about the presence and duration of symptoms, medical care sought, satisfaction with care, and included a posttraumatic stress disorder (PTSD) assessment tool. Medical records are also being reviewed.

Results:
Interviews are still being conducted. Of those interviewed (n=14), 71% sought medical care beyond that received immediately following the release, and 21% were still receiving medical care for problems

related to the release at the time of interview. Seventy-nine percent were still experiencing symptoms related to the release and half of those interviewed were still experiencing difficulty breathing. Twenty-eight percent of those interviewed screened positive for PTSD. Of those who sought additional medical care, 60% were dissatisfied with the care they received.

Conclusions:
A substantial proportion of those interviewed had symptoms that persisted six months post-release. Due to the prevalence of ongoing symptoms, dissatisfaction with current care, and the possibility of PTSD, CDPH is attempting to ensure that these victims receive adequate and satisfactory medical and mental health care. This follow-up study suggests that acute exposure events may cause a longer lasting burden of illness than has been conventionally recognized. CDPH plans to improve tools for monitoring and evaluating the longer-term medical consequences of airborne releases with acute health impacts. Public health authorities and clinicians should anticipate the possibility of longer-term health effects and medical needs in the aftermath of future toxic chemical releases.

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Abstract ID: **1062331** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Florida's ESSENCE System â€“ An information system used in post-disaster surveillance**

Committee: **Environmental Health**

Topic: **Disaster epidemiology: best practices, long term studies, and lessons learned**

Keywords: **Disasters, Information systems, Surveillance**

Abstract Text

Background:
In the last decade Florida experienced a number of hurricanes, wildfires, and other emerging health threats that required urgent public health response. Florida implemented the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) in 2007 for early event detection and situation awareness based on emergency department (ED) chief complaints. It now includes routine descriptive epidemiologic analysis, data visualization, and reporting using four different data sources, building on tools originally developed for syndromic surveillance.

Methods:
The Florida ESSENCE system is a multi-tiered, automated, and secure (https) web-based application. Microsoft SQL databases are used in data ingestion, statistical analysis, and web databases. System development is primarily in Java. Enhancements to the system are developed through close collaboration with the Johns Hopkins University Applied Physics Laboratory, paying close attention to feedback from state and local epidemiologists in Florida.

Results:
The system includes four data sources: 1) ED record data from 152 hospitals; 2) Reportable disease case data from the Merlin system; 3) Florida Poison Information Network call data; and, 4) Florida Office of Vital Statistics death data. Users can produce time series graphs, summary charts, maps, and tables by a number of possible stratification variables drawing on multiple data sources at once. Automated analyses can be configured on any data source to run on user defined queries customized for a particular event. Alerts populate “myalerts” tables which may suggest the need for additional drill-down. All output can be extracted and included in routine reports to stakeholders.

Conclusions:
We have moved from a time- and resource-intensive “paper and pen” disaster surveillance system to a single web-based statewide syndromic surveillance system, and finally to a single statewide biosurveillance system. This approach creates one location where users can access data and create epidemiologic reports and "data dashboards" that describe the morbidity and mortality for a given region in Florida. This functionality has allowed for more timely and routine analysis of data that was previously not available or required significant effort to access, and has helped close the public health surveillance loop with our partners in the clinical community. Automated data collection and analysis systems should be implemented and monitored outside of events so system use is routine during events, but can only be used when the normal health care system is functioning. Florida’s response to hurricanes, tropical storms, wildfires, and the 2010 earthquake and cholera outbreak in Haiti highlight the importance of these factors.

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Abstract ID: **1062355** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Estimating the mortality burden attributable to fine particulate air pollution in New York City**

Committee: **Environmental Health**

Topic: **Environmental Public Health Tracking**

Keywords: **Air pollutants, Health disparities, Risk communication**

Abstract Text

Background:
Fine particulate matter (PM2.5) is an important combustion related pollutant that contributes to increased morbidity and premature mortality. The very old and young and those with chronic cardiopulmonary conditions are most susceptible to PM2.5 effects. Quantifying the burden from different public health problems can be useful in engaging public officials and community stakeholders and establishing local policy. We used evidence from published studies with local data on air quality and mortality rates to estimate the number of deaths attributable to current ambient PM2.5 exposure in New York City overall and the distribution of PM2.5-attributable mortality by neighborhood and by age.

Methods:
Our base-case analysis used a relative risk function derived from a published 2009 analysis of the American Cancer Society cohort, New York City metro area routine PM2.5 monitoring data from 2005-2007, and EPA modeled estimates of natural background PM2.5 concentrations to estimate the proportion of deaths attributable to current PM2.5 levels compared to natural background. These attributable fractions were applied to mortality rates and population estimates by age and by each of 42 zip-code based New York City neighborhoods. Sensitivity analyses were conducted to assess the influence of choice of epidemiological study and background scenario. The US EPA's Benefits Mapping and Analysis Program (BenMAP), developed to support national ambient air quality standards, was used to implement the analysis and track all assumptions behind our estimates.

Results:
We estimate that more than 3000 deaths annually are attributable to current PM2.5 levels in New York City, or about 6% of total mortality. The estimated rates of PM2.5-attributable deaths vary more than two-fold across neighborhoods and are highest in neighborhoods with the greatest concentration of poverty. The majority of PM2.5-attributable deaths occur in persons greater than 70 years of age. As expected, estimates were sensitive to choice of epidemiological study and background scenario. Because the American Cancer Society cohort under-represents more vulnerable low income populations, our estimate may be conservative.

Conclusions:
Overall, PM2.5 is an important cause of premature death in New York City and the burden is unevenly distributed throughout the city, disproportionally impacting high poverty neighborhoods and elderly populations. While achieving natural background PM2.5 concentrations is not feasible, even modest improvements can have large public health benefits.

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Abstract ID: **1064436** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **CSTE-APHL Biomonitoring Guidelines**

Committee: **Environmental Health**

Topic: **Biomonitoring**

Keywords: **Biomonitoring**

Abstract Text

Background:
The purpose of this oral presentation is to provide a 10 minute overview of CSTE activities in

biomonitoring and introduce state activities. The Association of Public Health Laboratories (APHL) has developed a five year plan to establish a National Biomonitoring Network of public health laboratories. CSTE is working in collaboration with APHL to develop epidemiological standards for designing studies, collecting samples, and the statistical analyses & interpretation involved in biomonitoring programs.

Methods:
APHL has met with their members to discuss the development of new analytical methods, quality assurance for testing, data reporting requirements and other laboratory-related concerns for a national system. APHL recognizes that biomonitoring goes beyond the laboratory and that an effective national biomonitoring system requires the skills, expertise, and supporting infrastructure of a variety of additional entities and individuals. CSTE members are collaborating with APHL to develop guidelines for epidemiologists in state health departments interested in biomonitoring projects. CSTE assembled state volunteers with experience in biomonitoring activities who agreed to participate in a webinar, in-person meeting, conference calls, and draft language for a guidance document publication. Activities have been ongoing from July 2010 through present day.

Results:
Guidance includes information on study planning and organization, biomarker selection, community engagement, sample collection and storage, and statistical analysis & interpretation of biomonitoring results.

Conclusions:
The final document will be distributed Spring 2011.

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Abstract ID: **1062173** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Tracking's approach to addressing gaps in data, methods, and tools for integrating environmental and health data to drive public health action**

Committee: **Environmental Health**

Topic: **Environmental Public Health Tracking**

Keywords: **Collaboration, Data/Surveillance, Environmental Health**

Abstract Text

Background:
The Centers for Disease Control and Prevention (CDC) National Environmental Public Health Tracking Program strives to provide information communities can use to improve their health. Early state and local pilot projects in environmental public health tracking laid the groundwork for the Tracking Network and identified critical data, methods, and analysis needs of environmental public health practitioners. To address these needs, CDC has taken a multipronged approach; engaging partners across disciplines, leveraging resources and expertise, and fostering collaboration and capacity building.

Methods:
CDC has focused on filling gaps in environmental monitoring data through partnerships with EPA, NASA, NOAA, and USGS and the use of modeling and non-traditional data such as satellite observations. Analytic tools to examine temporal and geospatial relationships between health and environmental hazards have been developed in collaboration with state and academic partners. Current academic partners will continue development of methods and tools that can be applied at the national, state, and local levels to link health and environmental data and better characterize population exposure. CDC is also working to help health departments and communities quantify how efforts to reduce air pollution can impact health.

Results:
Collaborations with federal partners have provided useful estimates of drinking water contamination and modeled ozone and PM2.5 concentrations for counties without monitors for use on the National Public Portal and in academic research projects. Modeled air data are also being used in health impact assessments. Remote sensing data has been used to fill gaps in air monitoring data for a project linking PM 2.5 and asthma related emergency department visits and to identify heat events in a climate change module. The Rapid Inquiry Facility (RIF), which can be used to calculate rates and risk, has been enhanced through collaborations with the Imperial College of London. It has been used by states to examine trends in cancer and birth defects and by CDC to evaluate childhood lead poisoning. Current projects include efforts to develop methods for local ambient air quality health impact assessment and for linking drinking water and birth outcome data and linking PM2.5 and cardiovascular outcome data.

Conclusions:
Engaging partners with various expertises has expanded capacity, fostered an extended community of practice, and advanced development of tools and methods and the use of non-traditional data sources. Continued partnerships to develop, disseminate, and apply new methods will further address the critical information gap in the understanding of the relationship between environmental factors and disease.

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Abstract ID: **1062501** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Tracking heat: Metrics for extreme heat surveillance from modeled meteorological data**

Committee: **Environmental Health**

Topic: **Climate change epidemiology and public health**

Keywords: **Climate change, Environmental Health, Geographic Information Systems**

Abstract Text

Background:
High ambient temperatures can cause health effects such as heat cramps, heat exhaustion, heat syncope and heat stroke. In order to monitor health effects associated with extreme heat, temperature and relative humidity data are needed at highly resolved spatio-temporal scale. Currently, reliable temperature and relative humidity data are available from first-order network of weather stations. These stations are sited to provide climatological observations, and many of these stations are not located close to population centers. North American Land Data Assimilation System (NLDAS) provides modeled meteorological data that is quality-controlled, spatially and temporally continuous, and available by 1/8th-degree grid covering the conterminous United States. This presentation deals with development of county-level metrics of extreme heat for the CDC Tracking Network using modeled meteorological data.

Methods:
NLDAS data, available at the 1/8th-degree grid, consist of 103936 grid cells that cover the entire conterminous United States. We selected the daily maximum and minimum temperatures from the hourly NLDAS data. We also calculated a daily maximum heat index taking into account relative humidity and temperature. We converted grid-level data to county-level estimates to ascertain population exposure to extreme heat and enable linkage with health datasets. We used a 3-step geo-imputation approach to convert grid-level meteorological data to county-level estimates. First, we created a population-weighted centroid for each county in the conterminous United States and identified the grid-cell that contained the population-weighted centroid. Subsequently, for each grid cell containing the population weighted centroid, we identified all the adjacent grid-cells. Finally, we calculated daily county-level estimate s by averaging values from all the adjacent grid cells. We compared the daily county-level modeled meteorological data with data from the nearest weather monitor, and computed reliability statistics. Further In order to track population exposure to extreme heat, we generated county-level metrics to identify extreme heat episodes and understand daily maximum distribution of temperature and heat index.

Results:
Daily county-level estimates of temperature and heat index from NLDAS data cover all of the 3109 counties in the conterminous United States. The geo-imputation approach identified population centers and adequately characterized the prevailing heat exposure of each county. The county-level metrics explained temporal patterns of heat exposure and identified heat episodes. The metrics served as a screening tool to identify the at-risk population to extreme heat exposures.

Conclusions:
refer results section

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Abstract ID: **1058176** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Communicating biomonitoring study results: A case study on one state's experience**

Committee: **Environmental Health**

Topic: **Biomonitoring**

Keywords: **Biomonitoring, Communication, Environmental exposures**

Abstract Text

Background:
In their 2006 report, Human Biomonitoring for Environmental Chemicals, the National Research Council describes communicating biomonitoring results as the most challenging issue facing the field, yet critical to the accurate interpretation and use of biomonitoring data. The dearth of research in this area has hindered progress toward filling the gap in knowledge about how to communicate effectively about biomonitoring and the results of biomonitoring studies with lay audiences and others outside the field. In 2008-09, the Minnesota Department of Health conducted a biomonitoring study among residents of two communities in the Minneapolis-St. Paul metropolitan area who were exposed to perfluorochemicals through contamination of their drinking water. This study provided the Centers for Disease Control and Prevention's National Biomonitoring Program with a case for documentation of the process, characteristics, and effects of strategic communication implemented to support a community based biomonitoring study.

Methods:
This case study research used qualitative methods to explore and describe communication practices before, during, and after a biomonitoring study through collection and analysis of primary and secondary data. A review of documents and archival records contributed to an understanding of the context of the study and chronology of events. In-depth interviews with key informants provided insight into the knowledge, attitudes, perceptions, and responses of the target audiences that participated or had vested interest in the local biomonitoring study and its findings. These informants included participants in the community based biomonitoring study, state public health officials, state legislators, advocates, and industry representatives. The data was analyzed using a descriptive framework based on chronologic and thematic organization, classification, and presentation of the case.

Results:
The primary data collected from over 20 in-depth interviews combined with the data from secondary sources supported development of a narrative that describes a biomonitoring communication process generally characterized as collaborative and open and the variable responses of key audiences to the local biomonitoring study communication activities, messages, and materials.

Conclusions:
The case study provides empirical evidence of the need for and value of integrating strategic communication planning, implementation, and evaluation into the broader planning of biomonitoring studies. The study also highlights how communication needs across key audiences can vary and the importance of understanding and addressing such variations during development and implementation of communication plans. This case study contributes to the formation of a database for future comparison and theory building for development of best practices in biomonitoring communication.

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Abstract ID: **1060492** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Florida's surveillance efforts related to the gulf oil spill**

Committee: **Environmental Health**

Topic: **Disaster epidemiology: best practices, long term studies, and lessons learned**

Keywords: **Data/Surveillance, Disasters, Environmental exposures**

Abstract Text

Background:
The mobile drilling platform, Deep Water Horizon, sank April 20 off the Louisiana coast. Monitoring of syndromic surveillance systems for detection of adverse health effects due to exposure to crude oil, crude oil by-products, pollutants, distillates and dispersal agents reported from gulf-coast counties began in Florida 2 weeks later: May 6-September 11, 2010.

Methods:
Florida utilized syndromic surveillance consisting of hospital Emergency Department (ED) chief complaints and Poison Information Center data. Health effect and substance based searches were created to identify oil spill-related exposures and to create periodic summary reports. Active solicitation of physicians to report possible cases of oil-related illness or review of hospital records was not conducted.

Results:
250 reports of individuals with symptoms potentially related to the spill were received by the Florida Poison Information Center Network (FPICN): 221 Florida residents, nine visitors, one healthcare provider and fifteen oil workers. Inhalational exposures (158) were reported by the majority of callers followed by dermal exposures (46) and multiple exposure routes (e.g. ingestion/dermal, ingestion/inhalational/dermal (30)). Throat or ocular irritation, dizziness, shortness of breath, nausea, vomiting, diarrhea, cough, bronchospasm, headache, chest pain and rash were frequently reported symptoms. Most reports came from gulf coast counties.
Seventeen reports were identified from ED chief complaint data, including twelve reports from oil clean-up workers. Chest pain, headache and heat-related illness were cited in at least four of the visits. Difficulty breathing, shortness of breath, dry cough, dizziness, rash, chest pain, hypertension, headache and muscle sprain were listed as chief complaints in these ED visits. Four Florida residents reported symptoms such as nausea and vomiting, shortness of breath, chafing or blisters after contact with tar balls, crude oil or after walking on the beach.

Conclusions:
Near real-time access to ED chief complaint and FPICN data provided situational awareness and assisted public health planning and decision making. Limitations included incomplete hospital coverage in the syndromic network, difficulties in linking symptoms to oil exposure using these passive data sets, and the inherent uncertainties in using syndromic surveillance particularly in a novel situation. Comparison to findings from a state using active surveillance (Louisiana) will be discussed. Details on FPICN partnerships, creation of queries used in syndromic surveillance, Florida's overall surveillance approach and the gaps and limitations of these efforts in the gulf oil event will be presented.

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Abstract ID: **1056532** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Infection prevention challenges and training needs in nursing homes and assisted living facilities, Virginia, 2010**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Assessments, Healthcare associated infections (HAI), Infection control**

Abstract Text

Background:
Assisted living facilities (ALFs) and nursing homes (NHs) are residential settings that, like all types of facilities across the continuum of care, have infection prevention challenges. The Virginia Department of Health (VDH) commonly investigates outbreaks of influenza and norovirus in these settings. Recent transmission of hepatitis B in ALFs as a result of improper blood glucose monitoring practices has demonstrated the need to assure that facilities have infection control policies in place, are educated about prevention strategies, and implement appropriate prevention practices.

Methods:
A needs assessment was distributed electronically via SurveyMonkey to ALFs and NHs in Virginia and targeted to the main point of contact for infection prevention issues at the facility. The purpose of the assessment was to identify infection prevention training needs and preferred training formats, highlight differences in infection prevention resources and challenges between the two settings, and ascertain inconsistencies between facility policies, training needs, and infection prevention challenges. Frequencies and analyses were conducted using SAS v. 9.2.

Results:
Thirty-six stand-alone ALFs and 88 NHs responded to the assessment. Respondents were interested in regional one-day trainings (85% ALFs, 88% NHs) as well as self-study or webinar training opportunities. Top infection prevention training needs of both settings included outbreak investigation, education of visitors, residents, and staff regarding infection risk-reduction behavior, multidrug-resistant organisms, and environmental cleaning. ALFs were less likely to track infections in their facility (52% versus 99% of NHs) or have a clinician (nurse or physician) designated as the main point of contact for infection prevention issues (69% versus 99% of NHs). Although 43% of nursing homes identified staff hand hygiene compliance as a top infection prevention challenge, 78% said that no training on hand hygiene was needed. In ALFs, all facilities perform blood glucose monitoring, but 18% did not have a policy on this topic, and 53% indicated training was needed.

Conclusions:
Health departments can play a key role in supporting infection prevention programs in the long-term care setting by identifying training needs and providing education and resources. In spring 2011, the VDH Healthcare-Associated Infections (HAI) Program will be conducting a series of regional trainings for ALF and NH providers, inspectors, and local epidemiologists to address the educational needs of

the surveyed facilities. Trainings are structured to be interactive, engaging, and tailored to the type of setting, where possible. In addition, facilities will receive an infection prevention toolkit of fact sheets, logs, and policy templates to share with staff.

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Abstract ID: **1062862** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Reported cases of dengue in Key West, Florida 2009 and 2010**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Arbovirus, Emerging infections**

Abstract Text

Background:
Dengue viral infection is one of the most common arthropod-borne illnesses in the world. Although dengue outbreaks occurred in Florida and other areas of the US through the 1930's, the disease was considered eradicated following widespread use of DDT and improvements in living standards. No locally-acquired cases of dengue were reported in Florida or the continental US from 1946 to 1980. However, since 1980 outbreaks in Mexico have resulted in repeated introductions of the virus in the US along the Texas-Mexico border, as well as an introduction in Hawaii. None of theses events in Texas or Hawaii resulted in permanent re-establishment of the virus. In the summer of 2009, locally acquired dengue was identified in Key West, Florida. Although the virus was thought to have been successfully eradicated by October, the same virus strain was found to be circulating the following spring in 2010, suggesting the possibility of the reemergence of dengue infection as an endemic disease in Florida and elsewhere in the US.

Methods:
The data were collected by the Monroe County Health Department, entered into the FDOH communicable disease database (Merlin), and analyzed by the Florida Department of Health (FDOH) Vectorborne Disease Surveillance Program. Cases were confirmed based on clinical symptoms and serological testing per national guidelines. Laboratory testing was performed at FDOH Bureau or Laboratories or Centers for Disease Control (CDC).

Results:
There were 63 cases were reported from March through November of 2010. Fifty-three were Key West residents, 1 was a non-Key West Monroe County resident, 8 were from other Florida counties, and one was from out-of-state. Affected individuals ranged from 22 to 86 years of age, with 20 % being between 22-40 years, 43% being between 41 to 60 years and 35% being 60 to 86 years. The cases were 58% male and 42% female. Race was primarily white with 90% being white and 92% were of non-Hispanic ethnicity. Risk factors including not regularly using repellants or window screens, and geographic proximity to other cases will also be discussed

Conclusions:
Most cases involved white, middle-aged males. Important risk factors included residing on Key West, inconsistent use of repellant, lack of screen use, and living near a focal mosquito breeding area. Detailed analysis of demographics and risk factors will assist with developing successful targeted public prevention messaging.

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Abstract ID: **1061996** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Travel-associated cases of dengue reported to the Centers for Disease Control and Prevention's Arbovirus Surveillance System (ArboNET) and Dengue Branch--United States, 2009**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Global health, Surveillance, Vectorborne disease**

Abstract Text

Background:
Dengue, a potentially fatal acute febrile illness, is caused by four mosquito-borne dengue viruses (DENV-1--4). Dengue is endemic in most tropical/subtropical countries and is the leading cause of febrile illness in travelers returning from South/Central Asia, South America, and the Caribbean. We describe travel-associated dengue cases occurring among persons residing in the 50 states and District of Columbia (DC) with illness onset in 2009.

Methods:
Dengue case data reported to the Centers for Disease Control and Prevention's (CDC) national arbovirus surveillance system (ArboNET) and case data from patients with specimens submitted for testing to the CDC Dengue Branch (DB) but not reported to ArboNET were included in this analysis. For cases reported to ArboNET, laboratory result interpretations and travel classifications were determined by the reporting jurisdiction. For cases reported to DB, laboratory-confirmed cases were patients with DENV RNA detected or DENV isolated in an acute specimen by real-time polymerase chain reaction assay or viral isolation, respectively. Laboratory-probable cases were patients with anti-DENV IgM antibodies detected by enzyme-linked immunosorbent assay in a single convalescent specimen. Travel-associated illness was defined as dengue-like illness in a resident of the 50 United States or DC traveling outside of the 50 states or DC within 14 days of illness onset.

Results:
Between January 1 and December 31, 2009, 196 travel-associated cases were reported to

ArboNET/DB; the median age was 44 years (range = 1-76 years), 95 (48.5%) were male, 30 (15.3%) were laboratory-confirmed, 166 (84.7%) were laboratory-probable, 94 (48.0%) were hospitalized and none died. Of the 186 cases reporting clinical information, 163 (87.6%) reported dengue fever (DF), 12 (6.4%) reported DF with hemorrhage, and 4 (2.2%) reported dengue hemorrhagic fever or dengue shock syndrome. Travel-associated cases were reported from 29 states and one metropolitan area, of which New York City, Florida, and Texas reported 52.0% of all cases. One-hundred-and-eighty cases reported travel to 40 countries; the leading destinations were Dominican Republic (12.2%), India (11.6%), Haiti (11.0%), Mexico (8.3%), and Puerto Rico (7.7%).

Conclusions:
Travel to dengue endemic areas continues to pose risk for US travelers. Persons traveling to tropical/subtropical areas should seek pre-travel health counseling, minimize mosquito exposure while traveling, and seek medical evaluation if fever develops upon return. In 2010, dengue became nationally notifiable in the United States, and cases should be promptly reported to local/state health departments to optimize detection and implementation of preventive activities against introduction into the United States.

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Abstract ID: **1062250** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Using focus groups to guide public reporting of Central Line-Associated Blood Stream Infection (CLABSI) data in Maryland**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Data sharing, Healthcare associated infections (HAI), Performance measurement**

Abstract Text

Background:
Healthcare-associated infections (HAI) are costly and deadly infections that patients acquire during the course of receiving medical treatment for other conditions. Given the impact of HAIs, a number of states, including Maryland, have enacted legislation mandating hospitals to publicly report HAI data. Different populations (i.e. patients, hospital administration, physicians) frequently have different objectives when reviewing publicly reported data. To address this issue, the Maryland Health Care Commission (MHCC) utilized focus groups to guide selection of the format for public reporting of central line-associated bloodstream infections (CLABSIs) on the Maryland Hospital Performance

Evaluation Guide (http://mhcc.maryland.gov/consumerinfo/hospitalguide/index.htm).

Methods:
MHCC performed a literature review on public reporting of health care performance measures and reviewed formats used for public reporting of HAI data in 14 other states. Utilizing this information the Commission developed four alternative formats for CLABSI data presentation as well as an evaluation tool for focus group participants to assess the options. The Commission convened two Focus Groups - one targeting health care consumers and the other health care professionals. The consumer focus group had 13 members, including individuals with personal experiences with HAIs and individuals representing senior advocacy organizations, consumers, and media. The health care professional focus group had seven members, including a hospital CEO, hospital patient safely officer, chief medical officer, cardiac anesthesiologist, and surgical intensive care unit nurse. After presentation of the formats and a discussion period, a survey was given to participants to provide feedback on a range of reporting dimensions (e.g., data elements to include, level of aggregation, benchmarks for comparison) and format display preference.

Results:
The consumer focus group ranked the format which held the fewest data elements and utilized simple shape/color interpretations of the data (i.e., red circle for high rates, green diamond for low rates) highest on clarity, functionality, usefulness and effectiveness. Furthermore, they emphasized the importance of providing simple, clear and concise definitions and explanations and emphasized the importance of updating the data as frequently as possible. In contrast, the professional focus group preferred the format which presented more data elements, including confidence intervals, due to concerns regarding the potential misinterpretation of the data. The professional focus group agreed with consumers that the data should be updated frequently, but added the importance of being able to show changes in performance over time.

Conclusions:
Utilization of focus groups provided useful perspectives which aided in the development of formats for publicly reporting CLABSI data to both professionals and consumers.

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Abstract ID: **1060107** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Epidemiologic features of Human Anaplasmosis - Wisconsin, 2006â€“2009**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Infectious Diseases, Vectorborne disease**

Abstract Text

Background:
Human anaplasmosis (HA) is an acute, severe, febrile illness caused by *Anaplasma phagocytophilum* and transmitted in Wisconsin by *Ixodes scapularis*. We describe epidemiologic features of Wisconsin HA cases reported during 2006-2009.

Methods:
We reviewed and classified anaplasmosis case reports (2006-2009) by using the 2008 Council of State and Territorial Epidemiologists/CDC ehrlichiosis/anaplasmosis case definition. Confirmed HA is clinically compatible illness (acute fever and ≥1 of the following: headache, myalgia, malaise, anemia, leukopenia, thrombocytopenia, or elevated liver enzymes) with laboratory confirmation (four-fold change in anti-*A. phagocytophilum* IgG levels; polymerase chain reaction (PCR) detection of *A. phagocytophilum* DNA or antigen; or *A. phagocytophilum* isolation). Probable HA is clinically compatible illness with supportive laboratory results (single elevated anti-*A. phagocytophilum* IgG level or identified neutrophilic morulae).

Results:
A total of 890 confirmed (28%) and probable (72%) HA cases were reported; 88% were from northwestern Wisconsin counties. Reported cases increased from 158 (21% confirmed) in 2006 to 278 (34% confirmed) in 2009. Among 890 patients, 535 (60%) were male; median age was 58 years (range: 3-92); 94 (11%) had immunosuppressive conditions; 90 (10%) had complications, including acute respiratory distress syndrome, disseminated intravascular coagulation, meningitis/encephalitis, and renal failure; 218 (24%) were hospitalized; and one (0.1%) died. Confirmation was enhanced with PCR (85% of 249 confirmed cases) and limited by infrequent serum pair collection (4.7% of 890 cases).

Conclusions:
Because reported HA increased substantially during 2006-2009 associated with frequent hospitalization, additional HA prevention strategies are warranted. Opportunities to confirm HA were impaired because of infrequent pairing of sera. Improved understanding of HA-related provider practices and laboratory capabilities is needed to design timely approaches to diagnose and confirm HA.

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Abstract ID: **1053968** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Tennessee's tools and trainings for healthcare-associated infection reporting**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI), Training**

Abstract Text

Background:
Infection preventionists (IPs) are typically responsible for reporting healthcare-associated infections (HAIs) to the National Healthcare Safety Network (NHSN). The Centers for Disease Control and Prevention (CDC) provides education to IPs via webinars and web-based resources. However, CDC trainings are not tailored to state reporting requirements, and, given the complexity of the NHSN system and making HAI determinations, IPs may struggle with accurate HAI reporting. To aid IPs in the HAI reporting process, the Tennessee Department of Health (TDH) aimed to develop a variety of cost-effective tools and trainings, which would be tailored to state reporting requirements and would address specific reporting issues identified by TDH HAI staff.

Methods:
Topics for IP trainings and educational tools were chosen based on common reporting questions and requests for additional instruction submitted to TDH by IPs, data quality problems recognized during TDH's data quality checks and validation efforts, and reporting issues identified by CDC. TDH used standard, commercially available software programs to develop instructional materials. Costs, IP input, and time and travel limitations were considered when selecting training formats.

Results:
TDH staff identified common errors in conferring rights, completing the monthly reporting plan, entering multidrug-resistant organism/ Clostridium difficile¬-associated disease (MDRO/CDAD) summary data, and identifying HAIs. Errors in conferring rights and monthly plans were associated with confusion over reporting requirements that differ between TDH, the Tennessee Center for Patient Safety, and the state quality improvement organization (QSource), while MDRO/CDAD summary data errors were related to "off-plan" data entry. To address these issues, TDH staff created documents with step-by-step instructions and corresponding screen shots of the NHSN application. TDH staff also developed checklists for identifying HAIs using NHSN definitions and created instructions for identifying laboratory-identified (LabID) methicillin-resistant Staphylococcus aureus (MRSA) and C. difficile infection (CDI) events using Microsoft Excel. These materials were shared via email and the Tennessee HAI Online Workspace, a website that allows members to communicate, join groups, and post resources. In May 2010, TDH staff held an all-day, in-person IP training in each of Tennessee's three Grand Divisions (East, Middle, West). The trainings covered NHSN enrollment, facility set-up, and reporting of central line-associated bloodstream infections, surgical site infections, and MRSA and CDI LabID events. Webinars on these topics were also held May-October 2010.

Conclusions:
IPs provided positive feedback regarding the trainings and educational tools. By participating in educational efforts, HAI staff are better able to assist IPs with HAI reporting to NHSN.

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Abstract ID: **1057645** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Examining emergency department chief complaint and final diagnosis data for rabies postexposure prophylaxis surveillance**

Committee: **Infectious Diseases**

Topic: **Zoonotic disease**

Keywords: **Electronic data, Rabies, Surveillance**

Abstract Text

Background:
While cases of animal and human rabies are nationally notifiable in the United States, human rabies exposure and postexposure prophylaxis (PEP) are not. Few states require reporting of human rabies prophylaxis, and studies have suggested reporting rates less than 50% in some jurisdictions that do. To date the majority of studies examining the epidemiology of human rabies PEP in the United States consists of discrete cross sectional studies with no data driven national or longitudinal evaluations conducted since 1980.

Methods:
We investigated the utility of electronic Chief Complaint and Final Diagnosis data available through BioSense, to monitor patient presentation to non-federal hospital Emergency Departments (ED) for potential rabies exposure and PEP administration. Final diagnosis fields were examined for the following ICD-9-CM Codes: V01.5 (Contact with or exposure to communicable diseases - Rabies), V04.5 (Need for prophylactic vaccination and inoculation against Rabies), E949.1 (Other vaccines and biological substances causing adverse effects - Rabies vaccine), and 979.1 (Poisoning by other vaccines and biological substances - Rabies vaccine). Chief complaint fields were scanned for a text string including the term “rabies”. Chief complaint fields were also scanned for “shot”, “injection”, and “vac” to help identify visits that involved administration of a vaccine versus consultation for a possible rabies exposure where final diagnosis was not available or did not differentiate. Weekly time series graphs were produced to evaluate the data from January 2006 through October 2010.

Results:
Of 74,558,511 total BioSense ED visits from 545 facilities, 26,386 (0.04%) had either a Chief Complaint or Final Diagnosis associated with rabies exposure and/or vaccine. This represented 17,257 unique patients. Information on patient age was available for 16,596 (96.2%), median age was 31, range 19 days to 99 years. Time series showed a seasonal pattern peaking between July and September with observable year-to-year variation.

Conclusions:
While BioSense facilities are not a representative sample of all United States EDs, an initial analysis suggests final diagnosis and chief complaint data may be a viable supplement or alternative model to traditional public health surveillance of rabies PEP in the United States. Additional data mining of chief complaint text and increased enrollment of facilities will likely improve the utilization of this data.

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Abstract ID: **1045212** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Attitudes toward use of personal protective measures for prevention of zoonotic disease exposures among National Park Service Field Biologists â€“ United States, 2009**

Committee: **Infectious Diseases**

Topic: **Zoonotic disease**

Keywords: **One Health, Workplace safety, Zoonotic disease**

Abstract Text

Background:
In November 2007, a National Park Service (NPS) biologist died from pneumonic plague after unprotected contact with an infected mountain lion. For NPS, the biologist's death increased awareness about the importance of preventing zoonotic disease transmission in the workplace. We conducted a national survey of NPS field biologists to assess the frequency of zoonotic disease exposures and their attitudes towards personal protective measures.

Methods:
During April-June 2009, an NPS-wide online survey of self-identified field biologists was conducted to assess potential work-related zoonotic disease exposures; current protective practices, including personal protective equipment (PPE) use; and barriers and facilitators to PPE use. Relative frequency of engaging in protective practices in different situations was assessed using Likert-scale questions scored 1-5 (1=never, 5=always). The Wilcoxon rank-sums test was used to compare protective practice scores by different work-related factors.

Results:
Completed questionnaires were received from 238 biologists working in 131 parks across all eight NPS regions. Among most biologists, the following interactions with animals occurred several times a year: handling live (39% of respondents), sick (43%), or dead animals (46%), and drawing blood from animals (42%). Barriers to PPE use include PPE being either difficult to use in extreme environmental conditions (42%) or inconvenient (22%). Respondents had higher protective practice scores if they either read or had their supervisor review with them NPS guidelines for safe work practices ($p<.001$), had zoonotic disease safety or PPE use included in their employee performance appraisal plan ($p=.009$), or performed a job hazard analysis for handling wildlife ($p=.03$).

Conclusions:
Difficulty of PPE use in extreme environmental conditions was the most commonly cited barrier, but by only a minority of respondents. Respondents who used certain workplace initiatives engaged in protective practices more frequently than those who did not. These findings support the development of practical interventions to improve zoonotic disease prevention among wildlife field biologists.

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Abstract ID: **1059159** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Pneumonia surveillance using radiographic transcripts: Assessment of data quality**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Influenza / Pandemic influenza, Influenza surveillance, Surveillance**

Abstract Text

Background:
Pneumonia is a common complication among patients hospitalized with influenza and can lead to severe outcomes including intensive care unit admission and death. Surveillance for influenza-associated pneumonia is essential for monitoring severe influenza outcomes. Pneumonia can be identified by radiographic reports abstracted from patient medical charts. However, consistency of interpretation of these reports by surveillance staff, many of whom do not have a clinical background, is not well known. We compared the assessment of the radiograph reports by surveillance staff with physician's assessment to determine if radiographic information can be accurately interpreted and abstracted by persons with less clinical training. This was an exploratory analysis to assess the utility of capturing radiographic key terms for pneumonia surveillance.

Methods:
During the 2008-2009 influenza season, surveillance staff for the Emerging Infections Program Network began reviewing chest radiograph transcripts and key terms for determination of pneumonia as part of influenza hospitalization surveillance. The key terms included "bronchopneumonia", "consolidation", "pleural effusion", "airspace density/opacity", or "infiltrate". Using a random sample of a 2628 (35%) out of 7590 available chest radiograph transcripts, we compared the radiographic key terms abstracted by surveillance staff with those abstracted by two non-radiology trained physicians (reviewer A and B). Inter-observer agreement for each key term was calculated between reviewer A and B and the surveillance staff. Based on Cohen's kappa coefficient, agreement was considered moderate (0.41-0.60), substantial (0.61-0.80) or almost perfect (0.81-1.0).

Results:
There was almost perfect agreement between surveillance staff and respectively reviewer A or reviewer B for "consolidation" (0.81 or 0.85), and substantial agreement for "pleural effusion" (0.79 or 0.79), "airspace density" (0.75 or 0.77), and "bronchopneumonia/pneumonia" (0.63 or 0.67). For "infiltrate," there was substantial (0.70) agreement between surveillance staff and reviewer B but only moderate (0.50) agreement between surveillance staff and reviewer A. Overall, there was higher agreement between surveillance staff and reviewer B (0.70-0.85) than reviewer A (0.50-0.79).

Conclusions:
For four of five radiographic key terms, there was at least substantial agreement between surveillance staff and either physician with "consolidation" having almost perfect agreement. This indicates that surveillance reports are likely to accurately reflect radiographic information from radiograph transcripts. Therefore, radiographic abstractions by surveillance staff are useful in identifying key terms defining

pneumonia cases within the influenza hospitalizations surveillance system. Future analyses are needed to determine which combinations of radiographic key terms are the strongest predictors of clinical diagnosis of pneumonia.

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Abstract ID: **1060037** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Transfusion transmitted infection surveillance in action: Babesiosis in a transfusion recipient following spontaneous splenic rupture associated with anaplasmosis**

Committee: **Infectious Diseases**

Topic: **Transfusion/Transplantation-Associated Infections**

Keywords: **Healthcare associated infections (HAI), Surveillance, Vectorborne disease**

Abstract Text

Background:
There is increasing recognition of transfusions as a source of *Babesia* infection. To enhance identification of transfusion transmitted infections (TTI), the Massachusetts Department of Public Health (MDPH) instituted a policy of reviewing babesia laboratory reports every two weeks. Reports are forwarded to local boards of health for immediate follow-up. Routine application of this protocol revealed a 53-year-old male who presented to the emergency department with acute onset of weakness and near-syncope following a febrile illness of 2-3 days duration. He was diagnosed with

splenic rupture and sent to surgery. Intra-operatively he received 5 units of packed red blood cells. Approximately 70 days post-surgery, he again developed a febrile illness and was diagnosed with babesiosis.

Methods:
Completed case reports are reviewed daily by epidemiologists to identify specific exposure risks including receipt of a transfusion or transplant preceding diagnosis. When a transfusion is reported in association with a babesia case, MDPH notifies the hospital transfusion service that a suspect case of TTI has been identified. In this case, the transfusion service initiated a donor recall for follow-up testing. The patient's medical record was reviewed and formalin-fixed, paraffin-embedded splenic tissue was forwarded to the Centers for Disease Control and Prevention (CDC) for immunohistochemical (IHC) and polymerase chain reaction (PCR) testing. The patient was interviewed regarding opportunities for tick exposure.

Results:
Results from 3 of 5 blood donors showed no evidence of previous infection with *Babesia* or *Anaplasma*. Attempts to recall the remaining two donors are ongoing. IHC and PCR testing of splenic tissue were negative for *Babesia*; IHC testing indicated the presence of *Anaplasma* antigens at the time of splenic rupture.

Conclusions:
Public health surveillance systems can identify potential cases of TTI not already recognized by either a clinician or a blood center. Cases like this emphasize the need for good communication between clinicians, transfusion services, blood centers and public health authorities. Comprehensive investigation of these cases requires the involvement of multiple entities and can be complicated. The responsiveness of donors to recall notices is variable and confirmation of transmission by transfusion is not always possible.
To our knowledge, his is the first report of spontaneous splenic rupture associated with *Anaplasma* infection. This association might not have been recognized without MDPH's TTI surveillance and investigation. TTI investigations may reveal additional information about tick-borne diseases that might have clinical and/or public health implications.

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Abstract ID: **1060683** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Risks for influenza A (H1N1) death among American Indians/Alaska Natives: Collaborating on conceptualization, design and conduct of a 5-state case-control study, 2009-11**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Alaska Natives, American Indians, Influenza / Pandemic influenza**

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Abstract ID: **1055399** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Validation in a resource efficient manner: Evaluation of central-line associated blood stream infection reporting among intensive care units in Tennessee**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Data/Surveillance, Healthcare associated infections (HAI), Hospital data**

Abstract Text

Background:
Reporting of central-line associated blood stream infections (CLABSIs) to the National Healthcare Safety Network (NHSN) is the foundation for surveillance of these infections in many states. Ensuring validity of these data is essential in an era of public reporting and future value-based purchasing. Here we describe a resource effective method for conducting validation of CLABSI data reported to NHSN.

Methods:
The goal was to conduct validation on at least one-third of the 78 acute-care facilities with adult/pediatric intensive care units (ICUs) and half of the 26 facilities with neonatal ICUs (NICUs) who reported CLABSI data to NHSN in 2009. Ten facilities with an adult/pediatric ICU which reported a CLABSI rate ≥90th percentile (based on NHSN 2006-2008 reference data) were chosen. Additionally, 38 facilities reported a CLABSI rate of 0 in at least one adult/pediatric ICU. Of these facilities, 3 were selected because the standardized infection ratio (SIR) for their whole facility was significantly less than 1 in the prior state CLABSI report (July 2008-June 2009 data), and 7 others were selected at random. Of the 30 remaining facilities 6 were randomly chosen. In NICUs, umbilical catheter-associated BSI (UCABSI) and CLABSI rates were calculated for 5 birth weight categories resulting in up to 10 BSI rates per NICU. The 6 NICUs with at least 1 BSI rate ≥90th percentile were selected. Seven NICUs with ≥7 rates of 0 were also chosen. One facility with 6 rates of 0, which had a dramatic reduction in NICU CLABSI rates from 2008, was also selected.

Results:
Through this method 26 of 78 adult/pediatric ICUs and 14 of 26 NICUs were selected for validation. For adult/pediatric ICUs, a total of 16 charts are chosen from the ICU selected and from other ICUs in the same facility. Charts targeted include those with coagulase negative Staphylococcus and Candida species. The remaining charts are randomly selected. Reviewers are blinded to any determinations reported to NHSN. Validation of denominator data is also performed by speaking directly with the person(s) collecting these data.

Conclusions:
Targeting facilities with high and low CLABSI rates along with focusing on reviewing cases with higher potential for inaccurate reporting provides a resource efficient manner to detect reporting errors. Problem areas can then be communicated to all facilities who can review their records to correct similar mistakes. This creates a sustainable method for providing education and maximizing the validity of data reported to NHSN.

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Abstract ID: **1060350** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Eight year review of measles surveillance: Positive predictive value of IGM**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Evaluation, Surveillance**

Abstract Text

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Abstract ID: **1060286** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Evolution of pertussis diagnostics: 1995-2009**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Surveillance**

Abstract Text

Background:
Surveillance for pertussis is complicated by imperfect diagnostic tests. Culture is the gold standard for

confirming B. pertussis, yet use of PCR has increased since it was included in the CSTE case definition in 1997. Serology is not an accepted confirmatory test for pertussis outside of Massachusetts; however, serologic assays for pertussis are commercially available and being used for diagnosis and notification. Since both culture and PCR have low sensitivity after 14 days of cough, including serology in the case definition could improve case confirmation, provided validated assays are used. The objective of this study was to evaluate the trends in use of culture, PCR and serology among pertussis cases reported to the National Notifiable Diseases Surveillance System (NNDSS) from 1995 to 2009.

Methods:
Annual proportions of cases with each test performed were calculated by dividing the total number of cases with any reported result (positive, negative, indeterminate) for each diagnostic test by the total number of confirmed and probable cases reported. Regression was used to detect significant trends in testing patterns over time.

Results:
Between 1995 and 2009, the use of culture declined 22% (slope: -2.35; $p < 0.001$). Since its inclusion in the CSTE case definition in 1997 and 2009, the proportion of cases tested by PCR has increased 41% (slope: 3.55; $p < 0.001$). The proportion of cases tested by serology fluctuated between 1995 and 2009 (median proportion: 9.4%; Range: 1.6% - 20.3%. Slope: 0.406; $p= 0.173$). In 1995, 16 states including Massachusetts reported serology results (median number tests: 3; Range: 1-15). As of 2009, Massachusetts reported 19% of all serology results (n=235); however, 33 other states also reported serology (median number tests: 12; Range: 1-155).

Conclusions:
There has been a nationwide shift toward PCR as the primary diagnostic method. Concurrently, serological testing has increased among states outside Massachusetts, making it almost as common as culture for diagnosis. Including serology in the CSTE case definition could improve diagnosis and notification of future pertussis cases.

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Abstract ID: **1062342** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A collaborative approach to improve infection prevention programs in Georgia long-term care facilities**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Evidence based practice, Healthcare associated infections (HAI)**

Abstract Text

Background:
Because of the complexity of care now delivered in many long-term care facilities (LTCF), nursing

home residents are considered to be at comparable risk of developing a healthcare-associated infection (HAI) as acute care hospital patients. To reduce this risk, LTCFs are expected to adhere to the current Centers for Disease Control and Prevention (CDC) infection prevention and control guidelines. As healthcare moves beyond traditional acute care settings, LTCFs will need to implement innovative infection prevention (IC) programs involving collaborators across the continuum of care.

Methods:
To focus future training efforts and assist Georgia LTCFs in implementing these IC programs, a survey is being administered to all Georgia nursing homes and skilled nursing facilities during the period from October 2010 to April 2011. The survey was developed by a multi-disciplinary committee of stakeholders, including representatives from public health, regulatory agencies, healthcare providers, quality improvement organizations. The survey incorporated CDC's Long-Term Care Baseline Prevention Practices Assessment Tool and included questions such as whether a full-time infection preventionist (IP) was employed, years of IP experience, IP training, and current surveillance and infection control practices. Survey responses will be analyzed by the multidisciplinary committee who will then develop a two-day IC training course for long-term care IPs based on identified gaps and needs.

Results:
Preliminary analysis of surveys from 115 Georgia LTCFs (not all respondents answered all questions) identified the following priority gaps and needs: (1) formal IP training (62 of 110 (56%) had no formal IP training) (2) certification of IPs (3 of 110 (3%) were board certified, CIC) (3) retention of IPs (average time in position was < 4 years, 15 of 115 (13%) < 1 year) (4) surveillance activities (24 of 115 (21%) did not use standard definitions for determining presence of infections).

Conclusions:
Preliminary survey responses suggest IC programs in Georgia LTCFs require additional resources and training to meet clinical and regulatory expectations. The committee will use the identified gaps and needs to focus IP training. The collaborative committee approach has been associated with opportunities to share expertise, experiences and resources.

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Abstract ID: **1057622** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Case-control investigation of a drug-resistant *Acinetobacter baumannii* outbreak at a regional medical center in eastern Kentucky, 2010**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI), Infection control, Outbreak investigations**

Abstract Text

Background:
Multidrug resistant (MDR) *Acinetobacter baumannii* is an important public health concern in the healthcare setting because of its ability to persist in the environment for extended periods of time. This investigation characterizes MDR *A. baumannii* cases during an outbreak and attempts to identify sources and potential mechanisms of environmental transmission within an eastern Kentucky hospital.

Methods:
A case-control study was conducted. Cases included individuals who had laboratory-confirmed cultures of MDR *A. baumannii* ≥72 hours after hospital admission from January 2010-October 2010 and were admitted to the intensive care unit (ICU). Controls were matched to cases 1:1 based on ICU admission date. Patient information was abstracted from medical records. Environmental and patient samples were collected and sent to state and Centers for Disease Control and Prevention labs for identification and pulsed-field gel electrophoresis (PFGE) analysis. Logistic regression was used to examine odds ratios between potential risk factors and A. baumannii recovery.

Results:
Thirty cases of *A. baumannii* were identified. There were no significant differences in race, age, or gender between cases and controls. Positive cultures for *A. baumannii* were identified from respiratory sources (n=19, 63%), blood (n=5, 17%), wounds (n=4, 13%), and urine (n=2, 7%). *A. baumannii* was recovered from a portable x-ray machine and from a digital camera at a nurse's station used for wound photography. PFGE showed that the isolates from *A. baumannii* cases were indistinguishable from the environmental isolates. The average number of chest x-ray procedures done on cases and controls during their hospital stay (14 and 10, respectively) was significantly different between the groups (t=2.41, 95%CI (0.67, 7.59), p=0.02) and was associated with becoming a case after adjustment for age, mechanical ventilation, and type of admission (OR=1.18, 95%CI (1.02, 1.37), p=0.03). Cases tended to have a photographed wound more often than controls although the association was not statistically significant after adjusting for age, mechanical ventilation, and type of admission (OR=2.71, 95%CI (0.88, 8.37), p=0.08). There were no procedures in place for cleaning the portable x-ray unit or the camera between patients.

Conclusions:
This study identifies a portable chest x-ray machine and a digital camera used for wound photography as possible sources for transmission of *A. baumannii* to patients in the healthcare facility. These findings demonstrate the importance of outbreak recognition by healthcare facilities and immediate implementation of effective environmental health controls to reduce MDR *A. baumannii* transmission.

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Abstract ID: **1058393** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Eye opening: Are compounded drugs causing harm?**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI), Protection, Public health law**

Abstract Text

Background:
Over a 5 month period the Tennessee Department of Health [TDH] was alerted to five cases of alpha hemolytic streptococcus endophthalmitis following vitreous fluid injections at a local ophthalmology practice. It was discovered, the treatment used in the injections had been compounded at a local pharmacy. The pharmacy used a multidose vial to pull up single use syringes, used for the injections. TDH visited the clinic and the pharmacy. The compounding process was highly suspicious for possible contamination of the drug by the compounder, specifically from a mouth organism, for example, no mask was worn and the technician spoke throughout the procedure. However, according to the Tennessee Board of Pharmacy's rules and regulations, the technician followed protocol. The United States Pharmacopoeia developed a guidebook, USP 797 with strict guidelines to protect the sterility of compounded drugs, however, states are not required to adhere to this. The objective of this study was to assess stringency of protecting the sterility of compounded drugs by state throughout the country.

Methods:
The rules and regulations, specifically requirements of personal protective equipment, during sterile drug compounding for each state and the District of Columbia were reviewed. States were separated into three general categories, those who: incorporated specific language which required compliance with the USP 797, used identified specific personal protective equipment for compounding pharmacy staff, or who did not address protective garb for compounding procedures. For this study, requirements were excluded if they address garb solely when compounding cytotoxic agents, as this is to protect the employee not for the sterility of the drug. For states with compounding guidelines other than the USP 797, the specific garb required was recorded.

Results:
21 (41%) states require compliance to the USP 797 by December 31, 2010, 11 (22%) states have incorporated some language requiring some protective garb when compounding sterile drugs and 19 (37%) had no requirements or only required protective garb when compounding cytotoxic agents. Eleven states did not require USP 797 but specify required protective equipment [Equipment (Number of States)]:
Shoe Covers (5)
Head Covers (7)
Masks (8)
Gown (11)
Gloves (11)
Laminar Flow Hood (10)
Mask and Laminar Flow Hood (7)
Mask and Head Cover (5)
Mask, Head Cover and Booties (3).

Conclusions:
As the country is trying to reach a goal of zero preventable harm, much of the attention has been focused on central line associated bloodstream infections; it appears some focus must be shifted towards safer compounding practices.

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Abstract ID: **1062073** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Current status of carbapenem-resistant *Enterobacteriaceae* in the United States and the role for state and local health departments in its control**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Emerging infections, Healthcare associated infections (HAI), Infection control**

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Abstract ID: **1060386** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **TickNet: The first 3 years**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Epidemiology, Surveillance, Vectorborne disease**

Abstract Text

Background:
Tickborne diseases are caused by an array of viral, bacterial, and parasitic agents and are an increasing public health problem in the United States. Although a single tick species may transmit multiple agents, technical expertise and surveillance for these agents is fragmented across Centers for Disease Control and Prevention (CDC) and state health departments. The current organizational framework at CDC complicates communication and collaborations with state and federal health agencies, and hinders research and prevention efforts.

Methods:
TickNet is a network created in 2007 to foster collaboration on surveillance, research, education, and prevention for tickborne diseases. Collaborators include various divisions within CDC and key state and local health departments. CDC provides extramural funding to participating health departments and partners through the Epidemiology and Laboratory Capacity for Infectious Diseases (ELC) cooperative agreement, to sustain and enhance surveillance for Lyme disease, and through the

Emerging Infections Program (EIP), to promote applied research.

Results:
TickNET has provided support for Lyme disease surveillance to 19 states (including 4 one-time awards). The principal components of this program are: 1) support for the routine collection and processing of surveillance data, and 2) support of innovations to improve the efficiency of Lyme disease surveillance activities. In collaboration with CT, MD, MN, NY and TN EIPs, TickNET has also initiated four research projects. The first project evaluated national and state-specific (CT, MD, MN and NY) laboratory testing practices for Lyme and other tickborne diseases. Data collection for this project was completed in 2010. The second is an active surveillance project for spotted fever group rickettsioses (ie. RMSF) and Lyme-like illness in four west-central Tennessee counties. The third project measures the degree of underreporting for tickborne diseases in MD, MN, and NY. The fourth project is a randomized, blinded, placebo-controlled trial in CT, MD, and NY to evaluate the efficacy of single springtime applications of acaricide on residential properties to prevent tickborne diseases. In addition, in 2009, CDC hosted a meeting for TickNET partners to discuss surveillance and research activities.

Conclusions:
The ultimate goals of TickNET are to foster greater collaboration among CDC programs working on tickborne diseases, to enhance and integrate surveillance for tickborne diseases in partnership with states, and to facilitate applied research projects that address key public health questions regarding tickborne diseases. Through these efforts, CDC aims to better understand the burden of tickborne diseases and to develop tools to control their increasing incidence.

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Abstract ID: **1062213** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Variability among states in response to foodborne disease outbreaks (Change - Tim Jones will present in place of Amanda Ingram)**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Epi / Lab capacity, Foodborne disease, Outbreaks**

Abstract Text

Background:
Approximately 1,200 foodborne disease outbreaks (FBDO) are reported in the U.S. each year. The extent to which they are investigated varies widely from state to state. We examined national data to identify potential reasons for this variability.

Methods:
Data on FBDOs reported from all U.S. states to CDC's Electronic Foodborne Disease Outbreak Reporting System (eFORS) from 2004-2008 were analyzed. Multistate outbreaks were excluded from analysis. FBDOs were defined as the occurrence of two or more illnesses resulting from the ingestion of a common food. Data on etiology, vehicle and outbreak size were analyzed. Incidence rates of foodborne disease were calculated using data reported to CDC via the National Notifiable Disease Surveillance System. Survey data from the Association of Public Health Laboratories and the Council of State and Territorial Epidemiologists were used to assess foodborne disease investigation capacity.

Results:
Data were analyzed for 5,655 FBDOs, involving 122,054 ill persons. The mean annual rate of reported FBDOs varied 65-fold among states (range 0.3-19.4 per million population).
<P>An etiology was confirmed in 2,494 (44.6%) of 5,587 outbreaks (range: 19.7-100.0%). The proportion of outbreaks with an identified vehicle was 50.5% (range: 5.5-100.0%). FoodNet states, which receive additional funding for foodborne disease surveillance, did not differ significantly from other states in rates of outbreak reporting or success in identifying an etiology or vehicle.
<P>The mean annual incidence of *Salmonella* in the U.S. was 15.2 cases per 100,000 persons (range: 9.2-32.4). Of 230,039 *Salmonella* cases reported, only 66.2% were subtyped by pulsed-field gel electrophoresis in PulseNet. During that period, *Salmonella* was the confirmed etiology in 602 FBDOs. The ratio of *Salmonella* cases to outbreaks ranged 90-fold among states (5.7 to 513.2).

Conclusions:
Overall, rates of reported FBDOs vary dramatically among states and do not correlate with overall disease rates or success in identifying the causes of outbreaks. Additional work is necessary to identify specific interventions that can improve the recognition and investigation of FBDOs.

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Abstract ID: **1062510** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Carbapenem-resistant enterobacteriaceae: Current epidemiology and prevention**

Committee: **Infectious Diseases**

Topic: **Multi-Drug Resistant Organisms (MDROs)/ Carbapenem-resistant Enterobacteriaceae (CRE)**

Keywords: **Antimicrobial resistance, Healthcare associated infections (HAI)**

Abstract Text

Background:
Enterobacteriaceae are an important cause of healthcare and community infections. Highly resistant strains, particularly the carbapenem-resistant Enterobacteriaceae (CRE), have emerged as an

important multidrug-resistant organism associated with high mortality rates and limited treatment options. The control of these organisms has become an important infection control priority. However, control is complicated by the fact that these organisms can be found across the spectrum of healthcare settings in a community while interventions tend to be facility-specific. In order to help facilitate CRE prevention, it is important that public health practitioners have an understanding of CRE epidemiology and basic infection prevention principles.

Methods:
This review will consist of two parts. The first will review the basic epidemiology of CRE in the United States. In the second, currently recommended strategies aimed at preventing transmission of these organisms will be described.

Results:
A subject matter expert (SME) from CDC will describe the current epidemiology of CRE in the United States. This will focus on the emergence of Klebsiella pneumoniae carbapenemase-producing Enterobacteriaceae in 2000 and their subsequent widespread dissemination. The emergence of new resistance genotypes including the New Delhi metallo-beta-lactamase and other metallo-beta-lactamases will also be discussed. Data from the National Healthcare Safety Network on the prevalence of carbapenem resistance among Enterobacteriaceae will also be presented. Following this review of CRE epidemiology, the SME will discuss interventions focused on preventing CRE transmission and infections. This section will highlight the 2009 national guidance on preventing transmission of CRE in acute care settings but will be also describe the applicability of these recommendations to non-acute care settings.

Conclusions:
At the conclusion of this presentation, attendees will better understand the epidemiologic importance of these organisms and their increasing prevalence in healthcare facilities in the United States. In addition, they will be able to describe currently recommended prevention practices and potential roles for public health in preventing the further dissemination of these organisms.

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Abstract ID: **1060661** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Neisseria gonorrhoeae infections with high minimum inhibitory concentrations to azithromycin - San Diego County, California, 2009**

Committee: **Infectious Diseases**

Topic: **STDs**

Keywords: **Antibiotic resistance, Outbreak investigations, Sexually Transmitted Diseases**

Abstract Text

Background:
Neisseria gonorrhoeae (NG), a common cause of genitourinary disease, causes approximately 700,000 infections annually in the United States. NG has developed resistance, indicated by minimum

inhibitory concentrations (MICs), to certain antimicrobials, limiting treatment options. One 2-g azithromycin dosage has been used to treat uncomplicated gonorrhea among cephalosporin-allergic persons, but is not recommended because of resistance concerns. During August-October 2009, a total of 5 of 55 (9.1%) NG isolates collected from men with symptomatic urethritis at San Diego County's municipal sexually transmitted disease clinic had high MICs to azithromycin. We investigated to describe the outbreak and characterize the isolates.

Methods:
We interviewed patients and performed contact tracing. High MIC was defined as ≥8 µg/mL by agar dilution. Isolate genotyping was performed by using NG multi-antigen sequence typing (NG-MAST) to determine strain type (ST). Polymerase chain reaction-based methods were used to sequence genes associated with azithromycin resistance, including the gene encoding the 23S rRNA subunit and and the mtrR gene's coding and promoter regions.

Results:
Five cases of gonorrhea infection with high MICs to azithromycin were identified. Three isolates had 8 µg/mL MICs, and 2 had 16 µg/mL MICs. All were from human immunodeficiency virus-uninfected men who have sex with men. Four were San Diego County residents, and one was a resident of a Midwestern state. The median age was 29 years (range: 19-31). The men reported 13 total sex partners (range: 1-4 partners/man) within the 90 days preceding diagnosis. None named partners in common. Four isolates were assigned a novel NG-MAST ST and the fifth, a closely related ST. Sequencing of the 23S rRNA gene and mtrR gene's coding and promoter regions demonstrated mutations associated with azithromycin resistance in all 4 sequenced isolates.

Conclusions:
Lack of common sex partners indicates that NG strains with high MICs might be widespread in the county. Continued surveillance for antibiotic resistance is critical to identify resistance patterns and guiding gonorrhea control efforts.

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Abstract ID: **1061460** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Towards improved surveillance for chronic hepatitis C infection: Status in 2011**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Hepatitis, Surveillance**

Abstract Text

Background:
Novel therapies are expected to revolutionize care of those with chronic hepatitis C virus (HCV) infection. The US prevention and control strategy is based on identifying asymptomatic infected persons and link them with active clinical management and treatment. The public health community needs surveillance data to determine the rate of newly diagnosed cases, the magnitude of the problem, and the proportion of infected persons receiving care. Unfortunately, the current case definition yields data of limited utility because cases include past or present infection and the number of cases easily overwhelms existing surveillance reporting infrastructure.

Methods:
CDC sponsors the monitoring of past or present viral hepatitis (defined as confirmed HCV antibody-positive) in the Emerging Infections Program (EIP). During 2009-2010, CDC received data on HCV cases from 6 EIP sites: Colorado, Connecticut, Minnesota, 34 counties in New York State, New York City, and San Francisco. We defined a chronic case as one reported with an HCV-RNA positive test. We describe characteristics of cases and the availability of relevant information among chronic cases.

Results:
Sites reported a combined 54,303 confirmed cases of past or present HCV infection; of these, 26,082 (48.0%) were RNA-positive, 27,751 (51.1%) were RNA-unknown, and 470 (0.8%) were RNA-negative; the RNA-negatives were excluded from further analyses. Similar proportions of positives and unknowns were male (65.4% and 65.3%, respectively), black non-Hispanic (27.6% and 22.6%), and aged 40-55 years (47.1% and 45.3%). No cases were missing age, few were missing sex (0.5% of positives and 0.7% of unknowns) and similar, large proportions were missing race/ethnicity data (50.4% and 57.7%, respectively). Follow-up was conducted on 28.8% of positives and 22.1% of unknowns. Indicators of medical management were mixed: date of diagnosis was missing more often among positives (31.5%) than among unknowns (21.6%), history of treatment was missing less often among positives than unknowns (67.8%, 73.2%, respectively), and information on seeing a provider was mostly missing among both groups (98.1% missing in positives, 97.7% in unknowns).

Conclusions:
Restricting investigation to cases with a positive HCV-RNA test can reduce the surveillance effort, but does not yield more complete information of relevant indicators of medical management. Alternative methods of surveillance for chronic HCV infection, including use of electronic records, seroprevalence surveys, and monitoring healthcare utilization should be explored.

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Abstract ID: **1019554** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Outbreak of cryptosporidiosis among veterinary students in a bovine obstetrics**

laboratory

Committee: **Infectious Diseases**

Topic: **Zoonotic disease**

Keywords: **Animals and Public Health, Occupational safety, Outbreak investigations**

Abstract Text

Background:
In April 2010, an outbreak of gastrointestinal illness among veterinary students who participated in one of three, 2-day bovine obstetrics laboratories was reported to the Minnesota Department of Health.

Methods:
Students who attended a laboratory session were interviewed regarding symptoms and potential exposures. A case was defined as a student who attended an obstetrics laboratory and subsequently had either: a) ≥ 3 days of diarrhea; or b) a stool sample test positive for Cryptosporidium spp. Stool samples were collected from cases, and fecal samples were collected from calves from the same farm as those used in the laboratories. Routine cultures for enteric bacteria (e.g., Salmonella, E. coli O157:H7, and Campylobacter) were done. Ova and parasite examinations were done with additional testing for Cryptosporidium and Giardia. Positive Cryptosporidium specimens were identified to species by PCR and subtyped by DNA sequence analysis of the 60-kDa glycoprotein (gp60) gene.

Results:
Thirty-eight of 42 students were interviewed, and 8 (21%) met the case definition. All cases had attended Laboratory 2. Additionally, one veterinary college employee became ill. Students in Laboratory 2 were significantly more likely to have been splashed in the face during the laboratory than students in Laboratories 1 and 3 (odds ratio, 14.3; 95% confidence interval, 1.5-661.6; p=0.009).Among students in Laboratory 2, being splashed in the face on day 2 (7 of 7 cases vs. 1 of 3 controls, Fisher's exact p=0.07) approached significance. Stool samples from three cases, the ill veterinary college employee, and three calves yielded C. parvum of the same gp60 subtype. The laboratories routinely use euthanized 48-hour old, healthy bull calves. However, some calves used in these laboratories were older and had died of a diarrheal illness. Throughout the laboratory there were opportunities for students to be exposed to the intestinal contents of the calves via the physical nature of the class, the use of a garden hose to clean the laboratory, and the lack of facial protection. Infection control measures were implemented prior to the final laboratory session, and no additional cases of cryptosporidiosis were reported.

Conclusions:
This outbreak highlights the zoonotic risk inherent in certain veterinary school activities. The laboratory testing and molecular subtyping of C. parvum supported the epidemiologic evidence that calves used in the laboratories were the source of infection. We recommend enhanced infection control measures and ensuring the use of healthy calves in laboratories, and education of veterinary students regarding occupational infectious disease risks.

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Abstract ID: **1060469** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Human blastomycosis surveillance in Minnesota, 1999-2009**

Committee: **Infectious Diseases**

Topic: **Zoonotic disease**

Keywords: **Environmental exposures, Geographic Information Systems, Infectious Diseases**

Abstract Text

Background:
Blastomycosis is caused by the dimorphic fungus Blastomyces dermatitidis. Infection occurs through inhalation of airborne conidia from disturbed soil. Clinical blastomycosis is a relatively rare disease; the incidence of reported blastomycosis cases in endemic areas in the United States is 1 per 100,000 persons.

Methods:
In Minnesota, blastomycosis is reportable to the Minnesota Department of Health; surveillance is passive. A confirmed case is defined as a Minnesota resident with either: a) a positive urine antigen test and compatible clinical symptoms, or b) B. dermatitidis cultured or visualized from tissue or body fluids. To improve our understanding of blastomycosis in Minnesota, a descriptive analysis of cases reported during 1999-2009 was performed using SAS version 9.2 (SAS Institute, Cary, N.C., USA). ArcMap version 9.3.1 (ESRI, Redlands, CA, USA) was used to identify endemic counties. Frequency of outdoor exposures among cases was compared to the general population through the National Survey on Recreation and the Environment (2000).

Results:
There were 353 cases of blastomycosis reported during the study period (0.67 per 100,000 person years). Of these, 229 (65%) cases were hospitalized, and 35 (10%) died. The median age of cases was 44 years (range, 4-93 years) and 70% of cases were male. Sixty-four percent of cases had pulmonary disease, 8% had extra-pulmonary disease only, and 20% had disseminated disease. Fifty-four (16%) of 337 cases were immunocompromised. Of 256 cases with county of exposure information, 78 (30%) were exposed outside their county of residence. Of the cases exposed in their county of residence, the highest incidence county was Itasca (4.1 cases per 100,000 person years) followed by Lake of the Woods (4.0 cases per 100,000), Hubbard (3.5 cases per 100,000), and St. Louis (3.1 cases per 100,000). St. Louis county had the most cases (83) followed by Itasca (24), Cass (10), Beltrami (10) and Chisago (10) counties. When comparing cases to the general population regarding outdoor exposures, hunting (24% vs. 15%; odds ratio, 1.6; 95% confidence interval, 1.16-2.23; p=0.003) was significantly associated with developing blastomycosis.

Conclusions:
Blastomycosis cases in Minnesota are predominantly middle-aged males who reside in the north-central and north-east areas of the state. High rates of hospitalization, disseminated disease, and case fatality indicate that physician awareness of blastomycosis and better characterization of risk factors could lead to earlier detection and treatment, and reduced morbidity and mortality due to blastomycosis.

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Abstract ID: **1062134** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Lymphocytic Choriomeningitis Virus-a zoonotic pathogen to watch**

Committee: **Infectious Diseases**

Topic: **Zoonotic disease**

Keywords: **Zoonotic disease**

Abstract Text

Background:
Lymphocytic choriomeningitis virus (LCMV) is an arenavirus carried by rodents. In adults and children, symptoms vary from mild febrile illness to aseptic meningitis. Infections during pregnancy may result in severe teratogenic effects, and transmission by organ donation can cause disseminated disease with high mortality. Because symptoms mimic other pathogens, many infections likely go undiagnosed. The incidence of LCMV illness is difficult to ascertain as human infections are reportable in few U.S. jurisdictions. However, the potential for severe clinical manifestations demonstrates a need for monitoring and surveillance. Our objective is to provide an overview and update of LCMV, and to demonstrate knowledge gaps that may be improved with increased testing and disease reporting.

Methods:
Several recent epidemiologic activities were carried out to characterize the frequency of exposure, incidence, and distribution of LCMV infections in the U.S. They included: 1) mapping of confirmed LCMV infections to date, 2) a serosurvey to determine the prevalence of IgG antibodies to LCMV, and 3) chart reviews of patients diagnosed with LCMV.

Results:
1) From 2006-2010, 16 patients were confirmed as having LCMV infection by diagnostic testing at the Centers for Disease Control. Based on all obtainable historical records (1966-2010), LCMV infections have occurred in 23 states, including 3 multistate outbreaks associated with organ donation and 1 multistate outbreak associated with pet hamsters. 2) Following a diagnosis of congenital LCMV infection in upstate New York, we conducted a serosurvey of 563 blood donors, and found reactive antibody in only 2 individuals (0.14%). 3) Within a subset of Indian Health Service hospital facilities, we found no patients with consistent symptoms confirmed to have LCMV infection out of a representative population of 72,000 during 2001-2009.

Conclusions:
LCMV continues to cause sporadic illness. Recent seroprevalence results found few people with evidence of exposure to LCMV, which may indicate that severe disease occurs more commonly than previously believed and asymptomatic disease is infrequent. The current diagnostic coding system may not be capturing LCMV infections correctly, and tests to confirm infection are infrequently performed on patients with consistent clinical symptoms. More studies are needed to further explore the questions of exposure and incidence, and identify populations at risk. In consideration of the potential for severe disease and the previous history of widespread outbreaks, a discussion of implementing wider testing, reporting, and surveillance for LCMV infections is warranted.

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Abstract ID: **1062248** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Lessons learned in implementing a cocoon program to prevent infant pertussis at four Kansas hospitals**

Committee: **Infectious Diseases**

Topic: **Immunizations**

Keywords: **Communicable disease, Disease prevention, Immunization**

Abstract Text

Background:
Pertussis-related complications and deaths occur almost exclusively in infants too young to have completed the primary immunization series. Studies have shown that in approximately 70% of infant pertussis cases where a source can be identified, the infant acquired the infection from an immediate family member. In 2001, the Global Pertussis Initiative was implemented, with a key strategy of “cocooning” (vaccinating family members and close contacts of the newborn), and in 2006, ACIP mirrored these same recommendations. In 2010, Kansas implemented a pilot program at four hospitals and three associated local health departments with the goal of vaccinating a postpartum woman and one designated primary caregiver (parent, grandparent, childcare provider, etc) per newborn.

Methods:
Tdap vaccine was provided free of charge to the project sites, and a method of vaccinating the postpartum woman and caregiver was developed with each project hospital and local health department. This strategy included standing orders at the hospital to vaccinate the postpartum woman prior to discharge, in addition to a voucher redemption program enabling the designated caregiver to receive the Tdap vaccination for little or no cost at the corresponding local health department.

Results:
Vaccination of postpartum women was deemed successful with vaccination rates above 80% during the first six months of the pilot program. However, caregiver vaccination was not as robust, with rates below 20% during the same time period. After further evaluation, it was determined that many barriers existed with the voucher redemption program. At one pilot hospital, a strategy was implemented through interdepartmental collaboration allowing a caregiver to be vaccinated prior to the infant’s discharge without any additional cost to the family. This resulted in a 200% increase in caregiver vaccination rates.

Conclusions:
Innovative solutions and collaboration among stakeholders are fundamental components in an effective cocoon immunization program. Barriers must be minimized to provide the greatest opportunity for vaccination of the newborn infant’s close contacts. An approach developed by a Kansas hospital allows the caregiver to be vaccinated on site without being registered as a patient, which has successfully

increased the number of Tdap vaccinations given.

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Abstract ID: **1060051** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **HIV testing among men who have sex with men surveyed in the National HIV Behavioral Surveillance System - St. Louis, Missouri, 2008**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **HIV/AIDS, Surveillance**

Abstract Text

Background:
Approximately 70% of new human immunodeficiency virus (HIV) diagnoses in St. Louis occur among men who have sex with men (MSM), many of whom receive HIV diagnoses late in the course of disease (i.e., ≤12 months from an acquired immunodeficiency syndrome diagnosis). To decrease HIV morbidity, mortality, and transmission through earlier diagnosis, CDC recommends MSM receive HIV testing at least annually. We investigated recent HIV testing among MSM in St. Louis.

Methods:
The 2008 National HIV Behavioral Surveillance System survey was conducted in 21 U.S. cities through venue-based, time-space sampling. Men were interviewed for behavioral risks and HIV testing history. We included men in St. Louis with male-male sex within 12 months and excluded men who had tested HIV-positive as of 12 months before interviews. We identified factors associated with HIV testing within 12 months by multivariable log-binomial regression.

Results:
Among 339 MSM, 198 (58%) had been tested within 12 months; 15 (7.6%) tested positive. MSM were more likely to have been tested if they were black (adjusted prevalence ratio [APR]: 1.60; 95% confidence interval [CI]: 1.02-2.50); had visited health-care providers within 12 months (APR: 1.63; 95% CI: 1.27-2.09); or had discussed sexual identity or behaviors with health-care providers (APR: 1.56; 95% CI: 1.21-2.01). Of 141 untested, 89 (63%) stated perceived low HIV risk as the reason for not testing.

Conclusions:
Although MSM in St. Louis were at high HIV risk, nearly half were not tested within the previous year. Annual visits to health-care providers with whom sexual identity and behaviors are discussed might help increase awareness of HIV risk and promote HIV testing among MSM in St. Louis.

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Abstract ID: **1062595** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Surveillance for laboratory-confirmed influenza hospitalizations using health information exchange data, Spokane County, Washington, 2010â€“2011**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Electronic case reporting, Health information exchange, Influenza surveillance**

Abstract Text

Background:
Health information exchanges (HIE) provide an opportunity for public health to electronically monitor diseases of public health significance. The Washington State Department of Health (DOH), in collaboration with Spokane Regional Health District, the Inland Northwest Health Services and the University of Washington, has recently established a system to monitor influenza hospitalizations using deidentified HIE data. The objective of this ongoing project is to evaluate the sensitivity, positive predictive value, completeness, and timeliness of this new surveillance system.

Methods:
In November 2010, DOH began receiving daily, deidentified electronic data on patients admitted to four hospitals in Spokane County. Data elements include demographics, influenza vaccine status, admission and discharge dates, diagnoses, laboratory test results, and outcome. Using these electronic data, we detected influenza hospitalizations using three different case definitions and prospectively compared them to those reported through enhanced but traditional surveillance to determine sensitivity and positive predictive value. Timeliness was measured by comparing the admission date to the date that diagnoses or laboratory results were transmitted.

Results:
Data from October 1, 2010-April 30, 2011 will be presented. As of January 4, 2011, preliminary analyses show that the sensitivity and positive predictive value of detecting influenza hospitalizations was 83% and 31% using diagnostic codes alone, 17% and 100% using electronic laboratory results alone, and 83% and 71% when using a combination of diagnostic codes and laboratory results. Age, gender, race/ethnicity, county of residence, admission and discharge dates, and outcome were complete for 100% of the detected cases. The median number of days for detecting influenza hospitalizations by electronic diagnoses was 8 days (range 3-18) and by electronic positive lab results was 0 days.

Conclusions:
Data messaging from health information exchanges are useful for monitoring laboratory-confirmed influenza hospitalizations and do not require reporting from healthcare providers, healthcare facilities, or laboratories. Using diagnoses in combination with laboratory results provided the highest sensitivity and positive predictive value when influenza prevalence was low in the community.

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Abstract ID: **1061393** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Surveillance for animal bites and other potential rabies exposures - West Virginia, 2007â€“2009**

Committee: **Infectious Diseases**

Topic: **Zoonotic disease**

Keywords: **Rabies, Surveillance**

Abstract Text

Background:
Rabies, a viral disease of mammals, is almost always fatal once clinical signs appear. In the United States, approximately $300 million is spent annually on rabies detection and prevention. To mitigate the cost and risk of rabies, West Virginia operates a population-based surveillance system to identify animal bites and other potential rabies exposures. This study characterized potential rabies exposures in West Virginia to determine local strategies for prevention.

Methods:
Potential human rabies exposures were defined as bites or scratches from a mammal or wound or mucus membrane contamination by saliva or central nervous system tissue from a mammal. Exposures reported from January 1, 2007-December 31, 2009 were extracted from the West Virginia Electronic Disease Surveillance System. Duplicate records and records not meeting the case definition were excluded. Chi square, relative risk (RR) and 95% confidence intervals (CI) were used to assess the relationship between categorical variables. Exposures were analyzed and summarized using SAS v. 9.1.3 and ArcGIS v. 9.3.

Results:
During the study period, 6,441 confirmed, individual exposures were identified. Children aged 5-13 years had the highest rates of exposure at 207.6 per 100,000 per year. Exposures were reported year-round with a peak in July (n=802). Exposure rates by the patients' county of residence varied geographically; however, as county population density decreased, exposure rates increased ($p<0.01$). Among all exposures, 5,756 (89%) were bite exposures and 4,581 (71%) were inflicted by dogs. Among exposures from cats and dogs, 655 (44%) of 1,489 cats were stray compared with 373 (8%) of 4,461 dogs (RR=5.3, 95% CI=4.7-5.9). Among exposures from pet animals, 206 (37%) of 563 cats were vaccinated for rabies as compared to 1,485 (54%) of 2,735 dogs (RR=0.7, 95% CI=0.6-0.8). Forty-five (7%) of 668 animals tested for rabies were reported as positive; 4 (9%) of the 45 were pets and 30 (67%) were wildlife. Rabies post-exposure prophylaxis was documented in 481 (7%) exposures.

Conclusions:
In West Virginia, children and counties with lower population densities are disproportionately affected by potential rabies exposures. Compared with pet dogs, pet cats were less likely to be vaccinated for

rabies; cats were also more likely to be strays than dogs. Although cats and dogs are responsible for most potential rabies exposures, more wildlife tested positive for rabies. Educational messages promoting responsible pet ownership and safe interactions with wildlife should be targeted for children, parents, and rural counties.

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Abstract ID: **1059336** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Determination of human immunodeficiency virus coinfection among tuberculosis cases reported in 2008 in California**

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Co-morbidity, HIV/AIDS, Infectious Diseases**

Abstract Text

Background:
Human immunodeficiency virus (HIV) coinfection in tuberculosis cases is associated with recurrent tuberculosis and mortality. The Centers for Disease Control and Prevention recommends that HIV status be determined for all tuberculosis cases. Of cases reported in 2008 from all states excluding California, 79% had a known HIV status. We assessed HIV status determination in California and identified factors associated with a known HIV status.

Methods:
Local public health records were reviewed to obtain HIV status information for all cases reported to the state tuberculosis registry in 2008. Tuberculosis cases with a positive or negative HIV status were classified as having a known HIV status. Multivariate analysis was used to identify factors associated with a known HIV status and to estimate adjusted odds ratios (AOR) among cases managed in the public sector.

Results:
Of 2697 tuberculosis cases reported in 2008, 2667 (99%) were available for review. Of those reviewed, 1754 (66%) had a known HIV status and 134 (5.0%) were coinfected with HIV. In bivariate analysis, cases managed exclusively in the private sector were less likely to have a known HIV status compared to cases with public management (OR=0.29, CI=0.24-0.34). In multivariate analysis of publicly managed cases, a known HIV status was less likely to be found for those aged less than 14 years (AOR=0.13, CI=0.08-0.22), between 45 and 59 years (AOR=0.62, CI=0.43-0.90), and over 60 years (AOR=0.36, CI=0.25-0.51) compared to those aged between 30 and 44 years. A known HIV status was also less likely to be found for those who were female (AOR=0.74, CI=0.59-0.94), had no history of

substance abuse, homelessness, or incarceration (AOR=0.63, CI=0.43-0.93), and had no previous tuberculosis diagnosis (AOR=0.43, CI=0.23-0.80). Compared to foreign-born Asians, US-born Asians were less likely to have a known HIV status (AOR=0.28, CI=0.12-0.65). Similarly, US-born Hispanics were less likely to have a known HIV status than foreign-born Hispanics (AOR=0.64, CI=0.41-0.99).

Conclusions:
Only 66% of California's 2008 tuberculosis cases had a known HIV status documented in public health records. This was below the average for all other states. Gaps in HIV status determination were concentrated among specific subgroups. These findings suggest that HIV status determination of tuberculosis cases in California was selective rather than routine as recommended. To ensure effective management of HIV coinfected cases, HIV status should be determined for all tuberculosis cases, even those perceived to be at low risk.

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Abstract ID: **1060183** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Babesiosis in a 1-Month Old Infant - New York, September 2010**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Infant health, Infectious Diseases, Vectorborne disease**

Abstract Text

Background:
Incidence of babesiosis, a sometimes severe or fatal parasitic infection of red blood cells, is increasing in southern New York State. Babesiosis is naturally transmitted by Ixodes scapularis ticks and less commonly acquired from transfusion with infected blood products. Vertical transmission rarely has been described. We investigated a case of babesiosis in an infant aged 1 month from an endemic area to determine the probable transmission route.

Methods:
Medical charts and laboratory results for both infant and mother were reviewed. The mother was interviewed to determine both patients' clinical histories and outdoor exposures. All available clinical parasitology and serologic tests were confirmed by the New York State public health reference laboratory.

Results:
At age 36 days, after a normal full-term pregnancy, uneventful vaginal delivery, and initial neonatal period, the infant was hospitalized with fever, jaundice, lower-leg petechiae, anemia, and thrombocytopenia. Direct microscopy on the infant's peripheral blood revealed 3% parasitemia; Babesia microti presence was confirmed by polymerase chain reaction. The infant had been outdoors at home and during transport for well-child visits but had no history of tick bite. The mother denied

illness or tick bite during pregnancy. No parasites were detected in maternal blood samples collected at 38 and 93 days postpartum; however, polyvalent serum antibody titers ≥1:1,024 strongly indicated ongoing or recent maternal infection. The infant recovered with medical treatment.

Conclusions:
Given the evidence of recent maternal infection and absence of a known tick bite on the infant, this case is consistent with vertical transmission. However, direct tick transmission cannot be ruled out. Although rare, physicians in endemic areas should remain alert for babesiosis among newborns.

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Abstract ID: **1055982** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Laboratory-acquired human cowpox virus infection in the US: Case investigation**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Occupational exposure, Vaccination, Zoonotic disease**

Abstract Text

Background:
Human cowpox virus infections can be severe. Infections occur rarely in Eurasia, where the virus is endemic. Neither human nor animal infection has been reported in the United States. In July 2010, an unvaccinated laboratory researcher, who worked with a non-human pathogenic poxvirus, developed a suspicious, painful, ulcerated lesion on a finger. The patient recovered, without incident, approximately three months after lesion onset. We investigated the etiology and potential sources for the infection, laboratory biosafety precautions, and strain composition.

Methods:
We interviewed the patient and laboratory personnel, and conducted a laboratory biosafety assessment. Molecular diagnostic assays and DNA sequencing were employed to identify the patient's infection and to assess the extent of environmental contamination.

Results:
In October 2010, biopsy specimens were submitted to the CDC for suspect orthopoxvirus testing. A series of realtime PCR assays on the biopsy tissue tested positive for non-variola orthopoxvirus, negative for vaccinia, and positive for cowpox DNA. Further sequencing identified the strain as cowpox Brighton. The investigation revealed cowpox virus stocks in the laboratory's freezer, but no known or intentional use of cowpox in the patient's laboratory in the past five years. Sequencing of the patient's

isolate revealed a recombinant region consistent with recombinant cowpox strains stored in the freezer. Cowpox was detected in multiple viral stocks and two viral lines, including the viral stocks used by the patient prior to the onset of illness. Orthopoxvirus DNA was present from environmental swabs of several surfaces in the laboratory and a shared freezer room. No live virus was recovered from the swabs. There were no additional suspect cowpox cases in the patient's family, pets, or laboratory colleagues.

Conclusions:
Data suggest that the patient was likely infected by handling laboratory reagents or environmental surfaces which were contaminated with cowpox. Laboratory exposures to vaccinia virus have been documented, but, to date, there are no reports of accidental laboratory-acquired cowpox infections. Vaccination is recommended for laboratory workers with risk of exposure to orthopoxviruses, including cowpox. Prompt diagnosis and reporting of orthopoxvirus infections to appropriate public health agencies can help reinforce appropriate infection control practices.

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Abstract ID: **1057397** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Unmet need for nucleic acid testing among New Yorkers reported with hepatitis C, 2009 â€“ 2010**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Surveillance, Viral hepatitis**

Abstract Text

Background:
Disease management for chronic hepatitis C can be challenging due to limited patient knowledge, provider education, and funding. Antibody tests are recommended to screen patients for hepatitis C. For patients who test positive, nucleic acid testing is necessary to determine current infection status. The New York City Department of Health and Mental Hygiene (DOHMH) requires laboratories and healthcare facilities to report positive antibody and nucleic acid tests for hepatitis C; in 2009, 10,846 patients were newly reported with hepatitis C. In July 2009, DOHMH began enhanced surveillance by investigating a sample of newly-reported patients.

Methods:
Every two months, staff randomly select 20 New York City residents newly reported to DOHMH with a positive hepatitis C result and collect information from clinicians about demographics, risk factors, counseling received, and hepatitis test results. For patients with only a positive antibody test, staff ask the reason a nucleic acid test was not ordered and request that the test be ordered.

Results:
We sampled 160 patients from July 2009 to October 2010, of whom 11 were excluded after investigation showed they did not meet sampling criteria. Of the remaining 149 antibody positive patients, 1% had previously been successfully treated, 41% were initially reported with positive nucleic acid tests, 7% had positive nucleic acid tests after the test was requested by DOHMH, 14% were nucleic acid test negative either initially or after DOHMH staff request, and 37% did not have nucleic acid testing performed despite DOHMH's request. These 37% (56 patients) without a nucleic acid test were seen in detox facilities (38%), medical facilities (33%), and jail/prison (11%). For most patients without nucleic acid test results seen in medical facilities, the most common reason nucleic acid testing was not done was that the patient did not return for follow-up (58%).

Conclusions:
Without a nucleic acid test, patients may presume that they are currently infected with hepatitis C when they are not. Accurate diagnosis is necessary for appropriate treatment and to aid in public health planning. This study suggests that nearly 40% of patients may not be getting the laboratory testing needed for accurate diagnosis and clinical management. Barriers to nucleic acid testing may include high cost, lack of knowledge of clinicians about the need for such testing, testing at facilities that only provide antibody tests, and patients not returning to clinic for follow up.

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Abstract ID: **1062272** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Perinatal HIV and syphilis testing policies, practices and screening levels in Texas hospitals**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **HIV/AIDS, Pregnancy, Sexually Transmitted Diseases**

Abstract Text

Background:
Early identification and treatment of pregnant women with HIV and syphilis prevents neonatal disease and improves women's health. In 2008, Texas law required opt-out testing for both syphilis and HIV at the first prenatal visit and at delivery. Hospital policies and practices can assure appropriate perinatal HIV/syphilis screening and provision of antiretroviral medications to HIV positive mothers and exposed infants.

Methods:
In 2008, a cross-sectional study reviewed Texas hospital policies and practices for the prevention of various perinatal infections including HIV and syphilis. A survey was completed by 119 hospitals on written policies and standing orders for: review of prenatal testing, testing on admission, neonate HIV testing for infants of mothers with unknown status, and administration of antiretroviral medications (ARVs) to mothers and exposed neonates. Additionally, 25,706 medical records from 12,670 live birth events were reviewed.

Results:
About three fourths, 71.4%, of the hospitals had a policy to review maternal HIV status on admission, with 64.5% having a routine order to conduct this review. Only 54.6% of the hospitals had both a written policy and a routine order. About three fourths of the hospitals had a policy to provide HIV testing on admission and almost all hospitals had routine orders. The proportion of hospitals with policies on ARVs for mothers and infants were much lower. Statewide, 87.4% of women had a prenatal HIV test and 88.4% had a syphilis test documented in the hospital medical record. For HIV, 94.4% of the women were screened on admission, with 96.8% screened for syphilis. Almost all women had one of the two HIV and syphilis screening tests, although lower proportions were screened for HIV and syphilis at both time periods.

Conclusions:
A large proportion of pregnant women in Texas are getting screened for HIV and syphilis during pregnancy and/or delivery. To achieve maximum prevention of perinatal transmission, testing at both perinatal time periods could be improved. There is wide variation in Texas hospital policies and procedures around perinatal HIV prevention practices and this study points to specific topic areas and regions for improved policy development and implementation.

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Abstract ID: **1061909** Presentation Type: **Breakout Presentation - Single Speaker**

Title: ***E. coli 0157:H7* outbreak in a home child care facility: The role of asymptomatic carriage**

Committee: **Infectious Diseases**

Topic: **Viral gastroenteritis**

Keywords: **Enteric infectious diseases, Outbreak investigations, Surveillance**

Abstract Text

Background:
Asymptomatic carriage of *E. coli O157:H7* has previously been identified in outbreaks in child care

facilities in both the United States and Canada. In March 2010, a child care attendee was hospitalized with *E. coli 0157:H7*. One week later, a second attendee was hospitalized with bloody diarrhea. Symptom onset of the second case was 11 days after the first case left child care.

Methods:
The investigation included an environmental assessment of the child care facility and active surveillance. Because of the long interval between potential exposure to case 1 and symptom onset of case 2, there was concern about the possibility of asymptomatic carriage and person-to-person transmission within the child care facility. Consequently, Clark County Public Health (CCPH) collected stool specimens from all who attended, lived or worked at the child care facility.

Results:
Twenty-three children and four caregivers lived or spent time in the child care facility. Active surveillance identified two additional children with symptoms compatible with *E. coli 0157:H7* infection who were hospitalized. A total of four children were hospitalized; one subsequently died. Of the 19 asymptomatic children, 79% (n=15) reported mild gastrointestinal illness earlier in March. Stool specimens from one caregiver and nine children were positive for *E. coli 0157:H7*. The environmental assessment and epidemiologic analysis revealed no point source for exposure.

Conclusions:
This investigation identified that asymptomatic carriers might have contributed to person-to-person transmission within the facility. The majority of cases in this investigation did not have the typical presentation associated with *E. coli 0157:H7* infection. Public health officials should consider obtaining stool cultures on all attendees and staff of child care centers with more than one case of *E. coli 0157:H7*. This outbreak also highlights the challenges in working with child care centers. Complete attendance records were not provided by the child care operators until after stool samples were requested. CCPH also discovered in the course of the investigation that the child care operators and parents underreported illness. Continued cooperation between child care center operators, parents and public health is important for best outcomes during an outbreak investigation.

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Abstract ID: **1060152** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Investigation of three foodborne disease outbreaks caused by *Staphylococcus aureus* contamination of cakes from a bakery**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Foodborne disease, Outbreaks**

Abstract Text

Background:
Staphylococcus aureus (*S. aureus*) enterotoxins cause gastrointestinal illness approximately 1-6 hours after ingestion of a contaminated food. Contamination may occur by direct food handler contact,

followed by incubation at a temperature permissive for bacterial growth and toxin production. Freshly prepared desserts are among the most common foods implicated in outbreaks of gastrointestinal illness due to *S. aureus*.

Methods:
Three outbreaks of gastrointestinal illness were investigated by three Northeastern Illinois local health departments during a 6-week period. Standardized questionnaires were utilized to collect data on ill and well persons; Fisher's exact test was used to detect associations. Food handler interviews and environmental inspections were performed. Food specimens were collected for microbiologic analysis.

Results:
In early November, 2010, gastrointestinal illness was reported among convention participants at a catered lunch; ingestion of tiramisu cake was associated with illness (p=0.018). Five weeks later, outbreak 2 was reported by ill persons who attended a private party at a home; consumption of frosting with or without cake was associated with illness (p=0.011). Six weeks after outbreak 1, outbreak 3 was reported by ill party attendees who ate at a restaurant; consumption of cream cake was associated with illness (p=0.017). All three cakes had been prepared at a large bakery (Bakery A). Tiramisu cake from outbreak 1 was not available for testing; cake samples from outbreaks 2 and 3 were positive for > 2 x 10^8 and 6.5 x 10^7 colony forming units of coagulase positive *staphylococcus* per gram, respectively. Analysis of *S. aureus* isolates from both samples revealed presence of toxins A and B by reversed passive latex agglutination and genes that encode enterotoxins A, B, and H by real-time polymerase chain reaction. Interviews with 90 Bakery A food handlers revealed that fillings and frostings were occasionally prepared using bare hand contact. Public health officials and Bakery A management initiated food handler trainings on hand hygiene techniques and glove use. Routine observations of food handling practices were initiated by management.

Conclusions:
Gastrointestinal illness in all three outbreaks was likely caused by *S. aureus* toxins that were present in the cakes consumed. Direct food handler contact with fillings and frostings during the preparation of the cakes may have played a role in contamination. These outbreaks illustrate the importance of investigating *S. aureus* outbreaks in settings where freshly prepared food products may be implicated. Timely data sharing between state and local health departments is essential for identifying common exposures for outbreaks separated by time and geographic distance.

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Abstract ID: **1048982** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Incidence trends and characteristics of Shiga toxin-producing *Escherichia coli* (STEC) O157 and non-O157 infections in Washington, 2005â€“2010**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Emerging health issues, Enteric infectious diseases, Interventions**

Abstract Text

Background:
Over the past decade, the incidence of reported non-O157 Shiga toxin-producing *Escherichia coli* (STEC) has steadily increased in the United States. While about 8% of STEC O157 infections result in hemolytic uremic syndrome (HUS), the proportion of non-O157 STEC infections resulting in HUS remains unclear. With limited research on the pathogenicity of non-O157 STEC infections, it is uncertain whether public health intervention should parallel intervention for STEC O157. The objective of this study was to determine incidence trends, and clinical and laboratory characteristics of reported O157 and non-O157 STEC infections in Washington State.

Methods:
We retrospectively analyzed clinical characteristics of confirmed STEC infections reported to the Washington State Department of Health (DOH) during January 2005 through June 2010. Confirmed STEC O157 was defined as isolation of *E. coli* O157:H7 or identification of Shiga toxin in an *E. coli* O157 isolate. Confirmed non-O157 STEC was defined as identification of a Shiga toxin in a non-O157 *E. coli* isolate. Incidence trends were calculated using the National Cancer Institute's JoinPoint Regression Program. Incidence rates for 2010 were estimated based on data through June.

Results:
During the study period, 816 confirmed STEC infections were reported to DOH; 694 (85%) were STEC O157 and 122 (15%) non-O157 STEC. While STEC O157 incidence remained stable, non-O157 STEC incidence increased, with an annual percent change of 81% (95% CI: 43,128). Non-O157 STEC infections are expected to account for 40% of all STEC infections in 2010. Incidence for both O157 and non-O157 STEC infections was highest among those aged < 5 and > 70 (overall 6 and 1 per 100,000 population, respectively). STEC O157 infections were statistically more likely than non-O157 STEC infections to result in bloody diarrhea (87% vs 50%; P < 0.0001), HUS (7% vs 0%; P 0.0065) and hospitalization (40% vs 8%; P < 0.0001). Among isolates tested during 2010, non-O157 STEC isolates were less likely than STEC 0157 isolates to produce Shiga toxin type 2 alone (4% vs. 93%; P < 0.0001) and more likely to produce Shiga toxin type 1 alone (78% vs 0%; P < 0.0001).

Conclusions:
Although reported non-O157 STEC infections have dramatically increased in Washington, they are associated with less morbidity than STEC O157 infections. Public health intervention for non-O157

STEC may require less intensive action than intervention for STEC O157. Data on serotype and Shiga toxin type should be continually monitored to detect any changes in trends.

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Abstract ID: **1062373** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Congenital syphilis in Shelby County, Tennessee: Past and present**

Committee: **Infectious Diseases**

Topic: **STDs**

Keywords: **Local epidemiology, Maternal and Child Health, Sexually Transmitted Diseases**

Abstract Text

Background:
In 2009, the congenital syphilis rate in Shelby County was over seven times the national rate. Trends in primary and secondary (P&S) syphilis cases among women are usually followed by similar patterns in the incidence of congenital syphilis. This study will examine the association between P&S and congenital syphilis and describe the characteristics of mothers of infants with congenital syphilis in Shelby County.

Methods:
The P&S and congenital syphilis rates were calculated using Tennessee surveillance data. A spearman correlation was used to determine the association between annual P&S and congenital syphilis rates between 1990 and 2009. Data between 2005 and 2009 was examined to describe the race and age of mothers bearing children infected with syphilis. Additionally, surveillance records were reviewed to determine the percentage of mothers receiving prenatal care.

Results:
Since 1990, the congenital syphilis rate in Shelby County decreased by 67% percent, while the P&S syphilis rate among females decreased by 92%. A significant spearman correlation coefficient (spearman's rho=.86767, p<.0001) indicates a positive relationship between the P&S and congenital syphilis rates. Data between 2005 and 2009 indicate Black women represent 92% of female P&S syphilis cases, and 95% of the congenital syphilis cases occurred among infants born to Black mothers. During this time period, the P&S syphilis rate among women aged 30 to 39 years declined 70%, but the rate among women aged 20 to 29 increased 190%. Eighty percent of the congenital syphilis cases during this same time frame occurred among infants born to mothers between the ages of 20-39. Of the 40 congenital cases reported between 2005 and 2009, 47.5% (19) did not receive prenatal care.

Conclusions:
As the P&S syphilis rate among females in Shelby County remains high, it is expected that the

congenital syphilis rate will also remain high. While women between the ages of 20-39 and Black females report the highest rates, health-care providers should consider any pregnant woman at-risk for syphilis in Shelby County. Based on CDC recommendations, efforts should be made to increase prenatal care access to improve early syphilis screening while serologic testing should also be obtained at 28-32 weeks' gestation and at delivery. No infant or mother should leave the hospital unless maternal serologic status has been documented at least once during pregnancy.

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Abstract ID: **1057547** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Acinetobacter baumannii infection, colonization, and transmission related to a long-termâ€“care facility - California, 2009â€“2010**

Committee: **Infectious Diseases**

Topic: **Multi-Drug Resistant Organisms (MDROs)/ Carbapenem-resistant Enterobacteriaceae (CRE)**

Keywords: **Antimicrobial resistance, Emerging infections, Special populations**

Abstract Text

Background:
Gram-negative Acinetobacter baumannii bacteria cause emerging nosocomial infections with substantial morbidity and mortality but have rarely been studied among long-term-care facility (LTCF) residents. When a hospital reported a multidrug-resistant A. baumannii cluster that included LTCF patients (Facility A), we investigated its role at Facility A.

Methods:
We reviewed local hospitals' records of Facility A patients with laboratory-confirmed A. baumannii infection during January 2009-February 2010 and classified patients as having infection or incidental colonization on the basis of clinical presentation. In March 2010, we implemented a sputum survey of Facility A patients receiving respiratory support or who could cough to determine colonization. Using sputum survey data, we performed a multivariate analysis to evaluate potential factors associated with colonization. From the study period, available Facility A clinical and survey isolates and hospital isolates underwent pulsed-field gel electrophoresis (PFGE); patients with related isolates were evaluated for overlapping stay in the same or adjacent room.

Results:
During January 2009-February 2010, we identified 21 Facility A tracheostomy patients with infection, leading to 11 (52%) intensive care unit admissions and 3 (14%) deaths. From the sputum survey, 14 (20%) of 70 Facility A patients were colonized with A. baumannii, which was independently associated with ventilator use (adjusted odds ratio: 5.08; 95% confidence interval: 1.19-21.70). Of Facility A patients with infection or colonization, 33% had multidrug-resistant isolates. Overlapping PFGE strains emerged between Facility A and a local hospital; epidemiologic linkage between patients indicated localized transmission.

Conclusions:
We documented substantial A. baumannii infection, colonization, and probable spread associated with an LTCF. To control A. baumannii, acute-care hospital infection control practices and antimicrobial stewardship should be extended to LTCFs.

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Abstract ID: **1058734** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Characteristics of foodborne disease outbreak investigations conducted by FoodNet, 2003â€“2008**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Foodborne disease, NORS (National Outbreak Reporting System), Outbreak investigations**

Abstract Text

Background:
Approximately 1,200 foodborne disease outbreaks (FBDOs) causing ≥20,000 illnesses are reported to the Centers for Disease Control and Prevention (CDC) annually. To devise prevention and control strategies, we describe characteristics of successful outbreak investigations (i.e. those that identify etiologic agent and vehicle).

Methods:
We analyzed CDC Electronic Foodborne Outbreak Reporting System (EFORS) and supplementary data collected in 10 FoodNet sites during 2003-2008. FBDOs were defined as the occurrence of ≥2 cases of a similar illness resulting from ingestion of a common food.

Results:
Data regarding 1,200 FBDOs were available. Etiology was confirmed in 715 (60%); a food vehicle was implicated in 387 (32%). Fecal specimens were submitted in 647/715 (90%) outbreaks with a confirmed etiology and 232/485 (48%) without a confirmed etiology. There was no difference in the odds of confirming an etiology when the outbreak caused ≤5 illnesses compared to >5 (OR: 0.4, 95% CI: 0.3-0.5), or ≤10 illnesses compared to >10 (OR: 0.4, 95% CI: 0.3-0.5). The odds of confirming etiology were best when ≥4 fecal specimens were collected as compared to <4 (odds ratio [OR]): 7.6; 95% confidence interval [CI]: 5.3-10.9). The proportion of outbreaks with confirmed etiology varied little by median number of days from symptom onset to fecal specimen collection: 0-3 days (70%), 4-7 days (78%), and 8-14 days (69%). A food vehicle was implicated in 314/671 (47%) outbreaks investigated using a case-control or cohort study, compared with 73/529 (14%) outbreaks investigated using other methods (OR: 5.9; 95% CI: 4.1-7.3). The majority of outbreaks were reported by private citizens (74%) and attributed to exposures outside the home (71%). Reported barriers to successful investigations included difficulty recruiting case and control subjects and obtaining fecal specimens.

Conclusions:
Vehicle and etiology are frequently undetermined in FBDOs. Greater emphasis on fecal specimen collection, regardless of timing, and overcoming barriers to pursuing analytic epidemiologic studies may improve ascertainment of these factors

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Abstract ID: **1060902** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Neisseria gonorrhoeae: Impact of risky behaviors, unemployment, and delays in treatment and reporting - rural California, July 2009â€“February 2010**

Committee: **Infectious Diseases**

Topic: **STDs**

Keywords: **Outbreaks, Sexually Transmitted Diseases**

Abstract Text

Background:
Neisseria gonnorhoeae (GC) is the second most common reportable disease in California, causing approximately 25,000 infections annually. In a rural California county (County X), GC cases increased from an average of 13 cases annually during 2004-2008 to 37 cases in 2009. We investigated the outbreak to identify contributing causes and recommend control measures.

Methods:
We reviewed laboratory records from Healthcare Organization A, the main provider of inpatient and outpatient services for County X, and from Laboratory A, an out-of-state laboratory that provides GC testing for Healthcare Organization A. Confidential morbidity reporting system records were reviewed to ascertain patient demographics and treatment information. A case was defined as laboratory-

confirmed GC in a County X resident during July 2009-February 2010. Patients and their sexual and social contacts were interviewed to obtain risk factor and sex partner information.

Results:
Among 36 patients identified, 20 (56%) were diagnosed at Healthcare Organization A and tested by Laboratory A. Among those with data available, 58% were female; 71% were non-Hispanic white; 42% were aged 25-34 years; 50% were unemployed; and 32% were chlamydia coinfected. Sixty-four percent of patients were epidemiologically linked through sexual or social relationships; 91% were heterosexual; 73% had >1 sex partner during the previous year; 34% reported methamphetamine use; and 35% were incarcerated or had been incarcerated during the previous year. Among the 20 patients with diagnosed GC at Healthcare Organization A tested by Laboratory A, 4 (20%) were treated by using a non-CDC recommended drug regimen, and 4 (20%) other patients had treatment dates >14 days from specimen collection. The mean time from specimen collection to receipt of Laboratory A GC results at Healthcare Organization A was 3 days (range: 2-5 days). Results from Laboratory A were automatically entered into Healthcare Organization A's medical records without notification of clinical or administrative staff. Mean time from result receipt to report to County X by Healthcare Organization A was 28 days (range: 1-109 days). Laboratory A did not report cases to County X.

Conclusions:
Multiple factors contributed to the GC outbreak in County X, including unemployment and high-risk behaviors among the patients and lack of clinician notification at the time of positive GC result receipt. Healthcare Organization A should implement systems to ensure timely notification of clinicians about positive GC cases to facilitate timely treatment and disease reporting. Laboratory A should report GC infections directly to County X.

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Abstract ID: **1061552** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Influenza vaccination rates among the elderly in Pennsylvania, 2001-2009**

Committee: **Infectious Diseases**

Topic: **Immunizations**

Keywords: **Immunization, Infectious Diseases, Influenza surveillance**

Abstract Text

Background:
Influenza causes significant morbidity among older persons; however, vaccination rates have been suboptimal in the United States. To improve vaccine coverage among this population in Pennsylvania, the 2004 Elderly Immunization Act mandated hospitals to offer inactivated influenza vaccine to eligible persons aged ≥65 years.

Methods:
We reviewed influenza vaccination data for Pennsylvanians aged ≥65 years 2001-2009 from the Behavioral Risk Factor Surveillance Survey (BRFSS) records. BRFSS is an annual telephone survey of a representative sample of non-institutionalized adults aged ≥18 years. We estimated the prevalence of adults aged ≥65 years who reported being vaccinated during the preceding 12 months. We also reviewed data on influenza vaccination administered to inpatients aged ≥65 years during 2004-2009 from the Pennsylvania Department of Health's annual acute care hospital survey.

Results:
The estimated prevalence among adults aged ≥65 years who had received an influenza vaccine during the preceding 12 months was as low as 59% in 2005. Influenza vaccine coverage reached 72% in 2007 and remained above this level during 2008-2009. During 2004-2009, acute care hospitals reported annually vaccinating ~44,000 inpatients aged ≥65 years, representing 2.3% of Pennsylvanians in this age category (1.9 million).

Conclusions:
Among those aged ≥65 years, influenza vaccination coverage was variable 2001-2006 but has been maintained above 72% during the period 2007-2009. This coverage was above the national level, estimated at 68% of Americans aged ≥65 years in the 2009-2010 season. The Elderly Immunization Act mandated inpatient vaccination programs that contributed to influenza vaccine coverage for a small, yet vulnerable subset of the population. Although vaccination coverage for those aged ≥65 years has increased modestly (p = 0.4) in recent years in Pennsylvania, there is a need for further improvement as current levels are below the national target coverage of 90%.

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Abstract ID: **1058511** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Invasive Group A Streptococcal infections among residents at a long-termâ€“care facility - Pennsylvania, 2009â€“2010**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI), Infection control, Outbreak investigations**

Abstract Text

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Abstract ID: **1060326** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Description of healthcare-associated infections in long-term care facilities in Pennsylvania**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Healthcare associated infections (HAI), Surveillance**

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Abstract ID: **1060563** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Prevalence of seropositivity to 2009 pandemic influenza A/H1N1 virus infection in the United States by December 2009**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Influenza / Pandemic influenza**

Abstract Text

Background:
In April 2009, pandemic influenza A/H1N1 (pH1N1) was first detected in the United States and resulted in a global pandemic with widespread illness. Estimating the proportion of the population that developed anti-pH1N1 antibody following the virus' emergence is important to understanding the spread of pH1N1. Estimates of disease burden from clinical surveillance do not capture asymptomatic infections or most mild illnesses and thus underestimate the community incidence of immunity to influenza. Serological surveys, by detecting laboratory-based evidence of infection, complement clinical surveillance and provide a fuller measure of how many people have been infected with pH1N1 over time. To determine the overall and age-specific prevalence of seropositivity to pH1N1 following the spring and fall waves of the pandemic in the US and the start of the vaccination program, we

conducted a serologic survey for pH1N1 in December 2009 among persons in 10 states.

Methods:
Banked specimens collected during the 2007-2008 National Health and Nutrition Examination Survey (NHANES), an ongoing population-based survey conducted nationwide in the US, were used to establish a pre-pandemic baseline estimate of cross-reactive immunity to pH1N1 by age group. To assess the increase in seroprevalance from pH1N1, leftover serum specimens submitted to clinical diagnostic laboratories were obtained from US states in each of 10 HHS regions - Connecticut, New York City, Pennsylvania, Florida, Wisconsin, Texas, Missouri, Utah, Arizona, and Washington. Each serum specimen was tested in triplicate using the hemagglutination inhibition (HI) assay against A/California/7/2009; a specimen was considered seropositive if the geometric mean HI titer was ≥40. The increase in seroprevalence was calculated as the difference in the proportion of specimens seropositive for pH1N1 between the baseline and 2009 samples by age group.

Results:
A total of 1,143 baseline serum specimens were obtained from the 2007-08 NHANES and 2,803 serum specimens were collected from 10 states between Dec 14, 2009-Jan 15, 2010. The age-adjusted increase in seroprevalence to pH1N1 from baseline to 2009 was 26% (95%CI: 19-31%), including the following distribution by age group: <18 years (46%, 95%CI: 42-54%), 18-64 years (20%, 95%CI: 15-25%), 65+ years (10%, 95%CI: 3-17%).

Conclusions:
Approximately one-fourth of the US population, including almost half of children, had developed immunity to pH1N1 by the time activity waned in the US, through natural infection or early pH1N1 vaccination. Ongoing analyses will estimate the contribution from pH1N1 vaccine coverage by this time. These results may inform predictions of pH1N1 circulation during 2010-2011 and guide prevention policies, including vaccination recommendations.

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Abstract ID: **1060216** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Evaluating expanded criteria for the acute hepatitis C virus case definition to identify newly acquired asymptomatic infections**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Epidemiology, Hepatitis, Surveillance**

Abstract Text

Background:
Identification of new hepatitis C virus (HCV) infections is critical to recognizing and controlling outbreaks and affording patients opportunity for early treatment. Due to a high prevalence of asymptomatic infections, a lack of laboratory markers for new infection and resource limitations, new

cases are underreported when applying the current Council of State and Territorial Epidemiologists (CSTE) case definition. Based on national estimates and population data, we estimate that 617 new HCV infections occur in New York State (NYS), excluding New York City, per year; however, from 2008 - 2010, 138 acute HCV cases meeting the current surveillance definition were reported. To identify new, asymptomatic HCV infections, in 2008, the NYS Department of Health (NYSDOH) began assessing availability of prior negative HCV tests among newly reported asymptomatic cases.

Methods:
Between 2008 and 2010, prior negative test results were assessed for newly reported asymptomatic cases. Cases with prior negative results reported were classified as seroconverters if they had a negative HCV antibody or Nucleic Acid Test <12 months prior to diagnosis and were asymptomatic (i.e., did not meet the current CSTE acute HCV case definition). The effectiveness of collecting data on prior negative test results among asymptomatic cases to increase identification of new infections was evaluated.

Results:
Availability of prior negative HCV test results was assessed for 1,879 (9.7%) of 19,343 newly reported chronic HCV cases. Of these, 186 (9.9%) had a prior negative results and 60 had a negative test date. 33 persons had a negative result dated >12 months and were excluded. The remaining 27 had a prior negative date <12 months. Of the 138 acute cases reported, 73 had prior negative test results assessed; 26 had prior negative results available and 19 were within 12 months of diagnosis. Expanded case finding resulted in a 23.9% increase in new infections identified.

Conclusions:
Finding additional new HCV infections improves the completeness of surveillance data and has the potential to enhance our ability to identify clusters of disease resulting in implementation of control measures to halt further spread. Infections identified earlier are more successfully treated than chronic infections. To increase case ascertainment, the following case definition for new HCV cases should be considered: 1) Acute onset of illness with jaundiced or ALT >400 IU/mL and a positive HCV confirmatory test, or 2) Documented HCV seroconversion with a positive confirmatory HCV test within <12 months of the last negative antibody test result.

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Abstract ID: **1062071** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **2010 Food safety epidemiology capacity assessment: Findings**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Epidemiology capacity, Foodborne disease**

Abstract Text

Background:
CSTE assessed food safety epidemiology capacity in states and territories in 2010 given advances in public health surveillance technologies and the dramatic increase in national attention on food safety since the last assessment conducted in 2002.

Methods:
An updated food safety epidemiology capacity assessment was distributed by CSTE to 4 pilot states in March 2010, and the full assessment was distributed to 50 states beginning in April 2010. The assessment had a 100% response rate from states.

Results:
This assessment examined electronic lab reporting, the use of electronic databases and data sources, and barriers to the investigation of enteric outbreaks. The assessment also enumerated the foodborne epidemiology workforce. Finally, the assessment examined legal authority in states and the receipt of the CIFOR Guidelines for Foodborne Disease Outbreak Response.

Conclusions:
The assessment had four main conclusions:
1. There is significant variation among states with regard to reporting and surveillance.
2. Most states report a lack of capacity, impacting their ability to investigate and intervene in the control of foodborne illness.
3. Delayed notification and lack of adequate number of staff are the most common barriers to completion of foodborne illness investigations.
4. There are differences in states' working relationships with other disciplines, including federal partners.

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Abstract ID: **1062836** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Greater antibiotic use may change the sensitivity of the pertussis case definition**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Infectious Diseases, Surveillance**

Abstract Text

Background:
Population-based incidence of pertussis is based on reports of confirmed and probable pertussis cases, as defined by the 1997 CSTE case definition. This definition focuses on positive bacterial culture or a cough lasting at least two weeks. With decreasing use of culture-based diagnostics and increasing use of antibiotics which may shorten the duration of cough, existing case definition may not

adequately capture incident pertussis cases.

Methods:
Using Washington State's population-based Public Health Issues Management System (PHIMS), we analyzed reports of suspect, probable, and confirmed pertussis cases for frequency of laboratory diagnostic methods and antibiotic use.

Results:
From June 1, 2005 to December 31, 2010, 2298 confirmed cases of pertussis, 550 probable cases, and 186 suspect cases were reported to local health departments in Washington. Frequency of culture-based diagnostic testing varied by year, from 36% of cases having culture results in 2005 to only 10% of cases having culture results in 2010. Frequency of PCR testing increased over 2005-2010, from 43% of cases having PCR results in 2005 to 68% of in 2010. Antibiotic use also increased over this time, from 57% of cases receiving antibiotics in 2005 to 95% in 2010. Designation as a suspect case was strongly associated with shorter time from onset of symptoms to initiation of antibiotic use; compared to confirmed and probable cases, suspect cases were more likely to have initiated treatment within 1 week of symptom onset ($p<0.0001$).

Conclusions:
PCR-confirmed suspect cases of pertussis were more likely to get antibiotics in the first week of their illness which likely shortens the duration of the cough. As a result, the existing pertussis case definition likely excludes true pertussis infections. To remedy this, the next definition revision should consider broader inclusion of PCR-positive cases and reduced focus on two weeks cough duration.

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Abstract ID: **1061335** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Validity of polymerase chain reaction using liquid transport media during a pertussis outbreak**

Committee: **Infectious Diseases**

Topic: **Immunizations**

Keywords: **Communicable disease, Immunization, Vaccination**

Abstract Text

Background:
On November 10, 2010, Jefferson County Public Health Service (JCPHS) notified New York State Department of Health (NYSDOH) of an outbreak of pertussis in Jefferson County, New York. By December 22, 2010, 2,129 polymerase chain reaction (PCR) specimens for *Bordetella pertussis* from Jefferson County residents had been submitted to a single commercial laboratory using a liquid transport media. The objective of this study is to describe the results of PCR testing and determine the validity of the test during the current pertussis outbreak.

Methods:
Positive PCR results were reported to JCPHS and NYSDOH via electronic laboratory reporting. Case and contact investigations of positive results were performed by JCPHS and NYSDOH. Information on negative PCR results was obtained from the submitting hospital and providers. Cases were classified according to the Council of State and Territorial Epidemiologists 2010 pertussis case classification for an outbreak setting. Statistical analysis was performed using Microsoft Excel 2007.

Results:
By January 4, 2011, 534 PCR-positive specimens (25%) for *Bordetella pertussis* were reported to JCPHS and case investigation was completed on 523 persons. 178 confirmed cases of pertussis were identified; no probable cases among PCR-negative persons were identified. The sensitivity of the *Bordetella pertussis* PCR test using liquid transport media in this outbreak was 100%; specificity was 82%; positive predictive value was 34%.

Conclusions:
Although the *Bordetella pertussis* PCR using liquid transport media had high sensitivity and specificity, the positive predictive value in this outbreak was undesirably low. Positive predictive value may be influenced by test characteristics (for example, liquid versus solid transport media) and the prevalence of disease in the population tested. The validity of this test could be improved by limiting pertussis PCR testing to patients with cough of five or more days' duration without other known cause or with cough of one to four days' duration and epidemiologic linkage to a confirmed case.

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Abstract ID: **1054126** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Emergence of Klebsiella pneumoniae carbapenemase (KPC)-producing Enterobacteriaceae in Minnesota, 2009-2010**

Committee: **Infectious Diseases**

Topic: **Multi-Drug Resistant Organisms (MDROs)/ Carbapenem-resistant Enterobacteriaceae (CRE)**

Keywords: **Antibiotic resistance, Emerging infections, Surveillance**

Abstract Text

Background:
KPC-producing Enterobacteriaceae have emerged in parts of the US over the past 10 years. These highly resistant bacteria are difficult to treat, spread readily in healthcare facilities, and are associated with increased morbidity. The first reported KPC in MN was isolated from a patient in Feb. 2009 and was positive by PCR for blakpc. In March 2009, the MN Dept. of Health (MDH) initiated statewide laboratory-based surveillance for carbapenem-resistant Enterobacteriaceae (CRE). MDH advised MN laboratories to perform a Modified Hodge Test (MHT) on isolates that had elevated MICs for at least 1

carbapenem and submit all MHT positive isolates to MDH for further characterization.

Methods:
MN laboratories submitted MHT positive Enterobacteriaceae isolates to MDH. PCR for blakpc was performed. MDH recommended healthcare facilities follow CDC infection control guidance when CRE were reported. Hospital medical records were reviewed for KPC patients identified between Feb. 2009 and Oct. 2010.

Results:
MDH received MHT positive CRE isolates from 70 unique MN residents in healthcare facilities throughout the state. 25 of 70 (36%) were blakpc positive, of which 7 (28%) were from the respiratory tract, 9 (36%) urine, 6 (24%) wound, and 3 (12%) blood. blakpc was found in 16 (64%) K. pneumoniae, 6 (24%) Enterobacter cloacae, 2 (8%) K. oxytoca, and 1 (4%) Citrobacter freundii. All 6 E.cloacae were associated with 2 related healthcare facilities. K. oxytoca and C. freundii isolates were recovered from pediatric patients with multiple medical problems and prolonged hospitalizations. blakpc positive isolates were submitted from laboratories serving acute care hospitals (15 patients), long-term acute care hospitals (7 patients), ambulatory clinics (2 patients), and a long-term care facility (1 patient). 10 (40%) patients were known residents of long-term care or assisted living facilities. Median age for patients with blaKPC positive isolates was 58 years (range 1-90); 48% were male. Of hospitalized patients 14 (93%) had co-morbidities, 14 (93%) had invasive devices at the time of culture, and 14 (93%) had known antibiotic exposure in the previous 3 months. 13 (87%) patients had an ICU stay, of which 7 (54%) died with no deaths reported in non-ICU patients. All deaths occurred within 5 months of hospitalization.

Conclusions:
The presence of KPC in MN healthcare facilities across the continuum of care is concerning. KPC was found in patients with co-morbidities from a variety of healthcare settings throughout MN. We recommend that all healthcare facilities be vigilant for KPC, particularly in patients with co-morbidities, and that facilities institute infection control measures immediately upon identification.

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Abstract ID: **1047292** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Effect of ill and unvaccinated employees on influenza outbreaks in long-term care facilities: Lessons from the 2007/08 influenza season**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Elderly, Influenza / Pandemic influenza, Vaccination**

Abstract Text

Background:
Influenza can cause substantial illness and death among long-term care facility (LTCF) residents. Vaccination of employees and residents of LTCFs can help reduce the impact of influenza. The Healthy People 2010 objective is to achieve 80% vaccination rate for residents and 60% for staff. The objective of the current study was to examine the association of vaccine coverage with outbreak severity as measured by Influenza-like-illness, (ILI) hospitalizations and deaths reported in LTCFs in Pennsylvania during one influenza season.

Methods:
Data on influenza outbreaks reported from LTCFs during the 2007/08 influenza season in Pennsylvania were examined to assess the relationship between optimal influenza vaccination rates (the HP 2010 objectives) and ILI, hospitalizations and deaths among residents of LTCFs during outbreaks.

Results:
During the 2007/08 Influenza season, 92 outbreaks were reported from 91 facilities involving 591 illnesses, 89 hospitalizations and 8 deaths of residents in total. Vaccination was optimal among employees of 26 facilities (4384 employees) and among residents in 71 facilities (12298 residents). Facilities with optimal resident vaccination rates were less likely to have optimal employee vaccination rates (p=0.0028). Most outbreaks were in facilities with sub-optimal employee vaccination rates (66 vs. 26) and facilities with any ill employees (50 vs. 39). Most hospitalizations were reported in facilities with sub-optimal employee vaccination (38 vs. 10). Employee and resident vaccination rates did not differ based on the size of the outbreak (number of cases) or occurrence of fatalities (3 vs. 4).

Conclusions:
These data show that facilities with sub-optimal employee vaccination and ill employees more frequently experience ILI outbreaks with hospitalizations. In addition to promoting “optimal” vaccination among staff, policies for exclusion of ill employees may help reduce excess and severe illness among resident of LTCFs. Data from additional seasons and LTCFs without outbreaks would help confirm these findings.

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Abstract ID: **1056208** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Toolkit to promote use of the CIFOR Guidelines to improve foodborne disease outbreak response**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Foodborne disease, Guidelines, Outbreaks**

Abstract Text

Background:
To improve the investigation and control of foodborne disease outbreaks, the multidisciplinary Council for Foodborne Disease Outbreak Response (CIFOR) released consensus guidelines in 2009. To facilitate implementation of the Guidelines, a toolkit was developed to help local and state public health and environmental health practitioners better understand current foodborne disease outbreak response activities in their agency/jurisdiction, become more familiar with the CIFOR Guidelines and recommended practices, and identify specific CIFOR recommendations that will improve their agency's/jurisdiction's future performance during foodborne disease outbreaks.

Methods:
The toolkit was developed by a workgroup with expertise in epidemiology, environmental health, and food safety with representatives from local, state, and federal public health agencies. The toolkit was piloted at APHL PulseNet Regional meetings and one large metropolitan local health department and was, subsequently, streamlined.

Results:
The toolkit includes easy-to-use worksheets to be completed in an ordered sequence that help users: 1) select and prepare a workgroup to examine agency/jurisdiction foodborne outbreak response activities, 2) prioritize areas of foodborne outbreak response on which to focus efforts for improvement in the agency/jurisdiction, 3) systematically examine the prioritized areas to identify CIFOR recommendations that are appropriate for the agency/jurisidiction and are an effective use of limited resources, and 4) make plans to implement the selected recommendations.
Keys to success (i.e., activities, relationships, and resources that are felt to be critical to achieving success in foodborne disease outbreak response) were developed to help users identify areas in need of improvement in their agency/jurisdiction.

Conclusions:
In this discussion we will distribute copies of the toolkit and walk participants through its components. We will discuss settings in which the toolkit might be used and necessary resources. We will outline ways to engage agency/jurisidiction workgroup members to gain consensus on the need to implement the Guidelines (or selected recommendations) and solicit their help in determining how to implement the Guidelines. Participants will be asked to share their experiences with local implementation of the CIFOR Guidelines and ideas to improve the toolkit components or their use.

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Abstract ID: **1062217** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Engaging long-term care facilities in HAI prevention: Assessing current practices and developing new resources**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Challenges and Opportunities, Healthcare associated infections (HAI)**

Abstract Text

Background:
There is a growing expectation that state healthcare-associated infection (HAI) prevention efforts will expand beyond the acute care hospitals into other healthcare settings such as long-term care. This session will provide examples of state projects that are raising awareness, developing resources, and engaging long-term care facilities (LTCF) in HAI prevention activities.

Methods:
The session will consist of three 10-15 minute oral presentations from representatives from state health departments followed by a 10 minute summary presentation by the moderator.

Results:
The states participating in this session have all utilized the CDC's Long-Term Care Baseline Prevention Practices Assessment Tool as part of a strategy to assess the current state of infection prevention programs in nursing homes, skilled nursing facilities and assisted-living facilities. Speakers representing HAI prevention programs will discuss the following presentations: "A collaborative approach to improve infection prevention programs in Georgia's long-term care facilities"; "Multidrug-resistant organism prevention in the long-term care facility setting"; and "Infection prevention challenges and training needs in nursing homes and assisted living facilities, Virginia, 2010". Summary comments about "Current state of infection control programs in nursing homes" by the moderator will conclude the session.

Conclusions:
At the end of this session, participants will have met the following objectives: 1) understand the current challenges facing infection control programs in LTCFs, 2) describe approaches to developing educational or experiential resources to improve infection prevention and control activities in the LTC setting, 3) understand the opportunities and challenges to engaging and sustaining HAI prevention programs for LTCFs.

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Abstract ID: **1061561** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Value of modeling during the national response to the 2009 H1N1 influenza pandemic**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Infectious Diseases, Influenza / Pandemic influenza, Influenza surveillance**

Abstract Text

Background:
Throughout the 2009 influenza A (H1N1) pandemic modeling studies were critical in determining the impact of the pandemic, the severity of H1N1, household and community attack rates, and transmission dynamics. Additional modeling efforts are currently helping determine the impact of antiviral use and vaccination in preventing illnesses and deaths during the pandemic.

Methods:
We propose an extended breakout session devoted to describing national modeling efforts during the H1N1 pandemic.

Results:
An overall talk will focus on what the critical epidemiologic questions were at the initiation of the pandemic and how modeling helped provide some of the answers. Talks will also include a description of the pyramid model used to determine the burden of disease during the spring wave, an expanded model to determine cases, hospitalizations, and deaths throughout the pandemic based on extrapolation of hospitalizations reported to the Emerging Infections Program, a novel method to model deaths and severity in real time based on the 122 Cities Mortality Reporting System (122 Cities), and a model that used 1200 weeks of data from the 122 Cities system and US death certificates listing a respiratory or circulatory underlying cause of death to forecast excess mortality during the 2- to 3-year period during which 122 Cities data, but not final death certificate data, were available. Two other models will be described that determined the impact of the vaccination program- one a predictive model developed before the vaccination program was initiated and one developed after the program was completed to estimate the program's impact.

Conclusions:
Participants in the breakout session will learn what critical epidemiologic questions need to be answered when a new infectious disease emerges and how findings from infectious disease modeling studies, for example those used to determine severity of illness, can be used to guide treatment and vaccination decisions. Participants will also learn how newly developed mathematical modeling techniques can be used to understand the epidemiology of emerging infectious diseases.

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Abstract ID: **1062868** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Are we underestimating the true burden of pertussis? A comparison of PCR-positive cases not meeting clinical case definition to confirmed cases in Washington State from 2005-2010**

Committee: **Infectious Diseases**

Topic: **Respiratory diseases: Non-influenza**

Keywords: **Epidemiologic methods, Infectious Diseases, Surveillance**

Abstract Text

Background:
The current pertussis case classification system may underestimate the true burden of disease. Cases testing positive for pertussis by PCR but not meeting clinical case definition cannot be classified as either confirmed or probable and are therefore not reported to the CDC. Many such individuals likely represent true pertussis infections with clinical illness but are misclassified and are therefore missing from state and national surveillance data. This study compared select characteristics of PCR-positive "suspect" cases with those of confirmed cases.

Methods:
We compared clinical symptoms and outcomes of PCR-positive suspect cases to confirmed cases reported in Washington (WA) State from 2005-2010. Univariate analysis was done on the following variables available in the case report: chronic lung disease, pneumonia, acute encephalopathy, overnight hospitalization, ICU admission, and death. We also assessed the completeness of data for clinical case-defining variables in records of suspect cases.

Results:
From 2005-2010, 2,573 confirmed cases and 188 suspect cases were reported. Of the suspect cases, 81 (43%) were PCR-positive. The respective proportions of confirmed and PCR-positive suspect cases with the following outcomes were: chronic lung disease, 9% vs. 5%; pneumonia, 5% vs. 4%; overnight hospitalization, 9% vs. 7%; ICU admission, 3% vs. 3%; and case fatality, 0.2% vs. 0%. None of these differences were statistically significant. 33 (41%) PCR-positive suspect cases were missing data for at least one clinical case-defining variable.

Conclusions:
The confirmed and PCR-positive suspect cases reported in WA State during the past 6 years have similar clinical symptoms and outcomes. Nearly half of our PCR-positive suspect cases were missing data for at least one clinical case-defining variable. These results suggest that the current case definition may result in an underestimation of the true burden of pertussis.

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Abstract ID: **1061935** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Emergence of carbapenem-resistant *Klebsiella pneumoniae* in an acute care facility and the potential risk of inter-healthcare facility transmission**

Committee: **Infectious Diseases**

Topic: **Multi-Drug Resistant Organisms (MDROs)/ Carbapenem-resistant**

Enterobacteriaceae (CRE)

Keywords: **Infection control, Infectious Diseases, Outbreak investigations**

Abstract Text

Background:
To investigate the emergence of carbapenem-resistant *Klebsiella pneumoniae* (CRKP) in a ~400-bed general acute care facility in Los Angeles County (LAC) and to describe the potential risks of transmission between healthcare facilities.

Methods:
Cases were defined as patients with CRKP isolated from any specimen from September 2008 to May 2010. CRKP was defined as a *K. pneumoniae* isolate with resistance to carbapenems by Clinical and Laboratory Standards Institute criteria; only the first CRKP culture was counted. LAC Department of Public Health reviewed medical records retrospectively to abstract medical data. Pulsed-field gel electrophoresis (PFGE), minimum inhibitory concentration (MIC) and antimicrobial susceptibility testing were performed in the LAC Public Health Laboratory.

Results:
From September 2008 through May 2010, 25 CRKP positive specimens from 24 cases were isolated from urine (17, 68%), wounds (4, 16%) and sputum (4, 16%); one case was positive in two different specimens collected on the same day. Nineteen CRKP specimens from 18 (75%) cases were collected within three days of admission. Four cases were seen in outpatient settings. Of the 18 admissions, 13 were from skilled nursing facilities, three from private residences, and two from long-term acute care hospitals. However, all patients admitted from private residences had frequent and recent exposure to a healthcare setting. Four CRKP specimens were collected more than three days after admission and categorized as healthcare facility-onset.

Conclusions:
There is considerable risk of CRKP transmission between healthcare facilities by patients with undetected CRKP. It is important to emphasize transfer reporting between healthcare facilities and enhance infection control practices to stop the spread of CRKP. There is inadequate laboratory-based surveillance data to determine the prevalence of infection or carriage with CRKP. A public health surveillance system to monitor the prevalence of CRKP in the community is indicated.

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Abstract ID: **1058501** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Multidrug-resistant organism prevention in the long-term care facility setting**

Committee: **Infectious Diseases**

Topic: **Multi-Drug Resistant Organisms (MDROs)/ Carbapenem-resistant Enterobacteriaceae (CRE)**

Keywords: **Healthcare associated infections (HAI), Infection control**

Abstract Text

Background:
The Vermont healthcare-associated multidrug-resistant organism (MDRO) prevention collaborative focuses on: (1) coordination of geographically clustered acute care hospitals and long-term care facilities (LTCFs) with skilled nursing; (2) implementation of MDRO transmission prevention activities; and (3) electronic submission of clinical laboratory data to the National Healthcare Safety Network (NHSN). To effectively include LTCFs we needed to understand healthcare-associated infection (HAI) prevention challenges and identify opportunities related to building and sustaining HAI prevention programs in the LTCF setting.

Methods:
CDC's Long-Term Care Baseline Prevention Practices Assessment Tool was administered to LTCFs participating in the MDRO collaborative by Survey Monkey or mailed hard copy. Descriptive statistics on infection control resources and practices were tabulated from assessment tool responses. Each healthcare cluster attempted to implement the most feasible MDRO prevention interventions within their facilities. Monthly cluster meetings monitored by the Vermont Department of Health (VDH) and the Vermont Program for Quality in Health Care (VPQHC) were used to discuss the logistics of implementing specific prevention interventions. VDH and VPQHC conducted bi-monthly surveys to assess the progress of each cluster and aggregate statistics were computed from survey responses. CDC's assessment tool will be re-administered at the completion of the collaborative and compared to baseline.

Results:
Of 41 LTCFs in Vermont, 33 (80%) accepted an invitation to participate in the collaborative and 31 (94%) responded to the baseline assessment tool. Infection control in the majority of LTCFs was reported to be: staffed by less than one full-time employee (63%); staffed by a registered nurse (71%); a part-time role (90%); and staffed by someone with no infection control training (74%). Existing policies on hand hygiene, isolation precautions and environmental cleaning were reported by 96%, 92% and 96% of facilities, respectively. Conversely, only 13% of facilities reported restricting the use of specific antibiotics. As of January 2011, each cluster has had at least one meeting with, on average, 66% of LTCFs in attendance. On average, LTCFs participating in the first cluster meeting rated the success of the meeting as 7.8/10. Despite reported use of HAI electronic databases by 40% of LTCFs at baseline, NHSN enrollment was completed by only 3% of LTCFs. A challenge to enrollment was low knowledge of information technology.

Conclusions:
Completion of the baseline assessment tool and participation in MDRO prevention collaborative cluster meetings by LTCFs was robust. LTCFs participating in cluster meetings reported that collaboration was highly successful during the first three months of the collaborative.

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Abstract ID: **1062434** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Escherichia coli O157 infections associated with consumption of artisanal raw cheeses - Multiple states, Septemberâ€“December 2010**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Enteric infectious diseases, Foodborne disease, Outbreaks**

Abstract Text

Background:
Annually, Escherichia coli O157 causes approximately 70,000 illnesses in the United States and can cause acute renal failure and death. In December 2010, routine interviews of 2 patients with indistinguishable pulsed-field gel electrophoresis (PFGE) patterns revealed that they had patronized the same restaurant 1 day apart. We investigated to find any potential common source and take preventive action.

Methods:
We queried PulseNet to identify additional cases. Cases were defined as PFGE-matching E.coli O157 isolates since July 2010. We reviewed interview records; menus; sales records; and shipping invoices from restaurants, retailers, and food distributors. We reinterviewed patients as necessary. Food samples were assayed.

Results:
Eight cases were identified (4, Washington; 1, Oregon; 1, Vermont; 2, Minnesota). All patients had diarrhea with onset during September-November 2010. Two patients were hospitalized; none died. Seven persons reported consumption of artisanal cheeses; none recalled specific varieties or brands; some provided certain clues. Two had eaten cheeses at Restaurant X, where Cheesemaker A's raw goat cheese might have been served. One person had eaten unidentified cheeses from a store and another person from Restaurant Y; both establishments carried Cheesemaker A's cheeses. One person had eaten locally made cheese at a wedding that occurred near Cheesemaker A's facility. Regulatory inspectors visited Cheesemaker A's facility, which had failed recent inspections. Multiple hygiene violations were identified. Cheesemaker A recalled available products nationwide. PFGE-matching E. coli O157 was subsequently cultured from raw cheeses collected at Cheesemaker A's facility and retail locations.

Conclusions:
Contaminated cheeses resulted in E. coli O157 infections. Although no patients specifically remembered consuming Cheesemaker A's cheeses, we identified the source through a combination of deductive reasoning, tracebacks, and molecular epidemiology.

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Abstract ID: **1062279** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Integrating occupational health with mainstream public health: Investigation of an Escherichia coli O111 outbreak, Colorado 2010**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Collaboration, Communicable disease, Occupational Health**

Abstract Text

Background:
Non-O157 shiga toxin-producing Escherichia coli (STEC) is an emerging and important cause of sporadic gastrointestinal illness and outbreaks. Risk factors for infection are not well understood. In 2010, inmates at a Colorado correctional facility experienced a protracted outbreak of E. coli O111:non-motile (ECO111). The facility houses 500 inmates, some of whom work at an on-site dairy.

Methods:
The Colorado Department of Public Health and Environment (CDPHE) conducted an investigation in April 2010 including an illness prevalence survey where 100 inmates were randomly selected for interview. A case was defined as an inmate with onset of diarrhea, lasting at least two days, since March 1, 2010. Additional illness reported in July 2010 prompted further investigation, including dairy cow stool testing, and an assessment of the dairy worksite and work practices involving state, federal, and academic partners.

Results:
Ten laboratory confirmed ECO111 cases were identified in inmates; eight had onset in April 2010, and two had onset in July 2010. Six April cases and both July cases had indistinguishable pulsed field gel electrophoresis (PFGE) patterns; two of the April cases had slightly different PFGE patterns. The April illness prevalence survey found that 18% of inmates met the case definition, and the outbreak likely occurred over a six week period. Multiple transmission routes, including person-to-person , environmental contamination, and foodborne via ill food preparers are suspected. Several dairy workers met the clinical case definition and the environmental investigation found opportunities for contamination of the correctional facility by dairy workers. Results from the dairy cow stool testing found three samples positive for ECO111, all with PFGE patterns indistinguishable from the predominant outbreak pattern. The occupational assessment of the dairy resulted in several recommendations, including provision of worker-training on the risks of enteric pathogens, consistent use of personal protective equipment, hand washing before meals, and showering and sanitizing clothes and shoes before returning to the correctional facility.

Conclusions:
This is the first reported outbreak of ECO111 linked to a correctional facility dairy, and it is the largest reported outbreak for this pathogen in a correctional setting. An integrated occupational and public health response led to targeted prevention strategies; however, implementing occupational recommendations in this setting is challenging due to limited funding and security restrictions. CDPHE’s new Occupational Health Surveillance Program provided an essential link to federal and academic partners with the knowledge, skills, and capacity to investigate a work-place associated outbreak.

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Abstract ID: **1062589** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A review of leptospirosis hospitalizations in the United States, 1998-2008**

Committee: **Infectious Diseases**

Topic: **Zoonotic disease**

Keywords: **Emerging diseases, Hospital data, Waterborne disease**

Abstract Text

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Abstract ID: **1061651** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Novel surveillance strategies for chronic hepatitis C: The Multnomah County Registry Project, 2009**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Hepatitis, Prevention, Surveillance**

Abstract Text

Background:

Hepatitis C virus (HCV) is the most common chronic blood-borne virus in the US, and morbidity and mortality related to HCV infection is predicted to increase dramatically in the decade 2010-2019. Given the heavy burden of disease and limited funding available for surveillance in most jurisdictions, novel surveillance strategies are needed to characterize persons with confirmed chronic HCV reported to local health departments. We piloted the use of a data collection form faxed to clinicians to obtain information on persons with HCV reported in Multnomah County, Oregon.

Methods:
For the period January-December 2009, health care providers of persons newly-identified with laboratory-confirmed HCV aged > 18 years reported to Multnomah County Health Department (MCHD) were faxed a one-page form to collect demographic characteristics, clinical histories and risk factors.

Results:
MCHD received 1287 reports of persons meeting the case definition. We excluded 92 (7%) because they were tested in settings such as correctional facilities or emergency departments where a primary care provider could not be identified. An additional 230 (18%) cases were excluded because a fax number could not be obtained for the provider. Of the remaining 965 (75%), responses were received from 619 (64%) providers, for an overall response rate of 48%. The majority of cases were male (55%), and 66% were between the age of 41-60 years. Cases were tested primarily in private provider facilities (54%), Multnomah County primary care clinics (12%), and a large health maintenance organization (10%). Over 51% of cases had a history of injection drug as a risk factor for HCV infection. The majority of cases (55%) were currently insured. Forty percent of cases had been referred to a gastroenterologist, 6% were diagnosed with cirrhosis, and 7% were currently being treated or had received treatment for chronic HCV. Further, 151 (24%) cases were vaccinated against hepatitis A, and 24% were vaccinated against hepatitis B.

Conclusions:
Given a relatively modest investment in resources (FTE=1.25), MCHD was successful in capturing valuable risk factor and demographic information on newly-reported cases of chronic HCV and describing their clients' ability to access medical care and preventive services such as vaccination. Although this surveillance strategy requires validation and is limited in its ability to describe individuals without identifiable primary care providers, use of faxes to clinicians is worth further investigation as a surveillance tool when individual case investigation is not feasible.

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Abstract ID: **1059271** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Evaluation of decline in reported tuberculosis cases â€“- Pennsylvania, 2009**

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Infectious Diseases, Surveillance**

Abstract Text

Background:
A substantial reduction in reported tuberculosis (TB) cases in the United States occurred in 2009, with an 11.3% decline in case rate compared to an average annual decline of 3.8% between 2000 and 2008. In Pennsylvania, the reduction in TB case rates was even greater, falling from 3.1 per 100,000 persons in 2008 to 1.9 per 100,000 in 2009 (-39%). The Philadelphia Department of Public Health, Pennsylvania Department of Health TB Control Programs, and CDC investigated changes in TB surveillance and diagnosis to determine if this decline represented a true reduction in TB disease.

Methods:
To assess changes in TB surveillance, we analyzed trends in counted and suspected TB reports during 2007-2009. Line lists of patients with positive Mycobacterium tuberculosis complex results were collected from private (hospital and commercial) and public health laboratories and cross-matched with Pennsylvania's electronic notifiable diseases surveillance system (PA-NEDSS) to identify unreported cases. Any suspected TB reports that had not been counted were reevaluated if they had TB disease characteristics. To assess changes in TB diagnoses, we distributed a survey to the 161 PA-licensed laboratories requesting information about the number of specimens received for TB culture testing, nucleic acid amplification and/or other microbiological tests and the proportion with positive results. We analyzed annual trends in TB-related hospitalizations (ICD-9 codes: 010-018) in hospital discharge records for southeastern Pennsylvania.

Results:
The number of suspected TB cases reported to public health authorities remained stable during 2007-2009, but the percentage of those counted as cases declined by 30% in 2009 compared to 2008. We detected six cases that should have been counted but were not through reevaluation of 409 suspected TB reports. No unreported countable cases were identified through cross-matching laboratory line lists and PA-NEDSS. The number of specimens received for TB testing at 131 laboratories (of 161) responding to the survey, and the number of TB diagnoses in hospital discharge records, remained stable during 2007-2009. However, the proportion of laboratory specimens that tested positive for TB by culture declined by 37% between 2008 and 2009.

Conclusions:
Pennsylvania's decrease in TB cases probably represents a true decline in disease rather than underdiagnosis or underreporting. Continued TB surveillance, including vigilance in detecting, diagnosing, and promptly reporting TB to public health, will help to verify our findings and determine whether this decline represents a new long-term trend in TB rates.

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Abstract ID: **1061401** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **â€œTB Rowâ€ - Mycobacterium tuberculosis cluster investigation using current and historical genotyping to supplement traditional epidemiology - Detroit, Michigan 1960sâ€“2010**

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Communicable disease, Outbreak investigations, Risk factors**

Abstract Text

Background:
In 2010, widespread Mycobacterium tuberculosis (TB) clusters were identified in Michigan. In one cluster, 8 cases of multidrug-resistant TB were diagnosed during 1998-2009 in an area known historically as “TB Row.” Since 2004, universal genotyping has been performed on Mycobacterium tuberculosis (TB) isolates in Michigan. Using traditional epidemiology and laboratory genotyping results, we investigated to determine associations with historical cases, assess continued transmission, identify risk factors, highlight missed opportunities, and prevent future cases.

Methods:
To define cluster inclusion, we used current (polymerase chain reaction-based) and historical (restriction fragment length polymorphism [RFLP]) genotyping methods to supplement traditional epidemiologic links. Additional data were collected from medical records, case files, patient interviews, and multiple databases at national, state, and local levels.

Results:
Using current genotyping methods and epidemiological linkages, this cluster comprised 43 persons with active TB diagnosed during 1966-2010; persons were members of 1 extended family and close contacts (1966-2009), their neighbors (1993-2009), or residents of nearby homeless shelters (2007-2010). Traditional epidemiology linked 18 cases. An additional 25 cases were linked by using genotyping. Five used both methodologies. All patients were U.S.-born and black; 26 (60.5%) were male; 13 (30.2%) had history of homelessness; 23 (53.5%) had history of substance abuse; 10 (23.3%) were human immunodeficiency virus-infected; 10 (23.3%) had multidrug-resistant TB; 5 (11.6%) required court commitment to complete treatment; and 16 (37.2%) failed to complete appropriate treatment. RFLP results from historical cases (1996-2000) linked 71 additional persons to this cluster; these data are currently being analyzed.

Conclusions:
Molecular analysis can help to define inclusion in TB clusters when epidemiologic links are difficult to determine because of uncooperative patients, transient populations, or persons at high risk. Multigenerational and neighborhood transmission reveal missed opportunities for TB prevention among persons with high prevalence of known TB risk factors. Active and routine use of genotyping may assist with prompt case identification, improve contact investigations, and enhance ongoing TB cluster management.

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Abstract ID: **1062636** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **HIV risk and prevalence among three focal groups in Washington DC metropolitan areas**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **Behavioral health, Epidemiology, HIV/AIDS**

Abstract Text

Background:
Washington DC has one of the highest HIV/AIDS seroprevalence rates in the nation, with 3.2% of adults and adolescents and 7.2% of black men reported living with HIV/AIDS— a prevalence higher than that reported in Ethiopia, Nigeria, or Rwanda. Male homosexual and heterosexual contacts and injection drug use (IDU) have been 3 major driven forces fueling the epidemic. This analysis explores the risks and prevalence for HIV among 3 focal groups, namely, men who have sex with men (MSM), IDUs, and heterosexual groups in areas with high HIV prevalence and high poverty in Washington DC metropolitan areas.

Methods:
Data from second round men how have sex with men (MSM2; n=473), second injection drug user (IDUs; n=547), and the first heterosexual (HET1; n=717) cycles of the National HIV Behavioral Surveillance (NHBS) study in DC were analyzed. Demographics, sexual/drug use behaviors, and HIV status by serological testing were collected. Participants were recruited using respondent driven sampling (RDS) for NHBS-HET1 and NHBS-IDU2, venue-based strategy for NHBS-MSM2.

Results:
HIV prevalence rates were 14.2%, 11.5%, and 4.7% for NHBS-MSM, IDU and HET participants, respectively. Among those HIV-positive cases, 47%, 42%, and 41% were newly identified cases among these 3 subgroups, respectively. Among MSM, older (AOR=9.0; ≥30 yrs), blacks (AOR=4.5), lower level education (AOR=5.0; ≤high school), more sex partners (AOR=2.6; >3), early sex debut (AOR=5.7; ≤12yrs), and ever injected drugs (AOR=9.0) were associated with HIV infection. Among IDUs who ever having Hepatitis B or C (AOR=2.3) and ever having any other sexually transmitted diseases (STDs) (AOR=4.3) were independently associated with HIV infection. Among HET participants, older (AOR=7.2; ≥40yrs), unemployed/retired/disabled (AOR=2.1), ever having any other STDs (AOR=5.6), commercial sex (AOR=5.7) were independently associated with HIV infection.

Conclusions:
The study found alarming high HIV prevalence rates among NHBS-MSM/IDU participants (14.2% and 11.5%) in DC metropolitan areas as well as among HET-1 participants living in poverty areas (4.7%). High proportion of newly identified HIV infection indicated that the virus many continuously spread among the 3 focal groups. HIV prevention efforts should be expanded in these high risk groups and poverty areas in DC. Better targeted effective community-level interventions, in particular, would be ideal for these focal groups and poverty areas of high HIV prevalence in DC metropolitan areas.

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Abstract ID: **1061305** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Survey of animal trappers, a potentially overlooked occupational group, regarding emerging local rabies exposure risks - Denver metropolitan area, 2010**

Committee: **Infectious Diseases**

Topic: **Rabies**

Keywords: **Occupational exposure, Prevention, Rabies**

Abstract Text

Background:
Rabies is a fatal viral encephalitis transmitted between mammals. Although preventive measures have made human rabies rare in the United States, worldwide, >55,000 persons die from rabies annually. In Colorado, bats were historically the primary rabies virus (RV) reservoir (bat RV variant). However, in 2007, skunk RV variant was detected in rural Colorado, reaching the Denver-metropolitan suburbs in 2010. Skunks interact frequently with terrestrial animals; therefore, skunk rabies puts these animals and the humans who interact with them at risk. To address this, using Advisory Committee on Immunization Practices recommendations, we began a campaign to educate and improve RV vaccination among workers with elevated occupational risk of contracting rabies. Because data were limited regarding animal trappers, we surveyed this group to better understand their rabies-related risks.

Methods:
We used MapQuest® to identify pest-control companies located within 10 miles of our jurisdiction then surveyed managers/owners about mammals trapped, workers' rabies education, and workers' RV vaccination.

Results:
We reached 57 (90%) of 63 eligible companies; 22 (39%) of 57 reported trapping mammals. Sixteen (89%) of 18 respondents had personal protective equipment (PPE) and mammal-handling policies, 7 (41%) of 17 had written prevention policies; 3 (19%) of 16 reported recent rabies education of themselves or their employees; and 1 (6%) of 18 had a vaccination policy, although 4 (21%) of 19 had vaccinated employee(s). RV-vaccinated employees were rarer in companies with only 1 trapper (0/10 [0%]), compared with companies having ≥2 trappers (4/9 [44%]) (Fisher's exact test P <.05).

Conclusions:
In geographic areas with increased rabies exposure risks, PPE-related education and vaccination of animal trappers and others in high-risk occupations might help prevent cases of human rabies.

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Abstract ID: **1060815** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A One Health surveillance system integrating animal, human, and environmental health data: Is this the future of public health?**

Committee: **Infectious Diseases**

Topic: **Zoonotic disease**

Keywords: **Informatics, One Health, Surveillance**

Abstract Text

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Abstract ID: **1056352** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **The epidemiology of traumatic brain injuries in New York State**

Committee: **Injury Control and Prevention**

Topic: **Traumatic brain injury (e.g. war, sports, abusive head trauma, etc.)**

Keywords: **Data/Surveillance, Epidemiology, Traumatic Brain Injury**

Abstract Text

Background:
A traumatic brain injury (TBI) is an injury to the brain or skull caused by an external force such as a strike or impact. Unlike other injuries such as broken legs or cut fingers that can heal, brain injuries are often permanent and disabling. The leading causes of TBI continue to be falls, motor vehicle crashes, and assaults.

Methods:
NY multiple causes of death data, inpatient hospital discharge data, and outpatient emergency department (ED) discharge data were used to track the incidence and rate of TBI in New York State. Hospital data was linked to police and motorist crash report data to further investigate the contributing factors of motor vehicle crashes that lead to increased risk of sustaining a brain injury.

Results:
Annually in NY, TBIs result in more than 2,100 deaths, 18,500 hospitalizations, and 82,000 ED visits among residents, a rate of 11.0 deaths, 96.2 hospitalizations, and 425.4 ED visits per 100,000 residents. Hospitalization charges for TBIs average $37,839 and ED charges average $1,909 per stay, totaling more than $860 million in annual charges. Males are 2.7 times more likely to die, 1.7 times more likely to be hospitalized, and 1.3 times more likely to need treatment at an ED due to a TBI. The highest rate of TBI deaths occurs among adults aged 65 years and older, at 30.5 per 100,000 residents in this age group. The incidence rate for older New Yorkers is three times greater than for any other age group. Among hospitalized residents, the highest rate of TBIs are to children under one year of age and to adults 65 years and older, at 179.7 and 266.3 per 100,000 residents, respectively. The two highest rates of TBI-related ED visits are to children less than one and between one and four years old, at 1,447.0 and 973.6 per 100,000 residents. In motor vehicle crashes, unrestrained vehicle occupants were three times more likely to sustain a TBI than vehicle occupants that bucked-up. Alcohol and speed related crashes were associated with the highest risk of a TBI.

Conclusions:
TBI continues to be a significant public health problem in NY. The continued surveillance of TBI in NYS allows for the targeted implementation of programs and interventions that can prevent many of the deaths and disabilities caused by a brain injury. Therefore, there is an ongoing need to collect and analyze data related to TBI.

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Abstract ID: **1060667** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Infant deaths identified in violent death surveillance, Oklahoma, 2004-2007**

Committee: **Injury Control and Prevention**

Topic: **Injury related infant and childhood morbidity and mortality**

Keywords: **Infant mortality, Injury prevention, Violence**

Abstract Text

Background:
Oklahoma's infant mortality rate has been above the U.S. rate since 1992 (8.5 and 6.8, respectively, in 2007). A leading cause of infant mortality is sudden unexplained infant death (SUID). Nearly half of SUID is due to sudden infant death syndrome (SIDS). The percentage of SUID due to SIDS has been decreasing due to a diagnostic shift towards other designations such as "undetermined manner." The Oklahoma Violent Death Reporting System (OK-VDRS) provides data on undetermined manner deaths. The objective of this study was to analyze OK-VDRS data on infant deaths to inform prevention.

Methods:
OK-VDRS data are collected from medical examiner reports, death certificates, police reports, and child fatality review on all suicides, homicides, undetermined manner deaths, unintentional firearm deaths, and legal interventions that occur in the state. A descriptive analysis of OK-VDRS data was conducted for infant deaths (<1 year of age). Cases included Oklahoma residents who died in Oklahoma. Demographics, racial disparity, and circumstances surrounding the deaths were examined.

Results:
During 2004-2007, 392 child (<18) deaths were identified in OK-VDRS. Fifty-three percent of these deaths were infants (1.0 per 1000 live births). The majority of the infant deaths (89%) were ruled as undetermined manner; 11% were homicides. Native American and black infants were disproportionately represented among these deaths. Native American and black infants had significantly higher risk than white infants (RR=2.38 and RR=2.24, respectively). Hispanic infants had significantly lower risk (RR=0.54) than non-Hispanics. Among the undetermined manner infant deaths studied, 61% were 1-3 months of age; 89% were in an unsafe sleeping environment or an unsafe sleeping position. Co-sleeping with adults or other children was the most common unsafe sleep environment (70%). Of the 22 infant homicides, 12 were female and 10 were male. Black infants had a higher homicide rate than white infants but it was not significant. A parent was the suspect in 77% of the homicides. Data from child fatality review was available for 156 (76%) of the infant deaths. A prior Child Protective Services report had been filed on the infant's household in 43% of the cases and child abuse had been substantiated in 22% of the infant's households.

Conclusions:
Efforts to prevent infant deaths should include promoting safe sleep. Preventing sleep-related deaths could have saved as many as 180 infants (45 infants per year) and lower infant mortality in Oklahoma by 10%. Studies to identify modifiable risk factors for infant homicide are needed.

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Abstract ID: **1061779** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Homicide incident profiles of four municipalities in northeastern Puerto Rico: Supporting crime prevention programs**

Committee: **Injury Control and Prevention**

Topic: **Violence across the lifespan (e.g. child abuse, intimate partner violence, elder abuse, etc.)**

Keywords: **Injury prevention, Minorities, Violence**

Abstract Text

Background:
The homicide incident rate in Puerto Rico is among the highest in the United States. The island is

divided into thirteen law enforcement regions to facilitate local police operations. The Carolina law enforcement region (CLER) comprises the municipalities of Canóvanas, Carolina, Loíza and Trujillo Alto; police authorities identified this region as a high crime area impacting communities, tourism and area economy. This study aimed at identifying and analyzing CLER homicide trends and incident characteristics for the years 2007 to 2009 to assist law enforcement agencies and local governments in mapping crime prevention strategies and programs.

Methods:
The CLER database was the main data source for this descriptive study. A total of 310 homicide incidents were recorded for the years 2007-2009. Data analyzed per incident included the number of victims and their demographics; weapon used; municipality, day of the week and time of occurrence, among others. Excel, ARC GIS 9.3, and Epi-Info 2000 were used for the statistical analysis.

Results:
In 2007-2009, the average homicide incident rate for CLER was 31.4 per 100,000 persons. While the homicide incident rate per 100,000 persons per municipality was: Trujillo Alto 22.5, Carolina 24.7, Canóvanas 35.4 and Loíza 76.8. Two thirds of incidents (65%) happened between 12:01pm and 11:59pm, with most of them occurring between 6:00pm and 11:59pm (39%). Among all homicides victims, 96% were males; while the age distribution showed that 69% of all victims were between the ages of 15 and 29. The number of homicide incidents with double or multiple victims for 2007, 2008 and 2009 was three, nine, and eleven respectively.

Conclusions:
Data indicated that afternoon and night posed a higher risk for homicide incidents in the CLER. Young adult males (15-29 years of age) are the main victims of homicides in this region. Additionally, homicide incidents with double or multiple victims had a significant increased from 2007-2009. Special attention needs to be given to the municipality of Loiza, it had the highest homicide rate as compared to that of other municipalities and the entire CLER rate. Outcomes of this study provide a baseline and input for mapping and restructuring crime intervention strategies and prevention plans.

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Abstract ID: **1062059** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Sports and recreation-related, ED-treated Tbi's among the young, Ohio 2002-09**

Committee: **Injury Control and Prevention**

Topic: **Traumatic brain injury (e.g. war, sports, abusive head trauma, etc.)**

Keywords: **Bike helmets, Injury surveillance, Traumatic Brain Injury**

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Abstract ID: **1062244** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Drowning and submersion surveillance in New York City**

Committee: **Injury Control and Prevention**

Topic: **Other injury**

Keywords: **Injury prevention, Injury surveillance, Risk factors**

Abstract Text

Background:
Drowning became a reportable condition to the New York City (NYC) Department of Health and Mental Hygiene in 2009 in accordance with the World Health Organization's recommendation to track these incidents regardless of outcome.

Methods:
Eight years of NYC Death Certificates (2000-2008) where the primary or contributing cause of death was drowning were reviewed. Data from the corresponding Office of the Chief Medical Examiner files were abstracted. Cases involving children 0-4 years of age officially classified as intentional or undetermined were reclassified as unintentional if lack of adult supervision was a factor. Calls placed to Emergency Medical Services (EMS) (2001-2009) of final call type "drown" were also analyzed for temporal patterns.

Results:
393 drowning cases were identified including: 140 unintentional drowning incidents; 141 suicides; 15 homicides; and 97 incidents of undetermined intent. Males represented 74% of all drowning cases. Males between 15 and 44 years represented half of both unintentional incidents (n=72) and drowning suicides (n=70). Less than one third of both unintentional incidents and drowning suicides were non-Hispanic Black. However, males of this group represented 42% of drowning suicides among those 15-44 years of age while non-Hispanic White males represented 54% of drowning suicides above the age of 45 (n=50). Unintentional drowning incidents occurred in: natural water including beaches and rivers (54%); bathtubs (31%); pools (11%); and other (4%). 83% of natural water incidents (n=76) were among males. Young males between 15 and 24 years represented 40% of these incidents. 79% of unintentional bathtub drowning incidents among adults (n=28) were among females. Two-thirds of bathtub incidents among children less than five years (n=16) were between seven and eighteen months and 43% were non-Hispanic Black. One third of pool drowning incidents (n=15), were of children 1 - 2 years. All three drowning incidents involving buckets were among children around one year of age. Ten unintentional incidents were transportation-related. 60% of unintentional drowning incidents occurring in natural waters with known month of injury (n=62) occurred in June and July. Among these incidents with recorded time of injury (n=46), 65% occurred in the late afternoon hours (3-8pm). Seasonal and time-of-day patterns from EMS drown call data support the same patterns.

Conclusions:
NYC specific data on home and recreational drowning incidents empowers prevention efforts. These data inform tailored prevention efforts targeting risk factors in high risk groups including women, young children and young adult men.

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Abstract ID: **1062211** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Improving surveillance of intimate partner violence: A collaboration between the North Carolina Violent Death Reporting System and domestic violence prevention organizations**

Committee: **Injury Control and Prevention**

Topic: **Violence across the lifespan (e.g. child abuse, intimate partner violence, elder abuse, etc.)**

Keywords: **Domestic violence, Injury, Surveillance**

Abstract Text

Background:
Intimate partner violence (IPV)/domestic violence (DV)is a significant public health problem in North Carolina (N.C.). Since 2004, the North Carolina Violent Death Reporting System (NC-VDRS) has identified more than 550 homicides associated with IPV, 64.9 percent of which were women. Currently, multiple surveillance systems track IPV/DV fatalities in the state, including the NC-VDRS, the N.C. Coalition Against Domestic Violence (NCCADV) and the N.C. Department of Justice (NC DOJ). One of the problems that can result from overlapping surveillance systems is a difference in the number of cases detected due to discrepancies in case definitions and criteria for inclusion. NC-VDRS has partnered with NCCADV to acquire a more thorough understanding of the problem by comparing differences in methods, definitions, and the data generated by each organization's respective surveillance systems.

Methods:
NC-VDRS, NCCADV, and the NC DOJ have used different methods and case definitions for obtaining the number of IPV/DV fatalities in N.C. NC-VDRS identified cases from data collected from vital records, the Office of the Chief Medical Examiner, and local law enforcement reports; NCCADV identified cases from media reports; and the NC DOJ identified cases from state-mandated DV-related homicide reports collected by law enforcement. The authors matched cases from the NC-VDRS and NCCADV using a probabilistic linkage method based on the decedent's last name, first name, county of residence, and date of incident/death. In addition the authors assessed dissimilarities in the case definitions for IPV/DV, narratives, and overall number of cases collected by the NC-VDRS, NCCADV, and NC DOJ systems.

Results:
The NC-VDRS, NCCADV, and the NC DOJ contain minor, but important, differences in the methods used to obtain cases, case definitions, and the type of information collected. For example, in 2008, NCCADV, NC-VDRS, and NC DOJ identified 80, 125, and 131 IPV/DV-related fatalities, respectively. The presentation will highlight the specific differences between the data collection systems and will present the selected results of linking the NC-VDRS and NCCADV systems including demographic and

circumstance characteristics of both the victims and suspects.

Conclusions:
Despite a decrease in the overall rate of homicide, the rate of deaths associated with IPV/DV has remained relatively steady since 2004. One step in the right direction is linking data from multiple sources for the development of viable prevention and control strategies. This project demonstrates the utility of NC-VDRS, NCCADV, and NC DOJ for IPV/DV surveillance and highlights the importance of intra-agency collaboration.

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Abstract ID: **1060285** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Violent deaths among Native Americans in Oklahoma**

Committee: **Injury Control and Prevention**

Topic: **Injury related issues in Native Americans**

Keywords: **Injury, Native Americans, Violence**

Abstract Text

Background:
Violent deaths in the U.S. occur disproportionately among Native Americans (NA). From 2004-2007, the violence-related injury death rate among NA was 10% higher than the national average rate. Oklahoma has one of the highest concentrations of NA in the U.S. The objective of this study was to describe the characteristics of violent deaths among NA and compare to non-NA in Oklahoma.

Methods:
We used data from the Oklahoma Violent Death Reporting System, which includes suicides, homicides, undetermined manner deaths, unintentional firearm injury deaths and legal intervention deaths. Cases included Oklahoma residents who died in Oklahoma during 2004-2008. Race was categorized into 2 groups: NA and non-NA. The non-NA category included white, black, Asian, Pacific islanders and other races combined. Rates were calculated using the Census Bridged race population data.

Results:
There were 4560 violent deaths among Oklahoma residents. Ten percent of victims were NA. Seventy-four percent of violent deaths among NA were male. The overall rate of violent death among NA was 17% higher than the rate among non-NA (28.1 and 24.0 per 100,000 population, respectively). The violent death rate among NA 25-44 years of age was 50% higher than the rate among their non-NA counterpart. The suicide rate among NA was 4% less than the rate among non-NA. However, the suicide rate among NA 10-24 years of age was 78% higher than the rate among non-NA in that age group. The homicide rate among NA was 20% higher than the rate among non-NA. The homicide rate

among NA 25-44 years of age was 1.9 times higher than the homicide rate among non-NA in that age group. The undetermined manner death rate among NA was more than twice the rate among non-NA. NA children 0-4 years of age had the highest rate of undetermined manner death. NA victims were significantly more likely to be single/never married than non-NA (OR=1.63, 95% CI, 1.33-1.98), have lower educational attainment (OR=1.62, 95% CI, 1.23-2.14) and be using alcohol at the time of death (OR=1.85, 95% CI, 1.47-2.32). There was no significant difference among NA victims and non-NA victims for drug use at the time of death, OR=1.17,(95% CI, 0.92-1.49).

Conclusions:
The rates of homicide, youth suicide and undetermined manner death among NA in Oklahoma were disproportionately higher than the rates among non-NA. Violent death prevention programs should target NA populations particularly children, youths and adults less than 45 years of age.

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Abstract ID: **1059448** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Risk factors for prescription opioid death - Utah, 2008â€“2009**

Committee: **Injury Control and Prevention**

Topic: **Unintentional drug poisoning deaths**

Keywords: **Risk factors, Unintentional/intentional poisoning**

Abstract Text

Background:
Deaths from prescription opioids in Utah increased from 51 in 2000 to 263 in 2009 (>500%). Prevention efforts are hindered by an inadequate understanding of risk factors for overdose death.

Methods:
Characteristics of prescription opioid overdose decedents from 2008-2009 were gathered from medical examiner records and next-of-kin interviews. Decedents (N = 254) were compared with persons reporting prescription opioid use in the past year (N = 1,308) on state-added Utah 2008 Behavioral Risk Factor Surveillance System (BRFSS) questions. Exposure prevalence ratios (EPRs) and 95% confidence intervals (CIs) were calculated.

Results:
The majority (81%) of decedents had chronic pain; among those prescribed opioids, decedents were more likely to have chronic pain than opioid-using BRFSS respondents (EPR: 3.0; 95% CI: 2.6-3.3). Decedents were more likely than opioid-using BRFSS respondents to smoke daily (EPR: 5.6; 95% CI: 4.4-6.9), not graduate from high school (EPR: 9.0; 95% CI: 6.1-11.8), live alone (EPR: 3.5; 95% CI: 2.9-4.0), obtain opioids from nonprescription sources (EPR: 3.8; 95% CI: 2.8-4.7), and use opioids more than prescribed (EPR: 16.5; 95% CI: 9.3-23.7). Among females, decedents more often than opioid-using BRFSS respondents had a BMI ≥30 (EPR: 1.6; 95% CI: 1.3-1.8) and were aged 45-54

years (EPR: 2.3; 95% CI: 1.9-2.7).

Conclusions:
Chronic pain was common among decedents. The observed association with smoking might be confounded by other factors and deserves further study. When prescribing chronic opioid therapy, healthcare providers should be alert for risk factors among patients (e.g., low education level, living alone, obesity [females], being aged 45-54 years [females], obtaining opioids from nonprescription sources, and using opioids more than prescribed).

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Abstract ID: **1060190** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Unintentional drug poisoning trends in Nebraska, 2000â€“09**

Committee: **Injury Control and Prevention**

Topic: **Unintentional drug poisoning deaths**

Keywords: **Injury surveillance, Unintentional/intentional poisoning**

Abstract Text

Background:
The national rate of unintentional drug poisoning deaths has increased approximately 5-fold since the 1990s. This study tracks unintentional drug poisonings among Nebraskans over a 10-year period to determine if this state is following a similar pattern and to identify prevention priorities.

Methods:
Drug poisoning information was collected from death certificates, hospital and emergency department discharge data, and Nebraska Regional Poison Center call data for analyses. Frequencies, age-adjusted rates and age-specific rates were calculated to describe trends of unintentional drug poisonings among Nebraskans during 2000-09. Cases include poisonings from both prescription and nonprescription drugs. Only poison center calls regarding confirmed exposure cases that were not treated in a health care facility were included in analyses.

Results:
Over the 10-year period, the death rate due to unintentional drug poisonings increased 3-fold among males (2009 death rate: 3 per 100,000 population) and 5-fold among females (2009 death rate: 5 per 100,000 population) while the hospitalization rate due to unintentional drug poisonings increased 2-fold among males (2009 rate: 13 per 100,000 population) and females (2009 rate: 17 per 100,000 population). The overall rates of emergency department visits (2009 rates: 44 per 100,000 population

[male]; 51 per 100,000 population [female]) and poison center calls (2009 rates: 8 per 100 total calls [male]; 9 per 100 total calls [female]) due to unintentional drug poisonings did not substantially change over the study period. Compared to other age groups, the greatest increase in unintentional drug poisoning rates was observed among those 55-74 years during 2000-09; death, hospitalization, and emergency department visit rates increased 9-fold, 3-fold, and 3-fold, respectively. Opioid analgesics accounted for 1% of PCC calls, 2% of emergency room visits, 4% of hospitalizations, and 37% of deaths due to unintentional drug poisonings in 2000 and accounted for 2% of poison control center calls, 6% of emergency room visits, 20% of hospitalizations, and 60% of deaths due to unintentional drug poisonings in 2009.

Conclusions:
The greatest unintentional drug poisoning rate increases were associated with the most severe outcomes, hospitalizations and death. Interventions should address the 55-74 years age group due to the important increase in drug poisoning rates observed among this group. Finally, drug poisoning prevention efforts in Nebraska should focus on the control of opioid analgesics as this class of drug has been associated with a notable increase in unintentional poisonings.

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Abstract ID: **1062172** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Boat-related carbon monoxide poisoning surveillance in the United States**

Committee: **Injury Control and Prevention**

Topic: **Other injury**

Keywords: **Chemical and biological exposures, Environmental exposures, Injury prevention**

Abstract Text

Background:
Boating-related carbon monoxide (CO) exposure is a preventable, public health concern that can cause long term harm or death to victims. Exposed swimmers can become unconscious in water and drown. CO is a byproduct of incomplete fuel combustion from gasoline-powered engines and generators and is imperceptible to humans. Surveillance of boating-related CO poisoning is critical to inform prevention efforts, yet few epidemiologic studies have been conducted in this area. In order to assess the magnitude and burden of boating-related CO poisoning in the US, and to characterize the exposed populations, the Centers for Disease Control and Prevention (CDC) and the National Park Service (NPS) partnered to identify data sources and analyze the data.

Methods:
CDC and NPS compiled the most comprehensive collection of national marine-related CO exposures

from news media, US Coast Guard data, and hyperbaric oxygen treatment facility reports. Cases were identified as illness in persons who experienced signs and symptoms consistent with CO poisoning and had known exposure to marine engine or generator exhaust. Descriptive analysis was conducted. We also performed a review of studies from the past 10 years on NIOSH health hazard evaluations and engineering reports related to CO poisonings to assess current knowledge of CO in marine environments nationwide.

Results:
From 1981-2010, preliminary data show that over 920 boating-related CO exposures were reported in 40 states. Of these, approximately 18% of exposures resulted in fatalities and occurred primarily among men. Men were also the majority (55%) of those exposed to CO. The average age of all exposed individuals was 28 years (range: <1-81); 35% were among children <18 years. Forty-three percent of reported exposures were associated with the use of marine generators and 25% were due to propulsion engine use. The review of health hazard boating-related studies also provided evidence that engineering solutions can effectively reduce CO exposures in marine environments.

Conclusions:
These estimates are likely an underestimation of the overall burden owing to the lack of reporting and recognition of CO poisoning. Findings from this analysis will contribute to our understanding of boating-related exposures and assist in guiding prevention efforts. The data also contribute to the growing body of evidence that shows that enhancing educational efforts—such as on the proper use of marine generators—and implementing engineering solutions for boats are the critical efforts needed to effectively reduce boating-related CO-related morbidity and mortality.

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Abstract ID: **1032613** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Acute exertional rhabdomyolysis and triceps compartment syndrome among high school football players - Oregon, 2010**

Committee: **Injury Control and Prevention**

Topic: **Injury related infant and childhood morbidity and mortality**

Keywords: **Adolescent health, Injury, Physical activity**

Abstract Text

Background:
Although rare, overexertion can lead to sufficient muscle injury to cause rhabdomyolysis and compartment syndrome (CS). In August 2010, a cluster of rhabdomyolysis and CS occurred among high school football players. To help prevent future morbidity among the estimated 7.5 million high school sports participants, we investigated causal and contributory factors for illness.

Methods:
We reviewed hospital records and interviewed team members by using a standardized questionnaire.

Rhabdomyolysis was defined as myalgia plus creatine kinase (CK) >2,320 U/L. CS was defined as clinical diagnosis that required fasciotomy. After discharge, we tested 4 patients' urine for performance-enhancing drugs (PED) and conducted an environmental investigation of school facilities.

Results:
Among 43 players, 40 (93%) completed questionnaires, and 22 (51%) experienced rhabdomyolysis (peak CK range: 2,434-42,000 U/L). All 22 patients had upper-arm myalgia; 12 were hospitalized; 3 experienced triceps CS; none experienced renal failure. Illnesses started 1-3 days after an intense triceps exercise, which occurred in a non-air-conditioned room with outside temperature 92°F. Among 19 players receiving at least one vote from a teammate(s) as 1 of the 3 hardest working players, 13 (68%) experienced rhabdomyolysis, compared with 7 (33%) of 21 not considered to work hardest (relative risk: 2.1; 95% confidence interval: 1.0-4.0). Creatine supplement use, reported by 10 (25%) players, was not associated with rhabdomyolysis. No player acknowledged use of alcohol, illicit drugs, or PED; all PED tests were negative. Environmental investigation did not identify any factors contributing to illness.

Conclusions:
The triceps exercise and hot conditions caused rhabdomyolysis and CS. Greater awareness of specific exercise hazards and prevention strategies can minimize the risk for clinically significant muscle injury.

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Abstract ID: **1062533** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Unintentional drug poisoning mortality in New York City: A comparison case definitions and death certificate data with medical examiner records (2009)**

Committee: **Injury Control and Prevention**

Topic: **Unintentional drug poisoning deaths**

Keywords: **Coding, ICD, Substance abuse**

Abstract Text

Background:
Drug poisoning is the second leading cause of injury death in the United States, and in New York City (NYC), it is the fourth leading cause of premature adult death. Nevertheless, recording deaths from acute poisoning is not always straightforward. This presentation aims to accomplish two primary objectives: 1) to compare three case definitions for "unintentional drug poisoning" deaths, and: 2) to compare ICD-10 codes abstracted from death certificates with toxicology data abstracted from medical examiner files.

Methods:
NYC Department of Health and Mental Hygiene (DOHMH) conducted a retrospective review of data

from two linked sources: death certificates (DC) and medical examiner (ME) files. This investigation yielded findings influenced by the case definition used, as follows: Definition 1: DC includes multiple cause codes for “poisoning by a psychoactive substance (excluding alcohol or tobacco)” (ICD-10 codes X40-X44) or a “mental or behavioral disorder due to a psychoactive substance” (ICD-10 codes F11-16, F18-19, excluding the 4th character .2 dependence and .6 amnesic syndrome), and records manner of death as “accidental.” Cases using this definition were confirmed at the ME’s office using toxicology data, and are referred to as the “gold standard.” Definition 2: DC includes only selected underlying X-codes. Definition 3: DC includes selected underlying X-codes and F codes, and records manner of death as “accidental.” Further, toxicology findings abstracted from ME files were compared with ICD-10 “nature of injury” codes listed on the DC (T36-T50).

Results:
Definition 1: There were 636 unintentional drug poisoning cases selected from DC multiple-cause data and confirmed with ME files, including 599 X-codes and 37 F-codes. By comparison, Definition 2: Under-reported by 49 cases because only X-codes were included (N= 562), and Definition 3: Over-reported 99 cases involving F-codes, which were “natural” manner, and under-reported 37 cases involving X-codes, because the analysis included underlying causes only (N=698). Toxicology analysis confirmed all DC were incomplete, but varied by substance. In particular, T-codes were missing from 60% of heroin cases and 84% of alcohol cases. For other drugs, approximately one-third of cases were missing T-codes, respectively (32% of benzodiazepines, 32% of methadone, 28% of other opioid analgesics, 22% of cocaine).

Conclusions:
Our findings indicate that restricting unintentional drug poisoning case analyses to underlying cause and/or X-codes only results in substantial under-reporting of deaths. DC data alone lacks specificity, and often under-counts substances involved. Synthetic drugs tend to have few or no metabolites, and are consequently more frequently captured on DC.

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Abstract ID: **1061652** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Unintentional drug poisoning deaths in New York City (2005-2009): Drug combinations and related characteristics**

Committee: **Injury Control and Prevention**

Topic: **Unintentional drug poisoning deaths**

Keywords: **Local epidemiology, Research, Substance abuse**

Abstract Text

Background:
In New York City (NYC), unintentional drug poisoning is the fourth leading cause of adult death and accounts for 1.5% of all NYC deaths. Nearly all deaths involve multiple substances. The objectives of

this proposed presentation are: to identify drug and alcohol combinations involved in unintentional poisoning deaths; to characterize associated individual decedent characteristics, geographic variations and other ecologic factors and; to compare deaths where alcohol is involved and where it is not. Significant trend data will be presented.

Methods:
A retrospective review of data was conducted from two linked sources: NYC death certificates, and death files from the Office of the Chief Medical Examiner. Deaths reported here include poisonings from both illicit and licit drugs. All deaths occurred in NYC during 2005-2009; the death certificate recorded the manner of death as “accidental,” and ICD-10 codes from multiple-cause files were used. The medical examiner data provided toxicologic information for each fatality. In deaths caused by drug intoxication, when the toxicology results reveal the presence of more than one substance in concentrations greater than trace amounts, it is customary to include all the identified substances in the causes of death.

Results:
Nearly all (98%) of fatalities involved multiple substances. Seven out of ten deaths involved an opioid; heroin was most commonly present, involved in nearly half (47%) of deaths, followed by methadone (28%) and other prescription opioids (20%). Cocaine was involved in 59% of deaths, alcohol in 40%, and benzodiazepines in 30%. The most common drug combination involved benzodiazepines and opioids (90%), and primarily heroin (51%). While only one-quarter of cocaine involved deaths (24%) included benzodiazepines, alcohol was involved in more than half (53%) and heroin in 41%. Half of deaths involving prescription opioids also involved benzodiazepines (50%) and cocaine (47%). Distinct demographic differences were associated with different drug combinations. For example, deaths among white males were more likely to involve a combination of benzodiazepines and heroin, or prescription opioids and cocaine. Deaths among Hispanic males were more likely to involve combinations of heroin-alcohol and cocaine-heroin. Overall, the group aged 45-54 years had the highest rates for these combinations.

Conclusions:
Given that the majority of unintentional drug poisoning deaths involve multiple substances, identifying common drug combinations is critical to understanding patterns of risk and for informing intervention/prevention efforts. Some drug combinations, such as multiple central nervous system depressants (eg, opioids and benzodiazepines) increase risk for a fatal overdose

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Abstract ID: **1061743** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Safe States Alliance improves poison surveillance through its Seventh Injury Surveillance Workgroup (ISW7) on poisoning (Katherine Harmon will present in place of Scott Proescholdbell)**

Committee: **Injury Control and Prevention**

Topic: **Unintentional drug poisoning deaths**

Keywords: **Epidemiologic methods, Injury surveillance, Unintentional/intentional poisoning**

Abstract Text

Background:
The goal of the Safe State's Alliance's (SSA) Poison Injury Surveillance Workgroup (ISW) is to promote better surveillance around poisoning in our states and nation with an emphasis on drug poisonings. In order to do that the ISW is developing a framework for states and national-level organizations to use that includes: a conceptual definition of all types of poisoning that differentiates by type of exposure, and where possible, by intent, chronic, and acute; poisoning surveillance and risk factor data sources at the national and state level; and an operationalized definition for drug poisoning using ICD9-CM and ICD-10 for as many poison data sources as possible.

Methods:
The Workgroup developed a proposed conceptual definition of a poisoning: a poisoning is an exposure to any extrinsic chemical and radioactive substance that results in at least one related adverse clinical effect. This includes: acute and chronic exposures, and other adverse drug events, exposures to venoms and other biological toxins (Toxin exposures include bacterial foodborne intoxications, eg., staphylococcal food poisoning and botulism, as well as seafood "poisoning," eg., ciguatera and scombroid fish poisoning), exposures to radioactive substances incorporated into the body, and extrinsic substances include solids, liquids or gases and natural (ie plant) or synthetic chemicals. This excludes: bites and stings without envenomation and infections (e.g., food and waterborne infections such as hepatitis A, cryptosporidiosis, and salmonella, and infections resulting from the injection of drugs).
Safe State's Poison ISW is composed of approximately 15 members from private, state, federal, and national organizations. Each member brings a unique perspective to poison surveillance and years of experience. The Poison ISW will continue to meet throughout the first half of 2011 to improve overall poisoning surveillance and develop a consensus report.

Results:
The ISW7 will be creating a Poison Data Sources Reference Manual that will contain information on the following poisoning data systems: National Poison Data System, Workers Compensation Laws, Child Death Review, Drug Abuse Warning Network, Nationwide Emergency Department Sample, Nationwide Inpatient Sample, Medical Examiner Data, National Ambulatory Medical Care Survey, Mortality (ICD-9 and ICD-10), National Electronic Injury Surveillance System, National Emergency Medical Services, National Hospital Ambulatory Medical Care Survey, National Hospital Discharge Survey, National Institute for Occupational Safety and Health - Sentinel Event Notification System for Occupational Risk (SENSOR), National Violent Death Reporting System, North Carolina - NC Detect State, Emergency Department State Hospital Discharge, State Death Certificates, Automation of Reports and Consolidated Orders System, Behavioral Risk Factor Surveillance System, Fatal Analysis Reporting System, National Survey on Drug Use and Health, Occupational Drug Use, Youth Risk Behavior Surveillance System, and the Adverse Event Reporting System. The ISW7 will also create SAS code templates so that others can mimic the definition of a poisoning that is created in the ISW's final report.

Conclusions:
The work of the ISW will allow an in-depth understanding of poisoning in the US and how it has changed overtime, currently being heavily influenced by drug poisoning. The final consensus report from the ISW will provide standardize definitions and practices among groups working to address unintentional poisonings, especially poisonings that are drug-related. The final report will also provide a standard method for public health officials to understand the magnitude of the problem in their jurisdiction.

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Abstract ID: **1061332** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Violent deaths among recently released prisoners (Tammy Norwood will present in place of Scott Proescholdbell)**

Committee: **Injury Control and Prevention**

Topic: **Other injury**

Keywords: **Injury surveillance, Special populations, Underserved Populations**

Abstract Text

Background:
In North Carolina, around 25,000 inmates are released from prison each year. Prisoners' reentry into their communities can be a stressful transition and possibly result in higher risk of mortality from violence. Limited information is known about violent deaths (homicide, suicide, legal intervention) among recently released prisoners. As home of the North Carolina Violent Death Reporting System (NC-VDRS), our state is uniquely positioned to link these cases to better understand and address this issue. Working with local researchers, NC-VDRS will be utilized to test this innovative linkage.

Methods:
A data file provided by the North Carolina Department of Corrections will be matched against the NC-VDRS dataset from 2006-2007. Standard methodologies will be used to perform the linkage process using social security number, last name, first name, and date of birth. Match attempts will be made for deaths which occurred within 12 months of release. Key data from both sources will be used to create a new matched data file. Using the data file, analyses will be completed to identify characteristics of recently released prisoners that may be predictive of an increased risk of violent death. A particular focus will be risk of violent deaths among recently released prisoners with histories of a mental illness.

Results:
Results from the linkage process and key findings around circumstances of death will be presented. Case studies will be presented based on the number of matched cases.

Conclusions:
The North Carolina Violent Death Reporting System has been linking data since it inception from vital records, medical examiner, and law enforcement. Linking additional data sets is a logical extension of this effort. Understanding the scope of the problem and identifying risk and causes of violent deaths among recently released prisoners could provide information for more focused intervention and prevention. This could not only improve the transition from prison to community, but also outcomes. This project provides an opportunity to create and strengthen partnerships with those working with an incarcerated population.

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Abstract ID: **1056246** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Sexual Violence among high school students in Hawaii and associated risk behaviors, Hawaii Youth Risk Behavior Survey, 2005, 2007, and 2009**

Committee: **Injury Control and Prevention**

Topic: **Violence across the lifespan (e.g. child abuse, intimate partner violence, elder abuse, etc.)**

Keywords: **Adolescent health, Violence**

Abstract Text

Background:
Victims of sexual violence (SV) have been shown to engage in a myriad of negative health behaviors including substance abuse, suicide ideation, eating disorders and risky sexual activity. Engaging in negative health behaviors may also perpetuate a cycle of SV or contribute to further victimization.

Methods:
Secondary data analysis was conducted using the Hawai'i Youth Risk Behavior Survey, a surveillance system monitoring the self-reported prevalence of high school student behaviors that most influence health. HYRBS data of 2,335 female students from 2005, 2007, and 2009 were analyzed. Prevalence estimates of SV and risk behaviors including alcohol and marijuana use, suicide ideation, engaging in sexual activity with multiple partners, and anorexic and/or bulimic behaviors were calculated. Multivariate logistic regression modeling was conducted to determine odds of risk behaviors of those who reported sexual violence compared to those who did not.

Results:
12.4% (95% CI: 10.8-14.2) of public high school girls reported having been forced to have sexual intercourse at some point in their lives when they did not want to. After adjustment for sociodemographic factors, girls who had reported SV compared to girls who did not report SV had a statistically significant increased odds of reporting: 1) suicide ideation (aOR 2.6, 95%CI: 1.6-4.4); 2) more than 5 lifetime sexual partners (aOR 4.6, 95% CI:2.5-8.5); 3) being younger than 13 upon first sexual intercourse (aOR 3.7, 95% CI: 2.6-5.4); 4) symptoms of eating disorders (aOR 2.4, 95%CI:1.6-3.4); and 5) lifetime substance use (aOR 2.3, 95%CI: 1.5-3.4).

Conclusions:
Girls who reported sexual violence also reported engaging in several risk behaviors, particularly sexual risk behaviors. This is an understudied field of adolescent health, and additional research using prospective data collection is needed to establish temporality of these findings. Whether SV may predict risk behaviors or the converse, prevention is needed to protect adolescent girls from sexual violence and these risk behaviors. This may include empowerment messaging for girls, as well as education of boys to reduce perpetration.

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Abstract ID: **1062028** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Disparities among traumatic brain injury hospitalizations in children and young adults, Pennsylvania 2000-2007**

Committee: **Injury Control and Prevention**

Topic: **Injury related infant and childhood morbidity and mortality**

Keywords: **Children and adolescents, Injury, Injury surveillance**

Abstract Text

Abstract Text
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Abstract ID: **1054743** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Traumatic brain injury in Nebraska 2004-2008**

Committee: **Injury Control and Prevention**

Topic: **Traumatic brain injury (e.g. war, sports, abusive head trauma, etc.)**

Keywords: **Traumatic Brain Injury**

Abstract Text

Background:
Traumatic brain injury (TBI) is a serious public health problem in the United States. Each year, about 1.5 million Americans sustain a TBI and about 50,000 die as a result. Furthermore, about 5.3 million Americans are currently living with a TBI-related disability. The purpose of this study is to inform public health practitioners, policymakers, and the general public about the burden of traumatic brain injury in Nebraska in order to design and implement effective prevention measures against TBI across the state.

Methods:
Death certificates and hospital discharge data were analyzed to summarize the frequency, age-specific rates, and age-adjusted rates for traumatic brain injury deaths, hospitalizations, and emergency department (ED) visits among Nebraska residents. Fatal and non-fatal traumatic brain injury was defined in accordance with the Centers for Disease Control and Prevention (CDC) and State and Territorial Injury Prevention Directors Association (STIPDA) State Injury Indicators: Instructions for Preparing 2005 Data (2007).

Results:
From 2004-2008, 1,610 Nebraskans died as a result of a traumatic brain injury. The leading cause of TBI death was motor vehicle crashes (n=591), followed by firearms (n=419) and falls (n=383). These three causes accounted for more than 85% of all TBI deaths. During this same time period, there were 4,750 hospitalizations and 30,265 emergency department (ED) visits for TBI. Importantly, TBI-related hospitalizations and ED visits increased from 42.2 hospitalizations and 255.0 ED visits per 100,000 persons in 2004, to 62.0 hospitalizations and 412.5 ED visits per 100,000 persons in 2008. Unintentional falls accounted for over half (53%) of all TBI-related hospitalizations and ED visits. Motor vehicle crashes and struck by/against injuries were the second and third leading causes of TBI-related hospitalizations, respectively, while struck by/against injuries and motor vehicle crashes were the second and third leading causes for TBI-related ED visits, respectively. Although TBIs due to unintentional falls were more common, in general, TBIs resulting from motor vehicle crashes and firearms were more serious (more likely to result in death or hospitalization).

Conclusions:
Although Nebraska's rates are, on average, lower than national TBI rates, Nebraska hospitalization and ED visit rates have been climbing dramatically in recent years. In an effort to decrease the incidence of TBI in Nebraska, public health organizations across the state are encouraged to implement evidence-based strategies to prevent motor vehicle traffic crashes, firearms, unintentional falls, and struck by/against injuries.

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Abstract ID: **1058312** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Evaluation of the New York City Fire Department's Pre-Hospital Care Report System as an injury surveillance tool**

Committee: **Injury Control and Prevention**

Topic: **Other injury**

Keywords: **Evaluation, Injury surveillance, Local Public Health Agencies**

Abstract Text

Background:
Injury is a leading cause of morbidity and mortality in New York City (NYC). Comprehensive understanding of injury requires consideration of data beyond the traditional vital statistics and hospital

discharge databases. NYC's Fire Department (FDNY) is dispatched to over one million emergency medical service (EMS) runs annually. Electronic pre-hospital care reports (ePCRs) are generated for approximately 500,000 of these. ePCRs do not categorize injury causes by the International Statistical Classification of Diseases and Related and Health Problems, Clinical Modification (ICD-9-CM) taxonomy, but instead utilize a checklist of 36 injury cause categories that both overlap with (e.g., fall) and go beyond (e.g., domestic violence) ICD-9-CM. This evaluation assesses 1) ePCR data quality across years and 2) comparability of ePCR's demographic distribution to New York State's Statewide Planning and Research Cooperative System (SPARCS) outpatient discharge database.

Methods:
2008 and 2009 FDNY ePCR data quality was determined by assessing completeness, validity (i.e., proportion of observations with plausible values), and consistency of select ePCR information fields such as age and injury consequence (e.g., head pain, wrist swelling) within and across each year. Furthermore, the demographic distribution for all injury causes combined as well as specific injury causes that overlap in each system were compared for 2008 (year for which data were available in both systems).

Results:
Preliminary analyses showed that ePCR data completeness and validity varied by information field and year; data quality diminished slightly from 2008 to 2009. Gender had the highest information quality, where 100% and 93.3% of encounters had complete and valid information in 2008 and 2009, respectively. Residential zip code had the lowest information quality, where 90.5% and 68.1% of encounters had complete and valid information in 2008 and 2009, respectively. Age and gender distribution differed for the two systems. For all injury causes combined, gender distribution was 45.8% and 45.0% female, and mean age was 38.7 and 32.6 years in ePCR and SPARCS, respectively. Differences were more pronounced for specific injury causes. For example, gender distribution of injured pedestrians was 40.9% and 48.5% female in ePCR and SPARCS, respectively. Mean age of people who fell was 50.5 and 35.3 years in ePCR and SPARCS, respectively.

Conclusions:
FDNY-EMS's ePCR has great potential for augmenting injury surveillance in NYC. The system offers detail on injury causes not captured in traditional systems; data quality seems moderately high. Moreover, the distribution disparity found may suggest that ePCR and SPARCS capture differing dimensions of NYC's injury burden; continued investigation is warranted to identify possible explanations for this disparity. In sum, ePCR shows promise as a tool for advancing injury surveillance and prevention in NYC

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Abstract ID: **1061581** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Magic behind motor vehicle crash fatality trend: A closer look at Nebraska crash data**

Committee: **Injury Control and Prevention**

Topic: **Injuries resulting from motor vehicle or other transportation modes (ATV, bike, etc.)**

Keywords: **Environment, Injury surveillance, Motor vehicles**

Abstract Text

Background:
Nebraska motor vehicle crash fatality generally declined in the last decade, with a record low of 186 deaths in 2010. In this study, we examined state wide crash data from 2001 to 2010 to explore factors that contributed to the fatality decrease.

Methods:
The 2001-2010 Nebraska crash data were extracted from Nebraska Crash Outcome Data Evaluation System (CODES). Injury severities (fatal, severe, and minor) resulted from crashes were compared over the 10 years. Trend of fatality was examined by various human and environmental factors, including age, gender, alcohol involvement, and safety belt use, as well as location, type and time of crashes.

Results:
Number of severe and minor injuries declined consistently in the last 10 years. There appeared to be considerable fluctuation in number of fatalities, although the overall trend was declining. Lower numbers of annual crash deaths coincided with cold winter(s) and significant social events, such as economic recession.

Conclusions:
Environmental factors appeared to be a one of the major contributors to the trend of motor vehicle crash fatality. Further analysis is required to confirm the findings.

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Abstract ID: **1061833** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Adult Blood Lead Epidemiology and Surveillance (ABLES) program: A dialogue to improve data quality and outreach**

Committee: **Occupational Health**

Topic: **Lead exposure surveillance (ABLES)**

Keywords: **Lead, Occupational Surveillance, Program evaluation**

Abstract Text

Key Objectives:
In this 1.5 hour program review session, the NIOSH ABLES program and the State ABLES Program principal investigators will dialogue on improving ABLES data quality, ABLES data usage, reaching out to stakeholders, and current and future implications of program updates. Also, the ABLES coding committee and the ABLES laboratory working group will describe the progress made towards achieving their charges.

Brief Summary:
The Adult Blood Lead Epidemiology and Surveillance (ABLES) program is a state-based surveillance program. Currently 40 states participated in the ABLES program and one more state will join the system. This public health surveillance program is based in the National Institute for Occupational Safety and Health (NIOSH), an institute of the Centers for Disease Control and Prevention (CDC). State ABLES programs collect, analyze and report their data, identify new and high-risk lead exposures, follow-up with physicians, workers and employers, target workplace for site visits where needed, provide referrals for consultation, enforcement, and target educational materials for employers and workers. NIOSH calculates national and state rates and distribution by industries and disseminates findings and recommendations to stakeholders; participates in CDC's Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP); participates in the Federal Interagency Lead-Based Paint Task Force; and collaborates with State and Federal partners and workers-affiliated organizations to reduce lead exposures.
In 2010, NIOSH implemented programmatic changes in the statement of work with an updated case definition for an elevated blood lead level (BLL ≥ 10µ/dL) and a revised funding schedule. The ABLES program also recommended updating the operational definition for an elevated BLL (BLL ≥ 10µ/dL) for Healthy People 2020 objective to reduce lead exposure in adults, which was accepted.

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Abstract ID: **1057580** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Adult Blood Lead Epidemiology and Surveillance (ABLES) program: Annual progress report**

Committee: **Occupational Health**

Topic: **Lead exposure surveillance (ABLES)**

Keywords: **Indicators, Lead, Occupational Surveillance**

Abstract Text

Background:
The Centers for Disease Control and Prevention (CDC) National Institute for Occupational Safety and Health (NIOSH)'s Adult Blood Lead Epidemiology and Surveillance (ABLES) program tracks laboratory-reported elevated blood lead levels (BLL) in adults. The program objective is to build state capacity to initiate, expand, or improve adult blood lead surveillance programs which can accurately measure trends in adult blood lead levels and which can effectively intervene to prevent lead exposures. As part of CDC, NIOSH is currently the only federal agency funding occupational surveillance for lead exposures.

Methods:
State ABLES programs collect adult BLL data from laboratories and health-care providers through mandatory reporting requirements. BLL reporting requirements vary among ABLES states, ranging from the reporting of all BLLs to BLLs ≥ 40 µg/dL. Most ABLES states submit data on all BLLs to NIOSH, including reports from persons whose BLL fall below the state reporting requirement. NIOSH analyses the data and disseminates findings and recommendations to stakeholders.

Results:
In 2010, 40 states participated in the ABLES program and one more state will join the system. Currently all programs submit lead exposure data at the updated case definition for an elevated blood lead level (BLL ≥ 10µ/dL) and conduct activities to prevent lead exposures. NIOSH updated the ABLES website and launched the ABLES Charts and Interactive Database website (http://wwwn.cdc.gov/niosh-survapps/ables/Default.aspx). This new public health surveillance tool is an important milestone in the pursuit of making lead exposure data accessible and easily understandable by the general public and the public health community. The ABLES program is the data source for tracking Healthy People objective to reduce lead exposures in adults since 1990. The Department of Health and Human Services launched Healthy People 2020 (HP 2020) objectives this year. HP 2020 occupational health and safety goal 7 (OSH-7) is to reduce the proportion of persons who have elevated blood lead concentrations from work exposures. State ABLES programs lead exposure data for the first 3 quarters of 2010 have been received by NIOSH and is undergoing quality control.

Conclusions:
This session will describe NIOSH and State ABLES programs' contributions to reduce lead exposures in the U.S. during the past year, the challenges for lead exposure surveillance, and will highlight the need to continue efforts to build federal and state capacity to initiate, expand, or improve adult blood lead surveillance programs.

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Abstract ID: **1059104** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Characterization of adult blood lead levels below 25 mcg/dL in the New Hampshire Adult Blood Lead Epidemiology and Surveillance (ABLES) Program**

Committee: **Occupational Health**

Topic: **Lead exposure surveillance (ABLES)**

Keywords: **Occupational exposure, Occupational Surveillance, Unintentional/intentional poisoning**

Abstract Text

Background:
Objective
To better understand the health effects of lower Blood Lead Levels (BLLs between 10 and 24 µg/dL) in the New Hampshire adult population and to support the broader discussion of feasibility of collecting

and documenting these lower BLLs.
Background
Lead adversely affects multiple organ systems and can cause permanent damage. Until recently, a blood lead level (BLL) of 25 micrograms per deciliter (µg/dL) or greater for adults was considered “elevated,” and the Healthy People 2010 goal was to eliminate BLLs above this level. However, adverse health effects have been found with cumulative exposure at BLLs lower than 25 µg/dL. The Council for State and Territorial Epidemiologists and the National Institute for Occupational Safety and Health have recommended changing the case definition for an elevated blood lead level (EBLL) in adults from 25 µg/dL to 10 µg/dL, thereby dramatically increasing the “caseload” in New Hampshire by almost 4 and half.

Methods:
In order to learn more about the health effects of lower BLLs, and to analyze the feasibility of obtaining exposure/occupation information on these lower levels," we have performed more in-depth data analysis of the NH adult population with BLLs between 10 and 24 µg/dL and for those above 25 µg/dL. In addition, we documented and coded data for 2009 by industry and occupation (to the best of our ability). Analysis was made using a basic frequency distribution, by gender, age, geography, blood lead level, work relatedness, process, and by industry and occupation. Employee survey results from BLLs 25 µg/dL and above will also be analyzed.

Results:
Preliminary results of data analysis will be presented, as well as lessons learned from the process of further documenting industry and occupation for all BLLs 10 µg/dL and above.

Conclusions:
Knowledge gained from this study will support the broader discussion of the need for improved data collection and documentation of health effects from lower BLLs in the adult population.

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Abstract ID: **1049105** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Evaluation of multi-source surveillance for work-related carpal tunnel syndrome in California, 2007-2008**

Committee: **Occupational Health**

Topic: **Evaluating results of occupational health surveillance programs**

Keywords: **Data/Surveillance, Evaluation, Occupational Surveillance**

Abstract Text

Background:
Work-related carpal tunnel syndrome (WR-CTS) is a musculoskeletal disorder caused by ergonomic

stressors such as repetitive motion and vibration, which results in compression of the median nerve at the wrist. Because WR-CTS affects workers in all sectors and has a longer average duration of disability than other work-related conditions, the Council of State and Territorial Epidemiologists has included CTS as a core occupational health indicator. In order to address recent evidence that their Survey of Occupational Illness and Injury (SOII) undercounts work-related injury and illness, the U.S. Bureau of Labor Statistics (BLS) is collaborating with the California Department of Public Health (CDPH) Occupational Health Branch to perform multi-source surveillance of WR-CTS in order to enumerate the true incidence of the condition and estimate the magnitude of undercounting by the SOII.

Methods:
Individuals with WR-CTS were identified in the SOII data, Doctor's First Reports of Occupational Injury or Illness (DFR) and the California Department of Industrial Relations' Workers' Compensation Information System (WCIS). A sample of medical records was obtained for WCIS cases and reviewed to ensure accuracy of diagnosis. Cases were matched between data sets using record linkage methods, and capture-recapture analysis was used to determine the completeness of ascertainment of the data sources and estimate the total incidence of WR-CTS in California during 2007-2008. The characteristics of a surveillance system for WR-CTS using these data sources are described using the CDC's Updated Guidelines for Evaluating Public Health Surveillance Systems.

Results:
5,597 DFRs, 11,812 WCIS records, and 459 SOII cases from 2007-2008 were identified as cases of WR-CTS. Results of record linkage and capture-recapture analysis are expected to be available in the first quarter of 2011. Preliminary analyses suggest that the linkage of multiple data sources significantly improves sensitivity to detect WR-CTS.

Conclusions:
In addition to providing an estimate of the current burden of WR-CTS in California, the results of this evaluation will assist CDPH in determining the feasibility of using state-based data sources to supplement the BLS SOII as a national surveillance system for occupational injury and illness.

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Abstract ID: **1062178** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Survey of lead safe work practices among residential construction contractors**

Committee: **Occupational Health**

Topic: **Lead exposure surveillance (ABLES)**

Keywords: **Occupational exposure, Occupational Health, Occupational Surveillance**

Abstract Text

Background:
In New Jersey, the construction and renovation business represents a significant number of adult blood lead cases reported to our adult lead registry. The relative proportion of cases in the lead registry from the construction and renovation trades with significant levels of blood lead appears to be increasing over time in New Jersey, with a 12 % increase since 2001. One potential explanation can be the increasing need to renovate older homes with lead paint and the subsequent exposure among this cohort of workers. Overall, New Jersey's homes are older then many other states, with over 19% of homes in New Jersey built before 1940 and 28% built before 1949. This high percentage of older homes, which typically contain paint with significant amounts of lead pigment, has the consequence of significant lead exposures among construction and renovation employees.

Methods:
This survey utilized both field observations and a mailed written survey to gather information about residential construction contractor practices, knowledge, attitudes, and beliefs regarding lead safe work practices.
General contractors in both New Jersey and Virginia were identified through the use of the NJ ABLES blood lead registry and through the use of the Dun and Bradstreet Selectory business database (D&B, Short Hills, NJ). After identification, companies were mailed a letter of introduction followed by either a written survey or phone calls to invite the companies to participate in the survey.
For companies agreeing to a site visit, an industrial hygienist visited job sites to conduct observations. While on-site, the industrial hygienist recorded observations utilizing a standardized field checklist that assisted them in documenting observed work practices, equipment, and PPE. We also conducted video exposure monitoring (VEM) on selected work practices when the contractor agreed to allow filming of their work.

Results:
We observed general contractors that had no knowledge or appreciation of the hazards of lead paint and utilized prohibited work practices (e.g. heat guns, dry power sanding) without any PPE. We found that after lead exposed contractors entered the ABLES system they became very educated about the hazards of lead. Variability existed among general contractor awareness between a state with an ABLES program (NJ) and state that does not have an ABLES program (VA). We also found variability in contractor awareness of EPA's RRP rule and also variability among contractors regarding their intent to comply with the new EPA rule.

Conclusions:
Many general contractors do not appreciate lead paint hazards and are unaware of the new EPA Repair and Renovation Rule requirements, for which they must now comply. The NIOSH ABLES program is effective at educating workers about the hazards of lead.

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Abstract ID: **1062771** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Obesity prevalence by industry and occupation of employment in Washington State**

Committee: **Occupational Health**

Topic: **Linking surveillance to action: Interventions and policy change at the local, state, and national level**

Keywords: **Obesity, Occupational Health, Surveillance**

Abstract Text

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Abstract ID: **1062445** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **SENSOR-Pesticides: Annual progress report**

Committee: **Occupational Health**

Topic: **Acute pesticide poisoning surveillance**

Keywords: **Agricultural work safety, Occupational Surveillance, Pesticides**

Abstract Text

Key Objectives:
Update SENSOR-Pesticides partners and CSTE attendees on any pertinent information from the EPA, Coding Committee, or SPIDER software.

Brief Summary:
This presentation will update SENSOR-Pesticides state partners on recent developments pertinent to the program. An overview will be provided of recent changes to the SPIDER software program used by state-based SENSOR-pesticides state health departments to code and manipulate surveillance data. A summary of significant developments within EPA as it relates to the SENSOR-Pesticides program will be provided. Finally, a summary will be provided of coding committee activities regarding any recently developed variables, or codes added to existing variables.

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Abstract ID: **1059294** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Rabies vaccination coverage among wildlife workers-National Park Service, 2009**

Committee: **Occupational Health**

Topic: **Other occupational health issues (i.e. underreporting)**

Keywords: **Vaccination, Workplace safety, Zoonotic disease**

Abstract Text

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Abstract ID: **1062007** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Use of multiple data sources to enumerate work-related amputations in Massachusetts:Preliminary findings**

Committee: **Occupational Health**

Topic: **Successes, lessons learned, and challenges in occupational health surveillance**

Keywords: **Epidemiologic methods, Occupational injury and death, Occupational Surveillance**

Abstract Text

Background:
Accurate information about the extent, nature and causes of work-related injuries and illnesses is essential to both prioritize and evaluate prevention efforts. No single data source captures all cases and innovative approaches that combine information from multiple sources are needed. Massachusetts is one of three states funded by the Bureau of Labor Statistics to pilot multisource surveillance of work-related amputations.

Methods:
Massachusetts collaborated with other funded states to establish a surveillance case definition, and, to the extent feasible, similar protocols. An amputation is defined as loss of a distal body part with bone loss or uncertain bone loss status. Eligible cases include those with injury event dates during 2007 and 2008 and the event occurred while working. Four administrative data sources in addition to the Massachusetts SOII sample are being used for case ascertainment: workers' compensation records (WC) of lost time cases and three statewide hospital data sets, collectively referred to as Case Mix (CM) data: inpatient discharge, out patient observation, and emergency department data. Medical records for potential CM cases are being collected to obtain personal and employer identifiers needed

to match with other data sets and assess work-relatedness.

Results:
Injury code and narrative text selection criteria identified 448 probable/ possible WR amputations in the WC data base. Approximately 2,800 potential WR amputations were identified using diagnostic, procedure and payment codes in the CM file. Medical record review is underway. Anonymous linkage of potential CM and probable/possible WC cases based on injury and admission dates, birth date, gender and residence zip code identified few matched cases necessitating collection of medical records for more CM cases than anticipated. Findings based on linkages of the five data sets using personal and employer identifiers will be presented.

Conclusions:
Preliminary findings suggest that use of multiple data sources will identify substantially more cases than any single source, and more than the 210 cases estimated by the SOII for 2007-08. Multisource methods of surveillance improve our ability to characterize the problem but also pose many challenges. Completion of approvals for this study were time consuming but could be institutionalized for ongoing surveillance. Some additional challenges include: differences in scope of the data source (e.g. population covered, injury severity), data timeliness, variation in coding systems used across data sets, and multi-employer establishments. Medical record collection and review is very resource intensive and added value of collecting these records for all potential CM cases remains to be seen.

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Abstract ID: **1058308** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Nonfatal occupational injuries and illnesses by industry sector-United States, 2007**

Committee: **Occupational Health**

Topic: **Examining occupational injuries and illnesses using state or national surveys**

Keywords: **Occupational injury and death, Occupational safety, Occupational Surveillance**

Abstract Text

Background:
The National Institute for Occupational Safety and Health conducts surveillance of nonfatal occupational injuries and illnesses by using the National Electronic Injury Surveillance System-Occupational Supplement (NEISS-Work), a hospital emergency department (ED) system. Results from recently implemented industry coding of NEISS-Work data have not previously been presented. NEISS-Work national estimates by industry sector complement data from the Bureau of Labor Statistics' Survey of Occupational Injuries and Illnesses (SOII), an employer-based national surveillance system.

Methods:

We classified the industry sector for injured/ill workers treated in EDs by using narrative information on employer name, type of business, type of job, and injury location. We calculated injury rates and 95% confidence intervals per 100 full-time equivalent workers (FTE) by using labor force estimates from the Current Population Survey. We compared industry sector rates and characteristics of ED-treated cases to total recordable cases from SOII.

Results:
Based on NEISS-Work, we estimate that approximately 3.4 million occupational injuries and illnesses were treated in EDs in 2007. Workers in agriculture [4.2 (±1.3) incidents per 100 FTE] and construction [3.7 (±1.4) incidents per 100 FTE] experienced the highest injury/illness rates. Workers aged 18 to 19 years experienced the highest injury/illness rates in every industry sector, except for agriculture, where 15 to 17 year olds experienced the highest rate. Although events and exposures differed between industry sectors, contact with objects and equipment was the most common event overall and in most industry sectors. However, in the construction and healthcare sectors, bodily reaction and exertion was the most common event. Sprains and strains were the most common type of injury/illness overall and in most industry sectors. The NEISS-Work rate of injury/illness at primary jobs among workers ≥16 years of age was less than the SOII total recordable case rate in 2007 [RR = 0.58 (±0.15)], whereas rates among workers in the agriculture [RR = 0.76 (±0.24)] and construction [RR = 0.71 (±0.26)] sectors were less disparate.

Conclusions:
Examining NEISS-Work data by industry sector facilitates identification of industry-specific hazards and allocation of limited injury prevention resources. Comparing data from NEISS-Work and SOII by industry sector is effective for understanding the potential impact of the systems' different sampling frames. One advantage of the NEISS-Work data set is that it includes all US workers, whereas the 2007 SOII excludes certain classes of workers, including self-employed, small farm, household and public sector workers. Both systems are essential for understanding the impact of injuries/illnesses by industry sector.

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Abstract ID: **1056658** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Methodologic challenges in conducting mortality analyses after a disaster - Experience with the WTC Responders Fatality Investigation Program**

Committee: **Occupational Health**

Topic: **Epidemiology and surveillance of workers involved in emergency response: Public Health roles and tools**

Keywords: **Disasters, Emergency response, Occupational injury and death**

Abstract Text

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Abstract ID: **1058646** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Adult Blood Lead Epidemiology and Surveillance (ABLES) website usage and case coding exercise**

Committee: **Occupational Health**

Topic: **Lead exposure surveillance (ABLES)**

Keywords: **Coding, Lead, Occupational Health**

Abstract Text

Background:
The CDC/NIOSH's Adult Blood Lead Epidemiology and Surveillance (ABLES) program tracks laboratory-reported elevated blood lead levels in adults. State ABLES programs collect data on adult BLLs from laboratories and health-care providers through mandatory reporting requirements. For BLLs ≥ 25 µg/dL, follow-up by telephone generally is conducted to ensure completeness of information on the industry where the person works, exposure source (occupational or nonoccupational), and other variables. ABLES data, publications and resources are available at the ABLES website http://www.cdc.gov/niosh/topics/ABLES/ables.html

Methods:
To improve the performance of the ABLES program, an industry and occupation case coding exercise will be submitted to all ABLES participating states. Responses will be analyzed by NIOSH and the ABLES coding committee. The results will be analyzed and discussed with all attendees to identify strengths and needs for improvement and additional data coding issues will also be discussed. Omniture codes are embedded in ABLES web pages to track ABLES web pages usage. The number of countries that visited the ABLES Program web pages, the number of views, and the number of visits during the past year will be summarized to illustrate how the ABLES data are being used globally.

Results:
Results are not available at this time as these programmatic activities will take place by April 2011.

Conclusions:
Improvement in the industry and occupation coding of the ABLES data from participating states. Awareness of how the ABLES website is being viewed by various countries of the world.

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Abstract ID: **1062500** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Acute pesticide poisoning associated with control of bedbugs, Florida, Michigan, New York, North Carolina, Texas, and Washington, 2005-2010**

Committee: **Occupational Health**

Topic: **Acute pesticide poisoning surveillance**

Keywords: **Pesticides, Surveillance**

Abstract Text

Background:
Bed bugs, while not disease vectors, are a nuisance and their bites can be distressing. We collected reports on acute illnesses associated with pesticides used to control bed bugs.

Methods:
Data were collected from Florida, Michigan, New York, North Carolina, Texas, and Washington for years 2005 to 2010 on cases of pesticide poisonings related to the control of bedbugs. Demographic characteristics, such as age and race, product information such as active ingredients, health outcomes, and contributing factors relating to the injury were analyzed in SAS 9.2®.

Results:
At least 35 cases of acute illness associated with pesticides used to control bed bugs were identified from 2005-2010, including one fatality. The majority of these cases occurred between 2008 and 2010, and states are continuing to report more cases. Pyrethrins were implicated in at least 9 of the cases mentioned above, and piperonly butoxid (PBO) and pyrethrins were implicated in the fatality. The fatality occurred after several applications of pesticides in the household; including one application directly tn the victim's bed and two separate events of nine bug bombs per event released in the household in a period of five days. The fatality also applied pesticides directly to her skin and hair and had numerous underlying medical conditions.

Conclusions:
We believe this report will increase awareness of illnesses related to pesticide for controlling bed bugs and serve as an early warning to states about this emerging and complex issue. While there are currently few cases of pesticide poisonings associated with control of bedbugs, this could change if bed bugs become more prevalent or become more difficult to eradicate. These situations could lead to inappropriate and unsafe uses of pesticides to eradicate bed bugs.

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Abstract ID: **1061814** Presentation Type: **Breakout Presentation - Single Speaker**

Title:	**Nonfatal occupational injuries-a comparison of two national surveillance systems, 1998-2009**
Committee:	**Occupational Health**
Topic:	**Linking surveillance to action: Interventions and policy change at the local, state, and national level**
Keywords:	**Injury surveillance, Occupational injury and death, Occupational Surveillance**

Abstract Text

Background:
The U.S. Bureau of Labor Statistics (BLS) annually conducts the Survey of Occupational Injuries and Illnesses (SOII) based on employer records. For 2009, the SOII estimated 3.3 million cases in U.S. private industry. The SOII omits selected categories of workers such as the self employed and workers on small farms. One concern about the SOII has been the suspected underreporting of injuries and illnesses by employers.
The National Institute for Occupational Safety and Health (NIOSH) conducts complementary national surveillance for nonfatal injuries and illnesses treated in U.S. hospital emergency departments (EDs) through the National Electronic Injury Surveillance System occupational supplement (NEISS-Work). For 2009, the NEISS-Work estimated 2.6 million nonfatal injuries and illnesses treated in EDs (preliminary data).

Methods:
NIOSH conducts surveillance for nonfatal injuries and illnesses through a national probability based hospital ED sample. Work-related cases are identified by records abstractors in each hospital at the time of treatment. Cases include injuries/illnesses that occurred while working for pay or other compensation, during agricultural production, and while working as a volunteer for an organized group. Cases are collected without restriction by type of employer, employment status, or expected payer. Rates are estimated for workers age 15 yrs and older by using employed labor force estimates from the BLS Current Population Survey. SOII data were obtained from data publicly released by the BLS.

Results:
The SOII nonfatal injury/illness rate steadily declined from a high of 6.7 cases per 100 FTE in 1998 to a low of 3.6 in 2009. The break in series that occurred in 2002 with the change in recordkeeping rules did not have an obvious influence on the rate of decline. For ED-treated injuries/illnesses, the rate was 2.8 cases per 100 FTE in 1998, with a high of 3.1 in 2000, followed by a relatively stable rate of 2.5 in the mid-2000s. In the latter years there was a slight decline to a rate of 2.0 in 2009 for ED-treated cases (preliminary data). Analysis of temporal trends for both surveillance systems by various case characteristics did not provide ready explanation for the differences between SOII and NEISS-Work data over time.

Conclusions:
The SOII and NEISS-Work surveillance systems each provide unique perspectives on temporal trends in nonfatal occupational injuries and illnesses. Comparisons across years suggest that equivalent declines in injury/illness rates did not occur. Systematic underreporting by employers is only one possible explanation for the disproportionate rates of decline.

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Abstract ID: **1061841** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Online access to U.S. employed labor force estimates**

Committee: **Occupational Health**

Topic: **The role of Information Technology - including electronic medical records - in occupational health surveillance**

Keywords: **Information systems, Labor, Occupational Surveillance**

Abstract Text

Background:
The Bureau of Labor Statistics' (BLS) Current Population Survey (CPS) estimated that there were 140 million employed workers aged 15 years and older in the U.S in 2009. These workers represented 130 million full-time equivalent workers (FTE) based on their primary job hours and 133 million FTE based on all jobs worked. The CPS provides a wealth of detail about these workers including distributions by demographic characteristics, citizenship, education, number of jobs, and primary and secondary industry and occupation. CPS is a major source of information for describing the labor force and calculating occupational injury and illness rates, but the data can be challenging to use and understand.

Methods:
The National Institute for Occupational Safety and Health (NIOSH) has developed an online query system to facilitate access to the CPS microdata and to generate employed labor force (ELF) estimates by using a knowledge management based approach. The BLS-CPS microdata were imported in to an SQL server database. A web-based graphical user interface was developed to query the ELF data for labor characteristics. ELF estimates are displayed in cross-tabular format and exportable in several file formats.

Results:
The ELF query system provides rapid access to CPS data for 1980 through the present. Estimates based on time (year or month); region or state; demographics (age, sex, race, ethnicity); nativity, citizenship; number of jobs and hours worked; and industry and occupation are available. Since 1980 various aspects of the CPS data collection have changed such as industry coding schemes. To account for CPS modifications, the system automatically adjusts the query parameters available depending upon the time period and/or other parameters selected. Similarly, the most appropriate statistical weight for the nature of the query is selected automatically. By using these automatic query adjustment techniques, users are directed to the most appropriate data results based on the expert knowledge of BLS and the NIOSH query system developers.

Conclusions:
The ELF-CPS web-based query system provides easy access to denominator data for use in state and federal surveillance programs. By designing subject matter expertise into the system, the ELF-CPS system facilitates good data use practices. In addition, the system makes numerous aspects of the CPS data more readily accessible to data users and offers the potential to increase CPS data use among a broader audience. The ELF-CPS query system is currently in use by NIOSH researchers. Public release is expected.

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Abstract ID: **1054147** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Occupational injury rates and severity among minor, young-adult, and adult workers - Washington State, 2005â€“2007**

Committee: **Occupational Health**

Topic: **Examining occupational injuries and illnesses using state or national surveys**

Keywords: **Adolescent health, Injury surveillance, Occupational Surveillance**

Abstract Text

Background:
Compared with workers of other ages in Washington State, minors (persons aged 16-17 years) experience elevated occupational injury rates. However, the level of injury severity in comparison with other workers has not been characterized. This study examines occupational injury rates and severity for 2005-2007 by age group, comparing minor workers with young-adult workers (ages 18-24 years) and adult workers (25-64 years).

Methods:
The American Community Survey (ACS), an annual survey collecting data using U.S. Census methods on population samples, was used to estimate the employment distribution for workers aged 16-17 years by industry and to estimate full-time equivalents (FTEs) by age group (16-17, 18-21, 22-24, 25-44, and 45-64 years) within those industries employing the highest percentage of minors. To calculate the industry-specific occupational injury rates for each age group, accepted workers' compensation claims were divided by FTE estimates for the industry-specific age group. Injury severity was determined by calculating rates for compensable claims (claims resulting in temporary or total work disability), median compensable claim costs, and median time-loss duration for all age groups within each industry.

Results:
On the basis of ACS data, we estimated that 112,899 minors were employed in Washington State during 2005-2007. Industries employing the greatest percentage of minors were restaurants/food service (36.2%); retail grocery stores (10.6%); amusement, gambling, and recreation (6.6%); department/discount stores (4.8%); and construction (2.2%). Per 10,000 FTEs, the overall accepted-claims rate was highest for workers aged 18-21 years (1,473) compared with workers aged 16-17 years (1,344), aged 22-24 years (1,079), aged 25-44 years (716), and aged 45-64 years (642). Industry-specific claim rates were highest for either the minor or young-adult age groups. The overall compensable-claims rate was highest among workers aged 18-21 years (242/10,000 FTEs) and lowest among workers aged 16-17 years (161/10,000 FTEs). Median compensable-claims costs and median days lost from work were highest among the adult workforce.

Conclusions:
Minor and young-adult workers are injured more frequently than adult workers. However, injuries resulting in payment of a compensable claim in aggregate are less severe in terms of claim costs and time lost from work. To better understand the cause and effects of injuries to minor and young adult worker injuries Washington State's Department of Labor and Industries will interview injured minor and young adult workers, their families as well as their employers.

Keywords: adolescent; accidents, occupational health

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Abstract ID: **1061846** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Evaluating employer reporting of amputations to the U.S. Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses System in California**

Committee: **Occupational Health**

Topic: **Evaluating results of occupational health surveillance programs**

Keywords: **Data/Surveillance, Evaluation, Occupational Surveillance**

Abstract Text

Background:
In collaboration with the U.S. Bureau of Labor Statistics (BLS), the California Department of Public Health (CDPH) Occupational Health Branch has been conducting multisource surveillance of amputations in California, including the Survey of Occupational Injuries and Illnesses System (SOII). National and state-based data from the SOII are derived from a sample of employers' Occupational Health and Safety Administration (OSHA) logs of Work-Related Injury and Illness. Recent studies suggest that the SOII may undercount injuries and illnesses and that using additional data sources, such as workers' compensation records, may improve tracking of work-related injuries and illness. The extent of the SOII undercount may vary for different endpoints depending on several factors, such as recognition of work-relatedness by employers and misclassification of cases on the OSHA logs. However, undercounting may be less likely for the most severe and recognizable injuries, such as traumatic amputations. In this study, we conducted an analysis of the California BLS SOII data to determine the extent to which employer reporting captures all cases of amputations as ascertained by an electronic workers' compensation database.

Methods:
A case classification scheme was developed to identify probable amputation cases in the California Workers' Compensation Information System (WCIS), and a sample of medical records were reviewed to confirm the accuracy of diagnosis. For the years 2006 through 2008, all reports from the BLS SOII were matched with WCIS amputation cases using record linkage methods based on variables common to both data sources. The number of matched cases and cases that appear uniquely in each dataset were tabulated, compared for completeness, and evaluated by establishment to account for the BLS SOII's employer sampling process. Sensitivity and specificity analyses of the BLS SOII were also conducted.

Results:
From 2006 to 2008, 6,570 WCIS records and 336 SOII cases were identified as amputation cases. Record linkage results are anticipated in the second quarter of 2011. Preliminary results suggest there are fewer than expected amputation cases in the BLS SOII compared to WCIS, even after taking into account that SOII only collects data from a sample of the total work establishments in California.

Conclusions:
The study will identify areas within workplace amputation surveillance that require improvement, such as the accuracy of OSHA logs and utilizing additional state-based surveillance systems to supplement the BLS SOII. These conclusions may be generalized to improve national surveillance of workplace injury and illness.

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Abstract ID: **1062408** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Sentinel Event Notification System for Occupational Risks (SENSOR)-Pesticides: Case-coding exercise and open forum**

Committee: **Occupational Health**

Topic: **Acute pesticide poisoning surveillance**

Keywords: **Coding, Occupational Health, Pesticides**

Abstract Text

Key Objectives:
Review a case-coding exercise previously distributed to and completed by the state partner health departments, and then allow representatives to discuss issues, concerns, and pertinent topics in an open forum.

Brief Summary:
This presentation will review the responses to the case-coding exercise previously distributed to the state health departments participating in the SENSOR-Pesticides program. Following this, an open forum will give attendees an opportunity to present to NIOSH any topics or concerns about acute pesticide poisoning surveillance. Each section in the case-coding exercise will be reviewed briefly and short discussions of specific items may take place for clarification if necessary. The open forum will allow time for questions or concerns raised by individual representatives to the group for discussion.

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Abstract ID: **1061727** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Oil field workers and take home lead exposure**

Committee: **Occupational Health**

Topic: **Lead exposure surveillance (ABLES)**

Keywords: **Lead**

Abstract Text

Abstract Text
Omitted from display per the Author's request

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Abstract ID: **1060425** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Tracking 2009 work-related burns in Michigan**

Committee: **Occupational Health**

Topic: **Occupational health surveillance and OSHA priorities**

Keywords: **Burns, Occupational Surveillance**

Abstract Text

Background:
Occupational burns are serious but potentially preventable injuries. For 2009, the BLS Survey of Occupational Injuries and Illnesses (SOII) estimated there were 19,450 burns (14,710 thermal and 4,740 chemical) in the US. In 2009, Michigan initiated multi data source surveillance of work-related burns in 2009.

Methods:
Records from Michigan's hospitals/emergency departments(EDs), Worker Compensation Bureau and the state's sole Poison Control Center (PCC) were used to identify occupational burns. All hospitals/EDs received a letter in February 2010 notifying them they were required to report all individuals treated for burns in 2009. Discharge summaries and ED evaluations were reviewed to differentiate the work and non work-related burns. Companies where individuals were hospitalized or had 2nd or 3rd degree burns that occurred within six months of identification were scheduled for an OSHA enforcement inspection. Individuals whose workplace could not be identified in the records received were contacted to obtain the employer information.

Results:

There were 122 individuals from the PCC, 280 individuals from the Michigan's Worker Compensation Bureau, and 1,134 individuals from hospitals/EDs with occupational burns. There were another 904 individuals with non work-related burns, and 116 individuals where the cause of the burn was not identified in the hospital/ED records. Four of the 134 hospitals have yet to report and we estimate that there will be another 90 work-related burns. Among the individuals identified with work-related burns from hospitals/EDs, the demographics were: men (59.1%); age range 15-68; Caucasians (88.2%) and African American (6.2%); thermal (66.8%), chemical (25.3%), electrical (4.8%), radiation (1.9%), and other (1.2%); first degree (40.0%), second degree (54.8%), third degree (5.1%), and fourth degree (0.1%); wrist(s) and hand(s) (35.1%), upper limb (22.6%) and head, face, and neck (12.5%); Accommodation and Food Services (NAICS 72) (37%), Health Care and Social Assistance (NAICS 62) (16%), Metal Manufacturing (NAICS 33) (7%), Retail Trade (NAICS 44) (5%); ED visits (90.3%), outpatient visits (6.4%) and hospitalizations (3.3%). To date, MIOSHA has investigated three companies whose employees sustained a burn on the job.

Conclusions:
We identified work-related burns in 2009 in Michigan from the PCC, Worker's Compensation and hospital/ED data in comparison to the 380 burns in the BLS SOII system. We identified 1,134 - 1,536 work-related burns. The Michigan multidata source surveillance system identified 3 to 4 fold more burns than in the BLS employer based system and is being used to identify individual employers for inspections.

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Abstract ID: **1054850** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Possible work-related asthma: Should they be diagnosed with work-related asthma? Evidence from the Asthma Call-Back Survey, 33 states and District of Columbia, 2006 and 2007**

Committee: **Occupational Health**

Topic: **Occupational lung diseases**

Keywords: **Asthma, Occupational lung diseases, Surveillance**

Abstract Text

Background:
A discrepancy exists between patients' perception and physician recognition of the association of asthma with work. The proper diagnosis of work-related asthma (WRA) requires careful clinical assessment for a possible role of workplace exposures in asthma onset or exacerbation. The objective of this study was to identify factors associated with health professional diagnosis of WRA among adults who have possible WRA.

Methods:

We analyzed data from the 2006 and 2007 Behavioral Risk Factor Surveillance System (BRFSS) Asthma Call-back Survey (ACBS) from 33 states and District of Columbia for ever-employed adults (aged ≥ 18 years) with current asthma who had possible WRA. Possible WRA cases were those who reported that their asthma was caused or made worse by chemicals, smoke, fumes or dust in a current or any previous job. WRA cases were individuals with a lifetime health professional diagnosis of WRA. We developed separate logistic regression models examining the associations of WRA diagnosis with various outcomes adjusted for age and sex.

Results:
An estimated 47.5% of ever-employed adults with current asthma had possible WRA. Of these, 19.2% had health professional diagnosis of WRA. Those who were diagnosed by a health professional with WRA were significantly more likely than those who were not diagnosed to be 45-64 years old (prevalence ratio [PR]=1.4, 95% confidence interval [CI]=1.2-1.6), have an annual household income <$15,000 (PR=1.4, 95% CI=1.1-1.8), be currently not employed (PR=1.2, 95% CI=1.1-1.4), have very poorly controlled asthma (PR=1.3, 95% CI=1.1-1.5), have an asthma attack (PR=1.2, 95% CI=1.0-1.3), emergency room visit (PR=1.4, 95% CI=1.1-1.8), hospitalization (PR=1.7, 95% CI=1.2-2.6), or urgent treatment for asthma (PR=1.5, 95% CI=1.3-1.8) in the past year, and change or quit a job due to asthma related to work (PR=2.5, 95% CI=2.1-2.9). There were no differences in prevalence of health professional diagnosis of WRA by sex, race/ethnicity, education, insurance status, or smoking status.

Conclusions:
Individuals with possible WRA who have health professional-diagnosed WRA have similar demographic characteristics as those without health professional-diagnosed WRA. However, health professional-diagnosis of WRA is associated with poorer asthma control and adverse asthma health outcomes. These results suggest that in some patients the increased severity of asthma symptoms and the increased need for medical attention play a role in physician diagnosis of WRA.

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Abstract ID: **1062055** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Sharps injuries among nurses in Massachusetts hospitals, 2002-2009**

Committee: **Occupational Health**

Topic: **Linking surveillance to action: Interventions and policy change at the local, state, and national level**

Keywords: **Health care, Occupational exposure, Occupational Surveillance**

Abstract Text

Background:
Sharps injuries among healthcare workers are a recognized hazard and have been associated with

occupational transmission of more than 20 diseases. To address this hazard, legislative campaigns at the state and national level were championed by nurses and resulted in regulations designed to protect healthcare workers from sharps injuries. In Massachusetts, regulations require hospitals to use sharps with engineered sharps injury protections (SESIPs), maintain records of sharps injuries among healthcare workers, and submit these data annually to MDPH. This study was undertaken to further characterize sharps injuries among nurses.

Methods:
Every year since 2002, each MDPH licensed hospital has submitted data on sharps injuries among healthcare workers to MDPH. This analysis was restricted to injuries among nurses for the years 2002-2009. Rates were calculated for those working in acute care hospitals using full time employee equivalents (FTEs) as the denominator. Rates for physicians were computed for comparison purposes.

Results:
While rate of sharps injuries among physicians (76.5/1,000 FTE) is higher than that of nurses (37.5/1,000 FTE), nurses account for the greatest proportion of sharps injuries 38% (9,714) reported to the Massachusetts Sharps Injury Surveillance System. Almost half of the injuries (47%, 4,565) involved hypodermic needles/syringes, devices for which alternatives with sharps injury prevention features are available. More than a third of injuries (37%, 3,594) among nurses involved devices lacking sharps injury prevention features; 56% (5,439) occurred with SESIPs. Injuries related to injection procedures (55%, 2,101) and blood procedures (45%, 869) occurred most often after use and before disposal. In contrast, injuries related to line procedures (41%, 587) and suturing (49%, 384) occurred most often during use of the device.

Conclusions:
There is continued need to increase the use of SESIPs where available. As such, nurses and their organizations should demand and use the SESIPs to which they are, by law, entitled and should play an active role in the selection of those devices. Injuries occurring during use, a time when SESIPs are not protective, underscore the importance of training and technique. Injuries occurring after use demonstrate that the use and activation of SESIPs is critical to sharps injury prevention. The large proportion of injuries involving SESIPs highlights the need to evaluate the various mechanisms of sharps injury prevention features. Targeted prevention efforts aimed at the devices used and procedures performed by nurses will help to minimize the number of sharps injuries in this occupation group.

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Abstract ID: **1061481** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Adult Lead Poisoning and the RRP Rule in Iowa**

Committee: **Occupational Health**

Topic: **Lead exposure surveillance (ABLES)**

Keywords: **Data/Surveillance, Lead, Occupational Health**

Abstract Text

Background:
Iowa was the second state authorized by the U.S. Environmental Protection Agency to implement the Renovation, Repair, and Painting Program, commonly known as the RRP program. The program, which went into effect on April 22, 2010, requires contractors performing renovation, repair and painting projects that disturb paint in homes, child care facilities, and schools built before 1978 to be trained, certified, and to follow specific work practices to prevent lead contamination. In Iowa, it is estimated that 15,000 workers would initially need to comply with this rule, including workers in construction, demolition, renovation and repair, paint contractors, and plumbers.
Iowa was one of seven states NIOSH reported as having the highest prevalence rates of adults with blood lead levels (BLLs) => 25 ug/dL for 2007, with a rate almost three times the US rate. State surveillance identified most of those exposures occurred in occupations and industries other than construction. Few construction workers were being tested for lead exposure, even though these workers are a high risk group. Iowa was unable to provide state-level data about the incidence or prevalence of adult lead poisoning due to construction activities when the RRP rule went into effect. In anticipation of more construction workers learning about the risks of lead exposure during training courses, the Iowa Occupational Health & Safety Surveillance Program sent out an alert to medical providers in the spring of 2010, explaining that patients may come in requesting lead testing, and to consider testing all patients working in construction or other high-risk occupations.

Methods:
This presentation will use case studies of adults who work in the construction industry and have presented with elevated blood lead levels to illustrate the impact of the RRP rule in Iowa as it pertains to adult BLL surveillance.

Results:
As anticipated, the RRP rule has generated testing of adults who work in construction. Test results have identified workers with elevated blood lead levels. Construction workers often had no prior BLL on record. Elevated results were associated with the use of unsafe work practices, such as the use of heat guns or power sanders.

Conclusions:
The increase in testing of a high-risk group has shown that Iowa's construction workers are at risk of exposure above the current medical level of concern and provides the basis for establishing rates of exposure benchmarks for the state. Public Health programming has been adapted to target medical providers concerning the importance of testing at-risk workers, including adults doing renovation and repair work on their own properties. Additional industry-level and community-based outreach is being planned.

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Abstract ID: **1056110** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Improving respiratory protection programs in California acute care hospitals: Pilot test of a resource toolkit for program administrators**

Committee: **Occupational Health**

Topic: **Sector-specific topics in occupational health**

Keywords: **Communicable disease, Health care, Occupational Health**

Abstract Text

Background:
During the 2009-2010 H1N1 influenza pandemic, the use of respiratory protection among hospital personnel increased dramatically, in accordance with public health guidelines and a new California occupational standard for aerosol transmissible diseases (ATD). The National Institute for Occupational Safety and Health (NIOSH) contracted with the California Department of Public Health (CDPH) to conduct an assessment in winter 2010 of respirator use policies in 16 acute care hospitals. This project found that hospitals had followed the California ATD standard and CDC and CDPH guidelines in place at the time, by implementing N95 filtering facepiece respirator use; however, some deficiencies in written respiratory protection programs suggested areas to improve their effectiveness. NIOSH then initiated the current partnership with CDPH to develop, implement, and evaluate an intervention to improve hospital respiratory protection programs.

Methods:
CDPH industrial hygienists developed a toolkit of resources aimed at helping program administrators who are not trained health and safety professionals to implement an OSHA-compliant respiratory protection program and respirator use in accordance with the requirements of the California ATD standard. A pre-intervention respirator program evaluation checklist was completed with the program administrator from each of 17 northern California hospitals including those recruited from the previous project and one additional health care organization. The toolkit consists of a user-friendly booklet covering all requirements of a respiratory protection program and a DVD with electronic resources including a template for a written program, training videos and presentations, and useful Web links. The toolkit was provided to hospital personnel who attended a webinar for training on the intended use of the materials and resources.

Results:
Respiratory protection program administrators agreed to pilot test CDPH-developed materials and resources during January-March 2011, with CDPH available for any technical assistance needed. Participating hospitals agreed to provide feedback on what they find most helpful to improve their respiratory protection programs and suggestions to improve the materials. Their evaluation feedback will be supplemented by completing a post-intervention program evaluation checklist during a site visit to each hospital in April 2011 and interviews with additional managers and employees who are respirator users.

Conclusions:
Evaluation feedback from this pilot test and additional peer review of the developed materials by other entities (health care union and trade association representatives, health and safety professionals) will be used to develop revised materials for statewide distribution to the health care industry. NIOSH intends to further develop these tools for nationwide distribution.

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Abstract ID: **1061831** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Business practices during the 2009 influenza A (H1N1) pandemic -- Wisconsin, 2009**

Committee: **Occupational Health**

Topic: **Local/Regional occupational health issues**

Keywords: **Influenza / Pandemic influenza, Occupational Health**

Abstract Text

Background:
Because knowledge is limited regarding use and effectiveness of workplace-based influenza prevention strategies, we surveyed Wisconsin businesses to assess preventive measures used and impact from employee absenteeism during the 2009 pandemic influenza A (H1N1) outbreak.

Methods:
We partnered with Wisconsin Manufacturers and Commerce to survey businesses and local Chambers of Commerce (CCs), representing all industry sectors and business sizes. We evaluated employee absenteeism impact on business operations during April-December 2009 by industry sector, business size, and pH1N1 prevention strategy implementation. We assessed prevalence of the use of pH1N1 planning information sources (e.g., Internet sites, local health departments, healthcare providers, and mass-media).

Results:
Thirty-two CCs forwarded the survey to 23,196 businesses; 458 respondents (2%) reported a range of 1-15,000 employees. Impact from employee absenteeism was evaluated by 389 (85%) respondents who reported none (46%), minimal (48%), and moderate/severe impact (6%). Those reporting any impact from absenteeism differed by major industry, including 21% construction, 66% healthcare, and 94% educational services. Compared with small businesses (<20 employees), larger businesses had greater odds of having a pH1N1 plan (odds ratio [OR]: 9.1; 95% confidence interval [CI]: 5.5-14.8) and a paid sick-leave policy (OR: 5.5; 95% CI: 3.5-8.7), but also had greater odds of reporting an impact from absenteeism (OR: 3.8; 95% CI: 2.4-6.0). pH1N1 planning information sources used by the majority of businesses included mass-media (90%), healthcare providers (74%), and local health departments (74%); state/federal government sources were used less.

Conclusions:
Although the majority of businesses reported some impact from employee absenteeism, it was usually minimal. Lack of pandemic planning might make small businesses vulnerable during future pandemics. Pandemic guidelines should target information by business size and industry sector.

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Abstract ID: **1054694** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Effectiveness of novel occupational heat regulations on reducing fatal and serious cases of occupational heat-related illness - California, 2005â€“2008**

Committee: **Occupational Health**

Topic: **Emerging issues and public health responses (e.g., nanotechnology, underreporting, assessing health inequalities)**

Keywords: **Occupational Health, Occupational injury and death, Occupational Surveillance**

Abstract Text

Background:
In the United States during 1992-2008, approximately 29 heat-related worker deaths occurred annually. In 2005, the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA), enacted an occupational heat illness prevention regulation to decrease mortality. We analyzed demographics and illness severity, in relation to occupational prevention programs, after the new regulation to evaluate its potential impact on heat-related illness cases.

Methods:
Using surveillance data from all serious and fatal heat-related illness cases investigated by Cal/OSHA for 2005-2008, we described the characteristics of the population. We compared prevention programs, number and severity of cases, mortality rates, and demographics for each year after program implementation.

Results:
Overall, 142 cases occurred. Among investigated cases, 21% of employers had a heat illness prevention program in 2005, which increased to 61% in 2008. Reported heat-related illness cases increased from 25 (2005) to 63 (2008), whereas case-fatality rates declined from 52% (2005) to 10% (2008). Mean core body temperature of nonfatal cases decreased from 102.8 F in 2005 to 98.8 F in 2008. Demographic changes included 96% of cases were among males in 2005 versus 78% in 2008; 68% of cases were among Hispanics in 2005 versus 56% in 2008; and primary language spoken was 68% Spanish in 2005 versus 50% in 2008. The majority of cases were in construction and agriculture, which was consistent across time.

Conclusions:
Since regulation implementation, heat illness prevention programs increased, and severity of illness among investigated cases decreased. Demographic changes indicate that male, Hispanic, and Spanish-speaking workers are being reached with targeted information, or a greater diversity among cases is being reported.

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Abstract ID: **1057513** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Pesticide poisoning of hospital employees associated with attempted suicide - Orange County, Florida**

Committee: **Occupational Health**

Topic: **Acute pesticide poisoning surveillance**

Keywords: **Occupational exposure, Pesticides, Surveillance**

Abstract Text

Background:
Secondary contaminations of hospital employees caring for organophosphate (OP) poisoned patients have been reported in the past. OP poisonings may result in significant morbidity and mortality if not treated. This report describes poisonings which occurred among health care workers due to the delayed recognition of OP ingestion in a patient as a potentially hazardous incident. Several hospital employees were exposed to an OP pesticide and became ill. The patient was a 55 year-old male who attempted suicide by ingestion of malathion.

Methods:
Seventeen hospital employees were identified as patient exposures and six reported symptoms of pesticide poisoning. Medical records were requested and cholinesterase testing was recommended for the symptomatic employees. An interview was attempted with all symptomatic cases.

Results:
Five of the six symptomatic employees met the case definition for pesticide poisoning. Interviews were completed with four of the five employees who met the case definition; however, data on the patient who was not interviewed has been included where available.
The most frequently cited symptoms include eye irritation (80%) and nausea (80%). The average age for ill persons was 34.8 years with a range of 25 to 44 years of age. Females comprised 80% of the ill persons. One employee required hospitalization for seven days and another required supportive treatment in the ED. Symptoms in the other employees resolved without medical intervention. The average duration of illness for four of the five symptomatic was 2.75 days and ranged from one to seven days. Three of the five symptomatic were respiratory technicians, one was a nurse, and one worked in housekeeping. Four of the five interviewed employees reported wearing personal protective equipments (PPEs) such as gloves and mask.

Conclusions:
The poisoning incident described in this report is a result of health care workers not wearing appropriate respirators and PPE for proper protection of eyes and skin. Patients whose skin or clothing is contaminated with malathion can secondarily contaminate hospital personnel by direct contact or off-gassing of solvent vapor from clothing, skin, or vomitus. Patient decontamination and use of appropriate PPE by all persons handling the patient is critical to prevent further exposure and illness. The hospital required use of appropriate PPE once they became aware of the chemical; however, the information was not communicated to all staff who would potentially be interacting with the patient. This highlights the importance of proper hospital room signage and communication of potential hazards to hospital personnel including housekeeping.

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Abstract ID: **1058219** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Musculoskeletal pain reported by crop workers in the United States, 1999-2004**

Committee: **Occupational Health**

Topic: **Occupational health disparities**

Keywords: **Agricultural work safety, Migrant Farm Workers, Occupational Health**

Abstract Text

Background:
Musculoskeletal pain is a major concern for hired crop workers in the United States (US), although national data on the extent of the problem is limited. This study analyzed farm work-related musculoskeletal pain reported by these workers from the National Agricultural Workers Survey (NAWS).

Methods:
Data were collected through the NAWS for the federal fiscal years 1999 through 2004. Farm workers were asked to report the number of episodes of farm work musculoskeletal pain resulting in restricted work activity in the last calendar year. Demographic characteristics and rate estimates (both prevalence and incidence) of farm work-related musculoskeletal pain were derived from a sample of 20,301 crop farm workers. SAS survey software was used to conduct the analyses to account for the complex NAWS sampling design.

Results:
The annual average prevalence of farm work-related musculoskeletal pain was 18.3%. Crop workers with farm work-related musculoskeletal pain reported an average of 1.45 complaints per year, resulting in an annual average incidence rate of 43.3 complaints per 100 FTEs. Males accounted for the greatest number of musculoskeletal complaints (70%) while females had the highest prevalence (22.9% of female workers) and incidence rate (67.9 complaints per 100 FTEs). By age, crop workers

20-39 years of age accounted for the majority of the musculoskeletal complaints (55%) although the prevalence was highest for workers over 59 years old (27% of worker over 59). The highest incidence rate for musculoskeletal pain was found for workers less than 20 years old (61.6 complaints per 100 FTE), followed by workers over 49 years old (54.1 per 100 FTE). The most common part of the body with pain was the back (45%), followed by the lower extremities (19%), and the neck/shoulders (14%). Musculoskeletal pain to the back accounted for an estimated 217 restricted work days per 100 workers.

Conclusions:
Musculoskeletal pain is a major occupational health problem for hired crop workers in the United States, impacting 18% of this workforce annually, and resulting in an estimated 19 days of restricted work activity for each complaint. Increased risk was seen for female crop workers, workers less than 20 years old, and workers over 49 years old. The results of this study are useful for targeting intervention efforts and future research needs for this unique worker population.

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Abstract ID: **1061967** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Toxic chemical use data for primary prevention of work-related asthma in Massachusetts: Hazard surveillance to practice**

Committee: **Occupational Health**

Topic: **Linking surveillance to action: Interventions and policy change at the local, state, and national level**

Keywords: **Asthma, Environmental exposures, Hazards**

Abstract Text

Background:
Work-related asthma (WRA) is estimated to affect tens of thousands of adults in Massachusetts, contributing to serious disease and poor quality of life. Primary prevention seeks to reduce the use of chemicals associated with WRA, which will decrease the numbers of people exposed on the job and in the community. Efforts directed at cleaning products have lead to the exclusion of known asthmagens in 3rd party-certified cleaners. A similar, broadly envisioned project involves the Massachusetts Departments of Public Health and Environmental Protection, the Office of Technical Assistance (OTA), and the Toxics Use Reduction Institute (TURI) at UMass Lowell. TURI commissioned the Lowell Center for Sustainable Production (LCSP) to study asthma-related chemicals in Massachusetts. They analyzed data from manufacturers who use or manufacture large quantities of chemicals, collected under the Toxics Use Reduction Act (TURA). Findings indicated that use of asthma associated chemicals dropped 27% from 1990 to 2005. However, use of toluene diisocyanate and chlorine, two asthmagens, increased significantly over this period, and, while cumulative formaldehyde use declined, it totaled 105 million pounds over the 16-years.

Methods:

Following release of the report, LCSP and MDPH met with committees involved in the multistage decision-making process required by TURA to consider steps to address asthma. MDPH's Strategic Plan for Asthma in Massachusetts includes specific goals about reducing exposures to chemicals associated with asthma. OTA, working with TURI, volunteered to be the lead partner on these goals, directed toward reducing risk in the workplace (use and byproducts, fugitive releases), in the community (releases, byproducts, transfers) and among consumers (incorporated into products).

Results:
OTA will take the lead in developing methods that seek to decrease overall use of three chemicals selected for action: formaldehyde, chlorine and isocyanates. The following strategies are under consideration: designation of formaldehyde as a high risk chemical (carcinogenicity) which requires reporting of smaller quantities; outreach to healthy housing and building science agencies to investigate formaldehyde and isocyanates in insulation; and research on safer alternatives and more efficient use.

Conclusions:
Analysis of TURA data on use of asthmagens prompted collaborative efforts aimed at primary prevention of asthma in Massachusetts. This process demonstrates an approach of using data, relying on strategic plans, and partnering among environmental and public health agencies and academia to develop and implement primary prevention of asthma. These steps were facilitated by working relationships developed over many years.

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Abstract ID: **1061995** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Piloting use of workers' compensation data for case-based surveillance and prevention of work-related amputations in Massachusetts**

Committee: **Occupational Health**

Topic: **Occupational health surveillance and OSHA priorities**

Keywords: **Collaboration, Injury prevention, Occupational safety**

Abstract Text

Background:
Work-related amputations are serious injuries that warrant worksite follow-up to assure that hazards are abated and risks eliminated. Health departments that have access to amputation reports can engage with intervention partners so that hazards are investigated and corrected. The Massachusetts Department of Public Health (MDPH) is collaborating with OSHA to pilot use of workers' compensation (WC) data for case-based surveillance and worksite follow-up of work-related amputations in Massachusetts.

Methods:
Lists of lost time claims filed with the state WC agency are provided weekly to MDPH. These reports

include personal and employer identifiers, dates of injury and nature of injury and body part codes, but no narrative descriptions of the events. Amputations are identified using ANSI code 100 for amputation. Initial MDPH telephone follow-up with a small sample of employers found that many were miscoded and not amputations, raising concerns about referrals. OSHA, however, agreed to proceed with the pilot. Cases are reviewed weekly by MDPH and eliminated if the body part associated with the amputation is implausible e.g. head, torso, etc. Remaining cases are reviewed to determine if there is sufficient information to locate the workplace and assess if the employer is covered under OSHA jurisdiction. If so, referrals identifying the amputation injury and employer name and address are made to OSHA. Feedback is obtained from OSHA to assess: occurrence of amputation injury, hazards associated with the injury, and the usefulness of the referral to OSHA in targeting their enforcement resources.

Results:
To date, 20 of 59 amputations have been referred for investigation. Only one of these injuries was known to the OSHA area offices prior to the referrals. Some referrals were unproductive because they identified workplaces outside of OSHA jurisdiction, or OSHA could not locate the workplace. Referrals that resulted in inspections were deemed very useful to OSHA, regardless of whether the injury was an amputation. Additional findings based on 6 months pilot will be presented.

Conclusions:
Referrals of amputation injuries identified through WC to OSHA have led to targeted visits to employers, resulting in identification and abatement of safety hazards. Findings underscore that serious injuries are sentinels that other workers may be at risk and health department can engage with enforcement partners to reduce hazards in workplaces. These preliminary findings also reveal problems with injury coding in the Massachusetts WC database. More complete narrative information in the WC records available to MDPH quarterly, while less timely, should be used for population-based surveillance.

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Abstract ID: **1060552** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Good digging - Mining worker's compensation data for pesticide illness cases**

Committee: **Occupational Health**

Topic: **Acute pesticide poisoning surveillance**

Keywords: **Data/Surveillance, Occupational Health, Pesticides**

Abstract Text

Background:
The California Department of Public Health (CDPH) conducts multi-source surveillance of occupational pesticide poisoning as part of a National Institute for Occupational Safety and Health (NIOSH)

supported program. Historically, the majority of the cases are identified through physician-mandated reporting for work-related injuries and illnesses documented on a Doctor's First Report of Occupational Injury or Illness (DFR). In an attempt to capture additional cases, an additional data source, the California Department of Industrial Relations' Workers' Compensation Information System (WCIS), was explored.

Methods:
Through an agreement with the California Division of Workers' Compensation, CDPH has access to WCIS data. Criteria for querying WCIS for pesticide illness cases were developed in several iterations to ensure the greatest case capture with the fewest false cases. After case selection criteria were applied to determine "possible" cases, "probable" cases were selected manually based on the injury description field. Medical records were requested for cases with medical provider information, and phone interviews were attempted for the other cases. Medical records and interviews were then abstracted for demographic, pesticide, and health effect data. Cases were classified using the NIOSH pesticide case classification matrix. A capture-recapture analysis was completed to evaluate the overlap between physician reports and cases in the WCIS.

Results:
Our final query criteria selected a total of 254 possible pesticide illness cases with an injury date of 2009. Of these 254 possible cases, 195 (77%) were deemed probable pesticide illness cases based on manual review. Medical records were requested for the 116 cases with medical provider information, and interviews were attempted for the 56 remaining cases that also had a valid phone number. Only 12% of the 195 cases had previously been identified via a DFR. Case-specific information will be presented to highlight the differences between cases identified from physician reports and from WCIS and to try to explain the observed underreporting.

Conclusions:
The WCIS is a rich new source of pesticide illness cases for our program. Our data show that occupational illnesses due to pesticide exposure are common, occur among a wide variety of workers, and result in a variety of adverse health effects. Each data source has limitations which is why multi-source surveillance is necessary to capture the largest number and variety of cases. The new subset of cases identified from WCIS serve as an opportunity to identify new areas of pesticide poisoning that can be prevented through outreach efforts.

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Abstract ID: **1061723** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Factors associated with high blood lead levels at first laboratory report in Alabama: From the Adult Blood Lead Epidemiology and Surveillance (ABLES) program**

Committee: **Occupational Health**

Topic: **Lead exposure surveillance (ABLES)**

Keywords: **Data/Surveillance, Lead, Occupational exposure**

Abstract Text

Background:
ABLES is a state-based surveillance program that allows the identification of adult individuals at risk for lead exposure. Alabama is one of the 40 participating states (since 1991). The purpose of this analysis was to describe the ABLES data between 1991 and 2009; to establish a baseline based on each case's initial laboratory report, and to determine factors predictive of high blood lead levels (BLL) in Alabamians.

Methods:
Initial laboratory report received per individual, with BLL > 10µg/dL, age >16 years old, and residents from Alabama were included. The association between baseline characteristics and high BLL was assessed by univariable (UV) and multivariable (MV) regression analysis.

Results:
A total of 7,128 individuals were included in the analysis, of which 93% were male, 6.1% female, and 0.9% unknown. Reported race included 20.2% African-American, 12.8% Caucasian, 1.8% Hispanic, and 65.2% unknown. The mean (SD) age was 36.1 (13.7) years (range 16-103) while BLL was 23.3 (13.7) µg/dL (range 10-500). Work-related exposure information was available for 57.6%, among those 48.6% worked in manufacturing, 2.1% mining, 3.5% other industries and 44.8% unknown. UV analysis showed that age, gender, race, year of initial report, and industry were associated with high BLL. In the MV analysis only race, year of initial report and industry remained associated with high BLL (F=26.4, p-value=<0.0001, R2=0.13).

Conclusions:
Alabama ABLES population (1991-2009) was predominantly male, of unknown race, in their thirties. Manufacturing appears to be the most common industry. Although race, year of initial report, and industry were associated with high BLL, the association was weak since only 13% of data correlates with industry. Incomplete data collecting and reporting may have contributed to the inconclusive analysis. In order to target effective interventions more complete information is needed.

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Abstract ID: **1055715** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Work-related asthma in women: Surveillance data from California, Massachusetts, Michigan, and New Jersey, 1993â€“2006**

Committee: **Occupational Health**

Topic: **Occupational lung diseases**

Keywords: **Asthma, Surveillance, Women's health**

Abstract Text

Background:
Over 17.5 million U.S. adults aged ≥18 years are estimated to have current asthma. Compared with adult men, adult women have a greater prevalence of current asthma (8.4% vs. 4.9%) and asthma attacks (4.8% vs. 3.5%). An estimated 15%-25% of adult asthma is attributable to workplace exposures (i.e., work-related asthma, WRA). Information about WRA in women is limited. The objective of this study was to identify industries, occupations, and agents most frequently associated with WRA in women.

Methods:
We used state-based sentinel surveillance data on confirmed WRA cases collected from California, Massachusetts, Michigan, and New Jersey during 1993-2006. Information on industry and occupation was coded using the 2002 North American Industry Classification System and the 2000 U.S. Bureau of the Census Occupation Codes, respectively. Up to three putative agents may be reported for a single case of WRA. Agents were coded and grouped using the Association of Occupational and Environmental Clinics exposure coding scheme.

Results:
Of the 6,762 reported WRA cases, 4,000 (60%) were women. Of these, 2,125 (53%) were classified as asthma caused by workplace exposure to sensitizers or irritants (new-onset asthma), 949 (24%) as preexisting asthma exacerbated by workplace exposures (work-aggravated asthma), and 926 (23%) had insufficient data to classify asthma type. Of 20 industries reported by women with WRA, the top three industries were health care and social assistance (1,139; 29%), manufacturing (870; 22%), and educational services (475; 12%). Of 22 occupations reported by women with WRA, the top three occupations were office and administrative support (811; 20%), production workers (647; 16%), and health care practitioners (550; 14%). Overall, women WRA cases reported exposure to 110 different agents. Most frequently reported agent groups were miscellaneous chemicals (888 cases; 22%), cleaning materials (703 cases; 18%), and indoor air pollutants (608 cases, 15%).

Conclusions:
Over half of WRA cases in women are new-onset asthma indicating that workplace exposure plays an important role in the development of asthma. The identification of exposures associated with asthma in the workplace improves the ability to eliminate and/or control these exposures and, consequently, improve worker prognoses and prevent asthma in coworkers. The results presented here can be used to inform public health interventions to reduce workplace risks of asthma in women.

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Abstract ID: **1055380** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Six workers killed during pipe cleaning at a natural gas power plant in Connecticut: The Kleen Energy explosion**

Committee: **Occupational Health**

Topic: **Linking surveillance to action: Interventions and policy change at the local, state, and national level**

Keywords: **Policy/Policy Development, Workplace safety, Work-related fatalities**

Abstract Text

Background:
On February 7, 2010, and explosion occurred at a natural gas-fired power plant under construction in Middletown, CT. At the time of the explosion, it is estimated that approximately 150 workers were present at the construction site, of which over 50 were injured, six fatally.

Methods:
In the year since the fatal explosion at the Kleen Energy plant, several local, state, and federal agencies have undertaken extensive investigations into the underlying causes of that explosion. The Connecticut Department of Public Health responded to the scene in the initial hours after the explosion and has participated and commented on several of the subsequent investigations. The purpose of this presentation is to summarize those findings as well as resulting regulatory changes.

Results:
On the morning of the explosion, workers at the Kleen Energy construction site performed approximately 15 "gas blows" at a pressure of approximately 650 psig. In the 10 minutes prior to the explosion, approximately 500,000 cubic feet of natural gas was released into an outdoor space congested by surrounding power generation equipment. In total in the four hours preceding the explosion, approximately 2 million cubic feet of natural gas was released into this space, or enough natural gas to fuel a typical American home every day for 25 years. This volume of natural gas was found to be greatly in excess of what was necessary to adequately clean fuel gas piping.

Conclusions:
The US Chemical Safety Board (CSB) developed 18 Urgent Recommendations as a result of their investigational findings. These recommendations directed action for several different agencies and stakeholders, including OSHA, the National Fire Protection Association (NFPA), the American Society of Mechanical Engineers (ASME), major gas turbine manufacturers, the Governor and Legislature of the State of Connecticut, and the Electric Power Research Institute (EPRI). In addition, the Connecticut Department of Public Health has developed recommendations for the Connecticut Siting Council for incorporation into current and future siting permits for gas-fueled power plants in the state.

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Abstract ID: **1061374** Presentation Type: **Breakout Presentation - Single Speaker**

Title: ***Safe Jobs for Youth*: Tailored, user-friendly materials for cooperative placement coordinators assessing worksite health and safety**

Committee: **Occupational Health**

Topic: **Other occupational health issues (i.e. underreporting)**

Keywords: **Adolescent health, Occupational safety, Workplace safety**

Abstract Text

Background:
In Massachusetts participation in a cooperative education placement (co-op) is a requirement to graduate from a high school vocational program. The co-op coordinator is responsible for placing students in the worksite and overseeing the student's learning experience. As part of the placement, the coordinator is required to visit each worksite. Addressing the safety and health of students in co-ops is critical to both protect students and help ensure that students develop safety and health knowledge and skills during their work-based learning experience. However, few resources exist to help the coordinators assess health and safety in co-ops; existing worksite safety assessment tools are long and difficult for those without health and safety expertise to use.

Methods:
The Massachusetts Department of Public Health's Occupational Health Surveillance Program worked with the Massachusetts Association of Cooperative Education and Placement Coordinators to develop, *Safe Jobs for Youth*, a guidance manual to help the co-op coordinators assess the health and safety of a worksite. Before writing this manual, existing worksite assessment tools were reviewed. In addition, information was solicited from experienced worksite health and safety inspectors. Health and safety experts were enlisted to review draft checklists. The co-op coordinators provided initial input and feedback on drafts of materials; fourteen coordinators piloted the materials during fall 2010.

Results:
The completed *Safe Jobs for Youth* manual provides guidance to coordinators about communicating with employers, students, and parents prior to and during the co-op experience. The manual includes short checklists to be used during worksite visits for each Massachusetts vocational cluster (area of study), key questions to ask employers, laws and regulations, and tips for talking with students and parents. Results of the fall 2010 pilot will be presented.

Conclusions:
Experience to date underscores the challenges cooperative placement coordinators face in making health and safety assessments, the need for tailored, user-friendly, materials to help them in the process and their appreciation of our attention to this long-standing need. While this manual has been designed specifically for co-op coordinators placing youth in vocational education programs, there has been interest in adapting these materials for use by other professionals who place teens in jobs such as those responsible for summer jobs programs and school to career initiatives in comprehensive high schools.

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Abstract ID: **1061691** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Defining common categories of exposure among four cohorts of rescue/recovery workers who responded to the World Trade Center disaster**

Committee: **Occupational Health**

Topic: **Epidemiology and surveillance of workers involved in emergency response: Public Health roles and tools**

Keywords: **Cancer, Environmental exposures, Occupational exposure**

Abstract Text

Key Objectives:
- To describe the establishment of a multi-institutional, multi-disciplinary working group;
- To descibe common categories of exposure to the World Trade Center site for analyses of cancer and other conditions across cohorts.

Brief Summary:
Background:
The attacks on the World Trade Center (WTC) on September 11, 2001 (9/11) and its resulting collapse produced a massive dust cloud, fires that persisted for many months and rescue/recovery efforts that for some lasted beyond 2002. Because environmental monitoring was limited, human exposures have primarily been characterized using questionnaires, the content of which varied by WTC program site. In order to facilitate comparison of epidemiological findings from four cohorts of WTC-responders under study in NYC, common categories of exposure were defined.
Methods:
The four participating cohorts of WTC-responders include: the WTC Responder Health Consortium (N~27,000), the WTC Health Registry (n~30,700), the Fire Department of the City of New York (N~15,400), and the Environmental Health Center (N~800). Investigators from each cohort, and community and labor representatives met periodically to compare questionnaires in order to define common WTC exposure categories. “Common” was defined as similar information collected and available for at least 70% of enrollees, in at least three cohorts.
Results: Three common exposure categories were identified:
1. Dust exposure on day of 9/11: Type A: Presence in lower Manhattan on 9/11 and heavy exposure to dust from the cloud; Type B: Presence in lower Manhattan, work on the pile resulting from the collapse of the WTC towers on 9/11, not present during period of heaviest exposure to dust from the cloud; Type C: Presence in lower Manhattan on 9/11, no pile work on 9/11, not present during period of heaviest exposure to dust from the cloud; Type D: No presence in lower Manhattan on 9/11.
2. Work periods at the WTC site: Presence any time within the following time periods: 9/11/2001, 9/12/2001, 9/13/2001-9/17/2001, 9/18/2001-12/31/2001, 1/1/2001-6/30/2002.
3. Work activities at the WTC site: Participation in firefighting, search and rescue, hand digging/bucket brigade, and/or welding/steel cutting/torch operation.
We were unable to define common categories for other work activities, work in indoor spaces, or for the use of masks/respirators or other protective equipment across cohorts. Work duration is available for all cohorts but a common variable based on total days (1-7; 8-30; 31-90; >90) was available for only 2 cohorts.
Conclusion: Participating cohorts will use common exposure categories for analyses of post-9/11 cancer and other health outcomes to enable comparisons of disease/condition incidence by these WTC exposure categories across cohorts. Whenever possible, efforts to monitor health impacts of future disasters should include exposure categories with identical definitions across cohort studies

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Abstract ID: **1061959** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Use of proxy variables to identify work-relatedness in hospitalization data**

Committee: **Occupational Health**

Topic: **Other occupational health issues (i.e. underreporting)**

Keywords: **Occupational Health, Occupational Surveillance**

Abstract Text

Background:
The NYS Hospital Discharge data set does not record whether injuries are work-related; therefore, a proxy variable must be utilized to conduct surveillance for work-related hospitalizations. The CSTE Occupational Health Indicators how-to manual uses the variable 'expected primary payer' equal to workers' compensation as the specified proxy. This study examined the ability to correctly measure the work-relatedness of a hospitalization using proxy variables.

Methods:
Medical records were requested from hospitals based on a random sample from the 2007 hospital discharge data where principle diagnosis was carpal tunnel syndrome or amputation. A total of 340 records were used for the analysis (188 carpal tunnel syndrome, 152 amputation). Work-relatedness from the medical records was compared to two hospital discharge database payment variables, and the sensitivity, specificity, positive and negative predictive values were assessed. Differences in the validity of the variables was also analyzed.

Results:
Based on the medical records, 22% of the hospitalizations in this sample were work-related, and the hospitalization database variables identified 16% as work related. Overall, using the expected principle reimbursement variable correctly identified 50% of work-related hospitalizations (95% CI: 38%, 62%), and use of the source of payment variable correctly identified 47% of work-related hospitalizations (95% CI: 36%, 59%). Results based on the stratification will also be discussed.

Conclusions:
The results of this study indicate that a large percentage of hospitalizations that are work-related are being missed by these proxy variables.

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Abstract ID: **1062462** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Surveillance of work-related hospitalized amputations through pooled data sources**

Committee: **Occupational Health**

Topic: **Other occupational health issues (i.e. underreporting)**

Keywords: **Data/Surveillance, Hospital data, Occupational Surveillance**

Abstract Text

Background:
Work-related injuries are often estimated from a single data source. There are numerous reasons any one data source potentially fails to capture all work-related injuries: certain populations fall outside the scope of any one system; not all injuries meet a system's case definition; and cases may not be disclosed to the system by reporting parties. Recent efforts to improve surveillance of workplace injuries and illnesses have focused on utilizing multiple data sources for the estimation or enumeration of cases. In a pilot study of this multi-data source approach, we attempt to identify work-related hospitalized amputations from two Washington State-based data sources: the workers' compensation database and hospital discharge data.

Methods:
The Washington State Department of Labor and Industries state funded workers' compensation data and the Washington State Department of Health's Comprehensive Hospital Abstract Reporting System (hospital discharge data) were linked using common worker and injury characteristics. Amputations were identified within the workers' compensation data from injury classification codes, key words in injury descriptions, diagnosis, and medical procedure codes. Amputation-related ICD-9 codes entered in the primary diagnosis or primary procedure fields were used to identify cases within the hospital discharge data. For cases identified from the hospital discharge dataset, work-relatedness was ascertained from the primary payer field. Unique cases of work-related amputations with hospitalizations in 2006 through 2008 were identified from the combined dataset which was then analyzed for total number of hospitalized work-related amputations and case ascertainment by data source.

Results:
Approximately 80% of hospitalized amputations were captured by the workers' compensation system; half were captured by the hospital discharge data. The workers' compensation data uniquely contributed approximately 10% of all cases while over 15% of the total was identified solely in the hospital discharge data. Based on primary diagnosis and procedure codes, approximately half of the matched cases were classified as something other than amputations in the hospital discharge data.

Conclusions:
Hospital discharge data contributed unique cases to amputations identified from the workers' compensation data. These are likely amputations among workers not covered by the Washington State state funded workers' compensation system including workers whose employers self insure, the self-employed, and federal and military employees. However, the contribution is limited to injuries requiring hospitalization, which was observed to be approximately 10% of all amputations identified from the workers' compensation system.

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Abstract ID: **1061515** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Defining cancer outcomes among four cohorts of rescue/recovery workers who responded to the World Trade Center disaster**

Committee: **Occupational Health**

Topic: **Epidemiology and surveillance of workers involved in emergency response: Public Health roles and tools**

Keywords: **Cancer, Occupational exposure, Occupational Surveillance**

Abstract Text

Key Objectives:
-To describe the establishment of a multi-institutional, multi-disciplinary expert panel;
- To describe the common rules for defining cancer across cohorts.

Brief Summary:
Background:
The attacks on the World Trade Center (WTC) on September 11, 2001 (9/11) and its resulting collapse produced a massive dust cloud, fires that were not extinguished for months, and rescue/recovery efforts that for some lasted beyond 2002. Workers experienced potential exposures to a complex mix of airborne pollutants, including known and suspected carcinogens, raising concerns about whether such exposures will be associated with an increased risk of cancer. Although long-term follow-up is required, representatives from each of the four cohorts of WTC-responders have met to establish common rules for classifying cancer in future analyses.
Methods:
The four participating cohorts include: the WTC Responder Health Consortium (N~27,000), the WTC Health Registry (n~30,700), the Fire Department of the City of New York (N~15,400), and the Environmental Health Center (N~800). The WTC Cancer Review Board includes epidemiologists, oncologists and pathologists as well as community/labor representatives and meets periodically to review de-identified cancer cases from each site to determine how cases should be classified and counted for analytic purposes.
Results:
The following classification rules were agreed upon for external (comparisons to state and national cancer surveillance data [SEER]) and internal (comparisons within cohorts) analyses:
1. Common cancer definitions (i.e., confirmed, probable, possible, not confirmed, reporting error) will be used and in general, only confirmed cases by medical records will be eligible for analyses.
2. Only malignant cancer cases (ICD-O-3 Behavior 3) will be included, except in cases where common practice is for cancer registries to report lower behavior tumors/pathology.
3. Categorization of cancer by anatomic site unless hematologic histology.
For internal analyses only, the following additional rules were agreed upon:
1. If a primary cancer re-occurs with the same histology within 5 years of diagnosis it will be considered a relapse and not counted again. An exception is made for paired organs (e.g., breast, lung, kidney), when the newly affected organ is contralateral to the primary cancer.
2. If pathology reports contradict information from state cancer registries, information from the pathology reports will take precedence.
Conclusion: Participating cohorts will estimate cancer rates based on these rules to enable comparison of incidence rates, overall and site specific, across cohorts. Our effort underlines the importance of collaboration between institutions involved in multiple studies of a major health issue, especially if this carries a heavy social and political load, in order to generate comparable results and provide the best possible evidence.

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Abstract ID: **1061412** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Matching Pennsylvania medicaid lung cancer cases with state cancer registry records to estimate lung cancer incidence, Pennsylvania, 2007**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Cancer, Chronic diseases, Epidemiologic methods**

Abstract Text

Background:
Although State Medicaid claims databases are used for case management and administrative purposes, they can offer opportunities to conduct epidemiological public health surveillance for a wide variety health outcomes, diseases, and conditions. Pennsylvania's (PA) 2007 Medicaid database contains about 30 million claims, on about 1.7 million clients. Diagnosis information is provided on claims using ICD-9-CM codes. Unduplicated 2007 Medicaid prevalent lung cancer cases were matched with 1985-2007 Pennsylvania Cancer Registry (PCR) to identify year of diagnosis.

Methods:
Prevalent lung cancer cases were selected from a database containing all 2007 PA's Medicaid paid claims records. Unduplicated lung cancer records (2,768) containing name, birth date, and social security number were provided to PCR for matching to identity year of diagnosis for each case. A total of 2,112 matched records were identified, of which 983 were found have been diagnosed in 2007. Numerator (lung cancer cases) denominator (population-at-risk) data by age group 0-4, 5-14, 15-24,… 85+, for 2007 PA and Medicaid data were used to estimate number of expected cases by sex in the Medicaid population using 2007 Statewide cancer incidence rates.

Results:
Overall standardized incidence ratios (SIRs) for males (1.21), females (0.98), and total (1.02) were found. Male SIR was found to be statistically significantly higher ($p < .05$); however, age specific SIRs differed markedly. SIRs among 35 to 64 year olds were greater than 1.0, while SIRs among 65 to 85+ year olds were less than 1.0.

Conclusions:
Overall record matching efficiency of 76% between unduplicated Medicaid lung cancer records (2,768) and PCR matched records (2,112) may be attributed to differences in coding systems. PCR used ICD-0-3 coding, while Medicaid diagnosis is coded using ICD-9-CM codes. The fact that only 47% (983 of 2,112 matched cases) were found to be diagnosed in 2007 is expected because of the mix of incidence and prevalent cases in 2007 Medicaid lung cancer records. The downward trend in SIRs from above 1.0 among 35 to 64 year olds, below 1.0 among 65 to 85+ year olds was consistent for males and females. The data suggest a real increased risk of lung cancer in PA's 2007 Medicaid population, while the lower risk among 65 to 85+ year olds is likely due to switching of Medicaid population to Medicare,

or some other form of health care cost reimbursement.

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Abstract ID: **1060502** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Improving nationwide access to surveillance and biosurveillance information**

Committee: **Surveillance/Informatics**

Topic: **Other surveillance/informatics**

Keywords: **Epidemiology capacity, Informatics, Surveillance**

Abstract Text

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Abstract ID: **1062296** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Surveillance and informatics: Current and future directions and intersections**

Committee: **Surveillance/Informatics**

Topic: **Effective interactions between epidemiology and informatics**

Keywords: **Informatics, Surveillance**

Abstract Text

Key Objectives:
1) Provide an update on the intersection between surveillance and informatics from the CDC vantage,
2) Engage participants in an active discussion regarding the opportunities and challenges associated with the increasing automation of health information systems and implications for public health surveillance.

Brief Summary:
As the flow of information throughout the cycle of public health surveillance is increasingly automated, the fields of surveillance and informatics are increasingly intertwined. This reflects the growing automation of healthcare and health transaction records as well as advances in procedures for collecting, transmitting, managing, analyzing, mapping, and disseminating surveillance data and information. Recently, this trend has been accelerated by new federal incentives to encourage healthcare providers to adopt electronic medical records that meet “Meaningful Use” standards for both healthcare and public health objectives. Ideally, these developments will allow for more timely, complete, efficient, and accurate surveillance, enabling epidemiologists to give greater attention to interpreting and acting upon the information. But, as CSTE members well know, there are multiple pitfalls and challenges along the path to achieving this ideal. In this roundtable discussion, the directors of the CDC Public Health Surveillance Program Office and the Public Health Informatics & Technology Program Office will provide an update on CDC’s collaboration with CSTE and other state/local public health organizations to address current public health mandates in the “Meaningful Use” program, improve notifiable disease surveillance, and act on lessons learned from investments over the past decade in syndromic surveillance and “biosurveillance” systems. The session will invite a dialogue among participants regarding the opportunities and challenges associated with the increasing automation of health information systems.

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Abstract ID: **1061438** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **An integrated communicable disease electronic surveillance system in New York**

Committee: **Surveillance/Informatics**

Topic: **Electronic disease surveillance systems (EDSS, NEDSS, etc.)**

Keywords: **Communicable disease, Health information systems, Surveillance**

Abstract Text

Key Objectives:
The introduction of New York’s Electronic Clinical Laboratory Reporting System (ECLRS) improved the timeliness of laboratory reporting, but also increased the case investigation workload for Local Health Departments (LHDs). To reduce that workload and expedite case investigation and reporting for the LHDs is our key objective. Integration of ECLRS with Communicable Disease Electronic Surveillance System (CDESS) have been implemented by utilizing available technology to assist in reaching that objective.

Brief Summary:
LHD staff are required to fill out core case information along with various disease specific questionnaires while performing investigations and enter them into CDESS to generate case reports. To reduce the amount of work necessary to get those case reports keyed into the CDESS system, we have futher integrated ECLRS and CDESS so that case reports can be automatically generated by an

electronically submitted lab report. Communicable diseases that require supplemental information were grouped into logical entities or modules for analysis and development. Those modules were: foodborne diseases, hepatitis, vaccine preventable diseases, tuberculosis, sexually transmitted diseases, tickborne diseases, and contact modules. Those modules were developed in CDESS to provide users with similar questionnaires under each common module and further facilitate a one-stop shop for users to perform their routine tasks.
All modules share the same infrastructure while utilizing disease specific variables and functionality unique to the module. For example, the Hepatitis module provides a patient registry for tracking chronic hepatitis patients along with identification and management of infants born to HBsAg-positive mothers. The Syphilis Serology Registry provides a full picture of patients' past history of syphilis by tracking serology testing and treatment. A contact module was developed to capture demographics, prophylaxis and disease specific information for contacts while maintaining all links to the index case.
A dear doctor letter to ask for clinical information for a disease specific lab report can be automatically generated by ECLRS or CDESS. Currently a rabies information module is developed and ready to be implemented to allow LHD investigators to manage information on animals tested for rabies and human exposures and prophylaxis.
A sexually transmitted disease management information system (STDMIS) module within the CDESS is under development. The STDMIS will be linked with morbidity reports for reportable STD diseases and will be used for patient/partner tracking, monitoring, treatment and disease history and partner services follow-up. This newly integrated module will allow for improved case management and improved monitoring and evaluation of performance indicators.

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Abstract ID: **1062030** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **The compliance of laboratories with Electronic Laboratory Reporting in New York**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Data/Surveillance, Electronic laboratory reporting (ELR), Evaluation**

Abstract Text

Background:
New York State (NYS) has mandated the use of its Electronic Clinical Laboratory Reporting System (ECLRS) for reporting of all laboratory evidence of reportable conditions since 2007 and 502 laboratories are currently reporting. The purpose of this study was to survey all laboratories to assess compliance with ECLRS reporting and to evaluate whether laboratories reporting through ECLRS are using national standards. The survey results were also validated with information gathered by the NYS Clinical Laboratory Evaluation Program (CLEP), which regulates, approves, and conducts on-site audits regularly of all clinical laboratories throughout the country that perform diagnostic tests on New York residents.

Methods:
A letter was mailed in July 2010 to all clinical laboratories licensed by CLEP, requesting them to complete a survey posted on the ECLRS home page. The survey asked about the type of tests that the laboratories perform, the use of laboratory information systems (LIS), use of reference laboratories, and use of standards in data transport, data format, test coding, and availability of data elements. The ECLRS reporting status of responding laboratories was validated through CLEP audits for comunicable diseases.

Results:
Letters were mailed to 926 laboratories; 471 (51%) labs responded, with 417 (89%) of them reported performing tests from NYS residents or providers. Of the 417 laboratories, 250 (60%) can report in HL7 format, 166 (40%) use LOINC/SNOMED codes, 208 (50%) can report ICD-9 codes, and 262 (63%) use reference laboratories for confirmatory testing. The laboratories' LIS captured the following patient demographic data: 305 (73%) for patient address, 295 (71%) for patient phone number, 282 (68%) for specimen source, 189 (45%) for race, 81 (19%) for ethnicity, and 35 (8%) for pregnancy status. The most often used LIS vendors were Meditech (55), Cerner (44), Sunquest (42), and Soft (27). There were 518 laboratories visited by CLEP investigators, of which 325 (63%) were reporting via ECLRS, 14 laboratories were closed, 54 were outsourced, and 151 (30%) didn't perform communicable disease tests. CLEP audits showed that 98% of laboratories were compliant in reporting via ECLRS.

Conclusions:
The laboratory survey provided useful information regarding laboratory capability to meet national reporting standards. Race, ethnicity, and pregnancy status were not captured in most LIS. Our study suggested that the majority of laboratories were compliant with reporting, but that the variety of LIS vendors and missing data elements are challenging for implementing electronic laboratory reporting.

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Abstract ID: **1056488** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **How did information technology boost the dissemination of community-wide antibiogram to healthcare providers?**

Committee: **Surveillance/Informatics**

Topic: **Effective interactions between epidemiology and informatics**

Keywords: **Antimicrobial resistance, Information technology, Local epidemiology**

Abstract Text

Background:
Since 2002, the Washoe County Health District (WCHD) has collaborated with local laboratories to produce a community-wide antibiogram every year. The antibiogram is a tool for healthcare providers

to use local antibiotic susceptibility data as recommended by the CDC to provide guidance in their prescribing practice. Between 2002 and 2004, the antibiogram was disseminated to the local medical community in traditional printed formats. In November 2007, electronic formats including an online format and PDA format were created and posted on the WCHD's website. The objectives of this presentation are: 1) to describe how the online format of antibiogram was developed and how well it was received by local medical community; 2) to share our local experiences with other jurisdictions.

Methods:
The online antibiogram was developed using a combination of Cascading Style Sheets (CSS) and the programming languages PHP:Hypertext Preprocessor (PHP) and JavaScript. The online antibiogram provides an interactive interface for readers to easily lookup antibiotic susceptibility for organisms. Web statistics are reported on a monthly basis and have been documented since January 2007. One web visit is counted if the visit comes from one IP address within 15 minutes regardless of the number of hits. One month's data of IP addresses was also used to examine the number of people using the online antibiogram. Google analysis of Operating Systems (OS) was also used to assist evaluate underlying reasons for increased web visits.

Results:
There were a total of 15,510 visits for all formats of the antibiogram between 2008 and 2010. Of which, 87% (13,527 visits) were for electronic formats and the remaining 13% were for printed formats. Out of 13,527 visits for electronic formats, 99% of visits were for the online format. The average monthly visit for the online format increased significantly from 253 visits per month in 2008, to 435 visits per month in 2009, to 597 visits per month in 2010. Data on IP addresses suggested that 204 unique computers accessed the antibiogram page in a one month period in 2010. The increased popularity of the online antibiogram may be associated with the increased use of the iPhone in the past two years based on Google analysis of OS.

Conclusions:
Dissemination of epidemiology work is critical in public health surveillance. Our experience suggests that the interactive online antibiogram is more popular than the traditional format. This finding suggests that this novel mechanism for dissemination is worth exploring.

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Abstract ID: **1062041** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Strengthening hepatitis C virus (HCV) surveillance in Massachusetts (Change - Alfred DeMaria will present in place of Daniel Church)**

Committee: **Surveillance/Informatics**

Topic: **Effective interactions between epidemiology and informatics**

Keywords: **Epidemiology capacity, Nosocomial infections, Surveillance**

Abstract Text

Background:
The identification of emerging transmission trends and outbreaks of HCV infection in either community

or health care settings relies on the ability of health departments to investigate suspect cases of HCV infection effectively. Proper follow-up and categorization of suspect HCV infection is time-intensive and complicated. Despite the documented risk of nosocomial HCV transmission, potential nosocomial cases are often not identified and investigated in a timely manner due to inadequate resources in health departments. Thousands of reports of suspect HCV infection are received in Massachusetts each year making it difficult to review these reports in a timely manner. All viral hepatitis surveillance in Massachusetts is conducted using the Massachusetts Virtual Epidemiologic Network (MAVEN), a web-based disease surveillance system. While the use of MAVEN has contributed efficiencies with its many automated features, the number of cases of suspect HCV infection not investigated by the Massachusetts Department of Public Health (MDPH) remained above 500 per year.

Methods:
In 7/2010, procedures for reviewing suspect acute HCV cases were reviewed and revised, a guide for conducting these reviews was developed and a graduate student intern was enlisted to expedite investigations of possible acute HCV infections. This intern and other MDPH staff worked with local health departments to review all suspect cases, classify them appropriately, and identify any cases where healthcare-associated exposures were the possible source of infection.

Results:
By 12/2010, the number of cases of suspect acute HCV infection waiting to be investigated had dropped from over 500 to under 50. Cases are now investigated within one month. In 12/2010, the expedited follow-up of acute hepatitis C infections identified two possible healthcare-associated cases. Case A underwent hemodialysis in 9/2009 and was diagnosed with hepatitis C in 10/2009. As the case was deceased, no further investigation was conducted. Case B was diagnosed with hepatitis C in 11/2010 and reported a hospitalization during his incubation period. The case is currently being investigated as possibly healthcare-acquired. Neither case A nor case B had any other risk history or potential exposure history outside their possible healthcare-associated exposures.

Conclusions:
Dedicated staff resources and automated disease surveillance systems can enhance timely investigation of acute hepatitis C cases and address potential healthcare-associated transmission situations.

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Abstract ID: **1059221** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Travel history collection for infectious disease case investigations: Is it complete, is it consistent, and does it matter? â€“New Mexico, 2006â€“2009**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Data/Surveillance, Infectious Diseases, NEDSS/PHIN**

Abstract Text

Background:
Travel history is a standard component of infectious disease case investigations and can assist in identifying common-source exposures and linking multi-jurisdictional cases. A carefully elicited travel history is particularly critical for surveillance of transient populations (e.g. National Park visitors). To our knowledge, the completeness and consistency of travel history data has never been described.

Methods:
Our study consisted of three components. All data were obtained from the New Mexico Department of Health. 1) Review of case investigation templates, 2) Analysis of travel history data recorded in the New Mexico Electronic Disease Surveillance System (NM-EDSS) for select diseases during calendar years 2006-2009, and 3) Survey of state case investigators on knowledge, attitudes, and practices regarding travel history collection.

Results:
Travel history was approached/defined eight different ways on Centers for Disease Control and Prevention (CDC) or NM-EDSS templates. For most diseases assessed, travel history was elicited via a general comments field, but travel history-specific fields existed for food/waterborne conditions.
For the NM-EDSS data analysis, we reviewed a total of 2,122 case investigations for 27 diseases that were categorized as follows: 9 foodborne (66% of cases), 4 waterborne (18% of cases), 10 zoonotic/vectorborne (10% of cases), and 4 vaccine-preventable (6% of cases). Travel history was recorded electronically in 49% of all cases examined. However, recording of travel history was not homogeneous across all disease categories. Food/waterborne diseases had the highest proportion of cases (55%, $p < 0.0001$) with travel history recorded. In contrast, travel history was recorded in only 10% of zoonotic/vectorborne and 6% of vaccine-preventable disease cases.
From the case investigator survey (n = 23 respondents), >65% agreed or strongly agreed that having travel history-specific questions on investigation templates and receiving additional training on travel history collection would be beneficial.

Conclusions:
Travel history was recorded in <50% of total case investigations and was particularly poor for zoonotic/vectorborne and vaccine-preventable diseases. Interventions to improve the quality and consistency of travel history data are needed.

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Abstract ID: **1057557** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Comparing paper-based survey methods with digital pen technology for conducting rapid needs assessments**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Assessments, Disasters, Epidemiologic methods**

Abstract Text

Background:
The purpose of this study was to conduct a rapid needs assessment while comparing a paper-based survey system to a digital pen and paper method. Capturx software for Anoto digital pens was used to collect primary health data, which were integrated into Microsoft Office Excel and ArcGIS to conduct a timely, low-cost, and efficient health survey for a Community Health Assessment.

Methods:
The assessment protocol was based on the Centers for Disease Control and Prevention's Community Assessment for Public Health Emergency Response. A multistage cluster sampling technique was used to identify thirty randomly selected census block groups using probability proportionate to size for households. Seven randomly selected households from each block group were interviewed by teams of volunteers. Maps of each block group were developed with a legend and a pre-determined random walking path for the teams using Esri's ArcGIS software. An answer sheet was created using Microsoft Office Excel to track the respondents answers to the survey. Prior to field deployment, the maps and answer sheets were printed on normal paper using Capturx software, which generates a digital watermark that enables data written with the digital pens to be automatically integrated into the original Excel files and GIS database.

Results:
With minimal training, the teams were able to use the digital pens on the printed paper maps to track their location, households that were surveyed, refused, had no one home, or had a language barrier. By having the data from answer sheets automatically integrated into Excel, the team was able to reduce the amount of time needed for data entry, minimize data entry errors, and gain access to digital versions of the answer sheets in both original handwriting and converted text.

Conclusions:
The goal of the study was to gather data for the community health assessment, while training volunteers and exercising the ability to operate this protocol in the event of a disaster. By using Capturx software and Anoto digital pens, the survey data was automated without changing the paper-based process or having an extensive training for volunteers. This technology proved to be an effective and cost-efficient method to conduct a community health survey and its applications can be applied to rapid needs assessments following disasters.

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Abstract ID: **1062078** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Discussion of the recommendations of the National Biosurveillance Advisory Subcommittee's (NBAS) 2011 report**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Collaboration, Policy/Policy Development, Surveillance**

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Abstract ID: **1062431** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Do you want fries with that? A user-centered inventory of syndromic surveillance system design**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Data/Surveillance, Surveillance**

Abstract Text

Background:
To monitor population health, public health agencies increasingly use syndromic surveillance, a technique that relies on the secondary use of information collected for other purposes. To assist local, state, and national public health personnel in performing these functions, state and local authorities, the military, the Centers for Disease Control and Prevention (CDC), and academic research groups have developed a number of syndromic surveillance systems. Although substantial funding has been awarded for these efforts, many barriers to adoption have existed, including a debate as to their operational value in the public health setting and end-user complaints that systems are not entirely intuitive or easy to use. Our objective was to characterize existing syndromic surveillance systems to present a synthesized inventory of the current state-of-the-art in syndromic surveillance platforms and provide recommendations for enhancing current systems or designing future ones using a user-centered design (UCD) approach. In broad terms, UCD is a design philosophy, or process, in which the needs, wants, and limitations of end users of a technical product are given extensive attention at each stage of the design process. The authors submit that applying UCD principles to the development of syndromic surveillance applications may enhance future adoption by improving the usability of these systems. Specifically, this inventory will: (1) provide an updated review of existing systems; (2) identify user-centered needs and challenges to system enhancement or development; and (3) present in a synthesized manner the research and development efforts from the design and usability perspectives.

Methods:
For the purposes of this inventory, we limited the number of systems reviewed to those based on the seven most widely used applications in the United States. We cataloged a total of 36 attributes and used them to characterize each system across seven broad categories: anomaly detection algorithms, communication and dissemination capabilities, data sources, data visualization, indexing and search functions, reporting, and system requirements. To conduct a more complete review, we also examined the extent to which a particular technical feature met a specific functional requirement of syndromic

surveillance across all of the platforms inventoried.

Results:
This inventory provides an in-depth description of the design features, technical components, and interfaces of syndromic surveillance systems and frames the related research questions from a UCD perspective. In most instances, the systems do not adhere to best practices of user interface design. Our review reveals similarities across all attributes cataloged. Systems developers have focused on architecture, statistical aberration detection algorithms, and data presentation; however, efforts in communication, alerting, and dissemination of situational awareness are less developed. The full inventory will be presented and made available for CSTE conference participants.

Conclusions:
While the syndromic surveillance systems we reviewed share similar objectives and data sources, they are not easily used (i.e., usability is lacking). Similarities exist across the inventoried applications, including system architecture, data management techniques, indexing and search functions, algorithms for anomaly detection, reporting, and visualization capabilities. These similarities suggest that a UCD approach to design and development of these systems may improve overall system adoption and user satisfaction with these applications.

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Abstract ID: **1062481** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Data quality monitoring approaches in the Distribute system**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Electronic data, Influenza surveillance, Information systems**

Abstract Text

Background:
Distribute is a national emergency department syndromic surveillance project for influenza-like-illness (ILI) that integrates data from existing state and local public health department surveillance systems. The Distribute project provides graphic comparisons of ILI-related clinical visits across jurisdictions and a national picture of ILI. Unlike other surveillance systems, Distribute is designed to work solely with

summarized (aggregated) data which cannot be traced back to its un-aggregated 'raw' data. This feature, combined with the use of distributed data voluntarily contributed by state and local health jurisdictions creates some unique data quality characteristics and increases the value of regular, structured data quality monitoring.

Methods:
Currently we are employing a mixed monitoring approach, combining manual and automated data quality detection processes. Some automated data quality metrics, such as characterization of dropped data feeds, are built into the Distribute system. Manual data quality monitoring is conducted on a weekly or more frequent basis. The manual process consists of generating and examining summary tables showing data uploads and summary time series graphs showing counts and ratios over a small (typically 2 week) period. Problems and resolutions to identified problems are recorded in a Google-document to facilitate sharing with other team members.

Results:
Over the course of 6 months, 56 data anomalies were found and logged using the manual process; 43 were resolved. In addition, we maintain a catalog of observed data quality problems and known data quality issues with each site. No single automated method was effective for all data providing sites. Efforts to automatically detect data quality problems caused by other issues using classical statistical process control methods have not led to any results with both high specificity and sensitivity.

Conclusions:
We will describe the types of data quality issues that we have cataloged, discuss several data anomaly causes, and address issues with developing automated data quality monitoring processes. We will focus on the methods developed for manual data quality monitoring which in many cases are candidates for automation. Analysis of problems using classical methods has led us to conclude that detection methods using change point processes may better fit the data and thus perform better.

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Abstract ID: **1062381** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Spatial interpolation of viral load values among newly diagnosed HIV cases in New York City demonstrates geographic heterogeneity and highlights areas of need over time**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Geographic Information Systems, HIV/AIDS, Surveillance**

Abstract Text

Background:

Maps are powerful tools for displaying epidemiologic information, whether the burden of disease or control of an epidemic. HIV viral load (VL) values can indicate effectiveness of clinical management and potential transmissibility of HIV-positive individuals. Community VL studies have shown persons with similar VL values tend to be geographically proximate. Geographic distance is also influential in partner selection, risk of infection, and access to care. Available HIV surveillance VL data for HIV-positive individuals can be used to impute VL values for locations with sparse data using surface interpolation techniques based on geography. This community-level approach can inform HIV prevention and public health interventions.

Methods:
We conducted a cross-sectional analysis of routinely collected HIV surveillance data for NYC residents at two time points: at diagnosis (2008) and approximately one year post-diagnosis (2009). With residential address information, we assigned XY coordinates for each case using NYC Department of City Planning's geocoder (Gbat) and manual review. All viral load and CD4 values for individuals seeing NYC providers were obtained through mandatory electronic laboratory reporting in New York State. ArcGIS 9.3.1 was used to map XY coordinates and associated VL values. We used three ArcGIS spatial and geostatistical techniques - density weighted by viral quantity, inverse distance weighting, and hot spot analysis - to compare cases' values to their neighbors' and to create the interpolated citywide surface.

Results:
Of 3,809 persons newly diagnosed with HIV in 2008, 3,349 (87.9%) were living in NYC, were non-institutionalized, and had a geocoded address. VL values at diagnosis were reported for 2,742 of 3,809 cases (72.0%); 2,446 (89.2%) geocoded. At diagnosis, 93.8% had detectable VL values and individual VL values were geographically heterogeneous and wide ranging. Among cases diagnosed in 2008 and living 12/31/2009, 2,309 (63.9%) had a VL value in 2009 (54.4% were detectable), and 2,096 (90.8%) geocoded. The geographic heterogeneity was less pronounced when compared to 2008 maps. In 2009, sustained high VL "hot spots" identified by all three geostatistical techniques were portions of 12 NYC neighborhoods.

Conclusions:
Three novel mapping techniques emphasized similar "hot spots"; inverse distance weighting, specifically, produced a sophisticated and granular map that is more useful than traditional neighborhood-based maps in precisely targeting interventions. Though this analysis is limited by the assumption that geography influences VL distribution, application of interpolation techniques to HIV surveillance data, especially in densely populated areas, can inform resource allocation and illustrate areas of particular interest in a newly diagnosed subset of the population.

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Abstract ID: **1058773** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Understanding health behaviors among sexual minorities using the Behavioral Risk Factor Surveillance System, Colorado, 2006 â€“ 2009 (Change - Kyle Legleiter will present in place of Indira Gujral)**

Committee: **Surveillance/Informatics**

Topic: **Surveillance Indicators**

Keywords: **Data/Surveillance, Social determinants, Vulnerable populations**

Abstract Text

Background:
Most research studies assessing health behaviors among the gay, lesbian, and bisexual populations are only generalizable to the sample of respondents. As a result, little is known at a population level. Few state public health agencies have asked sexual orientation status on their annual Behavioral Risk Factor Surveillance System (BRFSS)survey. Since 2006, the Colorado Department of Public Health and Environment has annually asked sexual orientation status as part of ongoing efforts to address health disparities. The purpose of this study is to compare health behaviors and related conditions between Colorado's heterosexual and sexual minority (gay, lesbian, bisexual, and other) populations.

Methods:
Data from the BRFSS for years 2006-2009 were used for these analyses. Data availability varied based on whether questions stemmed from the BRFSS core set of questions asked annually, rotating core asked bi-annually, or added by the state health department. Colorado heterosexual and sexual minority populations were compared using a z-test for proportions to identify significant differences ($p < 0.05$) by demographic characteristics and individual health behaviors and related conditions.

Results:
In 2006-2009, sexual minorities comprised 2.3 percent of the population in Colorado who responded to the BRFSS. Statistically significant differences were observed for the following demographic characteristics: the sexual minority populations were younger, less diverse in terms of Hispanic ethnicity, and were more likely to live in urban areas as compared with the heterosexual population. In regard to health behaviors and conditions, Colorado sexual minorities had a higher prevalence of binge drinking, smoking, physical activity, asthma, and screening for HIV and a lower prevalence of overweight and obesity and having an emotional support in their lives. No statistically significant differences in prevalence were observed between the two groups in regard to consumption of fruits and vegetables, always using a seat belt, drinking and driving, and self-reported health status.

Conclusions:
Sexual minorities in Colorado comprise a small fraction of the population, yet they are disproportionately engaged in many risk and protective behaviors. The results will assist in the development of targeted public health prevention efforts in Colorado. Public health departments should be encouraged to include sexual orientation status in ongoing population-based surveys to identify health disparities and target prevention efforts.

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Abstract ID: **1062194** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Improving Notifiable Disease/Condition Surveillance through Automated Application of Case Definition Logic**

Committee: **Surveillance/Informatics**

Topic: **Effective interactions between epidemiology and informatics**

Keywords: **Core functions, Informatics, Surveillance**

Abstract Text

Background:
Public health surveillance and information systems are essential to effective disease/condition reporting. Inadequate understanding of surveillance case definition components by epidemiologic workers can lead to incorrect case classification. In addition, case classifications are often not updated to account for the additional information gathered throughout the case investigation process. Available technology can improve the classification of cases according to the adopted case classification criteria in the surveillance case definition.

Methods:
Merlin is the Florida Department of Health (DOH), Bureau of Epidemiology's (BOE) secure web-based disease reporting and epidemiologic analysis system operating in all 67 counties. Enhancements made to the Merlin system include the incorporation of case classification algorithms. For each communicable disease under surveillance, the individual case definition components were deconstructed into multiple simple present/absence statements. Data entered into the system for each case regarding clinical, laboratory and epidemiologic criteria are used to evaluate the case against the case definition. Using simple logic, the system will evaluate if the case meets the case definition and determine the case classification. Disease codes are currently being updated so the system will also automatically evaluate electronic laboratory results when setting the case classification. The criteria used to determine if the case meets the case definition are saved and can be evaluated.

Results:
Epidemiologists with administrator access to the Merlin system are able to add case definitions and text logic into the system reducing the need for specialized programming. The system stores the case definition that was effective at the time the case is evaluated and stores the criteria present to determine the correct case classification (confirmed, probable or suspect). The proportion of cases classified correctly according to the case definition has improved and reduces the burden on state level case reviewers to manually ensure cases are reported under the correct case classification. The logic tables that support this function are machine readable and could be implemented in many different surveillance information systems.

Conclusions:
The intersection of "traditional PH surveillance" methods with new technological capabilities provides the opportunity to focus on uniform reporting criteria to increase reporting specificity. Moving away from individuals interpreting written case definitions to the application of system generated algorithms improves the consistent application of case definitions and appropriate case classification. Uniform reporting criteria, in addition to the simplicity and timeliness of surveillance data, are fundamental to increasing the specificity of reporting.

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Abstract ID: **1045205** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Implementation of a national ALS registry using existing data sources: A novel approach**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Data/Surveillance, Registry**

Abstract Text

Background:
In 1986, the CDC Surveillance Coordination Group recommended the development of “a plan to test the usefulness of computer networks for the linkage of independent data sets for epidemiologic surveillance of chronic diseases.” Over the years, a number of state specific projects evaluated the feasibility of using existing data for surveillance. In 2008, President Bush signed into law a bill, which called for the development of a national Amyotrophic Lateral Sclerosis (ALS) registry to gather information about people with the disease.

Methods:
ATSDR conducted a series of four pilot projects to evaluate the feasibility of using existing data as one source of information to populate the National ALS Registry. This approach links existing administrative data, including Medicare, Medicaid, Veterans Heath Administration and Veterans Benefit Administration, and uses an algorithm to determine individual status.

Results:
The algorithm was developed using data from the pilot projects to identify different criteria in the national administrative databases that indicated whether an individual had ALS, potentially had ALS, or definitely did not have ALS. Because ~80% of cases are identified using existing data, a second approach to identify ALS cases is a self-registration process through a web portal. Individuals answer questions to validate a diagnosis of ALS, and then may register through the web portal. The National ALS Registry expects to capture most ALS cases using this two-pronged approach.

Conclusions:
The National ALS Registry is the first national surveillance system to use existing administrative data linkage as a major source of case ascertainment. These combined approaches give a new model for chronic, non-infectious disease surveillance that does not rely on “providers” to populate the registry.

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Abstract ID: **1059226** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Using hospitalization data to evaluate and improve invasive pneumococcal disease surveillance - New Mexico, 2007â€“2009**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Epidemiology, Evaluation, Surveillance**

Abstract Text

Background:
Invasive pneumococcal disease (IPD) is vaccine-preventable and commonly manifests as septicemia or meningitis. IPD underreporting can influence policy decisions regarding vaccine use. We evaluated IPD reporting completeness and how hospitalization data can benefit surveillance.

Methods:
Combined IPD data from passive surveillance and Emerging Infections Program Active Bacterial Core surveillance during 2007-2009 were linked with Hospital Inpatient Discharge Data (HIDD) by deterministic data linkage. Potential IPD cases in HIDD were identified by using 2 IPD-specific International Classification of Diseases, Revision 9 (ICD-9) codes (meningitis or septicemia caused by Streptococcus pneumoniae) and 3 nonspecific codes. For potential cases identified only through HIDD, laboratory reports confirming S. pneumoniae isolation from a normally sterile site were reviewed for all those with IPD-specific codes and a systematic sample of 17% of those with nonspecific codes. Capture-recapture was used to estimate surveillance sensitivity.

Results:
Surveillance detected 1,191 cases, 396 initially through active surveillance. HIDD identified 1,287 potential cases; 558 cases were identified by both HIDD and surveillance. Of 729 potential cases identified only by HIDD, 104 had IPD-specific and 625 had IPD-nonspecific codes; 32 were true IPD cases. We estimated 36 additional cases missed by both sources, yielding 95% overall system sensitivity. Predictive value positive was 78% for IPD-specific codes and 30% for nonspecific codes.

Conclusions:
The high sensitivity of New Mexico IPD surveillance is likely because of combined active and passive surveillance. Hospitalization data yielded additional IPD cases not identified through surveillance. For states that rely on passive reporting, using IPD-specific ICD-9 codes from hospitalization data might be an efficient way to improve surveillance. To track cases adequately, IPD case-ascertainment deficiencies, including hospitalization coding problems, should be addressed.

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Abstract ID: **1061955** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Development and application of the Pathogen Annotated Tracking Resource Network System (PATRN) for surveillance and outbreak investigations of food-borne pathogens**

Committee: **Surveillance/Informatics**

Topic: **Other surveillance/informatics**

Keywords: **Food safety, Information databases, Surveillance**

Abstract Text

Background:
The Pathogen Annotated Tracking Resource Network system is a web-based database (www.patrn.net) developed by FDA and cBio, Inc., to aid in the systematic analysis of data from foodborne pathogens. PATRN captures isolate-specific data from response network (FERN) labs, and other Agencies in a standardized, structured format, and allows secure and controlled access to the data for sharing with multiple user groups. The complex data types include phenotype, genotype, genomic features, virulence factors and antibiotic resistance properties, GIS-based source locations, disease information, laboratory sources, and documented analytical protocols and reports. In addition, data derived from PCR, DNA microarray, PFGE, MLVA, optical mapping, genome sequence, and SNP analyses to carry out further characterization of isolates are also made available.

Methods:
Currently, PATRN holds curated data on E. coli (6577), Cronobacter spp. (943), Listeria (1352) and Salmonella (under curation). As a use case for PATRN's application in the real-world of foodborne outbreaks, we analyzed two cases of neonatal meningitis associated with a Cronobacter spp. outbreak that occurred in the United States in the 2010. Four C. sakazakii isolates, three obtained from blood and cerebral spinal fluid cultures and a single isolate was derived from an infant's pacifier.

Results:
PFGE analysis showed that there were three band differences among the strains (97% relatedness) which by optical mapping were shown to be due to the presence of three indel regions (59, 37, and 14 kb). We analyzed the strains with our in-house plasmid-typing assay using 7 loci (repFIB, cpa, eitCBAD, iucABCD/iutA, Type VI secretion system, and fhaB). Results of these assays were compared online in PATRN with curated strain data using PATRN's computational tools. Simple hierarchical cluster analysis of these plasmid loci showed that the four outbreak strains matched two known records and these isolates grouped within Clade 1A which previous studies had shown to contain the sequenced strain, BAA-894. The two known strains include an isolate from an unknown spice sample in Jordan in 2008 and an isolate from a milk powder sample in France in 2006.

Conclusions:
In summary, a novel annotated tracking system has been developed for foodborne-pathogens. By clustering the experimental assay results from isolates of a recent outbreak with curated data in PATRN, the relatedness of these outbreak strains to other known isolates possessing similar attributes was quickly identified. We have demonstrated the effectiveness of combining traditional assay methodologies and informatics resources like PATRN in outbreak management.

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Abstract ID: **1061869** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Healthcare-associated infection (HAI) reporting and state-federal working relationships**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Electronic laboratory reporting (ELR), Healthcare associated infections (HAI), Surveillance**

Abstract Text

Key Objectives:
Describe
(1) major programmatic challenges of implementing HAI reporting mandates at the state and federal levels
(2) near term opportunities for applying advances in electronic laboratory reporting to HAI and notifiable condition surveillance
(3) high-priority policy and operational issues in HAI surveillance that call for cross-cutting, state-federal solutions

Brief Summary:
Mounting concerns about healthcare-associated infections (HAIs) as a public health problem have prompted enactment of mandatory HAI reporting requirements in an increasing number of states and new a federal HAI reporting requirement connected to Medicare payments to hospitals. These developments, coupled with advances in informatics and new sources of federal support for health information technology, present challenges and opportunities for HAI surveillance. Among the most important are assuring consistency and parsimony in HAI reporting requirements at the state and federal levels, using intergovernmental collaborations to further develop and integrate electronic laboratory reporting for HAIs and notifiable conditions, and adhering to good governance practices in the rapidly developing state-federal working relationships in HAI surveillance.
The presenters, drawing on their experiences with HAI surveillance, electronic laboratory reporting, and state and federal mandates, will focus on the practical implications of legislated HAI reporting requirements for state and federal programs. Special emphasis will be placed on use of CDC's National Healthcare Safety Network (NHSN) as the technical infrastructure for mandatory HAI reporting in an increasing number of states, efforts under way to simplify NHSN for mandatory reporting purposes and accelerate the transition from manual to electronic methods of HAI surveillance, and opportunities for intergovernmental collaborations to develop synergies across electronic laboratory reporting for HAIs and notifiable conditions. Also spotlighted will be priorities and practical challenges,

including minimization of data burden on the healthcare sector and data validation, that come to the fore as state and federal agencies forge new working relationships in HAI surveillance.

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Abstract ID: **1055159** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **BioSense Program redesign**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Collaboration, Informatics, Surveillance**

Abstract Text

Background:
The Centers for Disease Control and Prevention (CDC) will update the Council of State and Territorial Epidemiologists (CSTE) community on the latest activities for the BioSense Program redesign1,2. The BioSense Program's updated vision is to contribute to nationwide and regional (i.e., multistate) situation awareness for all hazards health-related events (beyond bioterrorism) and to support national, state, and local responses to those events. By integrating local and state-level data into a cohesive "picture," BioSense will improve its utility for state and local users. This vision is consistent with the 2006 Pandemic All Hazards Preparedness Act (PAHPA), and 2007 Homeland Security Presidential Directive (HSPD-21), both of which call for regional and nationwide public health situation awareness, through an interoperable network of systems, built on existing state and local situation awareness capability.

Methods:
In FY 2010, under the new Office of Surveillance, Epidemiology and Laboratory Services (OSELS), CDC started redesigning the BioSense Program based on input and guidance from local, state, and federal partners. The goal of the redesign is to create a new BioSense, which coordinates and links existing health monitoring surveillance systems to enable rapid and enhanced interchange of information and improvement of BioSense's utility. Activities in the BioSense Program redesign process include: (1) redefining the BioSense Program's programmatic and communication surveillance objectives through a user-centered approach, (2) supporting existing communities of practice, (3) realigning the BioSense Strategic Plan to complement and strengthen existing health monitoring surveillance systems and meet the Program's enhanced and broadened mission, and (4) using a governance structure that will allow public health stakeholders to drive the new direction for BioSense.

Results:
Financial savings achieved through improved internal contract management are being provided directly to support state and local health departments (HDs) for syndromic and other public health surveillance efforts. In FY2010, the BioSense Program awarded funding to 16 states, 4 cities and Washington D.C. BioSense retains its original purpose of early event (or threat) detection and characterization but is

expanding its utility for: (1) better public health situation awareness, (2) improved routine public health practice, and (3) improved health outcomes and public health. BioSense, as an all hazards and timely electronic surveillance system, will provide regional (i.e., multistate) and national views of multiple health outcomes and syndromes. A new BioSense Redesign Collaboration Site launched on September 1, 2010 and accessible at http://BioSenseRedesign.org, is designed to encourage transparent information ex-change among stakeholders and the BioSense Redesign team. The site allows users to: (1) provide requirements for the redesigned BioSense Program and system; (2) exchange ideas with one another and the BioSense Redesign team; and (3) follow the Bio-Sense Redesign project as it progresses. To date, the user requirements gathering process has identified gaps in public health surveillance practices and systems that BioSense is directly addressing through the redesign, resulting in more effective and timely public health surveillance at the local, state, and national levels.

Conclusions:
Working collaboratively with CSTE and other professional organizations, CDC will continue to ex-amine stakeholder requirements on a routine basis. Also, we will determine HDs and the BioSense Program's limitations, assess Meaningful Use readiness, and work collaboratively with partners on how best to meet the needs and address the limitations of state and local HDs. The new BioSense Program charter and governance structure is supported by a joint steering committee (or the Technical Expert Panel [TEP]) with a balanced representation of local and state stakeholders (e.g., CSTE, ASTHO, NACCHO, ISDS), hospital and healthcare-related groups, federal partners and CDC. Under the new governance structure, CDC and its partners will work collaboratively to redesign the BioSense Program to meet the objectives set forth by the public health community.

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Abstract ID: **1059580** Presentation Type: **Breakout Presentation - Single Speaker**
Title: **Surveillance of reportable diseases in long-term care facilities: An automated solution using electronic laboratory reporting - Nebraska, 2010**
Committee: **Surveillance/Informatics**
Topic: **Novel surveillance methods**
Keywords: **Electronic laboratory reporting (ELR), Surveillance**

Abstract Text

Background:
Long-term care facility (LTCF) residents are at increased risk for infections because of advanced age, comorbidities, frequent need for hospitalization, and group living. As such, LTCFs face a number of challenges including: antibiotic resistance, Clostridium difficile infections, influenza, and blood borne pathogens such as Hepatitis B and C. Traditional public health tracking systems have not traditionally tracked whether the patient resides in a LTCF, nor do they generate LTCF specific reports of reportable conditions. The Nebraska Department of Health and Human Services (NDHHS) uses automated electronic laboratory reporting (ELR) and the National Electronic Disease Surveillance Systems (NEDSS) to assess type and number of reportable diseases and antibiotic resistance among LTCF residents. We describe this novel application in this report.

Methods:
We obtained an address list of 231 NDHHS-licensed Nebraska LTCFs to match with the patient addresses of reported laboratory tests. Next, we extracted these reports from NEDSS to obtain all labs from LTCF residents reported during 2010. We calculated frequency distributions to determine number and type of reportable diseases among LTCF residents, and we examined antibiotic resistance patterns. These data were subsequently extracted into a datamart securely available via the Internet to local health departments for disease surveillance purposes.

Results:
We extracted 481 (1.9%) of 25,734 reportable disease events (other than STDs or lead) reported by ELR representing 287 individuals (1.7 lab tests per individual) in 69 LTCFs as follows: antibacterial susceptibility (294), influenza (49), Clostridium difficile (32), Human Immunodeficiency Virus (23), hepatitis (10), Streptococcus spp. (8), enteric (1), and other (65). Thirteen individuals had bloodstream infections (one polymicrobial), Enterococcus spp (6)., Staphylococcus aureus (5), and Klebsiella sp (2), Group A Streptococcus (1), and Group B Streptococcus (1). We also indentified 51 methicillin-resistant S. aureus (MRSA) isolates and 4 vancomycin-resistant Enterococcus spp.

Conclusions:
NDHHS has implemented this novel, automated surveillance system using ELR and NEDSS to efficiently link reportable conditions including antibiotic resistant isolates to residents of LTCFs. While the current analysis did not identify any outbreaks, it offers enhanced ability to detect such events in a more timely fashion, critical for effective public health intervention. This system can also facilitate tracking unusual events such as co-infections (e.g., influenza and S. aureus). This system should continue to be used and case ascertainment methods further refined.

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Abstract ID: **1059511** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Florida's ESSENCE System â€“ From Syndromic Surveillance to Routine Epidemiologic Analysis across Syndromic and Non-Syndromic Data Sources**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Epidemiology, Information systems, Surveillance**

Abstract Text

Background:
Use of the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) in Florida has evolved from solely early event detection based on emergency department (ED) chief complaints to include routine descriptive epidemiologic analysis, data visualization, and reporting across four different data sources, using and building on tools originally developed for syndromic surveillance.

Methods:
The Florida ESSENCE system is a multi-tiered, automated, and secure (https) web-based application. Microsoft SQL databases are used in data ingestion, statistical analysis, and web databases. System development is primarily in Java. Enhancements to the system are developed through close collaboration with the Johns Hopkins University Applied Physics Laboratory, paying close attention to feedback from state and local epidemiologists in Florida.

Results:
The system in Florida includes four different data sources, each with its own module, including: 1) ED record data from 152 hospitals; 2) Reportable disease case data from the Merlin system; 3) Florida Poison Information Network consultation data; and, 4) Florida Office of Vital Statistics death data. Users can produce time series graphs, summary charts, maps, and tables by a number of possible stratification variables per data source. Statewide pneumonia and influenza mortality from the Office of Vital Statistics death data feed to ESSENCE is analyzed automatically using a Serfling regression model. Death certificates can be analyzed based on analysis of literal cause of death text with a five-week delay and on assigned ICD-10 codes with a 12-week delay. ED data are analyzed by sub-day time intervals to identify clusters by the time patients are registered at the ED by hospital and sub-syndrome category. The Merlin reportable disease data are now processed through the ESSENCE spatial scan statistic to assist with detecting spatial clusters of public health significance.

Conclusions:
A number of barriers often exist for users attempting to access public health data. Data are sometimes siloed within organizations, and often very specialized skill sets are needed to manipulate and analyze data in statistical and mapping software programs. The integration of four data sources into the Florida ESSENCE system creates one location where users can go to access data and create epidemiologic reports and "data dashboards" that describe the morbidity and mortality for a given region in Florida. This functionality has allowed for more timely and routine analysis of data that was previously not available or required significant effort to access, and has helped close the public health surveillance loop with our partners in the clinical community.

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Abstract ID: **1060603** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Evaluation of a surveillance system for an international mass gathering - Lexington, Kentucky, 2010**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Outbreak investigations, Preparedness, Surveillance**

Abstract Text

Background:
Implementing surveillance at mass gatherings can help identify possible terrorism events and community outbreaks, enabling rapid response. The Alltech World Equestrian Games (WEG) held in Lexington, Kentucky, drew 632 athletes, 752 horses, and >500,000 spectators from 58 different countries. We implemented surveillance during the 16-day event (September 25-October 10) to monitor illness and injury at the horse park and in the surrounding area.

Methods:
Surveillance during WEG was conducted using five new and four established data sources and seven situational awareness reports sent to a centralized epidemiology email address to produce a daily public health situation report. The four new data sources included syndromic surveillance of chief complaints at local emergency departments and urgent care centers, visit logs from an on-site medical clinic, syndromic surveillance of local hotels, and WEG volunteer attrition rates. We requested submission of syndromic surveillance reports from local emergency departments, urgent care centers, and local hotels by 10 a.m. daily. Volunteer attendance information was collected from the WEG volunteer coordinator. Using daily line lists, we classified patient visits to the onsite medical clinic by chief complaint. We evaluated completeness of reporting and described chief complaints for patient visits to the onsite medical clinic.

Results:
During WEG, 22/34 (65%) local hospitals and urgent care centers submitted at least 1 syndromic surveillance report (range: 1-15), representing a total of 6,852 patient visits. Three of the 10 (30%) local hotels contacted submitted daily syndromic surveillance reports. Daily volunteer attendance was provided on 12 of 16 days, and ranged from 68.5% to 86.9% of those expected. Among 311 visits to the onsite medical clinic, the most common complaints were injuries (33%), gastrointestinal or genitourinary problems (14%), and respiratory problems (9%). Thirty-six (12%) required transportation to a local emergency department.

Conclusions:
The usefulness and success of the new data sources in monitoring for possible terrorism events and community outbreaks were varied and will be discussed. Successful collaborations were created between federal, state and local agencies to conduct surveillance during the WEG. Overall, completeness of reporting was low, highlighting the importance of efforts to enhance participation throughout planning and implementation of surveillance at mass gatherings. Onsite medical clinics should prepare for minor injuries and illnesses and have the capability to rapidly transfer patients with more serious needs to a local emergency department.

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Abstract ID: **1062110** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A model for monitoring infectious disease syndemics in San Francisco**

Committee: **Surveillance/Informatics**

Topic: **Other surveillance/informatics**

Keywords: **Data/Surveillance, Evaluation, Infectious Diseases**

Abstract Text

Background:
Syndemics are linked epidemics, where one epidemic is synergistically linked to increase transmission and/or worsen outcomes of either or all diseases. Separate disease surveillance systems - Tuberculosis (TB), Viral Hepatitis (VH), Sexually Transmitted Diseases (STD), and HIV - in San Francisco are not linked electronically. In September 2010, the San Francisco Department of Public Health (SFDPH) became a Centers for Disease Control and Prevention (CDC) Program Collaboration and Systems Integration (PCSI) funded site. The PCSI goal is to systematically evaluate, link, and coordinate our separate surveillance systems to examine syndemics at both the community and individual level. The results of the evaluation phase of our PCSI project are described here.

Methods:
We evaluated the four separate disease registries and identified challenges with obtaining and linking data in preparation for performing a registry match of HIV, TB, VH, and STD.

Results:
Each disease had unique epidemiologic characteristics (mode of transmission, population affected, length of infection, curability, amount of follow-up time), reporting laws, and clinical and programmatic needs. Thus, epidemiologic and surveillance data were collected differently for each disease. We developed distinct case inclusion criteria appropriate to each disease registry and used this to generate a list of cases for the match. VH registry included all cases because of the difficulty in determining a current case; TB registry included all active and latent cases from their registry because latent TB is more prevalent than active TB. HIV registry chose cases living as of December 31, 2009. STD registry selected cases who had a reportable STD in 2009.
While the most elementary match would produce a description of the number of cases in each registry and their overlap, in order for the results to be more relevant, further subanalyses are needed. For example, in the case of VH, registry matches were deemed more informative if analyzed separately by hepatitis B and hepatitis C; for TB, this was true for active and latent cases; for STD, separate match results were needed for syphilis, chlamydia and gonorrhea.

Conclusions:
Refinement of matching methodology will enable us to examine those affected by more than one disease and to measure the overlaps among the four registries and to describe the syndemics in San Francisco. Ultimately, we hope to develop a real time, flexible, modular database with consistent variables that we can link with other systems to function as a syndemic monitoring tool.

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Abstract ID: **1062513** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Distribute surveillance system: View of the 2010-2011 flu season**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Data/Surveillance, Informatics, Information systems**

Abstract Text

Key Objectives:
Demonstrate the features of Distribute, a community-based syndromic surveillance system

Brief Summary:
Distribute is a successful implementation of a community-driven model for syndromic surveillance. The system accepts and aggregates emergency department influenza-like illness (ILI) data that is contributed through the surveillance systems of local and state health jurisdictions. Distribute provides graphic views of ILI data on both a public site and a restricted access site available only to contributors of data to the system. Each jurisdiction is a voluntary participant that uploads visit counts for Influenza-like Illness (ILI), counts for total visits, and metadata including jurisdiction-specific syndrome definitions. Distribute currently integrates and displays data from 48 state and local health jurisdictions, or local regions, as well as building composite views of ILI activity for each federal regions and for the nation This presentation will demonstrate the Distribute system, and explore the data collected over the 2010-2011 flu season, by showcasing system features to a target audience of public health practitioners. The demonstration will step through the process of accessing the public site for a view of current national trends, logging into the restricted site for a more granular overview that includes historical data of contributing jurisdictions and conducting deeper investigations of the attributes of data behind interesting events. The interactive graphing features of Distribute will be showcased for comparison of different sites of different sites and regions using both seasonal flu and the 2009 H1N1 pandemic as examples. An overview of different syndrome definitions and the metadata that provides context for each data provider will be demonstrated and explained. Completeness and coverage of data in the system will be highlighted with examples from the data timeliness dashboard. The various methods of data transmission will be demonstrated and explained. An overview of planned features will be highlighted. The audience will be invited to participate in a discussion of the benefits and challenges of community-based syndromic surveillance.

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Abstract ID: **1060494** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Errors in the quality of electronic laboratory reporting: Understanding the impact on public health**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Coding, Communicable disease, Electronic laboratory reporting (ELR)**

Abstract Text

Background:
Accurate automated reporting of laboratory results is critical for efficient public health surveillance. Electronic laboratory reports received by public health agencies must be processed and interpreted, requiring data and message format integrity and use of standards. As the Utah Department of Health (UDOH) implemented electronic laboratory reporting, we evaluated incoming reports to provide feedback to reporters and define processing requirements so that reports could be automatically entered into the surveillance system.

Methods:
Two researchers evaluated electronic reports received by UDOH between April and Dec 2010 from three reporting facilities (RF). The reporting facilities had different levels of experience with electronic lab reporting: RF#1 was highly experienced, RF#2 was moderately experienced, and RF#3 was a recent adopter. We reviewed the test name, and compared it to the associated LOINC code, and the results transmitted in OBX.3 and OBX.5 of the electronic lab message. Errors were classified: 'Serious' errors will cause the wrong disease to be 'reported' because the LOINC code included in the message is either missing, invalid or incorrectly mapped to the test performed; 'Moderate' errors may affect case classification because of errors in the LOINC code or result; 'Burdensome' errors may require manual processing by public health and include errors such as incorrect result scale(e.g. nominal, ordinal) , data mapped incorrectly to the wrong HL7 segment, and inconsistent result formats.

Results:
A total of 345 reports (2% of the 17,260 received) would have resulted in the wrong disease being implicated by the LOINC code included in the message. The distribution of errors varied by reporting facility. Among the 5,324 reports from RF#1, few messages contained serious (0.02%), moderate (0.7%) or burdensome (1%) errors. Among the 10,918 reports from RF#2, we found 2% contained serious errors, 4% contained moderate errors, and half (49%) contained burdensome errors. Among the 1,018 messages from RF#3 (the recent adopter), we found 38% contained serious errors, 0.2% contained moderate errors, and 39% contained burdensome errors. Systematic and non-systematic errors will be described.

Conclusions:
Errors in laboratory reporting were common, although the type and severity varied by reporting facility experience. Until detected and fixed, errors may affect disease investigation and control, surveillance, and burden public health personnel. The burden will only increase as additional laboratories implement

ELR and continue to rely on public health to identify errors. Sufficient public health resources are needed to routinely monitor the quality of incoming reports and provide feedback to reporting facilities.

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Abstract ID: **1062503** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Using prediction intervals to determine the effect of timeliness on accuracy for ILI ratios**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Electronic data, Influenza surveillance, Information systems**

Abstract Text

Background:
Distribute is a national emergency department syndromic surveillance project for influenza-like-illness (ILI) that integrates data from existing state and local public health department surveillance systems. The Distribute project provides both graphic comparisons of ILI-related clinical visits across jurisdictions, and a national picture of ILI.
Unlike other surveillance systems, Distribute is designed to work solely with summarized (aggregated) data. Timeliness of this data varies considerably between contributing sites, and typically the day-to-day lag between encounter date and receipt of the data also varies. For example, data for a particular encounter date will usually arrive piecemeal, spread over several days. This spread introduces additional noise into the received data. Additionally, systematic differences in the timeliness of different sources of data can introduce bias into the primary indicator of interest, the observed ILI ratio.

Methods:
We developed a method for calculating prediction intervals for the complete data ILI-ratio using partially complete observations. This method examines the observed relationship between incomplete and complete data as a function of the number of days' lag in receiving data. Quantile regression was used to construct asymmetric prediction intervals.

Results:
Many sites supply data with sufficient regularity to establish statistical relationships between incomplete and complete data. For these sites quantile regression can be used to generate prediction intervals. A minority of the sites supply data in a haphazard manor; for these sites we typically cannot establish a sufficiently stable relationship to construct prediction intervals. Some sites produced very narrow prediction intervals that indicate the incomplete data ILI-ratio approximates the complete data ratio very accurately. Other sites showed considerable bias in the incomplete data ratios. We generated time-series graphs of the ratio with superimposed prediction intervals to give a visual representation of the uncertainty due to data timeliness lags.

Conclusions:

For sites that supply regular data, useful prediction intervals can be generated. These intervals can be used either to directly measure the uncertainty in the calculated ratio, or the width of the intervals can be compared with a threshold to establish measurements of time to acceptable quality. For sites that show considerable asymmetry in prediction intervals, estimates using quantile regression for the median can be used to reduce the bias.
This work has significant implications for the statistical use of surveillance and other clinically derived population data, which will increasingly be made available to public health by organizations striving to satisfy the public health meaningful use criteria.

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Abstract ID: **1062788** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Panel Discussion: Perspectives on Electronic Laboratory Reporting â€“ collaborative efforts to advance electronic exchange between providers and public health**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Electronic data, Electronic laboratory reporting (ELR), Health information exchange**

Abstract Text

Abstract Text
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Abstract ID: **1060507** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Using administrative claims data systems to inform public health**

Committee: **Surveillance/Informatics**

Topic: **Surveillance Indicators**

Keywords: **Community health assessment, Data/Surveillance, Indicators**

Abstract Text

Background:
All-payer claims data (APCD) provide new information to inform public health, in areas such as community health assessment, surveillance, and planning. In 2005, under state law, New Hampshire began to collect claims data from NH-based health insurance carriers, in a system known as the New Hampshire Comprehensive Healthcare Information System (NH CHIS). APCD data include information about healthcare services in the hospitals and emergency departments, as well as all outpatient services (primary care, specialty care, radiology, etc.) covered by commercial insurance. Thus, APCD data greatly supplement administrative data traditionally used in public health. In NH, NH CHIS data have been used to develop reports and special studies, including “2005 Emergency Department Use in New Hampshire: A Comparison of the Medicaid and Commercially Insured Populations”. In 2007, through funding from the CDC, the NH Assessment Initiative began development of a web-based module to include chronic disease indicators (cardiovascular disease and mental illness) and measures of care, as well as indicators of access to care (for adults and children) using clams data. These efforts are advancing the understanding of the utility of claims data to assess the public’s health.

Methods:
NH’s claims module development included the creation of a person-level record from claims data, as well as the development of a web-query interface for accessing the indicators of interest. The reports in NH’s claims module include age-specific, age-adjusted, and crude rates for the user selected geographic areas, as well as state rates and a statistical comparison to allow for benchmarking. Additional chronic disease and measures of care indicators continue to be added to the claims module as they are developed.

Results:
NH has created a web-based claims module and a series of analytic reports that demonstrate the utility of APCDs for public health.

Conclusions:
APCDs provide important information to supplement the typical sources of data used to understand the public’s health. The use of APCD for public health is an emerging field.

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Abstract ID: **1061292** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Linking elder maltreatment to injury and violent deaths (Tammy Norwood will present in place of Scott Proescholdbell)**

Committee: **Surveillance/Informatics**

Topic: **Other surveillance/informatics**

Keywords: **Elderly, Injury surveillance, Special populations**

Abstract Text

Background:
Elder maltreatment (abuse, neglect and exploitation) is a growing problem for states, and yet adequate public health surveillance to understand the scope of the problem is lacking. North Carolina is one of 3 states piloting projects which link death certificates through their state's Violent Death Reporting System to Adult Protective Services (APS) data. North Carolina is partnering with their states' adult services agency to see if this linkage provides more insight into the elder maltreatment problem and ways to better address the issue.

Methods:
NC will link electronic APS data and Violent Death Reporting System data. Linkage will match deaths from 2005-2008 with special attention given to violent deaths (homicide and suicides). Files will be matched using standard linkage methodologies using last name, first name and date of birth. From matched cases, key variables from each data system will be analyzed. APS data on reporter, types of abuse and perpetrator information will be compared with manner of death and circumstance information from the violent death reporting system.

Results:
Preliminary linkage resulted in NC matching 6,557 APS cases among all deaths occurring in 2005-2006 (total deaths=150,345). A subset of cases was matched for violent deaths: NC matched 25 violent death cases. Additional analyses will be preformed and presented to examine reporter information, type of abuse, time since last contact, and perpetrator information. Beyond this information, various state specific variables of interest to elder maltreatment will be presented.

Conclusions:
As the number of elder maltreatment cases continues to rise in states, linking data is imperative for the development of viable prevention and control strategies. Compiling data from multiple sources using successful methods developed by violent death reporting system programs will enable public health and human services agencies to better identify and target specific groups. This innovative pilot project demonstrates the utility of linking historically disparate systems and has helped develop new relationships between agencies within the state. Such data can assist prevention and intervention programs in targeting specific at-risk populations.

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Abstract ID: **1064755** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Use of existing hospital data for near real-time syndromic surveillance for public and environmental health**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Environmental Health, Preparedness, Surveillance**

Abstract Text

Background:
Many hospitals currently have sophisticated data systems to track information about their patients including chief complaints, diagnoses, and health procedures. These data are used both by hospitals and health insurance agencies to maintain health records and ensure appropriate billing for health care service provision. Public health specialists recognize the potential value of these data for near real-time tracking of health events within a defined population. Timeliness is a critical component of biosurveillance and it can be greatly improved through the use of these existing hospital data.

Methods:
The Hawaii Health Emergency Surveillance System (HHESS) is a project funded by the Hawaii Department of Health in collaboration with the Hawaii Health Data Warehouse and Hewlett Packard to collect and combine data streams from participating hospitals in the state. Hospital free-text chief complaint data are analyzed using natural language processing, and then categorized using two different Bayesian classifiers (CoCo and SyCo) and one deterministic classifier (Regular Expression). The open source platform Real-Time Outbreak and Disease Surveillance system (RODS, University of Pittsburgh) is the engine of the system that both classifies the data and analyzes it with five different algorithms to monitor numbers of specific symptom or syndrome categories. When an observed count exceeds an expected one, an alert is sent to the system epidemiologists who are then able to examine the details of the cases composing the alert. Based on this assessment, a decision is made for subsequent actions. Additional data feeds into HHESS include air quality monitoring data such that the health impact of some environmental events can also be tracked. Eventual inclusion of data from the National Retail Data Monitoring System will allow additional analysis of over-the-counter health care purchases in relation to hospital data and air quality.

Results:
Currently, 14 hospitals across the Hawaiian Islands have signed data use agreements to participate in HHESS, and 10 are feeding data into a test system. The live version of HHESS is scheduled to launch in the spring of 2011. Once begun, the system will be analyzed for sensitivity and specificity of event detection, as well as for overall utility.

Conclusions:
In a time of limited resources, it is especially important to obtain the maximum potential of collected data. Hospital data systems can provide a pre-existing source of information for near real-time biosurveillance within defined populations. HHESS is an opportunity to show proof of concept of this efficient and important use of existing data.

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Abstract ID: **1059443** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Rapid assessment of pneumonia- and influenza-related mortality - Ohio, 2009â€“2010**

Committee: **Surveillance/Informatics**

Topic: **Electronic disease surveillance systems (EDSS, NEDSS, etc.)**

Keywords: **Coding, Influenza / Pandemic influenza, Influenza surveillance**

Abstract Text

Background:
The Ohio Department of Health (ODH) Electronic Death Reporting System (EDRS) reports mortality causes 3 months postmortem. To enhance timeliness during the 2009-2010 influenza A (H1N1) pandemic, ODH activated a checkbox within EDRS for surveillance for pneumonia- and influenza-related deaths within 5 days postmortem. We compared checkbox and International Classification of Diseases (10th Rev.) (ICD-10) systems to determine agreement and identify opportunities for improvement.

Methods:
Registrars generated checkbox data when filing death certificates, and the National Center for Health Statistics assigned ICD-10 codes by using mortality descriptions from filed death certificates. For deaths occurring in Ohio during September 2009-March 2010, we compared pneumonia and influenza checkbox selections with corresponding assigned ICD-10 codes, treating ICD-10 codes as the standard.

Results:
Among 44,236 decedents, agreement of checkbox and ICD-10 data was 97% for pneumonia (kappa = 0.76) and >99% for influenza (kappa = 0.75). Of 2,872 pneumonia-related deaths detected by the ICD-10 system, 2,301 were also detected by checkbox (sensitivity: 80%). Additionally, 782 had checkbox selections of pneumonia without corresponding pneumonia ICD-10 codes. Of these, 578 (74%) had codes for chronic obstructive pulmonary disease (COPD) with acute lower-respiratory infections, excluding influenza. Among 64 influenza-related deaths detected by the ICD-10 system, 46 were also detected by checkbox (sensitivity: 72%). No predominant ICD-10 code existed among 15 identified as influenza-related deaths only by the checkbox system. Predictive value positive (PVP) was 75% for both influenza- and pneumonia-related deaths.

Conclusions:
The checkbox system enhanced timeliness while maintaining high agreement with the ICD-10 system. To improve pneumonia PVP and better target limited public health resources during pneumonia-related mass-fatality events, registrar training should enhance discernment between COPD and pneumonia.

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Abstract ID: **1054857** Presentation Type: **Breakout Presentation - Single Speaker**

Title:	**Using an integrated infectious disease surveillance system to enhance collaboration with refugee and immigrant health programs**
Committee:	**Surveillance/Informatics**
Topic:	**Electronic disease surveillance systems (EDSS, NEDSS, etc.)**
Keywords:	**Immigration, Informatics, Surveillance**

Abstract Text

Background:
We have deployed a Refugee Health module for disease surveillance and case management that facilitates the flow of critical epidemiologic information.

Methods:
Automated mechanisms were created to notify the RIHP (Refugee Immigrant Health Program) of newly arriving family units, persons, and information about notifiable conditions. Additional RIHP workflows and reports were created in the existing MAVEN (Massachusetts Virtual Epidemiologic Network) web-based system. MAVEN interfaces with the electronic laboratory reporting component and receives standardized uploads of laboratory reports from clinical laboratories. An electronic feed of health and arrival information downloaded from the CDC's EDN (Electronic Disease Notification) system was also developed.

Results:
RIHP and MDPH (Massachusetts Department of Public Health) staff have been using the system since October 2010. An EDN download/upload process is performed daily. RIHP Family events facilitate much of the health orientation and case management that is typically performed for the family as a unit. RIHP individual events contain health information specific to each newly arrived person. Access to events and to information within events is granted based on roles assigned to the MAVEN user. Cross-programmatic collaboration features include a disease notification hyperlink and a co-event report that allow for greater communication and facilitate information flow between divisions in the Bureau of Infectious Diseases. Currently, approximately 40 workflows and reports are being used to facilitate communication within RIHP, as well as routine communications between program areas. Data from overseas medical exams and domestic health assessments are also captured in MAVEN.

Conclusions:
The Refugee module has capitalized on existing aspects of the MAVEN system, while also introducing novel elements such as the EDN process and the RIHP Family event. An ongoing challenge was that business rules were revised during implementation which led to some delays. However, these additional reviews allowed program areas to further streamline business processes and increase communication with other state users. System integration has improved communications regarding case management across program areas. A pilot to add Local Public Health and Refugee Health Assessment Program sites as users will be implemented in 2011.

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Abstract ID: **1058469** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Local health department electronic reportable disease surveillance practice and costs, North Carolina, 2009**

Committee: **Surveillance/Informatics**

Topic: **Electronic disease surveillance systems (EDSS, NEDSS, etc.)**

Keywords: **Data/Surveillance, Local Public Health Agencies, NEDSS/PHIN**

Abstract Text

Background:
In 2008, the North Carolina Division of Public Health implemented a NEDSS-compliant electronic reportable disease surveillance system (NCEDSS) using a highly customized commercial system. In 2009, all local health departments (LHDs) and 2 laboratories submitted communicable disease reports (excluding syphilis and HIV) through NCEDSS. This study describes NCEDSS staffing and case reporting practices and costs at NC LHDs.

Methods:
The lead staff user for NCEDSS and a communicable disease (CD) nurse from 30 randomly selected LHDs were invited to interview. Information was gathered on the number of full-time equivalents (FTEs) used for NCEDSS activities and on routine workflow and system practices. CD nurses recorded the amount of time spent on NC EDSS and other competing tasks for 5 days. The time was converted to annual costs using the average NC LHD public health nurse salary of $60,603.

Results:
Interviews with 56/60 (93%) LHD staff were completed during May-August 2010. An average of 4.8 employees per LHD used NCEDSS (range 1-12 employees). Most employees did not work full-time on NCEDSS, and LHDs used an average 1.2 FTEs for system activities (range 0.4-3.4 FTEs). Many interviewees reported daily interruptions to NCEDSS use; 13 CD nurses (46%) reported that they were not able to check NCEDSS every day due to competing priorities such as clinic duties. The implementation of NCEDSS changed case management at 19/28 LHDs (68%) and 17/28 (61%) indicated this change was positive. Positive changes included decreased time between a positive laboratory finding and LHD notification, easier recognition of cases needing attention, and easier access to standardized patient and provider interview questions and historic patient data. In 19 LHDs (68%), staff responsibilities had changed related to NCEDSS use. Lead users at 13 LHDs (46%) indicated that NCEDSS use increased the surveillance workload, and at 8 (29%) indicated that additional staff members were needed for NCEDSS activities. CD nurses reported spending an average of 182 hours ($5,278) per year entering data into NCEDSS, 125 ($3,619) checking reported case lists, 88 ($2,552) reviewing data already entered, and 120 ($3,480) on other NC EDSS tasks for a total of 515 hours ($14,929) per year.

Conclusions:
Most LHD respondents reported NCEDSS use improved timeliness of reporting, case investigation, and case management. However, a substantial proportion reported increased workload, requiring increased staff time and therefore increased cost for surveillance.

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Abstract ID: **1058383** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **A state health department's approach to implementing requirements for reporting carbapenem-resistant enterobacteriaceae: Lessons learned from laboratory-based surveillance**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Antimicrobial resistance, Emerging infections, Surveillance**

Abstract Text

Background:
Multidrug-resistant organisms (MDROs) are an important threat to public health. Recognition and control of these organisms is complicated by the fact that these organisms are frequently not limited to individual healthcare facilities but move throughout the healthcare system as patients transition their care between higher and lower acuity settings. Most recently, carbapenem-resistant Enterobacteriaceae (CRE) have emerged as an important MDRO in healthcare settings in Minnesota. These organisms are frequently resistant to multiple classes of antimicrobials and present serious treatment challenges. The Minnesota Department of Health has taken an aggressive approach to CRE recognition and prevention; this session will highlight their approach.

Methods:
This presentation will review laboratory-based surveillance for CRE and describe current state health department activities aimed at identifying and decreasing the burden of CRE in Minnesota.

Results:
This session will highlight Minnesota's CRE surveillance and prevention activities. This includes adding CRE as a reportable communicable disease for the two most populous counties in the state and creating population-based surveillance within this geographic region. As part of this discussion, lessons learned and findings from laboratory-based surveillance for these organisms among laboratories serving ambulatory clinics, long-term care facilities, hospitals, and long-term acute care facilities will be reviewed. The speaker will provide an overview of resource tools and discuss outreach to infection preventionists to promote CRE surveillance and infection prevention and control practices. Finally, the speaker will describe how laboratory-based surveillance and communications with local laboratories and infection preventionists helped develop new state-wide recommendations for the monitoring, prevention, and reporting of these organisms.

Conclusions:
At the conclusion of this presentation, attendees will better understand how a state health department can work to address CRE including the benefits and challenges of this approach.

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Abstract ID: **1056431** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Public health surveillance: What will (should) it look like in the future?**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Health information exchange, NEDSS/PHIN, Surveillance**

Abstract Text

Background:
In recent years, several factors have significantly changed the landscape of public health surveillance. The first is the increased concern over public health preparedness that has brought many new stakeholders into surveillance and increased the expectations for public health agencies to collect and process new kinds of data in very short time frames. A second factor is the rapid development of new technologies for electronic information exchange, revolutionizing the way that public health surveillance can be conducted. A third factor is healthcare reform with its significant emphasis on promoting the use of electronic health records for public health surveillance, which presents challenges such as standardizing surveillance criteria nationally. In the mid-1990s Dr. Rebecca A. Meriwether wrote a “Blueprint for a National Public Health Surveillance System for the 21st Century” that still provides a relevant strategic view of public health surveillance. But recent developments call for a re-evaluation of surveillance that incorporates modern technology capabilities, health care reform, and preparedness needs.

Methods:
In February, CSTE convened a small group of surveillance experts who met and had facilitated discussions about what the roles of local, state, territorial, and federal jurisdictions should be in the conduct of public health surveillance and a strategy for optimal governance and decision making for surveillance activities. They also identified priority areas of surveillance activity for states and for CSTE. Some of the questions that were discussed included: What are the roles of local, state, territorial, and federal agencies in surveillance? Does the federated model of surveillance need rethinking in this age of electronic information exchange? What are the ramifications for surveillance decision making and governance in this informatics age with its need for national standardization? What should CSTE’s role be in responding to electronic health records and meaningful use?

Results:
The conclusions and recommendations from the February meeting will be presented. Time for questions and discussion will allow audience comment and input into these questions, which will be used to develop an updated strategic white paper on surveillance.

Conclusions:
Surveillance practice is changing in response to new developments in information exchange. An updated vision may be needed that describes principles for conducting public health surveillance in the current environment. CSTE plans to publish the findings from the February meeting and input received at its June annual conference.

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Abstract ID: **1058523** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Discontinuing healthcare provider reporting of chronic hepatitis C in New York City**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Hepatitis, Policy/Policy Development, Surveillance**

Abstract Text

Background:
New York State's health code requires both healthcare providers and laboratories to report all positive hepatitis C results; multiple reports on the same patient are deduplicated. Electronic laboratory reporting has greatly improved timeliness and completeness of reporting. While provider reporting is crucial for diseases that laboratories are unable to identify (e.g., acute hepatitis C), providers rarely comply because reporting is burdensome and the requirement is not enforced. Our objective was to assess the impact of discontinuing provider reporting of chronic hepatitis C.

Methods:
We compared provider and laboratory surveillance reports dated July 1, 2006-June 30, 2009. Reports were deduplicated to determine the number of patients identified by laboratories and providers prior to analysis. An additional sample of hepatitis C patients that appeared to have been reported only by providers during January-June 2010 was evaluated to determine what was missing because of the laboratories' failure to report.

Results:
During July 1, 2006-June 30, 2009, laboratories reported 93% of a total 266,062 hepatitis C reports while providers reported only 7%. After deduplication, there were 58,921 hepatitis C patients. Laboratories identified 84% (49,494) of the patients; 12% (7,071) were identified by both laboratories and providers and 4% (2,357) were identified by providers only. During January-June 2009, laboratory reports had more complete information than provider reports for patient's ZIP code (93% vs 85%, p<.001) and sex (99% vs 64%, p<.001) while provider reports had more complete information than laboratory reports on date of birth (99% vs 98%, p<.001) and race/ethnicity (64% vs 11%, p<.001). Of 26,929 patients in the subset, 306 appeared to have been reported only by providers. A random subsample of 120 from these 306 patients revealed that 95 (79%) were found to be true reportable hepatitis C patients that had not been reported by the laboratory. However, 25 (21%) of these patients were erroneously counted as provider-only reports (e.g. improperly deduplicated by the health department or reported in error by the provider). We estimated that less than 1% of reportable hepatitis C patients would likely be missed if providers discontinued reporting.

Conclusions:
Laboratories report the majority of chronic hepatitis C patients and have high completeness rates for important data fields. Few (<1%) patients would be missed if providers discontinued reporting.

Discontinuing provider reporting of chronic hepatitis C in NYC would decrease the burden on providers to report and may help them to focus on reporting clinical syndromes not detectable by laboratories.

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Abstract ID: **1062647** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Design and development of a standards-based knowledgebase to publish electronic laboratory reporting criteria**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Electronic laboratory reporting (ELR), Informatics, Standards**

Abstract Text

Background:
State laws mandate that laboratories report selected lab results to public health entities. For this purpose, reporting specifications are published by public health departments. There are several problems with existing reporting speci-fications: (1) they are described on individual state websites and posters and not structured or executable; (2) the specifications are often misleading representing case classification rather than case reporting criteria; (3) they vary across jurisdictions and change over time; and (4) reporting facilities are required to interpret the criteria and main-tain logic in their own systems. To overcome these problems, we are initially designing and developing a prototype system to represent laboratory reporting specifications that can be authored and maintained by public health and published openly. We aim to demonstrate the requirements and functionality of the knowledge management system to inform reporting facilities “what’s reportable where”.

Methods:
To determine the content and functional requirements, we reviewed existing reportable disease lists and rules, fact sheets, and CSTE Position Statements. We used ethnographic methods to obtain feedback from public health authorities and reporters in the laboratory and hospital setting. The knowledge management system allows public health authorities to author, store, and publish knowledge concerning reporting logic and specifications. The report-ing entities will be able to view human-readable specifications, download structured content using web services for execution within their own systems, and subscribe or query for updates. Knowledge authoring, publication, and ac-cess is provided through service-oriented architecture.

Results:
We identified the following content requirements to represent reporting specifications: a) detection criteria that in-cludes clinical and laboratory findings; b) constraints including characteristics of the patient, encounter, laboratory or clinical setting; c) reference resources; and d) reporting action details including the reporting time frame etc. We have designed a model workflow for public health authorities to author reporting specifications, allowing for default content based on CSTE Position Statements. We

are developing the use case for accessing the information in both a human-readable and machine-processable format. We are storing the knowledge assets in a metadata repository us-ing XML, and exploring models to represent laboratory criteria for improved linkage to the relevant pairs of LOINC/SNOMED mappings.

Conclusions:
The development of a prototype knowledge management system that allows public health authorities to author, store, and publish reporting specification knowledge will inform the development and implementation of national systems. Feedback from epidemiologists is requested.

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Abstract ID: **1060898** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Comprehensive evaluation of the infectious disease bio-surveillance system in a county public health department**

Committee: **Surveillance/Informatics**

Topic: **Electronic disease surveillance systems (EDSS, NEDSS, etc.)**

Keywords: **Epidemiology, Surveillance, Workflow Analysis**

Abstract Text

Background:
The National Electronic Disease Surveillance System is the central biosurveillance tool used by Public Health Departments and the CDC to monitor and report incidents of reportable diseases. This presentation is on phase one of a larger project, CASIPH, whose focus is improving the ability to detect and respond to disease outbreaks.
In this phase, researchers observed a county public health department and their work process around NEDSS. The result of this research is a comprehensive work-flow analysis that will inform the latter parts of a five-year study whose objective is to move the state-of-the-practice forward, increase efficiency, and improve the workflow process at every level.

Methods:
We employed the technique of contextual design to understand the complex work process, the physical, cultural, and computational environments, and communication/coordination patterns of individuals working in biosurveillance. This technique involved expert, on-sight observation of these individuals to methodically reveal their goals, motivations, and decisions. Models created from these

observations highlight breakdowns in the process and serve as reference for future system design.

Results:
The resulting analysis sheds light on just how complex the workflow process is, particularly in how information flows between testing labs, nurse investigators, and epidemiologists. Particular attention is paid to where breakdowns and inefficiencies occur. The results analyze the efficiency of surveillance tasks, the performance or success in completing a task correctly, and costs incurred in performing a task.
Issues and themes we uncovered include barriers with technology, complications in agency communication, and redundancy in workflow, among others. These breakdowns cause frustration among public health staff and delay the rate at which information is reported, risking delay in the discovery of potential epidemiological threats. Having identified these problems, we provide a set of recommendations for improving public health department workflow and biosurveillance capabilities.

Conclusions:
The county public health department serves a crucial role in getting information from local facilities and reporting it in a meaningful way into NEDSS and to the CDC. They are the first to identify possible outbreaks and are crucial in maintaining public safety. However their efficiency and quality of work is complicated by a needlessly complex work process that could be vastly improved with a redesign of their core reporting system. Integrating the latest advancements in technology as well as designing a more usable system could put less strain on public health staff and improve the Nation's biosurveillance system.

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Abstract ID: **1061002** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Liberating data: Accessing native Hawaiian and other Pacific Islander data from national data sets**

Committee: **Surveillance/Informatics**

Topic: **Effective interactions between epidemiology and informatics**

Keywords: **Epidemiology, Informatics, Native Americans**

Abstract Text

Background:
The limited data available show that Native Hawaiians and Other Pacific Islanders (NHOPI) experience severe health, social, economic, and service access inequities compared to the majority of Americans. For example, among Indigenous Peoples, Native Hawaiians experience the highest infant and neonatal mortality rates. NHOPI are served by a variety of independent, non-profit, culturally-linked, community-based organizations (CBO). Challenges facing these organizations include decentralized communities, limited service access, distrust of non-NHOPI services, and not least of all, limited and poor data. Reasons for this is include the continued aggregation of NHOPI data with other Asian groups (despite

OMB's 1997 revised Directive 15 standard for reporting on race), racial misclassification, and statistical/logistical limitations related to small numbers. Papa Ola Lokahi (POL), founded in 1988, is designated in law as the lead agency responsible for the health of Native Hawaiians. The Native Hawaiian Epidemiology Center (NHEC), created within POL in 2009, was established to confront the poor state of and access to information on NHOPI health. The NHEC works in partnership with the Pacific Islander Epidemiology Center, housed at the Toa Institute, to build a robust foundation of valid data on which the improvement of health and health services, and the reduction of health disparities for NHOPI can be based.

Methods:
Traditional epidemiologic approaches enhanced through the application of business intelligence methods and technologies can significantly improve the accessibility, ease of analysis/reporting, and ultimately use of large health-relevant data sets. Using data from the National Center for Health Statistics, the NHEC assessed the quality of death reporting in accordance with OMB standards, developed a working definition for NHPI, performed an analysis of deaths counts and rates for several racial categories, modeled the data for consumption through data structures optimized for analysis and reporting (on-line analytic processing cubes), and delivered information to users through MS Excel on the desktop (for analytic users) and interactive web-based dashboards (for general users).

Results:
The NHEC mortality analysis tool set allows rapid analysis and reporting of death counts and rates (with confidence intervals) by several dimensions of interest, including racial category, age, sex, location, and cause of death. Through the use of pivot tables and charts, mortality measures can be cross-tabulated, sorted, filtered and graphed along any combination or number of dimensions. Customized visualizations also allow users to drill down into the data along a specific lines of questioning.

Conclusions:
Information technology plays a critical role in ensuring access to data for small populations who bear the largest health disparities in the US. Data is essential for decision support; such as informing policy decisions, program planning and evaluation, and assessing health. A partnership between Federal agencies, community organizations, scientists, and information technologists can result in successful liberation of health data. Data accessibility creates visibility to the health of a population. More work is needed to ensure the health status of NHOPI is visible so the alarming disparities experienced by this population can be brought to light and addressed.

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Abstract ID: **1058552** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Estimating Wisconsin asthma prevalence using clinical Electronic Health Records and public health data**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Asthma, Data/Surveillance, Health information exchange**

Abstract Text

Background:
Asthma is chronic disease affecting over 500,000 children and adults in Wisconsin. Behavioral Risk Factor Surveillance System (BRFSS) data are used to provide annual statewide asthma prevalence estimates; however, these data consist of small samples, self-reported health outcomes, and are subject to non-response. Collaboration with the University of Wisconsin Departments of Family Medicine (DFM), Pediatrics, and Applied Population Laboratory (APL) have allowed us to identify a patient population with asthma at a census block group level using electronic health records (EHR). The goal of this research was to determine whether EHR data could improve our estimate of asthma prevalence over telephone survey data. Specifically, we sought to determine: (1) how asthma prevalence based on DFM clinic data compared to Wisconsin BRFSS estimates; and (2) areas and populations of asthma disparity in Wisconsin using DFM clinic data.

Methods:
Frequency tables and multivariate logistic regression models were developed for children and adults using WI BRFSS and UW DFM clinic data. Adjusted odds ratios (OR) from each model were assessed for comparability. GIS and spatial analyses were used to map areas of asthma disparity.

Results:
Between 2007 and 2009, approximately 192,000 patients, including 18,000 asthmatics, seen in DFM clinics were identified using EHR (compared to 23,000 persons/1,850 asthmatics interviewed over three years from BRFSS). Adjusted ORs for asthma were similar in magnitude and direction for all covariates, including gender, age and race, when comparing BRFSS and DFM clinic models. While the BRFSS estimates were often not significant due to wide confidence intervals associated with small sample size, the DFM clinic data had greater statistical power to detect associations, especially in the pediatric population. Asthma prevalence was twice as high among African Americans, compared to Caucasians, after adjusting for gender and age. This finding was significant in both BRFSS and DFM clinic models. GIS analyses identified asthma patients at the census block group in the Madison, WI area, making it possible to identify neighborhoods with the highest asthma prevalence.

Conclusions:
EHRs provide exciting opportunities in asthma surveillance, including small area estimation of asthma prevalence by linking to databases on community-level demographic and socioeconomic factors, behaviors and geographic characteristics. This could further highlight areas of asthma disparity, allow discovery of novel risk factors, and improve targeting of education and healthcare interventions.

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Abstract ID: **1060981** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Automated flu monitoring using multiple data types from emergency departments**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Hospital data, Influenza surveillance, Surveillance**

Abstract Text

Background:
This paper describes our automated flu monitoring system. It uses multiple emergency department (ED) data types including patient registration data, clinician notes, and microbiology lab reports to identify cases of fever, influenza-like-illness (ILI) and confirmed influenza. The system is unique in that it utilizes probabilistic inference and the prior probability of influenza along with patient symptoms to determine the posterior probability of flu for each patient visiting the emergency room. Our system directly addresses delays inherent in existing flu monitoring systems by using data as they become available. We had a direct impact to public health practice by providing an automated daily flu summary report to the Allegheny County Health Department (ACHD) via email.

Methods:
The flu monitoring system comprises five modules: data acquisition, natural language processing tools, database, inference engines and knowledge bases. The data acquisition module includes HL7 parsers for different data sources. The NLP tools include MedLEE and Topaz. We stored all patient data in a database using an entity attribute value schema. The inference engines include a probabilistic inference engine and a simple IF-THEN rule engine. The knowledge bases include a Bayesian network that comprises flu symptoms designed by a board-certified infectious disease expert and rules for ILI case definition.
We employ Jfreechart to create time series charts that count daily identified cases for a period of 6 months. Every day the system sends the report to ACHD using a mail server.

Results:
We deployed the flu monitoring system in early May 2009 in Allegheny County. It receives transcribed ED notes, microbiology reports, and chief complaints from 7 EDs of the UPMC Health System. The average number of daily ED visits with ED notes between July and Dec. 2009 was 569. During the time period, the 7-day moving average (7-MA) of fever cases ranged from 8-18%, the 7-MA of ILI cases ranged from 5-14%, the 7-MA of flu cases from Bayesian estimate ranged from 3-13%, and the 7-MA of laboratory confirmed flu cases ranged from 0.1%-5%.
These charts had an impact on ACHD in three ways. (1) ACHD received daily updates instead of weekly reports (from sentinel physicians). ACHD provided the charts to local news media on a regular basis. Finally, ACHD reduced staff time since they no longer had to manually compile ILI reports from sentinel ILI reports (2 days of work for each weekly report).

Conclusions:
We demonstrate utility and method of using multiple data types for flu monitoring.
ACKNOWLEDGEMENTS: The project is funded by CDC grants P01 HK000086 and 1U38 HK000063-01.

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Abstract ID: **1056671** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Childhood diabetes in the US Virgin Islands 1980-2010: Lessons learned from making childhood diabetes a reportable disease**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Children and adolescents, Diabetes, Surveillance**

Abstract Text

Background:
Comparable data on trends in the frequency of diabetes in children are rare for most states as the Behavioral Risk Factor Surveillance System does not include persons below age 18. Adding childhood diabetes to the state-wide list of reportable conditions may be a viable strategy for monitoring trends and changing patterns in the occurrence of diabetes mellitus among children. This study examines patterns in childhood diabetes incidence in the US Virgin Islands (USVI) since 1980 and identifies lessons learned from adding "diabetes below age 20" to the list of reportable conditions in 2006.

Methods:
Data on childhood diabetes cases, including date of diagnosis, gender, diabetes type (e.g., Type 1 vs. Type 2), body size at diagnosis, and age of diagnosis were gathered from the Virgin Islands Diabetes Registry which has an ascertainment rate of > 90%. Denominator populations from the Census and inter-censal estimates were used to calculate annual incidence rates. Poisson regression analysis in the Statistical Analysis System (SAS) software was used to assess differences between incidence rates.

Results:
The average annual incidence of childhood diabetes rose significantly from 7.3 per 100,000 in the decade of the 1980s to of 13.6 per 100,000 in the decade of the 1990s. The corresponding incidence rate for the 2000s was ~12.0 per 100,000. During the 30-year period, two epidemics of Type 1 diabetes were observed with the first occurring in 1984 (33 per 100,000) and the other between 1996 and 1997 (34 per 100,000. The percent of childhood diabetes cases due to Type 2 diabetes increased significantly from 6% for the 1980s to 18% for the 2000s. The percent of childhood diabetes cases associated with obesity rose from 41.8% for the 1980s to 68.7% for the 2000s. Adding childhood diabetes to the list of reportable conditions increased the efficiency of surveillance of diabetes in persons below age 20. However, with a larger number of childhood Type 2 cases being diagnosed outside of the hospital, real-time ascertainment from non-hospital sources remains a challenge.

Conclusions:
Surveillance data from the Virgin Islands Childhood Diabetes Registry show dynamic changes in patterns of childhood diabetes incidence since 1980. Traditional methods involving retrospective ascertainment of data for the registry do not allow for efficient investigation of potential reasons for significant changes in incidence, such as with an epidemic. Adding childhood diabetes to the list of territory-wide reportable conditions is helpful but some retrospective ascertainment continues to be necessary.

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Abstract ID: **1060045** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Public health surveillance and response efforts at a large youth camping event in Virginia**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Emergency response, Preparedness, Surveillance**

Abstract Text

Background:
A large youth camping event was held July 26 - August 4, 2010 at a publicly owned site in rural Virginia. The quadrennial gathering included activities such as outdoor sports, adventure courses, and concerts. Over 45,000 youth and adult leaders and an estimated 250,000 guests attended. Because of the scale and complexity of the event, public health assistance was requested to conduct syndromic surveillance and respond to events of public health concern.

Methods:
Before the event, Virginia Department of Health (VDH) staff participated in planning meetings and exercises to address potential public health issues and medical staff were trained on surveillance procedures. As attendees arrived, VDH staff screened all incoming participants for communicable diseases and isolated any group whose members exhibited illness symptoms. During the gathering, VDH collected surveillance data on a daily basis using paper surveillance logs. Logs were completed at medical care facilities in parallel to an electronic medical records system operated by the sponsor organization. Data were analyzed nightly and results were disseminated to event stakeholders the following day. VDH staff also consulted with medical staff on outbreaks or cases of public health concern during daily rounds to medical facilities. For the final analysis of syndromic data, diagnosis codes on the surveillance log form were categorized as infectious, non-infectious, or “other”.

Results:
Pre-event meetings identified heat exposure, dehydration, injury and communicable disease as potential areas of concern and response plans were developed accordingly. During participant arrival, two busses of participants were isolated because passengers displayed gastrointestinal symptoms. Of 10,255 events recorded by the surveillance log system, 6,446 (63%) were classified as non-infectious; blisters, laceration or puncture injuries, and dislocations, sprains, and strains were most commonly reported. Infectious events consisted primarily of upper respiratory syndromes.

Conclusions:
Because of appropriate planning, issues identified during pre-event meetings had a minimal impact on participants. The paper log surveillance system, coupled with daily rounds to medical facilities, provided useful information on injury and illness trends and strengthened relationships between public health staff and event partners. This event underscores the importance of advance preparation and collaboration during a public health response effort. Furthermore, public health involvement in any large scale event is critical for addressing population health concerns in a rapid manner and ensuring successful event outcomes.

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Abstract ID: **1060872** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Innovation space and stage for public health informatics research and practice: A state experience**

Committee: **Surveillance/Informatics**

Topic: **Effective interactions between epidemiology and informatics**

Keywords: **Collaboration, Informatics, Research**

Abstract Text

Background:
Public health informatics (PHI) is an action-oriented science and innovation-driven practice. Respecting each other's working space is crucial for successful collaboration between researchers and practitioners. Understanding the innovation stage also advances the innovation management across the spaces. Utah Department of Health (UDOH) has partnered with University of Utah's (UU) Center of Excellence in PHI to develop informatics tools to improve public health reporting, surveillance, and analysis. Our collaborative trajectory provides a live example of the innovation processes.

Methods:
We aim to translate our innovation experiences into a PHI management roadmap to better coordinate the informatics projects across research and practice spaces and project life-cycles. We used inductive reasoning and adapted the definitions of the clinical translational research stages into PHI innovation stages. We analyzed our own experiences during the past five years and developed the concept of innovation space.

Results:
We developed the following working definitions for PHI Innovation Stage and Space (ISS):
ISS-1. Researchers seek to move new discoveries into candidate public health applications with practitioners' input (Space=University)
ISS-2. Researchers and practitioners jointly assess the value of ISS-1 discovery for public health practice leading to evidence-guided innovation (Space=University and public health)
ISS-3. Practitioners implement fully-tested ISS-2 innovation into public health practice through researchers' delivery, dissemination, and diffusion efforts (Space=Public health)

ISS-4. Researchers seek to evaluate the "real world" public health outcomes of ISS-3 implementation in practice (Space=Public health)
We illustrate the four Innovation Stages and Space using our work with a new software innovation called Epinome. Epinome is a visualization application that dynamically analyzes, visualizes, and reports public health data. Epinome can significantly enhance the analytical capacity and usability of the Utah NEDSS. At the "ISS-1" stage, researchers created the novel technology on campus based on interviews with epidemiologists and simulated data in 2007-2009. At the "ISS-2" stage, researchers and practitioners jointly assessed the practical and potential added value of Epinome. This effort has led to

the re-engineering of Epinome's functionality and IT infrastructure based on contextual inquiries and observations of public health practice, processes, procedures, and policy since 2009. To prepare for a smooth implementation in "ISS-3," the collaborators mimicked UT-NEDSS IT environment and data structure in the UU's research environment. UDOH Institutional Review Board also approved "opening the space" for the "ISS-4" evaluation by researchers.

Conclusions:
Understanding the boundary and process of practitioner-participated research can improve efficiency of public health informatics innovations.

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Abstract ID: **1055446** Presentation Type: **Breakout Presentation - Single Speaker**

Title: **Surveillance of preventive services for cardiovascular diseases**

Committee: **Surveillance/Informatics**

Topic: **Surveillance Indicators**

Keywords: **Cardiovascular disease, Prevention, Surveillance**

Abstract Text

Background:
Evidenced-based clinical services that are recommended for the prevention of cardiovascular disease (CVD) include counseling about aspirin therapy; diabetes screening; healthful diet counseling; and screening, counseling, and treatment for abnormal lipids, hypertension, obesity, and tobacco use. Utilization rates for many clinical preventive services are low in the U.S. but health care reform aims to make primary care and preventive services more accessible, affordable and effective. Tracking the impact of increased and improved prevention services on CVD outcomes and risk factors requires identifying appropriate indicators, data sources, and new reliable and valid metrics.

Methods:
We used the 2005 A Purchaser's Guide to Clinical Preventive Services: Moving Science into Coverage to identify seven CVD-related clinical preventive services. We reviewed indicators for these services that are used by national programs such as Healthy People, the National Quality Forum, Physician Quality Reporting Initiative, and others; and identified data sources which could be incorporated into surveillance efforts to routinely and reliably track indicators for preventive services over time.

Results:
We have established a core set of indicators to include in our CVD surveillance activities with a focus

on population health measures that allow us to track whether persons are receiving preventive services as recommended and whether these services are effective in preventing or managing CVD risk factors. Surveillance of preventive services for CVD requires multiple data sources including surveys, registries, administrative data, and others. The feasibility of using new data sources such as electronic health records and health information exchanges for surveillance purposes is also being explored. Metrics include population-based rates of services, prevalence of hypertension and high cholesterol control, and population-based preventable hospitalizations which are indicators of access to quality health services.

Conclusions:
Indicators for preventive services are an integral part of a comprehensive CVD surveillance system. Information about the utilization of preventive services can be useful for educating/raising awareness among the population about recommended preventive services; increasing utilization of preventive services; increasing adherence to clinical guidelines; and identifying and tracking disparities in the use of these services.

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Abstract ID: **1106739** Presentation Type: **Late Breaker: Breakout Presentation - Single Speaker**

Title: **Outbreak of Tuberculosis in a Detention Center - Georgia, 2010**

Committee:

Topic: **Late Breaker**

Keywords: **Outbreak investigations, Respiratory diseases: Non-influenza, Vulnerable populations**

Abstract Text

Background:
Despite a 17-year decline in reported tuberculosis (TB) cases in the United States, outbreaks of the disease continue to represent an important challenge to TB control. In April-June 2010, TB cases with a matching genotyping pattern were diagnosed in three inmates at a detention center in Georgia; one patient died. State and local public health authorities and CDC jointly investigated the outbreak to identify interventions to halt further TB transmission.

Methods:
A case was defined as TB disease diagnosed January 1-December 15, 2010, 1) with the outbreak-associated genotype in a county resident, or 2) without a specimen for genotyping in a current or former inmate, employee, visitor, or volunteer at the detention center. We interviewed outbreak patients, reviewed medical records, and performed active case-finding among current inmates.

Results:
Nine total cases were identified, all in current or former inmates of the facility. Eight cases with isolates available had the outbreak-associated genotype. All outbreak patients were male; two had HIV infection. The index patient had been contagious for 3 months in the detention center before diagnosis and isolation in April 2010. The May 2010 contact investigation conducted by the detention center initiated evaluations for all 1,525 inmates at the facility, regardless of exposure, but did not lead to TB diagnosis for any of the eight secondary cases. Of the eight secondary cases, three patients were diagnosed upon transfer to the state prison system, four based on TB symptoms, and one during a later contact investigation. Among the 610 exposed inmates still at the detention center in December 2010, those exposed to one of the three smear-positive outbreak cases had 3.7 times the odds (95% confidence interval: 2.0-6.8) of having a positive TST result than those solely exposed to a smear-negative outbreak case. Subsequent to the December 2010 investigation, three additional cases were identified: one through active case-finding among current inmates, a second through intake screening of a former inmate reentering the facility, and a third when a released inmate sought care for TB symptoms. All 12 outbreak cases had been exposed to a smear-positive case.

Conclusions:
This outbreak highlights how rapidly TB can be transmitted in a congregate setting. Thorough contact investigations are essential to halt TB transmission. Continued efforts should focus on evaluating former yet-to-be-screened inmates currently in the community or other locales, with higher priority given to those exposed to smear-positive cases.

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Abstract ID: **1106861**
Presentation Type: **Late Breaker: Breakout Presentation - Single Speaker**
Title: **Outbreak of Healthcare-Associated Invasive Listeriosis - Texas, 2010**
Committee:
Topic: **Late Breaker**
Keywords: **Foodborne disease, Guidelines, Nosocomial infections**

Abstract Text

Background:
Invasive listeriosis, a potentially fatal foodborne disease caused by Listeria monocytogenes, accounts for 19% of foodborne-related deaths in the United States. In February 2010, a 4-case listeriosis cluster was identified in Texas. By August 2010, 6 additional cases occurred among hospitalized patients in 4 Texas hospitals. We investigated to confirm the outbreak, identify the source, and prevent additional infections.

Methods:
Clinical isolates of L. monocytogenes with highly related pulsed-field gel electrophoresis (PFGE) patterns were identified. Environmental and food samples from the hospital kitchen where 6 hospitalized patients had experienced listeriosis (Hospital A) were collected and cultured. Because PFGE pattern combinations were highly related, but not indistinguishable, we used multiple-locus variable-number tandem-repeats analysis (MLVA) to determine molecular subtype relatedness. We interviewed patients or their surrogates regarding food consumption, and reviewed their medical charts to determine exposures to common procedures.

Results:
We identified 10 cases with highly related but distinct PFGE pattern combinations among patients with illness onsets during January-August 2010. Nine of 10 patients were hospitalized before illness onset, and 1 patient had eaten at 3 hospital cafeterias. All patients were immunocompromised by preexisting conditions or medications. Ages ranged from 56 to 93 years (median = 80 years); 5 patients died. The last patient in the cluster was interviewed and reported frequent consumption of chicken salad at Hospital A. Of 198 environmental and 30 food samples collected from the kitchen of Hospital A, L. monocytogenes was detected in 2 samples of chicken salad and 1 sample of prepackaged diced celery. A traceback investigation identified a celery processing plant in Texas where L. monocytogenes was isolated from environmental and product samples. Initial rapid polymerase chain reaction (PCR) testing of 7 culture-positive celery specimens yielded negative results. The celery isolates from the processing plant had the same PFGE pattern combinations as the clinical, celery, and chicken salad isolates from Hospital A, and clinical isolates from the other hospitals. All L. monocytogenes isolates were indistinguishable by MLVA, thereby supporting subtype relatedness.

Conclusions:
Prepackaged diced celery was recalled, and operations at the production plant were suspended. This investigation directly implicated celery for the first time as a vehicle in a listeriosis outbreak. Utility of rapid PCR testing of commercial food products for the presence of L. monocytogenes should be revisited. Risk mitigation strategies, including hospital food safety practices for immunocompromised, older, or otherwise vulnerable patient populations should be developed and implemented.

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Abstract ID: **1107114** Presentation Type: **Late Breaker: Breakout Presentation - Single Speaker**

Title: **Measuring C. difficile Infection Counts and Hospital-onset Status in Discharge Data and NHSN**

Committee:

Topic: **Late Breaker**

Keywords: **Healthcare associated infections (HAI), Hospital data, ICD**

Abstract Text

Background:
The Illinois Department of Public Health (IDPH) is required by legislation to publish yearly reports on Clostridium difficile infections in hospitals based on Illinois Hospital Discharge Data (IHDD). Infections must be reported as present on admission (POA) or occurring during the hospitalization. No published studies have evaluated the validity of the POA variable in hospital discharge data with respect to healthcare-associated infections such as C. difficile. In order to evaluate POA coding for C. difficile, we compared use of IHDD and the National Healthcare Safety Network (NHSN) to identify hospital-onset C. difficile infections.

Methods:
We identified all (n=11) hospitals in Illinois reporting C. difficile infections to IDPH via NHSN using the LabID Event module during March-September 2010, and limited our study to these hospitals and this time period. Infections reported to NHSN occurring on the fourth day after hospital admission or later were classified as hospital-onset. C. difficile infections were identified in the IHDD by searching the first 25 discharge diagnosis codes for C. difficile infection (ICD-9 code 008.45). C. difficile infections in the IHDD that were not POA were classified as hospital-onset. We compared the total number of C. difficile infections reported in IHDD and NHSN for each hospital and all hospitals combined. In addition, we compared the proportion of C. difficile infections classified as hospital-onset in IHDD and NHSN using a Chi-Square test in SAS version 9.1.

Results:
We identified 1,838 discharges with a code for C. difficile in IHDD, 518 (28%) of which were classified as hospital-onset. Among 1,286 C. difficile infections reported to NHSN, 635 (49%) were classified as hospital-onset. These proportions were significantly different (Chi-Square= 145.97, p<.0001). The hospital-specific proportions of infections classified as hospital-onset in IHDD ranged from 12% to 50%; the hospital-specific proportions of infections classified as hospital-onset in NHSN ranged from 41% to 100%.

Conclusions:
More cases of C. difficile infection were reported in IHDD than in NHSN, and the proportion of cases coded as hospital-onset in IHDD was significantly lower than the proportion classified as hospital-onset in NHSN. These discrepancies underscore the need for a study comparing hospital discharge data and clinical data in order to assess the accuracy of POA coding. Until the validity of POA coding is clarified, POA classifications for C. difficile should be interpreted with caution.

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Abstract ID: **1113688**

Presentation Type: **Late Breaker: Breakout Presentation - Single Speaker**

Title: **A novel use of syndromic surveillance: Tracking sexual assault in Nebraska, 2009â€“2011**

Committee:

Topic: **Late Breaker**

Keywords: **Injury surveillance, Violence**

Abstract Text

Background:
Current population-based surveillance tools used to track non-fatal sexual assaults continually under-report incidence and underrate this public health priority; crime data are limited to sexual assaults reported to police and hospital discharge data external cause of injury codes (E-codes) only identify individuals injured from one type of sexual assault, rape. In July 2010, the Office of the National Coordinator established syndromic surveillance as a “Meaningful Use” requirement, with the expectation that all emergency departments (ED) would regularly report real-time de-identified clinical data to public health departments. This study assessed the utility of Nebraska’s newly implemented syndromic surveillance system as a novel tool to track sexual assaults.

Methods:
Data submitted between 03/02/2009 and 03/21/2011 from 8 hospitals for syndromic surveillance purposes were evaluated for tracking sexual assaults. Incident cases of sexual assault were identified from the chief complaint field using the SAS® INDEX function to search for the following substrings: “SEXUAL ASSAULT” and “(_)RAPE”. The case definition was then broadened to allow common misspellings and past tense phrasing. The entire chief complaint field was reviewed for each case identified by this method for specificity of the search substrings. For comparison, sexual assault cases were also identified in these data using the ICD-9-CM E-code indicating rape (E960.1).

Results:
There were a total of 167,688 ED records submitted for syndromic surveillance from 8 hospitals in Nebraska during the study period. Initial scan of the chief complaint field identified 153 sexual assault cases, 45 additional cases were captured when allowing common misspellings and past tense phrasing. Review of the chief complaint field for the 198 cases identified revealed that 77% (n=155) records were definite, 19% (n=38) were possible, and 3% (n= 5) were not sexual assault cases. The rape specific E-code only identified 54% (n=84) of the 155 definite sexual assault cases identified by chief complaint. Using both chief complaint and E-code, 213 cases of sexual assault (6.6 cases per 100 days) were identified. The majority of sexual assault cases were female (n=202, 95%) with a mean age of 23 years +/- 11 years.

Conclusions:
Relying on E-codes only to track sexual assaults in ED data greatly underestimates incidence; approximately half of the cases were missed by E-code in these data. Syndromic surveillance provides

an important opportunity to enhance current sexual assault surveillance by a system already being implemented at the national level.

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Abstract ID: **1113811** Presentation Type: **Late Breaker: Breakout Presentation - Single Speaker**

Title: **Use of an online survey to rapidly determine exposure source in a foodborne norovirus outbreak - April 2011, Oahu**

Committee:

Topic: **Late Breaker**

Keywords: **Electronic data, Information technology, Outbreaks**

Abstract Text

Background:
The Hawaii Department of Health (HDOH) received report of gastrointestinal illness among participants of a bike ride event on April 12, 2011. Many of the event participants had registered online. Recognizing the potential to improve disease investigation efficiency, we emailed an online survey to 821 event participants to ascertain illness and potential exposures.

Methods:
A standard paper survey tool was developed incorporating possible food and drink exposures, both event-associated and from area restaurants. Based on a registrant listing with contact information provided by the event coordinator, over 90% of the registrants had an email because most had registered online; therefore, an online survey based on the paper tool was developed on SurveyMonkey. While the online survey was being developed, phone interviews using the paper tool were initiated for participants without email. An informational letter containing a link to the online survey was emailed to registrants with email addresses and requested survey completion by all riders as well as family members and friends who spectated at the event. The process of conducting and findings for the online survey were compared with the phone interviews.

Results:
Nineteen phone interviews were completed within 12 hours after the paper survey was initiated and before the online survey was deployed, while 239 online interviews were completed within 24 hours after the online survey was deployed. Eight persons conducted the phone interviews, while only one staff person developed and launched the online survey. Online respondents were similar to phone respondents in gender, illness rate, and other variables. A statistically significant (odds ratio, 24.0, 95% CI, 4.7-186.9; P<0.001) source exposure could be determined from the 103 online survey reponses obtained in the first 2 hours, whereas similar analysis for phone responses required several days. Analysis of the complete online survey data set, the complete phone survey data set, and the combined (online plus phone) data set, yielded the same conclusions.

Conclusions:
Technology is changing the way epidemiologic investigations can be conducted. The concurrent use of different survey tools, including an online survey, in this disease investigation provided the epidemiologic information to identify within 12-24 hours the common source exposure and did not require additional personnel resources to gather or data enter information. These are critical considerations when diseases must be identified and controlled in the face of limited public health resources.

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Abstract ID: **1113794** Presentation Type: **Late Breaker: Breakout Presentation - Single Speaker**

Title: **School-based influenza vaccination clinics reduce school absenteeism**

Committee:

Topic: **Late Breaker**

Keywords: **Influenza / Pandemic influenza, School health, Vaccination**

Abstract Text

Background:
School absenteeism during influenza season correlates with other indicators of influenza disease activity. To protect school-aged children and reduce transmission of influenza, the Arkansas Department of Health (ADH) partnered with the Arkansas Department of Education (ADE) to conduct school-based influenza vaccination clinics from October 11 to December 13, 2010. To assess the impact of these school-based vaccination clinics on influenza activity, school absenteeism rates during the 2011 influenza season were correlated with school influenza vaccination clinic coverage.

Methods:
The mean percentage of students who were absent was calculated using school level attendance data supplied by the ADE and was matched with data on the proportion of students vaccinated in school-based influenza vaccination clinics. Complete data were available for 662 Arkansas elementary, middle and high schools. A linear regression model was used to evaluate the relationship between school absenteeism during the period of peak influenza activity during the 2011 influenza season in Arkansas (weeks 3-8 of 2011) and the proportion of students who had been vaccinated in school-based influenza vaccination clinics.

Results:
The median proportion of students vaccinated per school was 41%, and the mean absenteeism rate during the period of peak influenza activity was 7.0% for the 662 schools. As expected, school absenteeism decreased with increasing proportion of students vaccinated in school-based influenza vaccination clinics the previous fall. For every 10 percentage point increase in vaccination coverage, the mean absenteeism rate decreased by 0.2 percentage points, and this relationship was statistically

significant (p<0.0001). Applied to the 465,000 students in the Arkansas public school system over the 6 weeks of peak influenza activity, a 10 percentage point increase in influenza vaccination coverage would reduce school absenteeism by 27,900 student days.

Conclusions:
In Arkansas schools, school-based influenza vaccination clinics in 2010 significantly reduced school absenteeism during the subsequent 2011 influenza season. In addition to substantially increasing instruction time for students, school-based influenza vaccination clinics likely resulted in substantial savings in terms of missed work for parents caring for ill students.

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Abstract ID:	**1113511**	Presentation Type:	**Late Breaker: Breakout Presentation - Single Speaker**
Title:	**Outbreak of carbapenem-resistant Klebsiella pneumoniae associated with a long-term care facility - West Virginia, 2009-2011**		
Committee:			
Topic:	**Late Breaker**		
Keywords:	**Healthcare associated infections (HAI), Infection control, Outbreak investigations**		

Abstract Text

Background:
Carbapenem-resistant Klebsiella pneumoniae (CRKP) is an emerging public health threat. CRKP infections are resistant to almost all antimicrobial agents and are associated with increased morbidity and mortality. On January 27, 2011, a local hospital (Hospital A) notified its local health department of a cluster of CRKP infections. Multiple infections were detected among residents admitted from one long-term-care facility (LTCF A). We describe the first outbreak of CRKP reported in West Virginia. We investigated the outbreak to identify all cases and to characterize risk factors for CRKP infection.

Methods:
A matched case-control study was conducted. Infection control practices were evaluated, and point prevalence studies (PPS) were performed at Hospital A and LTCF A. Eleven PPS surveillance isolates, along with 5 Hospital A clinical isolates, were forwarded to the Centers for Disease Control and Prevention for pulsed-field gel electrophoresis (PFGE) testing. Data were analyzed by using Epi-Info™ v.3.5.2. and SAS® v.9.1. Exact conditional logistic regression was conducted to calculate odds ratio estimates and 95% confidence intervals.

Results:
Nineteen case-patients and 38 control subjects were identified. Fourteen (74%) case-patients were admitted from LTCF A, and 13 (68%) had CRKP isolated within 2 days of admission. Case-patients were more likely to be male, have a longer length of hospital stay, a higher number of previous hospitalizations, and be admitted from LTCF A. Risk for CRKP infection was most strongly associated

with prior stay at LTCF A (odds ratio [OR]: 46.6; 95% confidence interval [CI]: 8.0-∞), prior stay at any LTCF (OR: 42.3; 95% CI: 7.2-∞), and admission from LTCF A (OR: 35.1; CI: 5.9-∞). Zero of 29 hospital A and 11 (9%) of 118 LTCF A PPS specimens were positive for CRKP, including specimens from 7 LTCF A residents with previously unrecognized infection. PFGE results indicated that all 16 isolates were likely clonal. Evaluation of infection control practices revealed deficiencies at LTCF A, whereas Hospital A had sufficient protocols in place.

Conclusions:
An outbreak of 19 CRKP infections among Hospital A patients was highly associated with admission from and prior stay at LTCF A. PPS identified 7 new cases at LTCF A, indicating intra-facility transmission. PFGE analysis indicated that all clinical specimens from Hospital A and PPS isolates from LTCF A were closely related. These findings demonstrate the interconnectedness of the healthcare system; regional interventions targeting all levels of care are needed to prevent CRKP transmission.

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Abstract ID: **1113788** Presentation Type: **Late Breaker: Breakout Presentation - Single Speaker**

Title: **Closing the Loop: Converging Epidemiologic Findings with Laboratory Evidence for One Outbreak of Escherichia coli O157 Infection Associated with Raw-Milk Cheese - Colorado and California, October 2010**

Committee:

Topic: **Late Breaker**

Keywords: **Foodborne disease, Outbreak investigations, Risk factors**

Abstract Text

Background:
Escherichia coli O157:H7 (O157:H7) causes approximately 73,000 illnesses and 60 U.S. deaths annually. During October-November 2010, an O157:H7 outbreak resulted in 41 cases in 5 western states; 18 patients were hospitalized, including 1 with hemolytic uremic syndrome. Early laboratory results implicated aged raw-milk Gouda cheese produced by Manufacturer X and offered for sale and in-store sample-tasting at National Warehouse Chain A retail stores as the outbreak cause. To support the findings with formal epidemiologic evidence, we conducted a case-control study; we also investigated environmental factors through inspections.

Methods:
To identify factors associated with illness, in December 2010, we invited all 5 affected states to participate in an unmatched case-control study; case-patients' household members were control subjects. Cases were defined as laboratory-confirmed O157:H7 with pulsed-field gel electrophoresis

patterns indistinguishable from the outbreak strain. We excluded household member control subjects who reported illness compatible with O157:H7. In October and November, 2010, environmental inspections were conducted in 2 Chain As where case-patients had shopped.

Results:
California and Colorado participated; we interviewed all of their case-patients (aged 1-81 years), accounting for 15 (37%) of 41 case-patients, and 25 household member control subjects (aged 1-80 years), of whom 4 were excluded. None had purchased Gouda for home consumption; however, sampling Gouda cheese at Chain A was significantly associated with illness (odds ratio: 9.0; 95% confidence interval: 1.7-47). The 2 inspected stores lacked hand sinks and temperature-regulated food storage near food sampling stations.

Conclusions:
Our study provides epidemiologic evidence supporting the laboratory link between sampling aged raw-milk Gouda cheese at Chain A and O157:H7 infection. Cheese-handling practices during in-store sampling might have contributed to the outbreak.

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Abstract ID: **1113766**

Presentation Type: **Late Breaker: Breakout Presentation - Single Speaker**

Title: **Decreasing MRSA in Pennsylvania Hospitals from 2008 to 2010**

Committee:

Topic: **Late Breaker**

Keywords: **Healthcare associated infections (HAI), Infection control, Surveillance**

Abstract Text

Background:
Methicillin-resistant Staphylococcus aureus (MRSA) is one of the most challenging healthcare-associated infections (HAIs) and has been targeted for prevention and control measures. In Pennsylvania, since early 2008 all HAIs were mandated to be reported through CDC's National Healthcare Safety Network (NHSN). We assessed the antibiograms of reported S. aureus-associated HAIs in PA to examine changes in occurrence of MRSA versus methicillin-susceptible S. aureus (MSSA) infections over time.

Methods:
All SA isolates and event types were extracted from the NHSN database for the period July 2008-December 2010; SA isolates resistant to oxacillin were considered MRSA and susceptible were

considered MSSA.

Results:
Over the 30 month time period there were 10,741 SA isolates (2,265 in the last half of 2008, 4350 in 2009, and 4126 in 2010) with available antibiograms (16% of total isolates). The total number of SA due to MSSA remained steady over the period. However, the absolute numbers of SA due to MRSA declined by 17% from 1,135 (51.0%) in the last half of 2008 to 2,134 (49.1%) in 2009 to 1,875 (45.4%) in 2010. Of all SA, 1,707 (15.9%) were associated with a device (central line, urinary catheter, or ventilator). Among these, 56% were due to MRSA; the proportion of device-associated SA due to MRSA was 56.0% in 2008, 59.2% in 2009, and 52.0% in 2010.

Conclusions:
The proportion of healthcare associated SA infections in Pennsylvania caused by MRSA appears to be declining even as susceptible SA strains remain stable. This could result from measures specifically aimed at MRSA, including improved evidence-based infection prevention, prudent antimicrobial use, and targeted MRSA screening and patient isolation (required in PA's legislation). Ongoing surveillance for HAIs and MRSA should allow a determination of whether these trends will continue.

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Abstract ID: **1060433** Presentation Type: **Poster Presentation**

Title: **Evaluation results of the Louisiana Pregnancy Risk Assessment Monitoring System**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Enhancing or evaluating existing CD/MCH/OrH surveillance systems**

Keywords: **Evaluation, Maternal and Child Health, Surveillance**

Abstract Text

Background:
The Louisiana Pregnancy Risk Assessment Monitoring System (LaPRAMS) monitors selected maternal behaviors before, during and after pregnancy to reduce infant morbidity and mortality. LaPRAMS was prioritized for evaluation by program leaders, as many changes have occurred since the last evaluation in 2006. A stakeholder group was convened to prioritize three attributes for in-depth review and evaluation, including representativeness, data quality and acceptability.

Methods:
This evaluation followed the "Updated Guidelines for Evaluating Public Health Surveillance Systems" published in 2001. LaPRAMS 2007-2008 data was used for all analyses. Representativeness was assessed through response rates and analysis of differences between survey respondents and nonrespondents. Chi-square tests and multivariable logistic regression were used to identify women less likely to respond. Data quality was evaluated by assessing the percentages of missing values of individual questions and the data entry error rate. Acceptability was measured through a survey conducted in November 2010 to assess stakeholders' understanding of, and reliance on, LaPRAMS

data.

Results:
The overall weighted response rate was 56% in 2007 and 52% in 2008. Regression results showed that black women (OR=0.57, 95% CI=0.49-0.66) and women of other races (OR=0.49, 95% CI= 0.35-0.67) were less likely to respond than white women, and unmarried women were less likely to respond than married women (OR=0.78, 95% CI=0.61-0.84). A dose-response relationship was noted with maternal education. Women with eight or less years of education were least likely to respond (OR=0.29, 95% CI=0.20-0.43), followed by women with nine to eleven years (OR=0.47, 95% CI=0.37-0.60), 12 years (OR=0.55, 95%CI=0.45-0.68), and 13-15 years (OR=0.66, 95%CI=0.53-0.82), with 16+ years most likely to respond.
About 22.5% of 2008 surveys were verified, yielding an average error rate of 0.47%. Missing responses ranged from 0% to 16.9% on individual questions, with no significant difference in the percentage missing between 2007 and 2008.
Eight of nine (89%) stakeholders returned evaluation surveys. Results indicated that 75% of stakeholders found LaPRAMS very useful and 62.5% reported being very familiar with LaPRAMS content. All reported their work is at least somewhat dependent on LaPRAMS data.

Conclusions:
With response rates below the 65% guideline and significant differences between respondents and nonrespondents, representativeness requires improvement. Efforts to improve response rates have been ongoing since 2005, and novel, innovative approaches are still required. Data quality is strong, with low error and percentage missing on most questions. Acceptability was strong for stakeholders, however, assessment of participants' acceptability is recommended for future evaluations.

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Abstract ID: **1060553** Presentation Type: **Poster Presentation**

Title: **Secondhand tobacco smoke: A source of lead exposure in US children and adolescents ***

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Tobacco, alcohol, and substance use epidemiology**

Keywords: **Children and adolescents, Lead, Tobacco**

Abstract Text

Background:
Secondhand tobacco smoke (SHS) remains a major source of indoor air pollution worldwide, causing major health effects. In the U.S., around 20% of 3-11 year old children live with at least one smoker. Lead, a major neurocognitive and kidney toxicant for children at relatively low levels, is a tobacco constituent that is measured in mainstream and sidestream smoke, including the gas phase. Our objective was to evaluate the relationship between secondhand tobacco smoke (SHS) exposure and blood lead levels in U.S. children and adolescents who participated in the National Health and Nutrition

Examination Survey, 1999-2004.

Methods:
We analyzed data from 6,830 participants 3 to 19 years of age who were not active smokers and had SHS exposure information and blood lead measurements. Linear regression models on log-transformed blood lead levels were evaluated with progressive levels of adjustment for demographic, household characteristics and for year the family house was built. In children 3 to 5 years of age with house dust samples available (N=791), we further adjusted for window and floor lead dust concentrations in the participant's home.

Results:
After multivariable adjustment, participants in the highest quartile of serum cotinine had 28% (95% CI 21-36%) higher blood lead levels compared to those in the lowest quartile. Similarly, blood lead levels in children who lived with 1 and ≥ 2 smokers were 14% and 24% higher, respectively, compared to those living with no smokers. In participants with lead dust information available, the association between SHS and blood lead levels remained similar before and after adjustment for lead dust concentrations.

Conclusions:
SHS may contribute to increased blood lead levels in U.S. children. Lead dust does not appear to mediate this association, suggesting inhalation as a major pathway of exposure. Lead prevention programs need to incorporate strategies to prevent potential lead exposure from SHS, particularly in children who live with smokers. Smoke-free legislation initiatives in public places, motor vehicles and other environments where children are present could further prevent lead exposure. Furthermore, health care professionals should evaluate potential SHS exposure and provide recommendations to minimize exposure as part of children's medical care. Eliminating exposure to SHS in children could result in lower lead exposure and fewer adverse lead-related health effects, including neurocognitive effects.

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Abstract ID: **1055783** Presentation Type: **Poster Presentation**

Title: **Family health history as a risk factor for asthma and its utilization in health care practice**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Family history and genomics: use in applied epidemiology**

Keywords: **Asthma, Chronic illness, Genomics**

Abstract Text

Background:
Family history has been recognized as an important risk factor for the development of many chronic diseases, including asthma. Because of the link between family history and asthma, comprehensive public health interventions for asthma should incorporate family health history information. The objectives of this study are: 1) to quantify the risk for asthma based on having an immediate family member with asthma among Utah adults, and 2) to assess the degree to which Utah adults are both collecting and discussing health history information for disease prevention purposes, particularly among adults with a family history of asthma.

Methods:
Family history questions were included on the Utah 2006 Behavioral Risk Factor Surveillance System (BRFSS) survey. Logistic regression was used to calculate odds ratios to approximate the risk of being diagnosed with asthma if an immediate family member had asthma. For health history collection and utilization questions, simple frequencies were calculated and compared based on having an immediate family member with asthma. Results were further stratified according to asthma status to assess if there were differences in behavior based on having developed the chronic illness.

Results:
The unadjusted odds of developing asthma were 3.7 (CI 2.6-5.2) times greater for adults who reported having an immediate family member with asthma, compared to adults not reporting an immediate family member with asthma. Adjusting for potentially confounding factors (age and smoking) decreased the odds only slightly, to 3.6 (CI 2.6-5.1). Only 25.8% of adults with an immediate family member with asthma reported having ever actively collected family health history information. Less than half reported having ever discussed their risk for disease with a health care professional (44.9%) or received recommendations from a health care professional (39.3%) based on their family history. Significantly higher percentages of adults with asthma reported having collected their family health history information, compared to adults without asthma.

Conclusions:
Having an immediate family member with asthma more than triples the odds of developing asthma, compared to individuals without a family member with asthma. However, collection of family health history and its discussion in the health care setting appears to be underutilized. Public health efforts should emphasize the importance of knowing one's family health history information and discussing its implications with a health professional for disease prevention purposes.

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Abstract ID: **1062390** Presentation Type: **Poster Presentation**

Title: **Parents' recall of counseling on their child's secondhand smoke exposure and overweight/obesity by a health care provider - Colorado, 2008â€“2009**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Other chronic disease, maternal & child health, or oral health epidemiology**

Keywords: **Children and adolescents, Obesity, Tobacco**

Abstract Text

Background:
Physician visits for children present an opportunity to affect behavioral change for the child and the parent(s). The American Academy of Pediatrics and the American Medical Association support physicians in counseling parents to eliminate their child's exposure to secondhand smoke and to manage overweight/obesity. We assessed parents' recall of their child's health care provider discussing secondhand smoke exposure and overweight/obesity in Colorado.

Methods:
We analyzed data on children aged 2-14 years from the Colorado Child Health Survey for 2008-2009 to determine if parent's recall of health care provider counseling was associated with demographic and health-related characteristics.

Results:
Overall, 25% of parents recalled being counseled on their child's secondhand smoke exposure, and 14% of parents with overweight/obese children recalled their health care provider discussing their child's weight. The prevalence of being counseled on secondhand smoke exposure was higher among parents of children who were aged 2-5 years (27% vs. 19% for children aged 12-14 years), Black (44% vs. 23% for White non-Hispanic children), or had current asthma (36% vs. 24% for children who never had asthma) and among parents who were current smokers (42% vs. 22% for non-smoking parents). Parents of overweight/obese children had a higher prevalence of recalling that their health care provider discussed their child's weight if their children were aged 12-14 years (22% vs. 3% for children aged 2-5 years), Hispanic (27% vs. 10% for White non-Hispanic children), or obese (22% vs. 6% for overweight children) or if they were overweight/obese (18% vs. 7% for non-overweight/obese parents). No other comparisons, including child's sex, poverty index, health insurance status, having one or more personal doctor or nurse, and having someone who helps coordinate the child's health care, were statistically significant.

Conclusions:
We determined differences in parents' recall of their child's health care provider discussing secondhand smoke exposure and overweight/obesity by demographic and health-related characteristics. The majority of parents, regardless of demographic or other characteristics, did not recall discussing secondhand smoke exposure or overweight/obesity with their child's health care provider. Because secondhand smoke exposure and overweight/obesity are two major public health issues for children, public health professionals should 1) help to educate physicians about the prevention of secondhand smoke exposure and management of overweight/obesity in children, including evidence-based assessment and counseling methods and 2) provide policymakers with data and information that support health plan reimbursement policies for physician counseling services.

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Abstract ID: **1062080** Presentation Type: **Poster Presentation**

Title: **Association between maternal overweight and obesity with preterm birth- Ohio, 2000-2007**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of other CD/MCH/OrH risk factors**

Keywords: **Birth outcomes, MCH Epidemiology, Obesity**

Abstract Text

Background:
Maternal obesity before pregnancy has been shown to negatively impact pregnancy outcomes. Nationally, preterm birth (PTB) has trended upwards for the past 20 years. Pre-pregnancy obesity has also increased and some studies have found an association between PTB and pre-pregnancy obesity. The purpose of this study was to evaluate the independent risk of delivering a very preterm (20-31 weeks) or moderately preterm (32-36 weeks) infant in overweight and obese mothers.

Methods:
Data were from singleton pregnancies in 2000-2007 Ohio Pregnancy Risk Assessment Monitoring System. Pre-pregnancy BMI (kg/m2) was categorized as healthy (18.5-24.9), overweight (25-29.9), or obese (≥30). BMI < 18.5 were excluded. Using SUDAAN software, the adjusted odds ratios (AOR) for the association between pre-pregnancy BMI and very or moderately PTB were calculated after accounting for of interaction and adjustment for confounders using logistic regression.

Results:
The unadjusted odds of very PTB were 29% higher (OR: 1.27; 95% confidence interval (CI): 1.03, 1.55)] among overweight women and 49% higher (OR: 1.54; 95% CI:(1.28, 1.86) among obese women as compared to healthy weight women. The unadjusted odds of moderately PTB were not significantly higher among either overweight or obese women compared to healthy weight women. Effect modification by age-education with BMI status was identified for moderately PTB and by race with BMI status for very PTB. After adjustment for smoking and prenatal care adequacy, AORs were not significant among any maternal racial group (AOR: 0.56-0.94). After adjusting for smoking, race, WIC services, prenatal care adequacy, gestational weight gain and previous live birth, AORs for very PTB were not significant among any age-education group (AOR: 0.90-2.30).

Conclusions:
Amid the increasing rates of PTB as well as prepregnancy overweight and obesity, no independent association was found between these factors in Ohio.

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Abstract ID: **1050531** Presentation Type: **Poster Presentation**

Title: **Elevated aluminum blood levels among patients in a dialysis center, Puerto Rico, January 2010**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of other CD/MCH/OrH risk factors**

Keywords: **Chemical and biological exposures, Health risks, Vulnerable populations**

Abstract Text

Background:
In May 2010 Company X reported high aluminum blood levels in 70 (91%) of 77 patients at a dialysis center in Puerto Rico. Renal patients are at risk to develop: anemia, encephalopathy, and dementia from aluminum toxicity. The common causes for elevated levels are: dialysate solution; water source; medications; food and kitchen utensils.

Methods:
A case control study was conducted. Company X's centers were visited for inspection of equipment and processes (N=12). Data for aluminum levels during 2010 in: water source; reprocessed water; and patient's blood, was analyzed using Excel 2007 and EpiInfo 2000.

Results:
Acid component of the dialysate at center 100 was prepared in an uncovered tank exposing corrosive fumes to the mixer's motor. Fifty percent of mixer acid motors exhibited corrosion. Motors were composed of aluminum alloys not intended for medical use or corrosive environments. The percentage of patients with high aluminum blood levels was higher than the 2.5% expected in 10 (83%) of 12 centers during January 2010 (N=980). The overall percentage of patients with high aluminum blood levels (≥20µg/L) was 20%; among center 100, patients with high levels were 91%. Patients exposed to corrosive motors were more likely to have elevated blood aluminum levels than non-exposed (OR 5.04, CI-3.47-7.37).

Conclusions:
High levels among exposed patients were 5 times more likely than among non-exposed. Company X needs to establish standard operational procedures to select and maintain equipment. Aluminum blood screening should be more frequent than once a year.

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Abstract ID: **1061956** Presentation Type: **Poster Presentation**

Title: **Hemoglobinopathies beyond childhood: Demographics characteristics of pregnant women â€“ 2007-2008 Michigan Health Outside Pregnancy Survey (HOPS)**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Lifecourse epidemiology**

Keywords: **Chronic diseases, Neonatal, Surveillance**

Abstract Text

Background:
The prevalence of all hemoglobinopathies, including sickle cell disease (SCD), in the United States has yet to be determined. Since 1987, the Michigan NBS Program has screened for sickle cell disease allowing determination of the Michigan-specific newborn incidence. Little is known about the adult population born before 1987 and Michigan's current efforts are targeted to address this gap. There is not much information available for other hemoglobinopathies in Michigan (screening for thallassemias began in 2010).
Study Question: Are there any demographic differences in Hemoglobinopathy screening between women born before mandatory NBS and those born after?

Methods:
Health Outside Pregnancy Survey (HOPS) is a structured mail survey developed by DGPHCDE at MDCH. The sampling frame was drawn from live birth records from 2007-08; low birthweight and race (African American) were used for oversampling. Survey data was weighted for estimating the prevalence of Hemoglobinopathies among women born before and after 1987 when NBS became mandatory for SCD from the answer to a particular question related to testing and diagnostic. Bivariate analyses and crude OR were used for comparing the two groups. Due to small number of those born after 1987, a proxy was needed: age categorization below and after 25 years of age.

Results:
Of the 239,078 mothers represented by the data, an estimated 18,939 (8.0%, CI: 5.8-10.8) had ever been screened for and 6,269 (2.6%, CI: 1.4-4.9) had been diagnosed with a Hemoglobinopathy. The proportion of women screened who were born after NBS implementation (9.4%, CI: 6.0-14.6) was not significantly higher than for those born before (7.2%, CI: 4.7-10.0; crude OR: 1.4, CI: 0.7-2.7). Among all screened women, 78.0% (CI: 62.4-88.4) attended at least some college, compared to 22.0% (CI: 11.6-37.6) who received a high school diploma or less. Over 61% (CI: 45.1-75.2) delivered two or more children, while the remaining 38.8% (CI: 24.8-54.9) had only one. The proportion of women with private health insurance was 60.8% (CI: 43.2-76.0) and 39.2% (CI: 24.1-56.8) received Medicaid. Crude odds ratios showed no significant differences in demographics between the two groups: education COR = 1.1 (CI: (0.3-4.8), parity COR = 3.3 (CI: 0.8-13.2), and insurance COR = 1.5 (CI: 0.5-4.4).

Conclusions:
The prevalence of Hemoglobinopathy screening and diagnosis in women born before and after 1987 (>25 and <25) is not significantly different.
Assessment of Hemoglobinopathy screening and diagnosis among those born before NBS implementation may help discover gaps in services.

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Abstract ID: **1061497** Presentation Type: **Poster Presentation**

Title: **Leading causes of chronic disease and injury mortality in North Carolina: Persistence of spatial clusters, 1979-2009 ***

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Applying new analytic methods and measures for CD/MCH/OrH epidemiology**

Keywords: **Chronic diseases, Geographic Information Systems, Injury**

Abstract Text

Background:
In 2009, cancer, heart disease, stroke, chronic lower respiratory disease, and injury were the five leading causes of death in North Carolina (N.C.). Chronic disease and injury places a substantial burden on the health and welfare of North Carolinians; for example, in 2009, 57,920 individuals (75.3 percent of total deaths) died as a result of a chronic disease or injury. Chronic disease and injury can also lead to premature death. In N.C. for 2009, there were an estimated 258,437 total years of potential life lost due to a chronic disease- or injury- related cause. In N.C., certain geographic regions have had persistently higher rates of mortality for the five leading causes of chronic disease and injury. From a public health perspective, it is important to understand and characterize geographic and temporal changes in disease trends.

Methods:
The spatial autocorrelation tool Global Moran's I identified statistically significant relationships between location and age-adjusted mortality rates of chronic disease and injury for each five year time period between 1979 and 2009. If a significant spatial relationship was identified, ESRI's ArcGIS version 9.3.1 "Hot Spot Analysis" tool was used to display the spatial clustering. Each county received a numerical ranking for the persistence of spatial and temporal clustering. Analyses and county rankings were incorporated into a final thematic map to highlight "hot spots" of disease or injury that have persisted over the last thirty years.

Results:
Past research has indicated that certain chronic diseases display geographic patterns of mortality in N.C., for example, stroke mortality is higher in the coastal plain region of N.C.; however, these patterns may shift over time. Based on county ranking of chronic disease and injury persistence, a final map was created to document disease and injury persistence over both time and space for the leading causes of death in N.C.

Conclusions:
Spatial tools are one method of detecting areas with the greatest need for public health resources. The identification of disease clusters can aid public health professionals in targeting interventions at the most vulnerable regions and populations for the optimal use of limited resources.

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Abstract ID: **1060575** Presentation Type: **Poster Presentation**

Title: **Alcohol use and hypertension among Georgia adults, Georgia Behavioral Risk Factor Surveillance System (BRFSS) 2005-2009**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Tobacco, alcohol, and substance use epidemiology**

Keywords: **Alcohol Use, Binge drinking, Cardiovascular disease**

Abstract Text

Background:
Nearly one-third of Georgia adults have high blood pressure, increasing their risk for cardiovascular disease, the leading cause of death in Georgia. Excessive alcohol use increases risk for developing hypertension, elevates blood pressure in those with hypertension, and can limit the effectiveness and worsen side effects of some blood pressure medications. We analyzed Georgia BRFSS data to obtain the prevalence of alcohol use and hypertension in Georgia.

Methods:
Using Georgia BRFSS data for years 2005, 2007, and 2009 combined, we estimated the prevalence and determined characteristics of adults reporting alcohol use and hypertension. We performed multivariable logistic regression analysis to examine the overall effect of moderate (< 5 drinks per occasion or ≤ 2 drinks per day among men and < 4 drinks per occasion or ≤ 1 drink per day among women) and excessive alcohol use (≥ 5 drinks per occasion or > 2 drinks per day among men and ≥ 4 drinks per occasion or > 1 drink per day among women) on hypertension after controlling for sex, age, race, household income, smoking status, and body mass index (BMI). All analyses were conducted using SAS-Callable SUDAAN.

Results:
The prevalence of co-morbid excessive alcohol use and hypertension was 3.2% (95% confidence interval [CI]: 2.74-3.65) (n = 392), an estimated 229,688 Georgians per year. Among the respondents with co-morbid excessive alcohol use and hypertension, 64.1% were taking blood pressure medication, 49% reported that a healthcare professional advised them to reduce their alcohol use to control their blood pressure, and 55.9% reported reducing their alcohol use to control their blood pressure. After adjusting for other factors, moderate alcohol use was associated with decreased risk for hypertension (odds ratio: 0.83, 95% CI: 0.71-0.96). Analysis testing for an association between excessive alcohol use and hypertension was not statistically significant.

Conclusions:

Addressing excessive alcohol use should be considered when developing prevention programs for hypertensive adults. There may be additional opportunities to provide counseling and treatment for hypertensive adults engaging in excessive alcohol use.

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Abstract ID: **1044157** Presentation Type: **Poster Presentation**

Title: **Retrospective curative impact of bariatric surgery on diabetes in South Carolina**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of other CD/MCH/OrH risk factors**

Keywords: **Diabetes, Disease prevention, Surveillance**

Abstract Text

Background:
Diabetes is a serious, often incurable disease. Over 23.6 million children and adults in the U.S. (7.8% of the population) have diabetes, with 17.9 million diagnosed cases and 5.7 million undiagnosed cases (CDC). In South Carolina, the prevalence of diabetes is presently at 9.6% and ranks 10th in cases of diagnosed diabetes compared with other states. Lifestyle intervention programs such as diet therapy, behavior modification, and exercise programs are widely used in combination with pharmacological products to treat diabetes, but not cure it. Recently, some researchers have discovered a remarkable effect of bariatric surgery as a durable resolution of the clinical manifestations of type 2 diabetes. Bariatric surgeries have jumped dramatically since 1998, particularly among morbid obese individual (BMI ≥ 40). However, it has not been determined if this is true among diabetics. Due to the growing interest in surgery to treat diabetes, this study assessed the trend of bariatric surgery particularly among diabetics in South Carolina. The objective is to investigate the curative impact of bariatric surgery on diabetic patients.

Methods:
We used 2000-2009 South Carolina (SC) hospital discharge (HD) data, Emergency Department (ED) data, and Ambulatory Surgery Center (ASC) data to study bariatric surgery as an intervention procedure among people with diabetes. To assess each patient's diabetic status, co-morbidities (especially, associated obesity), and type of bariatric surgery performed, ICD-9 codes from each individual record were used to identity a single primary diagnosis, a maximum of nine secondary diagnoses, and a maximum of nine procedures. We then tracked the significant cases through the South Carolina facility records and generated relevant descriptive statistics.

Results:
South Carolina health records obtained from the hospitals, ED and ASC facilities during the past decade exceeded 28.286 million. Only 3,957 people with diabetes received bariatric surgery, with about 55% returning secondary to a complication within 30 days; complications were more prevalent in the male gender, the black or African American race, and the middle-aged group (45-65).Furthermore,

we found 3,096 (or 78.24%) visited a health care facility post-surgery, of whom 988 (or 31.91%) did not have a diagnosis of diabetes. This group included more males, more whites, and not surprisingly, more of the younger-aged group.

Conclusions:
The 2005 Medicare ruling to recognize obesity as a reimbursable disease entity has coincided with a rise in bariatric surgery rates. For South Carolina this study concludes that the curative impact of bariatric surgery on patients with diabetes who are also diagnosed with morbid obesity is at 32%.

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Abstract ID: **1060403** Presentation Type: **Poster Presentation**

Title: **Using community-based participatory mixed methods research to understand preconception health in African American communities of Arizona**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Evaluating CD/MCH/OrH programs**

Keywords: **Health promotion, Maternal and Child Health, Program evaluation**

Abstract Text

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Abstract ID: **1058321** Presentation Type: **Poster Presentation**

Title: **Agreement between Tennessee's Birth Statistical System and Pregnancy Risk Assessment Monitoring System for surveillance of diabetes complicated pregnancies**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Enhancing or evaluating existing CD/MCH/OrH surveillance systems**

Keywords: **Diabetes, Pregnancy, Surveillance**

Abstract Text

Background:
The surveillance of pre-pregnancy diabetes (PDM) and gestational diabetes (GDM) in Tennessee is mainly conducted through the use of the Birth Statistical System (BSS) and the Pregnancy Risk Assessment Monitoring System (PRAMS) survey data. To date, there has been no formal evaluation conducted to assess the use of the BSS or PRAMS as a surveillance system for diabetes complicated pregnancies. As the first part of a project evaluating surveillance systems for diabetes complicated pregnancy, this poster focuses on the comparison of BSS to PRAMS by calculating agreement measures between the two systems.

Methods:
Tennessee women who gave birth between January 2007-December 2008 and completed the PRAMS survey were included in this analysis. Individuals' self-reported diabetes status was extracted from both the BSS and PRAMS data systems. Diabetes status for these records was compared and selected measures of agreement were reported.

Results:
Among the 1,446 subjects with valid values for PDM the prevalence of PDM was 1.0% (95% confidence interval [0.5%, 1.5%]) in the BSS and 1.7% (95% CI [1.1%, 2.4%]) in PRAMS. The percent agreement was 98.8% (95% CI [98.2%, 99.0%]) between the two systems. Due to the small prevalence of PDM, in which case percent agreement may not be a reliable measure of agreement, percent positive agreement was calculated and it was 55.0% (95% CI [52.4%, 57.6%]). The kappa was 0.54 (95% CI [0.36, 0.73]), indicating a moderately high agreement.
There were 1,442 subjects with valid values for GDM. The prevalence of GDM from BSS (4.7%; 95% CI [3.7%, 5.7%]) was significantly lower than that from PRAMS (10.2%; 95% CI [8.6%, 11.8%]). Percent agreement was 93.1% (95% CI [91.8%, 94.4%]) and percent positive agreement was 54.0% (95% CI [51.4%, 56.5%]) between the two data systems. The kappa was 0.51 (95% CI [0.43, 0.59]).

Conclusions:
The agreement in reported PDM or GDM among the study subjects from the BSS and PRAMS was moderately high. The prevalence of GDM derived from BSS was lower than that from PRAMS while the prevalence of PDM was similar from these two systems. Further study is underway to investigate the discordant cases to determine whether or not one surveillance system is more reliable than the other for diabetes complicated pregnancies in Tennessee.

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Abstract ID: **1062002** Presentation Type: **Poster Presentation**

Title: **I can see clearly now: State tobacco programs can serve as a platform for preventing vision loss**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Tobacco, alcohol, and substance use epidemiology**

Keywords: **Disease prevention, Health promotion, Tobacco**

Abstract Text

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Abstract ID: **1057710** Presentation Type: **Poster Presentation**

Title: **Characteristics associated with failure to complete the pneumococcal vaccine series among children with sickle cell disease or sickle cell trait ***

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Emerging CD/MCH/OrH surveillance: new systems, methods, or use**

Keywords: **Community health, Data/Surveillance, MCH Epidemiology**

Abstract Text

Background:
Children with sickle cell disease (SCD) are at increased risk of acquiring invasive infections. Timely completion of the pneumococcal vaccine series could reduce the number and burden of these invasive infections. This study was conducted among children with SCD or sickle cell trait (SCT) to determine what maternal and infant characteristics are associated with failure to complete the pneumococcal vaccine series.

Methods:
Newborn screening (NBS) records for all children born from 2004-2008 confirmed with SCD or SCT were linked with live birth certificate records. Through live births, NBS data were linked with the Michigan Care Improvement Registry (MCIR), a statewide web-based system where immunizations of Michigan residents are reported, and immunization data on pneumococcal vaccines were used. The characteristics came from either the birth certificate (birth date, race, maternal age at time of birth, gestational age, region of birth, sex, and neonatal intensive care unit admission) or immunization data (insurance and vaccine date). Age at time of vaccination was calculated using the birth date and vaccine date. Timely vaccine series completion was defined as receiving 4 pneumococcal vaccines before 18 months of age. Due to the small number of SCD children, SCD and SCT children were grouped together for analysis. Bivariate analyses were conducted; based on significance test results, multivariable models were constructed to assess characteristics associated with failure to complete the pneumococcal vaccine series.

Results:
A total of 14,827 newborns were diagnosed with SCD or SCT through NBS. Immunization data were retrieved for 12,743 of these children (85.9%). Overall, 55% of the infants had timely vaccine series completion. In the bivariate analyses, preterm delivery (OR=1.2, 95% CI [1.0, 1.3]), black race (OR=1.5, 95% CI [1.4, 1.7]), being born in Detroit (OR=1.7, 95% CI [1.6, 1.9]), and maternal age <30

years at birth (OR=1.3, 95% CI [1.2, 1.4]) were all significantly associated with increased odds of failing to complete the vaccine series in a timely manner. These characteristics were included in the multivariable model, and the associations remained significant.

Conclusions:
The immunization coverage rates for children with SCD should be improved given their increased risk for infections. Several characteristics are associated with decreased completion rates for the pneumococcal vaccine series. Linkages between NBS, live births, and immunization data provide up-to-date, continued information on immunization status that should be used to develop targeted educational materials to meet the needs of specific high-risk populations.

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Abstract ID: **1062829** Presentation Type: **Poster Presentation**

Title: **Impact of perceived health and sociodemographics on health related quality of life: A multivariate analysis using survey data**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Examining social determinants of health and health disparities in CD/MCH/OrH**

Keywords: **Behavioral health, Behavioral research**

Abstract Text

Background:
The Memphis MSA is the 41st largest among all MSA's. It covers eight counties in three states; TN, MS, and Arkansas with population of 1,205,204. The reported health profiles of three states are similar for chronic disease, risk factors, health status and behaviors; ranking in top ten of disease prevalence compared to the US.

Methods:
3,500 participants in the 2006-2009 BRFSS data were included in an observed study. Health related quality of life (HRQL) variable was calculated by combining two questions that measured the reported sum of physically and mentally unhealthy days (PMUD) in past month by adults 18 years and older and ordered as 1) zero days, 2) 1-14 days, and 3) 15-30 days . Of the total participants, 1747 (50%) reported zero PMUD, 1015 (29%) reported 1-14 PMUD and 739 (21%) reported 15-30 PMUD. Chronic disease indicators and sociodemographics have been hypothesized to have significant association with PMUD. Therefore, to assess conditions that affect overall health, general health responses were dichotomized into poor or good and served a proxy measure for acute and chronic health. Chi square and t-test analyses were performed to measure the strength of association. To determine association between HRQL and insurance coverage, education and income levels, overall health, race, exercise

habits and Body Mass Index (BMI), a multinomial logistic regression analyses was employed.

Results:
Results show that adults who report making less than $15,000 a year demonstrate 32% (p=.0062) increased risks of reporting 1-14 PMUD compared to zero than adults making $50,000 a year; and 67% (p<.0001) more at risk for 15-30 PMUD than zero. Also Blacks show 40% (p=.026) decreased risk of reporting 1-14 PMUD compared to zero than Whites. Adults who report being overweight are 14% (p=.0446) less likely to report 15-30 PMUD compared to zero than adults who report being obese. The odds of adults with poor overall health reporting 1-14 PMUD compared to zero PMUD are 0.496 times (95% CI=0.39-0.63) than those with good overall health. In addition, the odds of adults who don't exercise reporting 15-30 PMUD are 0.519 (95% CI=0.42-0.64) than those who exercise.

Conclusions:
There is a protective effect between healthy behaviors and zero PMUD. Perhaps, favorable HRQL can be increased by reducing the health impact of obesity and lack of exercise in this population. Public health efforts, including continued surveillance of health behaviors, risk factors and chronic health to monitor effect trends of HRQL in the population.

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Abstract ID: **1061365** Presentation Type: **Poster Presentation**

Title: **Innovative and enhanced chronic disease surveillance and program planning using GIS (Change - Joshua Tootoo will present in place of Erin Kulick)**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Emerging CD/MCH/OrH surveillance: new systems, methods, or use**

Keywords: **Chronic diseases, Geographic Information Systems, Surveillance**

Abstract Text

Background:
The Massachusetts Department of Public Health (MDPH) Heart Disease and Stroke Prevention and Control Program (HSPC) was awarded a grant to increase capacity to utilize geographic information systems (GIS) to improve public health work through enhanced chronic disease surveillance and program planning. An integrated team received intensive GIS training with a concentration on addressing public health foci specific to Massachusetts. The skewed distribution of the state's population and disease burden, along with the lack of county-based organization, makes analytic methods unique to GIS especially useful. To date, several maps that combine spatial analyses with traditional chronic disease surveillance data have been created and incorporated into HSPC's work. Here we highlight one such analysis.

Methods:
A series of maps aimed at utilizing GIS to improve the understanding of chronic disease through surveillance were created. A Getis-Ord GI* analysis was performed to determine statistically significant clusters of chronic disease burden. A cumulative age-adjusted rate of 2008 hospitalizations with a

primary diagnosis of cancer, diabetes, heart disease, or stroke was calculated for each of the 351 Massachusetts towns and used to define the burden of disease. Current MDPH funded chronic disease programs were geocoded to the town level and mapped over hospitalization burden to identify areas of the state with high burden but low MDPH presence. Census 2000 sociodemographic attributes were joined at the town level and statistical analyses were performed to explore population size, income, and racial/ethnic characteristics of hotspots. Spatial analyses and mapping used ArcMap Version 10. Statistical analyses used SAS Version 9.1.3

Results:
The analysis revealed four significant hotspots of chronic disease burden in Massachusetts. Hotspots were found to have significantly higher median incomes and greater total population. There were no significant differences in number of programs. Geographic hotspots will be utilized in the future to target priority areas of the state.

Conclusions:
GIS is both a valuable visual and analytic tool with unique functionality. Currently, there are six MDPH-identified priority areas that historically have high disease and risk factor burdens above the statewide total. This GIS based approach highlights areas of significant chronic disease burden that are not currently MDPH priority regions and should be considered in future program planning efforts. This method may be used as a model for state health departments to integrate spatial analyses into both statewide surveillance as well as strategic programmatic planning.

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Abstract ID: **1061361** Presentation Type: **Poster Presentation**

Title: **Interpregnancy intervals and labor dystocia: Findings from Michigan PRAMS, 2006-07**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of other CD/MCH/OrH risk factors**

Keywords: **Maternal and Child Health, MCH Epidemiology, Women's health**

Abstract Text

Background:
Both short and long interpregnancy intervals have been associated with negative maternal outcomes. Previous research identified an increasing, dose-response relationship between long intervals and labor dystocia when compared to intervals of <2 years. Am pptimal interpregnancy interval (18 to <24 months) was defined based on the 2005 "Report of a WHO Technical Consultation on Birth Spacing."

Methods:
We used 2006-2007 PRAMS birth certificate variables to measure exposure (month and year of index conception minus month and year of last previous live birth) and outcome (indicator of the presence of labor complications). Multinomial logistic regression was used to estimate odds ratios for labor dystocia

among women with short and long intervals, compared to the optimal interval. Potential confounders were maternal age, race, education, marital status, parity, trimester of entry into prenatal care, smoking during pregnancy, and previous cesarean delivery.

Results:
Of the weighted total of 105,948 births identified from Michigan 2006-07 PRAMS data, 90% (94,775) had complete information and therefore, were included in the analysis. About 25.1% experienced labor dystocia during the index pregnancy. After adjustment for confounding, women with both short and long interpregnancy intervals were found to more likely experience labor dystocia [OR 2.79; 95% CI: (1.49-5.23) and OR 2.43; 95% CI: (1.27-4.65), respectively].

Conclusions:
Interpregnancy intervals outside the range of 18 to <24 months were associated with increased odds of labor dystocia. Further research is needed to better understand this relationship and its causes. PRAMS data may be used to estimate the association between interpregnancy intervals and relatively common perinatal outcomes, such as labor dystocia, at a population level. This approach is more timely and cost effective than more labor intensive methods involving linkages between datasets.

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Abstract ID: **1062831** Presentation Type: **Poster Presentation**

Title: **State tobacco smoke loads and middle-aged male cancer death rate disparities and smoking-attributable fractions in 2007**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Tobacco, alcohol, and substance use epidemiology**

Keywords: **Cancer, Epidemiology, Smoking**

Abstract Text

Background:
While the role of smoking in interstate disparities in male lung cancer death rates is well recognized, sources of the large inter-state disparities in non-lung cancer death rates have not been well explored. So I explored whether cumulative tobacco smoke damage (smoke load), as measured by the age standardized lung cancer death rate per 100,000 (rate), might explain much of 2007 interstate differences in non-lung cancer death rates.

Methods:
To minimize old-age and frontier diagnostic misclassification and breast cancer treatment-related disparities, males ages 35-74 years from the continental 48 states were studied. Death rates were obtained from NCHS and a lung/non-lung cancer death rate linear regression run. Given the association seen, smoking-attributable fractions (SAFs) of state male ages 35-74 years all sites cancer death rates were estimated using the formula SAF = 1 - unexposeds'/observed state-specific cancer death rate. Unexposeds' cancer death rate were estimated from the lung/non-lung cancer rate

regression line and the estimate that the unexposed had a lung cancer death rate of 4 (sensitivity range 2-10) per 100,000, near the level seen in comparable never-smokers.

Results:
Both all sites and non-lung male cancer death rates per 100,000 at ages 35-74 varied about two-fold, from 162 and 129 deaths , respectively, in Utah to 331 and 204, respectively, in Mississippi. States' lung and non-lung cancer death rates were tightly associated ($y = 0.65x + 108$, $p<0.05$, $R2=0.79$. That association suggests SAFs from 32% (SR 29-33%), 40%, and 40% in Utah, Idaho, and Colorado, respectively, on the low end to 64%, 65%, and 67% (SR 65-67%) in Kentucky, Alabama, and Mississippi, respectively, on the high end.

Conclusions:
Nearly 80% of the variance in non-lung cancer and 1/3 to 2/3 of the all sites cancer death rates in middle-aged males across the 48 continental states in 2007 might be explained by variation in those states' tobacco smoke loads. These high SAFs are consistent with others' findings that smoking status-based studies often misclassified smoke exposure and underestimated SAFs and even in the Nurses Health Study nearly 1/3 of the all cause death rate was due to smoking, despite their high quit rates and the healthy volunteer and worker effects.

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Abstract ID: **1060411** Presentation Type: **Poster Presentation**

Title: **Change in perinatal smoking trends among Ohio Women Infants and Children (WIC) participants, 2002-2009**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Tobacco, alcohol, and substance use epidemiology**

Keywords: **Policy/Policy Development, Pregnancy, Smoking**

Abstract Text

Background:
In November 2006, Ohio voters passed the Ohio Smokefree Workplace Act, which prohibits smoking in public places and places of employment. Smokefree air policies have been associated with lower smoking prevalence. The impact of these policies on perinatal smoking, especially among low-income women on WIC and women residing in rural, Appalachian regions in Ohio who have high smoking prevalence, is unknown. The purpose of this study was to examine change in perinatal smoking trends among Ohio WIC participants by region from 2002-2009 after implementation of the Ohio Smokefree Workplace Act.

Methods:
Data from the Pregnancy Nutrition Surveillance System (PNSS) were used to examine change in perinatal smoking trends among Ohio WIC participants. Pre-pregnancy smoking, smoking during pregnancy, and postpartum smoking were defined as 1) smoking during the 3 months before pregnancy, 2) smoking during the last 3 months of pregnancy, and 3) smoking at the postpartum WIC visit (6-18 weeks postpartum), respectively. Prevalence and standard errors were estimated by year

and geographic region. Joinpoint Regression software was used to estimate the annual percent change (APC) rates and test for change in trends using a log-linear model.

Results:
The proportion change in smoking prevalence from 2002-2009 was -15.1% (44.9% vs. 38.1%) pre-pregnancy, -17.2% (25.7% vs. 21.5%) during pregnancy, and -18.2% (29.7% vs. 24.6%) postpartum. There was a significant trend change in pre-pregnancy smoking in the year 2007 ($p = 0.002$). During 2002-2007, pre-pregnancy smoking declined only 0.7% (95% CI: -1.4, 0.0) per year compared to a decline of 5.8% (95% CI: -9.1, -2.3) per year during 2007-2009. The significant pre-pregnancy trend change was observed in rural Appalachian (2002-2007 APC = 0.3%, 2007-2009 APC = - 5.1%; $p = 0.008$), rural non-Appalachian (2002-2007 APC = 0.0, 2007-2009 APC = -7.0%; $p = 0.004$) and metropolitan (2002-2007 APC = -1.1%, 2007-2009 APC = -6.5%; $p < 0.001$) regions but not suburban. No overall or regional trend change in smoking during pregnancy (2002-2009 APC = -2.3%; $p = 0.674$) or postpartum smoking (2002-2009 APC = -2.6%; $p = 0.535$) was detected.

Conclusions:
The trend in overall prevalence of pre-pregnancy smoking significantly changed in 2007, following implementation of the Ohio Smokefree Workplace Act. WIC participants and women in Appalachia are known to have higher smoking prevalence and stricter smokefree air policies have the potential to improve preconception health within these high risk groups.

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Abstract ID: **1060290** Presentation Type: **Poster Presentation**

Title: **Comparison of maternal pre-pregnancy weight classification methods and the effect on gestational weight gain classification among MI adolescents 2003-2007**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of other CD/MCH/OrH risk factors**

Keywords: **Adolescent health, MCH Epidemiology, Pregnancy**

Abstract Text

Background:
The Institute of Medicine (IOM) recognized the importance of pregnancy weight gain on birth outcomes and developed recommendations based on adult pre-pregnancy body mass index classification (BMI). Recent research has questioned the appropriateness of adult BMI use rather than the age/gender specific percentiles developed by the Centers for Disease Control and Prevention (CDC) to categorize prenatal BMI in adolescents. The purpose of this study is to determine if there discordance between BMI categorization methods among pre-pregnant adolescents and if discordance is associated with inappropriate weight gain based on IOM (1990 or 2009) recommendations.

Methods:
Data from the Michigan Pregnancy Surveillance System (PNSS) 2003-2007 were used to estimate the

differences between BMI based on the IOM 1990 & 2009 classification compared to BMI based on CDC age/gender specific percentiles for adolescents 10 - 20 years of age with a singleton birth and a gestation length of 37-41 weeks. Logistic regression was used to estimate the effects of maternal age on discordance while adjusting for covariates (i.e. race/ethnicity and previous pregnancy). Multinomial logistic regression was used to estimate the effect of BMI discordance on weight gain, while controlling for covariates (i.e. race/ethnicity, age, BMI, and prior pregnancy).

Results:
The prevalence of normal pre-pregnant BMI: 51.7% (IOM 1990), 55.1% (IOM 2009) and 63.8% (CDC). Discordance between BMI (CDC) and BMI (IOM 1990) was 21.9%, highest among underweight teens (81%) 10-15 year olds (33%). Discordance between BMI (CDC) and BMI (IOM 2009) was 12.7%, highest among underweight (56%) and overweight (26%) teens.
Increased odds of discordance (IOM 1990) were found for 10-15 years of age (AOR 1.912; 1.744-2.096) compared to 20 year olds. Associations between 'less than ideal' weight gain (IOM 1990) and BMI discordance (IOM 1990) (AOR 1.547; 1.461-1.638) and between 'less than' ideal weight gain (IOM 2009) and BMI discordance (IOM 2009) (AOR 1.320; 1.222-1.426), were found

Conclusions:
Discordance between the three methods of BMI classification among adolescents was found and was associated with inappropriate weight gain based IOM recommendations.
It seems that the BMI categorization based on the CDC age/gender specific percentiles for pregnant adolescents may be more appropriate. Gestational weight gain recommendations specifically for adolescents must be further explored and thus better understood.

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Abstract ID: **1060331** Presentation Type: **Poster Presentation**

Title: **Feasibility of individual data collection by Michigan Title X family planning local agencies**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Evaluating CD/MCH/OrH programs**

Keywords: **Challenges and Opportunities, MCH Epidemiology, Surveillance**

Abstract Text

Background:
A recent Institute of Medicine report acknowledged the importance of Title X funded family planning clinics in provision of essential services to low income individuals, as well as a data gap which limits

program monitoring. The Michigan Family Planning Program, operated through the Michigan Department of Community Health (MDCH), currently collects aggregate data from local agencies to monitor compliance with federal directives, yet this information is of limited use for program evaluation and quality improvement. The survey's purpose was to determine the type of data collected by local family planning agencies and their capacity/willingness to share them with MDCH for facilitating program evaluation and thus identification of quality improvement opportunities.

Methods:
A brief internet survey was structured in modules: Agency information, current data collection and transmission capacity, current user demographic and health information collected and willingness to transmit current user information. The web link and the survey deadline were sent to each local agency director.

Results:
The survey response rate was 74% and represented all of Michigan's geographic regions. Most respondents were from family planning agencies affiliated with local health departments (83%). Most agencies (54%) stored user information in an electronic database; while 14% keep paper records only and 31% used both. All respondents have the capacity to send data electronically but only 69% are able to use password protection during transmittal process. In addition to summary data required for the Family Planning Annual Report (FPAR); agencies collect parity (81%), previous pregnancy delivery method (67%) or complications (61%), and pregnancy intention (69%), tobacco use (91%), alcohol use (83%) and illicit drug use (89%).

Conclusions:
Most respondents are willing to transmit individual level information, however not all are able to comply with data security and privacy protection that are critical for any data collection system. All details related to electronic collection, storage and transmission of data must be further explored before a family planning user surveillance system can be developed. Developing a successful encrypted and secure Title X Family Planning individual data collection system to allow evidence-based program evaluation and improvement requires collaboration between epidemiologists and program staff with input from stakeholders.

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Abstract ID: **1062857** Presentation Type: **Poster Presentation**

Title: **A mixed methods evaluation of a Diabetes and Cardiovascular Disease Quality Improvement Initiative Pilot in the Mississippi Delta**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Evaluating CD/MCH/OrH programs**

Keywords: **Cardiovascular disease, Chronic diseases, Diabetes**

Abstract Text

Abstract Text
Omitted from display per the Author's request

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Abstract ID: **1062365** Presentation Type: **Poster Presentation**

Title: **Nutrition environment assessment in an African American community in Acres Homes, Houston, Texas**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Physical activity, nutrition, and obesity epidemiology**

Keywords: **Assessments, Nutrition, Policy/Policy Development**

Abstract Text

Background:
Acres Homes (AH) is one of the oldest African American neighborhoods in Houston, Texas. It is also one of the most economically distressed neighborhoods with high crime rates, low rates of home ownership and with a large proportion of families living below the Federal poverty level. One of the key findings from the qualitative focus group assessment conducted in 2009, as part of Assessment, Intervention and Mobilization (AIM) project was that there is a lack of access to healthy food for the residents of Acres Homes neighborhood.

Methods:
To better understand the problem and identify the potential solutions, we conducted a nutrition environment assessment of Acres Homes neighborhood using Texas Nutrition Environment Assessment (TxNEA), a Texas-based tool [adapted from Nutrition Environments Measures Survey (NEMS)] developed to assess grocery and convenience stores. The tool measures price, availability and quality of the healthy food options using 14 different measures (e.g. produce: fruits, vegetables). We created the GIS maps prior to the assessment to locate and categorize the grocery/convenience stores distributed in the Acres Homes study area.

Results:
Using the GIS tool to map the available grocery/convenience stores in the study area, we learned that there is only one large grocery store (with annual sales of >1 million dollars), 6 medium size stores (with annual sales between 0.5 to 1 million dollars) and 7 small stores (with annual sales <0.5 million dollars). Preliminary data on price, availability and quality of healthy foods in the 14 stores is being collected now. We will be discussing those data and findings in our actual presentation during the conference in the context of public health policy implications.

Conclusions:
GIS along with the TxNEA tool provides a viable way to assess the local nutrition environment. Price, availability and quality of the healthy food options available will characterize the nutrition environment of Acres Homes. This information can be utilized to better understand the limited healthy food options in the community and to develop policy related interventions in partnership with the community and business sectors.

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Abstract ID: **1061817** Presentation Type: **Poster Presentation**

Title: **Persistent high cardiovascular health related burden in Michigan five-county cluster**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Generating and using county and local-level data for CD/MCH/OrH epidemiology**

Keywords: **Cardiovascular disease, Data/Surveillance, Surveillance**

Abstract Text

Background:
Michigan has consistently had a higher cardiovascular disease mortality rate when compared to the national rate and the burden has been much higher in certain geographical regions.

Methods:
Five-year age-adjusted hospitalization and mortality rates were calculated using data from 2002-2006 and 2004-2008 for cardiovascular disease, coronary heart disease, heart disease, heart failure and stroke. Disease-specific ICD-9 and ICD-10 codes were used to calculate the rates. In order to assess the geographical distribution of the rates for the above mentioned diseases we developed county maps by using Geographical Information Software. These rate maps were then compared and overlapped with previously created maps of Michigan reflecting population demographics, risk factor distribution, and healthcare access. Thus we were able to identify the counties and regions with higher rates of hospitalization and mortality and better understand their demographic characteristics.

Results:
The five county region consisting of Arenac, Bay, Clare, Gladwin and Ogemaw were among the top ten counties with the highest cardiovascular disease, coronary heart disease, heart disease, and heart failure hospitalization rates from 2002-2006 and 2004-2008. The 2004-2008 age-adjusted cardiovascular disease hospitalization rate per 10,000 and rank by county were as follows: Arenac (291.5, 1st), Bay (257.7, 2nd), Clare (256.1, 4th), Gladwin (236.1, 10th), and Ogemaw (257.3, 3rd). County rank for hospitalizations was consistent with 2002-2006 data. This cluster also had some of the highest mortality rates for those diseases. The 2004-2008 age-adjusted cardiovascular disease mortality rate per 100,000 and rank by county were as follows: Arenac (377.1, 2nd), Bay (297.1 29th), Clare (358.1, 5th), Gladwin (313.0, 16th), and Ogemaw (360.1, 4th). Four out of the five counties experienced an increase in rank when compared to 2002-2006 data. Cardiovascular health risk factor distribution maps showed a greater burden in this region for less college education, no leisure time physical activity, reported disability, and smoking prevalence.

Conclusions:
The analysis revealed a five-county cluster with some of the highest hospitalization and mortality rates in the state that will help programs to focus their activities more effectively. The greater burden of some

cardiovascular health-related risk factors supports the presence of the high rates in this area. However, further analyses along with outreach to region hospitals, public health, and other relevant entities are needed to better explain why rates were much higher in this region compared to other Michigan counties/regions.

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Abstract ID: **1050587** Presentation Type: **Poster Presentation**

Title: **Asthma symptom frequency among nebulizer and metered-dose inhaler users: An analysis of Asthma Call-Back Survey data**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Enhancing or evaluating existing CD/MCH/OrH surveillance systems**

Keywords: **Asthma, Health disparities, Risk Assessment**

Abstract Text

Background:
Asthma is a chronic inflammatory disease of the lungs characterized by wheezing, coughing, difficulty breathing, and/or chest tightness. Recent literature and results from the Michigan Asthma Mortality Review Panel suggests concern for nebulizer use including nebulizer disinfection, agent contamination, infection risk, increased side effects and racial disparities among users when compared to metered-dose inhaler use without the use of a nebulizer. The objective of this study was to describe the 'frequency of asthma medication use' profiles for Asthma Call-Back Survey participants. Participants' asthma was categorized as "well controlled," "not well controlled," or "poorly controlled," based on Guidelines for the Diagnosis and Management of Asthma: Expert Panel Report 3. Self-reported asthma medication use can be measured with Asthma Call-Back data.

Methods:
Using a control algorithm developed by a multi-state collaborative, we estimate asthma control based on EPR-3 from Asthma Call-Back Survey (ACBS) data. ACBS includes questions assessing 4 elements of asthma control - symptoms, night awakenings, rescue medication use, and interference with normal activity. We will compare the level of asthma control among among adults with asthma (2007-2009) who report use of nebulizer vs primarily metered-dose inhalers for medication delivery . Candidate predictors include demographic and socioeconomic characteristics, asthma management activities, indoor environment, and comorbidities.

Results:
Applying the control algorithm to prior 2005-2007 Michigan ACBS data, 22.2% of adults with asthma were estimated to be well controlled, 49.9% not well controlled, and 27.9% very poorly controlled. From preliminary models, uncontrolled asthma was significantly associated with not having an asthma action plan (OR: 2.51, 95% CI: 1.24-5.17), and use of a long-term control medication (OR: 5.42, 95% CI: 2.76-10.68), after controlling for demographic characteristics. Household income was also significantly associated with uncontrolled asthma; increasing income decreased the odds uncontrolled asthma. These analyses will be updated to 2007-2009 data and explored compared for primary medication

delivery method.

Conclusions:
In Michigan, the prevalence of uncontrolled asthma among adults with asthma, according to EPR-3 guideline classifications, is higher among individuals using nebulizers as compared with individuals not using nebulizers. The associations observed with asthma management activities suggest that adults with uncontrolled asthma are more likely receive an asthma action plan and be prescribed a long term control medication from their provider. Asthma control has particular significance for clinical providers and presenting data by these classes will resonate with this audience. These results will be particularly useful for state asthma program planning and evaluation.

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Abstract ID: **1013404** Presentation Type: **Poster Presentation**

Title: **Surveillance of overweight/obesity in Hawaii public school students entering kindergarten in 2002-2003 and 2007-2008**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Physical activity, nutrition, and obesity epidemiology**

Keywords: **Children and adolescents, Obesity, Surveillance**

Abstract Text

Background:
All children entering schools in Hawaii are required to submit a Form 14-Student Health Record for proof of immunization, which also includes documentation of age, sex, height, and weight, and any existing medical conditions. During a first assessment, student health record data from 10,199 records from the 2002-2003 school year were used by the Hawaii State Department of Health to retrospectively assess children's immunization status and BMI. Baseline estimates of overweight/at-risk for overweight in children entering public schools in 2002-2003 found that 14.1% of children were at risk for overweight and 14.5% were overweight (28.5%). To provide an additional population based estimate of overweight/obesity this study examined Student Health Records for 13,354 children entering public schools to assess the BMI status of a new cohort of public school kindergarten students in 2007-2008 and compare the results with 2002-2003. A BMI-for-age value of >=95% is now classiied as obese (previously overweight), while a BMI of >=85% and <=95% is now classified as overweight (previously at-risk for overweight).

Methods:
During the 2007-2008 school year, copies of Form 14 records from public schools, including charter schools who wished to participate statewide were collected. Data were entered into a database and analyzed for BMI percentiles and z scores using EpiInfo software. Obesity rates were assessed by

school, by school complex, by county, and for the state as a whole.

Results:
The results illustrate that like the 2002-2003 cohort(28.5%), almost one-third of the children aged 4-6 entering Hawaii public schools are again either overweight or obese in 2007-2008 (30%). The main difference is (1) a slight decrease in the proportion overweight (formerly classified as “at-risk for overweight”) from 14.1% in 2002-2003 to 12.3% in 2007-2008 and (2) an increase in the proportions obese (formerly classified as “overweight) from 14.4% in 2002-2003 to 17.8% in 2007-2008. This follows the national pattern of increasing rates of obesity among children.

Conclusions:
These results will be used to reinforce the need for interventions to address pediatric obesity and to explore mechanisms to embed this process for on-going surveillance of public schoolchildren for BMI, immunization or other issues.

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Abstract ID: **1062144** Presentation Type: **Poster Presentation**

Title: **Multiple chronic conditions and functionality in a community-based sample of older adults in New York City, 2009 ***

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of aging**

Keywords: **Aging, Chronic diseases, Community health**

Abstract Text

Background:
Approximately 60-75% of older adults suffer from multiple chronic conditions (MCCs) in the United States, and prevalence is even greater in low-income communities. Yet to date, the epidemiology of MCCs and their contribution to functional limitations has not been well characterized outside of clinical samples.

Methods:
We examined the impact of MCCs on functionality using data from a 2009 simple random sample telephone survey of 1,036 racially and ethnically diverse adults aged 65 and older living in New York City (NYC) public housing. Chronic conditions assessed included arthritis, osteoporosis, hypertension, cholesterolemia and diabetes. Reports on limitations of any of 6 activities of daily living (ADL) were used to define functionality.

Results:
Preliminary data show that of older residents, 93% reported at least one diagnosed chronic condition, 79% reported MCCs, and 29% reported having any ADL limitations. Individuals with multiple conditions were more likely to report ADL limitations (prevalence for 1 to 5 chronic conditions, respectively: 16%,

21%, 27%, 44%, 59%). Adjusting for age, women were more likely than men to have any MCCs (Adjusted Odds Ratio [AOR], 3.0 95% confidence interval [CI] 2.2-4.2) and more likely to report any ADL limitations [AOR], 1.7, 95% confidence interval [CI] 1.2-2.3). Of conditions examined, the association was strongest between arthritis and any ADL limitations (OR, 3.4, 95% CI 2.4-5.0) and weakest for hypertension (OR, 1.6, 95% CI 1.0-2.3). The diabetes-ADL limitation association was weaker (OR, 1.7, 95%CI, 1.2-2.3) than for musculoskeletal factors, but stronger when restricted to those with serious diabetes-related sequelae (amputation, neuropathy, retinopathy) (OR 3.3 95% CI 1.9-5.7). Stratifying arthritis by presence or absence of osteoporosis, the association remained strong for those with both conditions (OR 4.1, 95% CI 1.8-9.5) but was attenuated for those without osteoporosis (OR 2.7, 95% CI 1.8-4.2). Further, the arthritis/osteoporosis combination was more common among Asian older adults (OR 3.2, 95% CI 1.7-6.2) compared with non-Asians, and among Hispanics (OR 1.6, 95% CI 1.1- 2.2) compared with non-Hispanics.

Conclusions:
In older adults, loss of functionality is directly linked to number of chronic conditions. Women are at greater risk for both a greater number of MCCs and the associated loss of functionality than men. Further, arthritis combined with osteoporosis has the strongest effect on functionality, with Hispanics and Asians at increased risk of this MCC.

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Abstract ID: **1060806** Presentation Type: **Poster Presentation**

Title: **Identification of birth defects in Michigan infants with sickle cell disease and sickle cell trait: Michigan NBS and MBDR data, 2004-2006**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Enhancing or evaluating existing CD/MCH/OrH surveillance systems**

Keywords: **Birth defects, Maternal and Child Health, Risk Assessment**

Abstract Text

Background:
The Michigan Birth Defects Registry (MBDR) is a passive surveillance system, relying on hospital reporting and case sharing other State programs. The MI Newborn Screening (NBS) Program has been screening newborns for sickle cell disease (SCD) since 1987, and SCD is reportable to the MBDR. Little research has been done to assess anomalies associated with SCD or sickle cell trait (SCT). NBS and MBDR records were linked to validate the accuracy and completeness of SCD case reporting in the MBDR and to evaluate the frequency and types of birth defects reported in children with SCD or SCT.

Methods:
NBS records for infants with SCD or SCT born from 2004-2006 were linked to the MBDR records using the live birth records as an intermediate file. The linked file was used to identify missing or misclassified

SCD cases in the MBDR, using NBS as the gold standard. The relative risk of having a birth defect overall or a birth defect by category in those with SCD or SCT compared to those without SCD or SCT was determined. Race-specific relative risks were also calculated.

Results:
In total, 186 SCD and 8446 SCT cases from NBS were linked to live birth records. A total of 166 SCD cases were found in both NBS and MBDR files. An additional 97 SCD cases were found in MBDR (PPV=0.63) and 20 SCD cases were missing from MBDR (Se=0.89). Among linked MBDR-NBS cases, 12% of SCD cases and 11% of SCT cases had an additional birth defect. The risk of having any birth defect was 1.7 (95% CI: 1.1, 2.7) times higher and the risk of having an integument defect was 7.1 (95% CI: 3.2, 16.1) times higher in those with SCD, compared to those without SCD, but neither association achieved significance when stratified by race. For blacks, the risk of having a digestive defect was 1.6 (95% CI: 1.2, 2.0) times higher in those with SCT, compared to those without SCT, while for whites, the risk of having a musculoskeletal defect was 1.7 (95% CI: 1.3, 2.3) times higher for those with SCT compared to those without SCT.

Conclusions:
Through identification of missing and misclassified cases, the MBDR-NBS linkage can help improve program efforts in reporting and follow-up processes. Infants with SCT and SCD may have increased risk of having additional birth defects, but further research is needed to expand knowledge.

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Abstract ID: **1060797** Presentation Type: **Poster Presentation**

Title: **Investigation of a reported cluster of congenital heart defects in Midwest Michigan**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Generating and using county and local-level data for CD/MCH/OrH epidemiology**

Keywords: **Birth defects, Data/Surveillance, Maternal and Child Health**

Abstract Text

Background:
The Michigan Birth Defects Registry (MBDR) is a passive surveillance system, relying on reporting of birth defects from hospitals and laboratories. Besides annual report and quality improvement activities, cluster investigations are conducted as needed by the Birth Defects Follow Up Program staff and epidemiologist. Recently, the Birth Defects Program was contacted by a local health department, regarding community concerns of a possible increase in congenital heart defects (CHD) in Midwest MI. Following the Michigan Department of Community Health (MDCH) cluster investigation protocol, the Birth Defects team used data from the MBDR to compare CHD rates in Midwest MI and surrounding regions to the overall CHD rate in Michigan.

Methods:
Observed and expected numbers and rates of overall and of four specific CHD in Midwest MI, and

surrounding regions, as well as statewide, were determined using MBDR data, for infants born from 1996 to 2006. The Birth Defects Team assessed additional information (including medical, WIC, and Maternal and Infant Health charts) on 11 cases in the region, born from 2007 to 2009, as supplied by the local health department, in order to determine whether cases were etiologically similar or had common underlying causes.

Results:
In MI, the CHD rate increased by 28%, while in Midwest MI, the rate increased by about 17% from 1996 to 2006. From 1992 to 2006, the CHD rates were as follows: Midwest MI had 139.8 (95% CI: 112.0, 167.6) cases per 10,000 live births; surrounding region had 141.4 (95% CI: 136.3, 146.5) cases per 10,000 live births; Michigan overall had 171.1 (95% CI: 170.9, 171.4) cases per 10,000 live births. Rates of the four specific CHD were not higher in Midwest MI than in MI overall. Medical chart reviews revealed that cases had a variety of heart defects and some had isolated heart defects while others had additional birth defects affecting other body systems.

Conclusions:
The CHD rate in Midwest MI was not higher than the rate in the surrounding regions or the State of MI from 1996 to 2006 and the observed number of cases in Midwest MI was lower than the expected number of cases. Review of medical charts revealed that cases were likely not etiologically or developmentally similar. Identification of regions with increased rates of birth defects and cluster investigations can help programs direct prevention efforts and follow-up services to specific regions in need.

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Abstract ID: **1062301** Presentation Type: **Poster Presentation**

Title: **Cancer survivors and risk health behaviors in Florida, 2009**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Epidemiology of other CD/MCH/OrH risk factors**

Keywords: **Behavioral health, Cancer, Chronic diseases**

Abstract Text

Background:
Little information is available on health behavioral factors among cancer survivors at state level. Florida Behavioral Risk Factor Surveillance System (BRFSS) added cancer prevalence questions in the survey in 2008. The BRFSS data provide an opportunity to assess behavioral factors among cancer survivors.

Methods:
Data from the 2009 Florida BRFSS Survey were analyzed. Multivariate logistic regression was used to estimate associations between cancers and health behaviors (tobacco use, binge drinking, overweight/obesity, physical inactivity, fruit/vegetable consumption) adjusting for demographic

covariates.

Results:
2009 Florida BRFSS surveyed 12,055 adults. Around 12.4% adults reported that they had ever been diagnosed with cancer. The average survival length since the first cancer diagnosis was 12 years. More than 65% of the cancer survivors reported being diagnosed 6 or more years ago. Breast, prostate, cervical, and melanoma skin cancers were the most frequently reported cancers. Compared with respondents without cancer, more cancer survivors were older and non-Hispanic whites. Associations of education, marital status and annual household incomes with cancer occurrences were not found. There were no significant associations between cancer and risk behaviors for smoking, drinking, being overweight or obese and fruit/vegetable consumption, but being sedentary (OR: 1.5, CI of 1.1-1.9). The above risk behaviors were not found to be linked to breast cancer among women 40 years and older or prostate cancer among men 45 years and older.

Conclusions:
These findings will help state-based public health planners identify the needs of Florida cancer survivors in certain subpopulations or with certain cancer types (breast, prostate, melanoma) and help to develop interventions to improve the health of cancer survivors.

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Abstract ID: **1057730** Presentation Type: **Poster Presentation**

Title: **Frequency of oral health practices and selected determinants in Puerto Rico**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Oral health epidemiology: surveillance, data systems, or capacity building**

Keywords: **Behavioral health, Oral health, Prevention**

Abstract Text

Background:
There is no current detailed information or statistics about oral health practices and its potential determinants in Puerto Rico. The purpose of this study is to assess the frequency of individuals that “went to the dentist in the last year” as an indicator of good oral health practice in Puerto Rico and identify major determinants.

Methods:
Data were processed and analyzed using the SPSS 18.0. Sampling weights were used to estimate the population distribution of Puerto Rico. The frequency ratio was calculated as a measure of difference. The crude and adjusted frequency ratio were calculated for selected variables while adjusting for all confounders simultaneously. In order to calculate the adjusted frequency ratio, Cox proportional hazards regression was utilized. Given that cross-sectional survey data was used, a constant (1) was utilized as “time of follow-up” in the Cox model.

Results:
The overall frequency of visiting the dentist in the last year in Puerto Rico was 73.0%. Males had 10% lower frequency than females, and the frequency decreased with age. Being married had the highest frequency while couples living together have the lowest. Those living in the Aguadilla region had the highest frequency and living in Fajardo, Arecibo and Ponce had the lowest. The frequency increased with the level of education and with increasing level of income, but decreased as the number of loss teeth increased.

Conclusions:
This is the first oral health practice study based on BRFSS data in Puerto Rico. The results can be used to further investigate each of the determinants found associated with oral health and how to use this information for preventive programs.

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Abstract ID: **1038195** Presentation Type: **Poster Presentation**

Title: **Characteristics of women who smoke before, during and after pregnancy, Pennsylvania Pregnancy Risk Assessment Monitoring System**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Tobacco, alcohol, and substance use epidemiology**

Keywords: **Pregnancy, Smoking, Surveillance**

Abstract Text

Background:
Prenatal smoking is one of the most preventable causes of poor pregnancy and birth outcomes. Historically, smoking rates among Pennsylvania adults have been high; however, little data exists on the prevalence of smoking among pregnant and recently pregnant women and associated characteristics. The objectives of our study were to 1) examine the prevalence of smoking before, during and after pregnancy, and 2) identify the characteristics of smokers during these periods.

Methods:
Data from the 2007-2008 Pennsylvania Pregnancy Risk Assessment Monitoring System (PRAMS), a self-reported, population-based surveillance system on maternal characteristics and behaviors before, during and after pregnancy, were used to estimate preconception, pregnancy, and postpartum smoking rates among 1,778 postpartum women. Chi-square tests and logistic regression models were used to investigate differences in sociodemographic, pregnancy related, and health care utilization characteristics among: 1) pre-pregnancy smokers and nonsmokers; 2) women who continued to smoke during pregnancy and women who quit; and 3) women who relapsed in the postpartum period and women who remained tobacco-free. Data were analyzed using SAS survey procedures weighted to adjust for survey design, noncoverage and nonresponse, and thus were representative of all women

delivering a live-born infant in Pennsylvania.

Results:
28% of women reported smoking three months before pregnancy. Among pre-pregnancy smokers, 55% continued to smoke while pregnant. After adjusting for age, characteristics significantly associated with smoking during pregnancy included unmarried marital status (AOR 1.90, 95% CI 1.15-3.13), < high school education (AOR 3.00, 95% CI 1.85-4.84), low income (AOR 3.18, 95% CI 1.80-5.51), WIC enrollment during pregnancy (AOR 1.74, 95 CI% 1.10-2.8), and no first trimester prenatal care (AOR 4.84, 95% CI 1.75-13.4). Among women who quit smoking during pregnancy, 54% relapsed in the postpartum period. Compared to women remaining tobacco-free, relapsers were more likely to be young (OR 1.50, 95% CI 0.77-2.92), have less education (OR 1.81, 95% CI 0.93-3.51), have a lower income (OR 1.80, 95% CI 0.93-3.47), and receive WIC during pregnancy (OR 1.54, 95% CI 0.80-2.95).

Conclusions:
Although self-reported, the findings suggest substantial numbers of pregnant and recently pregnant women would benefit from comprehensive tobacco control programs. Targeted interventions for young, low-income, and less educated women are needed to increase and sustain smoking cessation in these populations. WIC programs may be one venue to reach such women.

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Abstract ID: **1062765** Presentation Type: **Poster Presentation**

Title: **Barriers to health care access among low income families utilizing Children's Health Insurance Program**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Examining social determinants of health and health disparities in CD/MCH/OrH**

Keywords: **Barriers to care, Health care, Maternal and Child Health**

Abstract Text

Background:
In an effort to increase utilization of preventative care, the University of Nevada, Reno's School of Community Health Sciences in collaboration with the Nevada State Health Division developed a project to provide outreach services to the parents of children newly enrolled in the Children's Health Insurance Program (CHIP). Although CHIP eliminates financial barriers to health care, non-financial barriers still exist. The objective was to identify barriers to health care access in children with special health care needs.

Methods:
We administered the validated Barriers to Care Questionnaire (BCQ) to parents of 620 newly enrolled children in CHIP between November 2008 to May 2009. The BCQ contains a total score and five subscales: skills obtaining health care, pragmatics (i.e. finance and transport), expectations about care, marginalization, and knowledge and beliefs about health care. Larger scores indicate fewer barriers. We assessed BCQ associations with children with medical home, living in urban or rural environments,

presence of siblings, and language spoken at home. We used t-tests and Analysis of Variance to analyze results.

Results:
Of the 356 respondents (57.4% response rate), 84.0% lived in rural areas, 63.2% spoke Spanish, 56.5% had one child, 71.6% had children under age 2, and 83.5% of the children had medical homes. Overall, parents of children without a medical home and living in rural areas experienced greater barriers: total score (Rural vs. Urban: 65.83 vs. 73.00, p=0.02; Medical home vs. No medical home: 73.06 vs. 63.60, p<0.01) , pragmatics (Rural vs. Urban: 60.01 vs. 68.38, p<0.01; Medical home vs. No medical home: 68.59 vs. 57.69, p<0.01), expectations (Rural vs. Urban: 68.40 vs. 75.59, p=0.02; Medical home vs. No medical home: 75.50 vs. 64.68, p<0.01) , and marginalization (Rural vs. Urban: 69.24 vs. 77.68, p=0.01; Medical home vs. No medical home: 75.50 vs. 64.68 , p<0.01). Spanish speakers experienced greater skills barriers than English speakers (62.35 vs. 69.46, p=0.01) and families with more children experienced greater knowledge and beliefs barriers than one child families (79.44 vs. 83.52, p=0.04).

Conclusions:
Non-financial barriers are a significant problem for parents seeking health services for their children. Access to care is more than just entry into the health care system. Barriers to care can affect children's health care at any multiple points in the care process. Identifying barriers is essential to help improve access to care and because barriers are modifiable, these finding may have implications for policy makers and health care providers.

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Abstract ID: **1058982** Presentation Type: **Poster Presentation**

Title: **Ethnic differences in the utility of BMI and waist circumference as screening tools for identifying persons at increased risk for diabetes mellitus in the US Virgin Islands**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Examining social determinants of health and health disparities in CD/MCH/OrH**

Keywords: **Diabetes, Risk Assessment, Social determinants**

Abstract Text

Background:
Waist circumference and Body Mass Index (BMI) are independently associated with insulin resistance (IR). There remains a tendency to consider the inclusion of one or the other anthropometric parameter when formulating screening protocol. This may be problematic as it is suggested that stress mediated IR may be for relevant for Black than White Americans, resulting in a stronger association of waist circumference and less of an association of BMI to IR in Blacks. To assess the need for ethnic group specific screening protocol in the USVI, we examined the interrelationships between anthropometric measures, life stress and IR in samples of Black and White Virgin Islanders and quantitatively

determined the most useful ethnic group specific screening tools for identifying persons at increased risk for IR.

Methods:
Anthropometric data, fasting blood glucose, insulin and serum lipids, together with data on life stress were collected from a randomly selected population-based sample of 908 persons (including 640 Non-Hispanic (NH) Blacks and 34 NH Whites) without a history of diabetes or heart disease. A nested assessment in which the 34 NH White participants were frequency matched by age and immigration status to the 335 NH Blacks was used to evaluate the relationships between anthropometric parameters, IR and life stress. Insulin resistance was estimated by the HOMA method. Life stress was assessed using Rogers Life Attitude Inventory questionnaire. Area under the Receiver Operating Characteristics (ROC) curve statistics were used to assess the ability of BMI, waist and lipid variables to discriminate IR.

Results:
The NH Whites and matched NH Blacks had similar median age (48.1 vs 48.9) and female proportion (66.5% vs 64.7%), respectively. Life stress was significantly correlated to HOMA in the NH Whites (r=.34) and NH Blacks (r=.14). In NH Whites the relationship was attenuated by controlling for BMI (r=.03) and waist (r=.08). In NH Blacks the relationship was attenuated after adjusting for waist (r=.09) not BMI (r=.17), suggesting a more waist-dependent IR in Blacks. ROC analyses showed that waist circumference (ROC = .73) but not BMI (ROC =.69) or triglyceride/HDLc (ROC =.64) was a suitable screening tool for IR in NH Blacks. Waist, BMI, and the triglyceride/HDL c were useful screening tools in other ethnic groups.

Conclusions:
Ethnic group specific screening protocol for IR must be considered in the USVI. The waist circumference is best when a single screening measure for IR is needed.

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Abstract ID: **1056797** Presentation Type: **Poster Presentation**

Title: **Differential effect of cigarette smoking on dyslipidemia in black Virgin Islanders with and without diabetes mellitus ***

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Tobacco, alcohol, and substance use epidemiology**

Keywords: **Cardiovascular disease, Minorities, Smoking**

Abstract Text

Background:
The December 10, 2010 MMWR summary of the Centers for Disease Control's (CDC) BRFSS data reported that the prevalence of smoking (6.4%) and heart disease (5.1%) in the US Virgin Islands (USVI) are the lowest among US jurisdictions despite a high rate of diabetes in the Territory.

Consequently, the value of conducting smoking interventions among diabetic patients in this predominantly Afro-Caribbean population has been questioned. This study was conducted to determine if 1) smoking has a differential effect on serum lipids associated with increased heart disease risk in diabetic and non-diabetic Afro-Caribbean persons living in the USVI and 2) implementation of smoking intervention among diabetic patients by the CDC sponsored Tobacco Prevention Program is warranted.

Methods:
Serum levels of triglycerides, HDL cholesterol, LDL cholesterol and total Cholesterol were determined for randomly selected population-based samples of 127 Afro-Caribbean diabetics and 626 Afro-Caribbean non-diabetics without diagnosed heart disease on the island of St. Croix, USVI. Age- and-sex-adjusted mean lipid values were compared for smokers and non-smokers with and without diabetes. Statistical analyses were performed using Statistical Analysis Software (SAS).

Results:
The frequency of smoking was similar among diabetics and non-diabetics (5.51% vs 5.75%, respectively). There was no difference in mean values for total cholesterol and LDL between smokers and non-smokers in either study group. Among non-diabetics and diabetics, triglyceride values appeared higher for smokers than non smokers, although the differences were not statistically significant. However, HDL values were significantly (p=.0185) lower among smokers than non smokers in the diabetic group (0.96 mmol/l vs 1.25 mmol/l, respectively) while no significant difference in HDL values were observed between smokers and non-smokers in the non-diabetic group (1.23 mmol/l vs 1.27 mmol/l , respectively; p=.4214). These relationships did not change after ajustment for alcohol consumption.

Conclusions:
Significantly reduced levels of HDL cholesterol are associated with smoking in Afro Caribbean diabetics compared to non-diabetics in the USVI. In a population with very low smoking prevalence, increased effort to curb smoking in diabetic patients is warranted.

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Abstract ID: **1062108** Presentation Type: **Poster Presentation**

Title: **The National Park Service Health Promotion Initiative: Strengthening the nexus between public lands and public health**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Physical activity, nutrition, and obesity epidemiology**

Keywords: **Mental health, Nutrition, Physical activity**

Abstract Text

Background:
A growing body of evidence suggests that human health is linked to the health of our natural world. The National Park Service (NPS) Health Promotion Initiative, established in September 2010, seeks to develop a strategic roadmap to guide how parks and partners can best contribute to the health of our nation. Focus areas of the initiative include physical activity, nutrition, and mental health promotion.

Methods:
As initial steps, the NPS Health and Wellness Steering Committee commissioned two priority activities: 1) Development of a baseline inventory and database of Service-wide health promotion programs offered since January 1, 2005, and 2) Hosting a 1.5-day facilitated meeting in April 2011 with ~80 invited stakeholders from diverse backgrounds.

Results:
Based on key informant interviews and a review of NPS databases, we identified 190 park-based health promotion programs representing parks in all 7 NPS regions; an additional 105 community-based health promotion programs were developed with the assistance of NPS personnel. Of the 295 programs, almost all focused on increasing physical activity; 11 programs focused on improving nutrition, and none mentioned mental health promotion as a significant program goal. Approximately 40% of programs—primarily community-based ones—involved collaboration with state/local health departments or other health organizations. For the stakeholders meeting, invited participants included corporate chief executive officers (CEOs), health foundation managers, government officials, researchers, and representatives from state/local health and recreation organizations. Key findings and themes from the meeting will be analyzed and presented.

Conclusions:
The National Park Service is already engaged in myriad health promotion activities, but most programs are focused solely on physical activity and have limited involvement with health partners. Increased collaboration with state/local health departments is critical for gaining credibility with the general public and expanding program content and reach.

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Abstract ID: **1062666** Presentation Type: **Poster Presentation**

Title: **Correlation of socioeconomic factors with cardiovascular disease burden in Maryland jurisdictions**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Examining social determinants of health and health disparities in CD/MCH/OrH**

Keywords: **Cardiovascular disease, Epidemiology, Social determinants**

Abstract Text

Background:

Heart disease and stroke are the first and third leading causes of death in Maryland. No jurisdiction-level analysis on the correlation of cardiovascular disease burden (premature death, hospitalization, and prevalence) with socioeconomic factors exists. The study objective was to determine by jurisdiction the relationship between socioeconomic factors and cardiovascular disease burden (i.e., years of potential life lost, YPLL, per 100,000 population, hospital discharges, prevalence, and their related risk factors).

Methods:
Socioeconomic factor rankings for Maryland jurisdictions were collected from County Health Rankings (2005-2008). YPLL rates measured the number of years not lived by each individual who died before 75, normalized per 100,000 population. Hospital discharge rates from cardiovascular disease were calculated as age-adjusted rates per 100,000 population. Death and hospital discharge data are from Maryland Assessment Tool for Community Health (MATCH, 2005-2009), and the prevalence of heart disease, stroke, and their risk factors from Maryland BRFSS (2005-2008). Descriptive and Spearman correlation coefficient analyses were conducted with SAS.

Results:
The data elucidated differences in YPLL rates of heart attack, coronary heart disease, hypertensive heart disease, heart failure and stroke between Maryland jurisdictions. Results showed socioeconomic factors are positively correlated to the YPLL of various types of heart disease: coronary heart disease (correlation coefficient (r) = 0.84, $p<0.0001$); hypertensive heart disease ($r=0.77$, $p<0.0001$) and heart attack ($r=0.62$, $p=0.001$). This correlation was also observed between socioeconomic factors and hospital discharges for hypertension, heart failure, coronary heart disease and heart attack hospital discharges. Similarly, socioeconomic factors correlated with prevalence of heart attack, angina and stroke, high blood pressure and high cholesterol. Of the five socioeconomic factors used in the rankings, the jurisdiction's unemployment rate was most significantly positively correlated to a jurisdiction's cardiovascular disease burden.

Conclusions:
Premature cardiovascular disease mortality, hospital discharge rates, prevalence of cardiovascular disease and related risk factors vary by jurisdiction in Maryland jurisdictions. Further analyses suggest positive correlation between higher rankings for socioeconomic factors and higher rates of premature death, hospitalization, and disease prevalence, with unemployment as the most important socioeconomic factor. Similar analyses can be used for program planning and policy development.

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Abstract ID: **1060506** Presentation Type: **Poster Presentation**

Title: **Using secondary data to monitor racial and ethnic minority health disparities in Michigan: The Michigan Health Equity Data Project ***

Committee: **Cross Cutting**

Topic: **Best epidemiologic practices to show health disparities**

Keywords: **Data/Surveillance, Health disparities, Minority Health**

Abstract Text

Background:
African Americans, American Indians/Alaskan Natives, Arab Americans, Asian Americans, and Hispanics/Latinos together comprise 22.5% of Michigan's total population. Tracking racial/ethnic minority health disparities can be challenging due to variation in data available from varied and non-integrated sources. Information on race/ethnicity may be either missing or inaccurate, and reporting methods are inconsistent between sources. The Health Equity Data Project (HEDP) compiles data for eighteen priority indicators for each population across consistent time periods so that disparities can be identified and monitored.

Methods:
Eighteen indicators were chosen to provide a comprehensive description of health outcomes and health risks, including social determinants of health. Data were gathered from secondary data sources, including vital records, the Behavioral Risk Factor Survey, and census data. Four standard measures were used to evaluate health disparities: pairwise disparity, change in pairwise disparity over time, population-wide disparity, and change in population disparity over time. For each indicator, absolute and relative differences between each minority population and the reference white population were calculated for two time periods, 2000-2004 and 2005-2009. The percent change in the relative difference for each indicator was used to evaluate whether inequity for each population increased or decreased over time. In addition, an Index of Disparity (ID) was calculated to indicate subpopulation variation around the total population rate, which was used to assess population-wide disparity. Change in population-wide disparity over time was measured by the absolute difference in ID.

Results:
Among all pairwise comparisons, the smallest relative difference was unhealthy mental days between Asians and Whites; in 2001-2003 Asians had 0.2 times that of Whites. The largest relative difference was gonorrhea incidence between Blacks and Whites; in 2003 Blacks had 31.6 times that of Whites. Among all indicators, the largest population disparity was for gonorrhea incidence in 2003 (117.3%), while the smallest was for household income in 2000 (16.4%). Between 2000 and 2009, the indicator showing the greatest decrease in population disparity was unemployment rate (-37.6%), while the indicator showing the greatest increase was unhealthy physical days (18.7%).

Conclusions:
There was great variation among populations and indicators in the magnitude of disparity and how disparity changed over time. The HEDP identifies disproportionate health exposures and outcomes in racial/ethnic minority populations and uses four standard measures to monitor progress toward reducing disparities. Results can be used to focus interventions to reduce disparities. These methods can be adopted by local health departments and by other states.

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Abstract ID: **1061391** Presentation Type: **Poster Presentation**

Title: **Differences in risky behaviors between nondrinkers and current drinkers in Michigan youth - 2009 ***

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Adolescent health, Alcohol Use, Injury**

Abstract Text

Background:
Alcohol is the most commonly used substance among Michigan adolescents. A number of studies have shown the harmful health and social consequences of underage drinking, such as getting into fights or arguments, missing school, driving after drinking, engaging in suicidal behavior and risky sexual behavior. The leading causes of death for the teenage population throughout the period of 1999 through 2006 were: unintentional injuries, including motor vehicle crashes (48%), homicide (13%) and suicide (11%). The Youth Risk Behavior Surveillance System was created to monitor the prevalence of health-risk behaviors among high school youth that contribute to the leading causes of morbidity and mortality. The purpose of this analysis is to examine the prevalence of risky behaviors between drinking and nondrinking Michigan youth.

Methods:
Data were obtained from the Michigan Youth Risk Behavior Survey (MiYRBS), a biennial school-based anonymous survey of 9-12 grade students designed to produce representative statewide estimates of health risk behaviors among high school students. The self-administered questionnaire collects information on six health topics including 35 questions on risky behavior, including two on alcohol use. In 2009, 3,411 Michigan 9-12 grade students in 43 public schools completed the survey and were included in this analysis.
SAS 9.2 was used to generate prevalence estimates from the weighted sample and chi-square tests were used to examine the associations between drinking and risky behavior. “Nondrinkers” reported not drinking any alcohol in the past 30 days. “Current drinkers” reported having at least one drink of alcohol in the past 30 days.

Results:
Current drinkers were significantly ($p < 0.05$) more likely to report engaging in 23 out of 35 risky behaviors compared to nondrinkers. Some examples of riskier behavior in drinkers compared to nondrinkers were: carrying a weapon (23.2% v. 10.1%), being in a physical fight (44.6% v. 20.0%), feeling sad for two consistent weeks (35.7% v. 21.4%), ever having sex (69.1% v. 28.9%), ever been physically forced to have sex (14.6% v. 6.2%), having four or more sexual partners (25.7% v. 6.0%), fasting for 24 or more hours (17.7% v. 7.5%), using diet pills to lose weight (9.4% v. 3.7%), riding with a drinking driver (17.2% v. 7.9%) and driving after drinking alcohol (8.6% v. 0.0%).

Conclusions:
Michigan youth who consumed alcohol were more likely to engage in multiple risky behaviors, which were reported as two-to-four times more common in drinkers than in nondrinkers.

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Abstract ID: **1053582** Presentation Type: **Poster Presentation**

Title: **Evaluation of the Youth Risk Behavior Surveillance System (YRBSS) for monitoring co-occurrence of drug use and depressive feelings among Michigan youth, 2003-2009**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Evaluation, Substance abuse, Surveillance**

Abstract Text

Background:
Community studies have revealed that 60% of youth with substance use, abuse, or dependence also have a co-morbid psychiatric condition such as depression. Youth with co-occurring disorders are at increased risk for damaging consequences including suicide and treatment failure. The Youth Risk Behavior Surveillance System (YRBSS) collects data on reported drug use and depressive feelings among high school students. We evaluated Michigan's Youth Risk Behavior Survey (YRBS) to examine the utility of the YRBS in monitoring co-occurrence of drug use and depressive feelings among Michigan youth.

Methods:
The evaluation was conducted using the 2001 CDC Updated Guidelines for Evaluating Public Health Surveillance Systems. We evaluated the surveillance system's simplicity, flexibility, data quality, acceptability, representativeness, timeliness, and stability using Michigan YRBS data from 2003-2009. To supplement the evaluation, we compared Michigan's co-occurrence estimates to 2006-2008 data from the National Survey on Drug Use and Health (NSDUH), a nationally representative survey. Large discrepancies in the depression case definitions prevented a direct comparison. Michigan YRBS data from 2003-2009 was examined to determine depressive feelings and drug usage co-occurrence estimates.

Results:
The Michigan YRBS scored high on flexibility, acceptability, stability; fair on simplicity, data quality, timeliness; and poor on representativeness. Data from 2009 Michigan YRBS found 15.2% of youth reported co-occurrence of past year depressive feelings and lifetime illicit drug use, while the reported co-occurrence of depressive feelings and current illicit drug use was 9.4%. Data from 2006-2008 NSDUH found 5.5% of Michigan youth reported past year major depressive episode (MDE) and lifetime illicit drug use and 2.2% reported past year MDE and past month illicit drug use co-occurrence. According to the Michigan YRBS, the co-occurrence of past year depressive feelings and lifetime illicit drug use as well as co-occurrence of past year depressive feelings and current illicit drug use remained relatively stable among youth 2003-2009.

Conclusions:
Strengths of the Michigan YRBS include: flexibility to include state-specific questions addressing illicit drug use; high acceptability at the state and community level; and stable resources from CDC to allow collection of risk behaviors. The largest limitation is that results are only representative of non-institutionalized youth attending public schools, thus underreporting co-occurrence estimates. Co-occurrence estimates were found to be significantly higher in the YRBS compared to the NSDUH. This can be attributed, in part, to case definition differences for the depression questions. Results from the

YRBS should be interpreted with caution since the survey measures depressive feelings, not depression.

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Abstract ID: **1060564** Presentation Type: **Poster Presentation**

Title: **Quarterly estimates of 2009 health insurance coverage among U.S. young adults based on analyses of Behavioral Risk Factor Surveillance System data**

Committee: **Cross Cutting**

Topic: **Best epidemiologic practices to show health disparities**

Keywords: **Epidemiologic methods, Health disparities, Health insurance**

Abstract Text

Background:
Lack of health insurance coverage can have a wide range of effects, including reduced health care access and poor health outcomes. Young adults are especially susceptible to changes in insurance coverage.

Methods:
Using data from the Behavioral Risk Factor Surveillance System, we estimated the percentage of U.S. residents aged 18-25 years without health insurance during each quarter of 2009, overall and by race/ethnicity.

Results:
Overall quarterly estimates were 29.9% (95% confidence interval [CI]: 27.1-33.0), 26.9% (95% CI: 24.5-29.5), 28.9% (95% CI: 26.4-31.4), and 33.2% (95% CI: 30.4-36.0). Estimates were consistently highest among Hispanics, lower among blacks, and lowest among whites. The prevalence of no health insurance increased significantly among Hispanics over the four quarters (40.6%, 40.5%, 44.9%, and 48.1%; P for trend <0.05) and among blacks in the last quarter (32.9%, 29.2%, 33.6%, and 40.5%; P for quadratic term <0.05) but did not change significantly among whites (25.0%, 21.3%, 23.8%, and 24.5%). From the first to the fourth quarter, the difference between Hispanics and whites increased from 15.1% to 23.6% and that between blacks and whites increased from 7.9% to 16.0%.

Conclusions:
During 2009, nearly one-third of U.S. young adults lacked health care coverage. The percentage with no coverage was higher among Hispanics and blacks than among whites, and these disparities appeared to worsen during the year. Analyses of quarterly health insurance coverage data can help identify changes and disparities in the prevalence of coverage and suggest approaches to increasing coverage in underserved groups.

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Abstract ID: **1062735** Presentation Type: **Poster Presentation**

Title: **Health inequities and poverty masked by affluence in Marin County, California**

Committee: **Cross Cutting**

Topic: **Best epidemiologic practices to show health disparities**

Keywords: **Epidemiology, Health disparities, Local epidemiology**

Abstract Text

Background:
Countywide health reports in affluent counties like Marin County often mask serious health inequities that exist among its residents. Marin County was recently ranked first in California in both health outcomes and health factors in the University of Wisconsin's Population Health Institute and the Robert Wood Johnson Foundation’s 2010 County Health Rankings; however, Marin scored poorly in income inequality, which signals poor distribution of resources among residents. While many Marin residents enjoy affluence and good health, 35% of Marin households live below the sustainability level. Additional local analyses showed that location, education, and/or income affected individual health behaviors as well as health outcomes such as life expectancy within Marin County.

Methods:
Age-adjusted death rates were calculated using mortality data from California Vital Statistics, 2008 to determine leading causes of death in Marin. Life expectancy was calculated using data from the California Electronic Death Registration System (CA-EDRS) 2005-2010, and mapped by census tract. Health risk factor and outcome data from the California Health Interview Survey (CHIS, 2009) were stratified by income and education and analyzed among Marin residents over 25 years of age.

Results:
Life expectancy and poverty varied geographically by census tract in Marin County. Self-reported health varied significantly by income and education. Compared with adults in the highest income group (6%), adults in the lowest income group (42%) were more likely to be in fair or poor health. Compared with college graduates, adults who have not finished high school (44%) were more likely to be in fair/poor health (6%). Other health risk factors and outcomes including alcohol consumption, binge drinking, smoking, obesity, fruit/vegetable consumption, and physical activity levels also varied significantly by income and/or education.

Conclusions:
Overall, Marin County enjoys high levels of health and affluence; however, it also has its own set of challenges. The county experiences a high degree of income inequality. This unequal distribution of resources can lead to negative impacts on social relations, cultural and social assets, and ultimately negative health consequences and health behaviors, illustrated by pockets of poverty where life expectancy is lower than surrounding areas. Furthermore, residents with low education levels and low incomes experienced poorer health outcomes and greater levels of modifiable risk factors which contribute to the leading causes of death in Marin. Incorporating a public health focus in public policy and organizational practices with an emphasis on communities at risk can improve the health and well

being of all Marin residents.

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Abstract ID: **1061584** Presentation Type: **Poster Presentation**

Title: **Policy effects on young adult fatal alcohol-related crash rates: 1998-2006 ***

Committee: **Cross Cutting**

Topic: **Assessing the impact of public health laws and policies**

Keywords: **Alcohol, Policy/Policy Development, Safety**

Abstract Text

Background:
How did the tightening of BAC standards affect young adult fatal alcohol crash rates between 1998 and 2006, and how did this compare with other policies?

Methods:
This study uses methods presented in 2009 and 2010 CSTE conference "Policy effects on fatal alcohol-related crash rates" posters, focusing on young adult fatal crash rates. Annual county level young adult fatal alcohol-related accident rates were regressed by year against state BAC standards and other policy variables, alcohol sales per capita, vehicle miles traveled, and county young adult rates, among others.

Results:
These data and methods capture some of the variation in young adult fatal alcohol-related crash rates. While alcohol sales and vehicle miles traveled per capita had significant positive effects on alcohol-related fatal crash rates in most years, tightening BAC standards had a significant reductive effect in many years as well.

Conclusions:
BAC standards were the most consistently significant policy predictor of young adult fatal alcohol-related crash rates by county, but other policies also showed reductive effects.

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Abstract ID: **1062123** Presentation Type: **Poster Presentation**

Title: **Racial difference in mortality among EMS Transported patients: A population based analysis**

Committee: **Cross Cutting**

Topic: **Health disparities due to socioeconomic factors**

Keywords: **Emergency response, Health care, Health disparities**

Abstract Text

Background:
Racial disparity in hospital treatments and outcomes has been discussed in various literature. But few tracked throughout the health care system, from EMS to hospitals, and to deaths. This study uses linked state-wide EMS, hospital discharge and mortality data to examine whether racial differences exist in mortality among patients who were transported to hospitals by EMS.

Methods:
EMS run time and time gap between hospital discharge and death were analyzed based on linked EMS, hospital discharge and mortality data. Race specific EMS run time was crosstabulated with chief complaint, between urban and rural areas, and between types of EMS services.

Results:
EMS run time was not significantly different between different racial groups or different disease types. However racial differences were found in time between the last hospital discharge and death.

Conclusions:
Racial differences in mortality among EMS transported patients could be attributed to factors occurred during and after hospital treatment, rather than pre-hospital transportation.

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Abstract ID: **1055250** Presentation Type: **Poster Presentation**

Title: **Investigation of a TCE site in Pennsylvania**

Committee: **Environmental Health**

Topic: **ATSDR's Health Assessment Program: An update on state activities, collaboration, challenges, opportunities for the future**

Keywords: **Cancer, Environmental exposures, Water**

Abstract Text

Background:
For decades, trichloroethylene (TCE) was commonly used as an industrial solvent in the United States. Seepage from industrial sources into surrounding groundwater makes TCE one of the most common chemicals of concern from hazardous waste sites, including those in Pennsylvania. Communities often petition health agencies alleging detrimental health impacts from TCE exposure, leading to extended investigations. The Pennsylvania Department of Health's (PADOH's) and Agency for Toxic Substances and Disease Registry's (ATSDR's) assessment of one such site in northeastern PA where residents claimed cancerous and non-cancerous health effects is described. This site involves a manufacturing plant of large pressure vessels that closed in 1984 from which a plume of TCE contaminated groundwater of the surrounding community. To reduce exposure risks, affected homes were removed from private wells and placed on municipal water.

Methods:
In 2010, available surface water, groundwater, and soil/gas indoor air sampling data were reviewed and theoretical exposure doses for cancerous and non-cancerous effects were calculated. To assess cancer incidence, state cancer registry data for 1996-2007 were reviewed for the surrounding zip code and compared to statewide rates to calculate standardized mortality ratios (SMRs).

Results:
A total of 29 residential wells near the site were contaminated with TCE above EPA's Safe Drinking Water Act maximum contaminant level, but since residents do not drink this water, no risk for this route of exposure was identified. Residential air sampling found the highest detected level of TCE (7µg/m3) was 70 times lower than the minimum risk level. TCE was identified in 31% of surface water samples, but this is not considered a significant route of exposure. The overall SMR for the local zip code was 0.89; the distribution of cancer types and SMRs showed no unusual deviations from statewide patterns.

Conclusions:
Despite high levels of TCE in well water, the switch to municipal water and lack of TCE exposure through other routes (e.g. air) led to a conclusion that water sources in the community are not expected to harm the public's health. Availability of cancer registry data supported this conclusion by finding no evidence of unusual incidence or patterns of cancer in the surrounding community. Multiple reports have been published and public meetings conducted to convey this information to the community. This approach can be adapted to a wide variety of settings when community concerns about TCE arise.

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Abstract ID: **1061822** Presentation Type: **Poster Presentation**

Title: **Elevated blood lead levels among refugee children in Florida: Is country of origin a significant risk factor?**

Committee: **Environmental Health**

Topic: **Challenging state-based environmental epidemiology investigations: lessons learned and collaborative efforts**

Keywords: **Data/Surveillance, Environmental Health, Risk Assessment**

Abstract Text

Background:
Refugee children may be at higher risk for lead poisoning than children born in the United States (US), (Schwemberger et al., 2005). Refugees are presumed to have been exposed to lead in their country of origin from a variety of sources such as leaded gasoline and industrial lead exhaust. Cultural practices such as use of herbal remedies, cosmetics, and spices containing lead are also potential sources for lead exposure among refugees (Romieu et al., 199). Generally, refugees resettle in the US into older, inner-city housing with a high potential for exposure to lead-based paints (Schwemberger et al., 2005). The CDC recommended that all refugee children 6 months to 16 years should receive lead poisoning screening within 90 days after arrival into the US and refugee children 6 months to 6 years should receive follow up blood lead tests 3 to 6 months after placement in a permanent US residence,(CDC, 2005).

Methods:
A cross-sectional study design was employed to determine the prevalence of elevated BLLs among refugee children upon arrival and after resettlement in Florida. The Refugee health assessment data for the period October 1, 2008 to, September 30, 2009 were linked to the childhood blood lead test data for the period October 1, 2008 to December 31, 2009 to obtain refugee children with reported initial and follow up blood lead test results. Analyses were conducted to determine the demographic characteristics and lead exposure risks among the refugee children sampled. The hypothesis that country of origin is a significant risk factor for elevated BLLs among refugee children was tested using multivariate logistic regression models. Age and gender were also examined as potential predictors of elevated BLLs.

Results:
Initial blood lead test data were available for 564 (51 percent) of newly arrived refugee children, ages 6 months to 16 years old. Ninety nine percent of the matched refugee children received an initial blood lead test within the required timeframe of 90 days upon arrival in Florida. Of these 564 refugee children, 3.0 percent (n=17) had elevated BLLs ≥ 10µg/dL. Fifteen (8.5 percent) of 176 refugee children, ages 6 months to 5 years old, received follow blood lead tests within six months of arrival regardless of initial BLLs. Elevated BLLs was found to be significantly associated with country of origin among refugee children with reported blood lead tests. Refugee children that emigrated from countries other than Cuba were 90 percent less likely to have elevated BLLs. Conversely, age and gender were not found to be associated with elevated BLLs.

Conclusions:
Three percent of refugee children who received initial blood lead tests in Florida had an elevated BLL. This rate was higher than the rates reported for the general population of children who were tested for lead poisoning in Florida in 2009. Refugee children who arrived from countries other than Cuba were less likely to have elevated BLLs.

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Abstract ID: **1055756** Presentation Type: **Poster Presentation**

Title: **Asthma and air pollution: Associations between asthma emergency department visits, $PM_{2.5}$ levels, and temperature inversions in Salt Lake County, Utah**

Committee: **Environmental Health**

Topic: **Air and water quality related to environmental epidemiology**

Keywords: **Air pollutants, Air quality, Asthma**

Abstract Text

Background:
Temperature inversions are common in Salt Lake County, Utah, specifically during the winter months December - February. Inversions contribute to poor air quality, primarily increased levels of particulate matter. In Salt Lake County, Utah, the degree to which people with asthma are affected by exposure to increased pollution levels during inversions, including $PM_{2.5}$, has previously been unknown. The objective of this study was to assess the risk of emergency department (ED) visits for asthma associated with temperature inversions and increases in $PM_{2.5}$ levels.

Methods:
ED visits for asthma and data on demographics, weather, inversions, and air pollutants (CO, SO_2, NO_2, PM_{10}, and O_3) were obtained for Salt Lake County during December-February, 2006-2007 and 2007-2008. During that time period, 1,373 records with a primary diagnosis of asthma were identified using ICD-9 code 493. A time-stratified case-crossover design was used to identify index times and referent times for each asthma visit. Odds ratios estimating the relative risk of an asthma ED visit due to inversions and $PM_{2.5}$ levels were derived using conditional logistic regression.

Results:
After adjustment for temperature and air pollutants (NO_2, SO_2, O_3), an ED visit with a primary diagnosis of asthma showed no association with increases in ambient $PM_{2.5}$ levels, including up to three days lag time. An association was found between prolonged inversions and primary ED visits for asthma. The odds of an ED visit for asthma during the 5th-7th day of a continuous inversion were 1.42 (1.02-1.96) times the odds of an ED visit for asthma on a day when there was no inversion. No correlation was found between days 1-2 or 3-4 of an inversion and ED visits for asthma.

Conclusions:
We found no evidence of an association between increases in ambient $PM_{2.5}$ levels and ED visits for asthma. We did find an association between asthma ED visits and prolonged inversions lasting 5-7 days, indicating that the length of an inversion is more highly associated with asthma ED visits rather than merely the presence of an inversion. Results suggest that prolonged exposure to air pollutants during a lengthy inversion may have a cumulative effect on one's asthma.

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Abstract ID: **1062063** Presentation Type: **Poster Presentation**

Title: **New York State Great Lakes biomonitoring project**

Committee: **Environmental Health**

Topic: **Biomonitoring**

Keywords: **Biomonitoring, Environmental exposures**

Abstract Text

Background:
The New York State Department of Health (NYS DOH) has been funded by the Agency for Toxic Substances and Disease Registry (ATSDR) to provide a baseline assessment of exposures to legacy contaminants associated with past industrial pollution of the Great Lakes. There are five active Great Lakes Areas of Concern (AOC) in NYS. The AOCs are the most severely impacted areas in the Great Lakes Basin with regard to aquatic life and associated human exposure risks. Four of the five active AOCs in NYS are in the State's Western Region: the Buffalo River, Niagara River, Eighteenmile Creek; and Rochester Embayment on Lake Ontario.

Methods:
Anglers are assumed to be the population at highest risk of exposure to Great Lakes legacy contaminants. NYS DOH is developing a plan to conduct biomonitoring among NYS anglers who fish in the Western Region. The NYS fishing license database will be used to identify the primary sampling frame for people who fish in bodies of water in Western NY, including the four AOCs. Because subsistence anglers, who are less likely to have fishing licenses, may be the population most susceptible to elevated exposures from Great Lakes pollutants, alternative methods, including response driven sampling and possibly venue sampling, will be used to assure participation of subsistence anglers. The program requires evaluation of the following analytes: eight PCB congeners, mercury and lead, mirex, hexacholorbenzene (HCB), and DDT/DDE. NYS also plans to include the following: 22 additional PCB congeners, polybrominated diphenyl ethers (PBDEs), cadmium, perfluorinated compounds (PFCs), benzo(a)pyrene, dieldrin, toxaphene, chlordane, omega-3 fatty acids, blood lipids, and urine creatinine. Combinations of the proposed analytes are found in all of the NYS AOCs.

Results:
To date, NYS is working closely with ATSDR and two other states funded by this program to develop appropriate elements of a common approach, such as standardized questionnaire modules to facilitate pooling of appropriate information for the baseline assessment of body burdens for some analytes. Some large differences in approach among the three states are reflected in other plans that are unique to each state.

Conclusions:
The overarching goal of the biomonitoring program is to develop information and actions that can contribute to reducing and preventing exposures to Great Lakes contaminants. Careful attention is

being paid to current fish advisory information and communication strategies, and how this project may contribute to improving the information provided or the methods of disseminating such information.

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Abstract ID: **1060508** Presentation Type: **Poster Presentation**

Title: **Health Impact Assessment in action in Wisconsin**

Committee: **Environmental Health**

Topic: **Practical application of health impact assessments**

Keywords: **Assessments, Built environment Â**

Abstract Text

Background:
Health Impact Assessment (HIA) is a framework for inserting health into policy conversations where it has previously been absent (e.g., land use, transportation, climate change). The Wisconsin Bureau of Environmental and Occupational Health (BEOH) received a second year of HIA funding from the Association of State and Territorial Health Officials (ASTHO), and is working to enhance the collaborative networks and capabilities among state and local partners to implement HIA. This presentation will give an overview of HIA and HIA capacity building and implementation efforts in Wisconsin.

Methods:
The main capacity building initiatives were to provide three local health departments (LHDs) with funding to conduct rapid HIAs, continue training LHDs and state level employees, and develop HIA indicators. A training was developed and conducted specifically for the Communities Putting Prevention to Work grantees and their partners. HIA training and technical assistance were provided to the mini-grant recipients, their community stakeholders, and other partners as needed. Case studies relevant to current Wisconsin issues were developed for the training with the intention of jumpstarting a rapid HIA. In-depth interviews with training participants and mini grant recipients were conducted to evaluate the trainings and technical assistance provided.

Results:
Three Wisconsin LHDs were funded ($10,000 each) to conduct rapid HIAs focused on a proposed concentrated animal feeding operation, alcohol outlet density policies, and open air burning policies. The mini-grants were implemented from November 15th, 2010 to May 15th, 2011. An overview and lessons learned from these projects will be presented. In addition, outreach activities to housing authorities, social development organizations, and new public health employees will be discussed, as well as the development of HIA indicators. Several new partnerships were developed and existing relationships fortified with state agencies, including the Wisconsin Departments of Administration, Energy Independence, Natural Resources, and Transportation, along with local agencies, including non-profit/advocacy groups, planning commissions, and transit authorities.

Conclusions:

Wisconsin's Bureau of Environmental and Occupational Health has been significantly involved in building HIA capacity throughout the state over the last 2 years. Lessons learned from this initiative, Wisconsin-specific examples of HIA case studies, a Wisconsin-specific HIA toolkit, and current and future opportunities for implementation will help provide guidance to other states looking to build HIA capacity.

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Abstract ID: **1051532** Presentation Type: **Poster Presentation**

Title: **BRFSS methodology used to evaluate EPHT outcome measures and health care access disparities in Spanish-only speakers living in Baltimore city or Baltimore county**

Committee: **Environmental Health**

Topic: **Environmental Public Health Tracking**

Keywords: **Asthma, Barriers to care, Environmental Health hazards**

Abstract Text

Background:
The Environmental Public Health Tracking (EPHT) initiative is currently utilizing retrospectively obtained measures for a variety of environmental hazards and chronic diseases or other health outcomes. EPHT data can be used to document how environmental hazards are associated with different health outcomes in populations. Based on Maryland Tracking Network (MTN) public portal data, http://eh.dhmh.md.gov/tracking/, between 2000 and 2006 for asthma, acute Myocardial Infarction, births and deaths, the average increase was 125.3% for Hispanics and 0.8% for non-Hispanics. The Behavioral Risk Factor Surveillance System (BRFSS) is another source of EPHT-relevant information as well as information about barriers to health care access. The BRFSS is administered by telephone each year in all of the states in the USA. The BRFSS questionnaire is administered in English, Spanish and many other languages. This poster will describe how the BRFSS instrument and methodology are now being used to evaluate EPHT-like measures and barriers to health care access in Spanish-only speakers who live in Baltimore City or Baltimore County.

Methods:
The Environmental Health Spanish Survey (EHSS) includes 33 BRFSS questions and seven BRFSS-formatted items written by the authors in English and translated into Spanish spoken in the Americas. The EHSS is administered to clients of a not-for-profit service referral agency in Baltimore, Maryland. Client recruitment and testing are in Spanish. Environmental hazards questions focused on pesticides and the chronic disease of interest was asthma. The EHSS can be administered in less than 20 minutes. The surveillance protocol was approved by the Maryland Department of Health and Mental Hygiene (DHMH) Institutional Review Board (IRB).

Results:
Of the 266 persons who were asked to participate, 178 (66.9%) agreed. Of the study participants, 177 (99.4%) completed the EHSS--one did not. Only minor adjustments have been made to the testing protocol. Based on reports from the trained bi-lingual English-Spanish EHSS survey administrators, lack of time determined why 88 (33.1%) of the approached clients declined participation. For some participants, the administrators had to explain the difference between a land-line telephone and a cellular telephone, and how Health Maintenance Organization (HMO) insurance coverage is different from private health insurance. No adverse outcomes have occurred.

Conclusions:
This study demonstrated that is it possible to use the BRFSS questionnaire and methodology to obtain EPHT prevalence data and evaluate risk behaviors and preventive health practices from Spanish-only speakers in a community setting.

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Abstract ID: **1055902** Presentation Type: **Poster Presentation**

Title: **2006 â€“ 2009 Pennsylvania inpatient hospitalizations rates with a primary discharge diagnosis of asthma**

Committee: **Environmental Health**

Topic: **Other Emerging Environmental Epidemiology Issues**

Keywords: **Asthma, Hospital data, Surveillance**

Abstract Text

Background:
Asthma is a chronic and potentially serious respiratory disease that, if not treated, can cause permanent lung damage, disability and even death. According to reports from the Centers for Disease Control and Prevention, every year a hundred thousand hospitalizations due to asthma occur in the USA. Data were reviewed for the years 2006-2009 to assess asthma hospitalization rates and patterns in Pennsylvania's general population.

Methods:
Asthma hospitalization data were provided by the Pennsylvania Health Care Cost Containment Council (PHC4). The unit of analysis for this report is asthma as the primary discharge diagnosis, ICD-9 (493.00-493.99). Only Pennsylvania residents who were admitted to hospitals in the Commonwealth are included. Data were analyzed using SAS 9.1.3 and Excel. Rates were age adjusted to the 2000 US standard population using the direct method. Crude rates were calculated per 10,000 Pennsylvania residents.

Results:
Over the 4-year period, hospitalizations rates for the five age groups were: 0-4 (45.7 per 10,000), 5-14 (18.5), 15-34 (8.2), 35-64 (18.9) and 65+ (28.2). The lowest overall rate of hospitalization occurred in 2007 (18.4) while the highest was in 2009 (19.4). Overall hospitalization rates were consistently higher for females (22.6) than males (14.7); although rates were higher for younger males than females (57.1 per 10,000 vs. 33.7 per 10,000 for age group 0-4), and higher for older females than males (35.4 vs. 17.9 in those aged 65 years and over). Blacks were significantly more likely to be hospitalized for asthma than whites (60.9 vs. 11.7).

Conclusions:
The patterns of asthma hospitalization in Pennsylvania suggest that the very young and elderly, females and minorities are more likely to be hospitalized for asthma than the rest of the population. These findings are similar to national patterns. For 2006-2008, overall hospitalization rates in PA are higher than national estimates. Further studies are needed to assess the factors responsible for these demographic differences.

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Abstract ID: **1062428** Presentation Type: **Poster Presentation**

Title: **Utilizing an existing state public health data warehouse to build an Environmental Public Health Tracking Network**

Committee: **Environmental Health**

Topic: **Environmental Public Health Tracking**

Keywords: **Accreditation, Environmental Health**

Abstract Text

Background:
In December 2007, the Iowa Public Health Standards, the state criteria for public health accreditation, outlined the need for the development of a statewide public health data warehouse. Since the publication of the Iowa Public Health Standards, the Iowa Department of Public Health (IDPH) has been working to build a public health data warehouse. The data warehouse shall organize and store data from a variety of datasets with health outcomes and allow for data dissemination via a Web-based application.
In August 2010, IDPH was awarded funding from the Centers for Disease Control to develop an Environmental Public Health Tracking (Tracking) Network. The Tracking Network is a collection of national, state, and local web-based portals that provide access to data about environmental hazards, exposures, and health outcomes. The mission and goals of the Tracking Network align closely with the Iowa public health data warehouse project.

Methods:
To plan for the integration and implementation of the Tracking Network at IDPH, the authors conducted a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of utilizing the existing public health data warehouse at IDPH to build the Tracking Network.

Results:
The outcomes of the SWOT analysis identified several strengths and opportunities for using the data warehouse to build the Tracking Network and minimal weaknesses and threats. Strengths include increased efficiency and consolidation of resources while weaknesses identified include potential differing of goals of the final product. Opportunities include having environmental and health data in one location, and being able to have a comprehensive and expandable final product. Threats identified include assuring consistent and sustainable funding over three different divisions within the department. A visual representation of the SWOT analysis and the organizational structure of the Iowa Tracking Network will be presented at the CSTE conference.

Conclusions:
The SWOT analysis allowed for strategic planning for the Iowa Tracking Network, and it shows that integrating the Iowa Tracking network into the existing data warehouse would be the most effective way to meet both the requirements of the Tracking Program and the needs identified in the Iowa Public Health Standards.

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Abstract ID: **1054691** Presentation Type: **Poster Presentation**

Title: **American Red Cross disaster-related mortality surveillance system during Hurricane Ike - Texas, 2008**

Committee: **Environmental Health**

Topic: **Natural disasters: surveillance and monitoring**

Keywords: **Data/Surveillance, Disasters, Evaluation**

Abstract Text

Background:
Disaster-related mortality is preventable by understanding the common circumstances that cause deaths during a disaster. Although frequency of disaster-related deaths is recorded, circumstances surrounding deaths rarely are. American Red Cross, with CDC collaboration, conducts disaster-related mortality surveillance in all states. Texas' Department of State Health Services (DSHS) also conducts active disaster-related mortality surveillance. During Hurricane Ike, both systems were activated. We compared results from the systems to assess quality, validity, and representativeness of data collected in the Red Cross system.

Methods:
We interviewed Red Cross and CDC staff responsible for the system and additional stakeholders. We compared Ike-related data captured by Red Cross with DSHS data, using DSHS as the gold standard. To assess data quality, we calculated proportion of deaths with complete data for key variables (e.g. cause and circumstances of death), and percentage concordance between data in the Red Cross and DSHS systems. To assess validity, we calculated sensitivity and positive predictive value (PPV) of Red

Cross data. To assess representativeness, we compared geographic distribution of deaths captured by both systems.

Results:
During Hurricane Ike risk period (September 11-October 6, 2008), Red Cross captured 38 deaths, whereas DSHS identified 74 deaths (sensitivity: 47%; PPV: 92%). Variable completeness in the Red Cross system ranged from 61% to 87%, and we observed 83- 97% concordance for key variables. Red Cross missed 39 deaths that the DSHS system identified. Of 16 counties where deaths occurred, Red Cross missed deaths in 8.

Conclusions:
We recommend establishing written guidelines to improve quality and representativeness of Red Cross data. Because Red Cross provides valuable information on disaster-related mortality, improvements to their surveillance system will benefit all stakeholders; moreover, the data can be used to prevent future deaths.

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Abstract ID: **1017501** Presentation Type: **Poster Presentation**

Title: **Hoarding and public health: A case report**

Committee: **Environmental Health**

Topic: **Practical application of health impact assessments**

Keywords: **Behavioral health, Community health assessment, Environmental Health hazards**

Abstract Text

Background:
Behavioral health experts have indicated that compulsive hoarding can occur when individuals acquire and fail to discard an excessive number of items. While this condition is not new, recently it has come to the forefront as communities began recognizing it as a disorder that impacts the health, welfare, and safety of the public. Each case of hoarding has a unique set of circumstances.

Methods:
Epidemiologists at the Sedgwick County Health Department (SCHD) were asked by the SC Department of Code Enforcement to prepare a public health assessment of a 2.5 acre property, owned by the same individual, for 15 years. The purpose of this assessment was to determine the public health risk to the community from this property.

Results:
Six primary public health concerns to the surrounding community were identified: (1) risk of vector-borne diseases;(2) risk of toxic inhalation hazards due to burning tires; (3) risk of explosion or possible hazardous waste exposure; (4) fire risk due to flammable materials; (5) multiple physical hazards; (6) unrestricted access to trespassers, nearby residents, children.

Conclusions:
Although community members may generally understand that the accumulation of large amounts of "personally collected items" may place neighborhoods at risk due to unsanitary and dangerous conditions, such risks may not be clearly understood or prioritized by residents. Locally, procedures for prevention have only recently been put into place. Because hoarding cases are often complex, an appropriate response is likely to be prolonged, expensive and require strong and well defined inter-agency collaboration.

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Abstract ID: **1054966** Presentation Type: **Poster Presentation**

Title: **Accidental chemical release of 2-chloro-6-fluorophenol in the Village of Holley, New York: Results from the biomonitoring and evaluation of the community response**

Committee: **Environmental Health**

Topic: **Biomonitoring**

Keywords: **Biomonitoring, Chemical and biological exposures, Emergency response**

Abstract Text

Background:
On January 5, 2002, a storage vessel at the Diaz Chemical Corp. ruptured, releasing 80 gallons of liquid and steam containing primarily toluene and 2-chloro-6-fluorophenol (CFP) into the neighboring residential area. A rapid response biomonitoring program was initiated by New York State Department of Health to measure urine CFP among residents of the village between January and December 2002. About 7 years after the release, the Department of Health conducted a survey of residents who had participated in the program to learn about their experience with the release and the biomonitoring program.

Methods:
Five rounds of urine sampling were conducted: rounds 1-3 were directed to persons with higher potential for exposure, specific health concerns, or detectable CFP levels in a previous round (n=36, 16, and 25, respectively); round 4 was offered to all persons living/working in the Village (n=250); round 5 was offered to persons with detectable levels in their most recent sample (n=10). The survey (comprised of five questions with some narrative responses) was completed by 114 adults from among

211 who had provided urine.

Results:
Urine CFP was a qualitative measure of exposure and there is very limited information about CFP toxicity. The biomonitoring program found that people living within a few blocks of the facility were more likely to have detectable levels of CFP, low level exposure may have occurred in a few individuals almost a year after the release, but CFP urine levels were decreasing over time. Preliminary findings from the survey are that three-quarters of respondents said the release had been stressful, a small number understood the limitations of the urine sampling, and many participated for their own reasons or perceptions.

Conclusions:
Although little is known about CFP's toxicity and, among residents with levels above the detection limit, levels dropped over time, participants in the survey expressed a strong desire to know their CFP levels.

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Abstract ID: **1060072** Presentation Type: **Poster Presentation**

Title: **Climate trends in indices for temperature and precipitation across New York State, 1900-2008**

Committee: **Environmental Health**

Topic: **Climate change epidemiology and public health**

Keywords: **Climate change, Indicators**

Abstract Text

Background:
New York State (NYS) is a geographically diverse area susceptible to climate change but trends in climate extreme indicators have not been extensively studied. Our objectives are to describe temporal trends in average annual and seasonal weather indicators, to compare various extreme indicators and their sensitivity to climate change and to demonstrate geographic differences in indicator trends in NYS.

Methods:
We analyzed data from the US historical Climatology Network for NYS from 1900-2008. We utilized 15 temperature and 11 precipitation indicators using linear regression with bootstrapping in SAS and Rclimdex software.

Results:
The indicators showing maximum change per decade were the growing season length (+ 1.2 days), the number of warm days (+0.23 days), number of cool days (-0.61 days) and the temperature of the coldest night of the month (+ 0.24 C). For precipitation indicators, the number of heavy precipitation

days (+0.4 days), consecutive wet days (+ 0.33 days) and the annual total precipitation (+11.03 mm) showed the most change per decade. The most sensitive indicators that showed significant positive trends for more than half of the stations were growing season length, number of warm nights, a decline in cold days and ice days and increase in total precipitation and simple daily intensity index for precipitation. The most sensitive regions for changes in extreme indicators were the eastern and western parts of NYS. The Adirondack, Coastal New York and Great Lakes regions showed some of the highest increases in warming indicators. In contrast, the Central Lakes and Western Plateau regions showed some significant cooling trends especially during the winter.

Conclusions:
There were consistent temporal trends of warming and increasing precipitation in NYS with large geographic variation. The indicators we have identified should be further evaluated and assessed for their health impact. Geographical differences in climate trends may be of use in informing policy and planning allocation of resources to mitigate climate change impacts.

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Abstract ID: **1060401** Presentation Type: **Poster Presentation**

Title: **Prevalence of the JAK2V617F mutation and the 46/1 haplotype in a select population in Northeast Pennsylvania**

Committee: **Environmental Health**

Topic: **Disease cluster investigations**

Keywords: **Cancer**

Abstract Text

Background:
In 2008, a Polycythemia Vera (PV) cancer cluster was identified at the nexus of three counties in Northeast Pennsylvania. The close proximity of this cluster to known areas of hazardous waste materials raised concern that environmental exposures may play a role in the onset of PV. The discovery of an acquired point mutation in the JAK2 gene has led to greater insights into this disease and aided in the correct diagnosis of PV. The recurring JAK2 mutation consists of a valine to phenylalanine change in position 617 and is found in approximately 97% of PV cases. The objective of our study was to validate test methods to detect and quantitate the JAK2V617F mutation, and to determine the prevalence of the JAK2V617F mutation and the 46/1 risk haplotype in persons living both inside and outside the Northeast Pennsylvania cluster area.

Methods:

Patients enrolled in a regional tissue bank at Geisinger Health Systems were selected to participate in the study. Blood samples, 4 ml, were collected from each patient via venipuncture. Qiagen MagAttract kits were used to extract and purify DNA from each blood sample. Geisinger Health Systems Laboratory conducted real-time polymerase-chain-reaction (PCR) and single nucleotide polymorphism (SNP) analyses to confirm the JAK2 mutation. The JAK2V617F allele burden was confirmed by Mt. Sinai School of Medicine's Molecular Pathology Laboratory (MSSM). Quality control (QC) samples of DNA containing JAK2V617F mutation loads ranging from 0% to 2% were prepared by CDC's Molecular Risk Assessment Laboratory (MRAL) and analyzed as blind specimens by MSSM and Geisinger Health System's Laboratory. The results were reported to CDC's MRAL.

Results:
Both Geisinger laboratory and MSSM demonstrated acceptable performance on the QC specimens with all positive samples detected. The JAK2V617 mutation was confirmed in, 42 (1.4%) of the 3095 samples collected from residents outside the cluster area. For the 3013 samples analyzed for the risk haplotype, 252 (8.5%) were homozygous and 1118 (37.1%) were heterozygous. The samples collected from residents inside the cluster area are currently being analyzed.

Conclusions:
To date, the JAK2V617F mutation analysis shows a mutation rate of 1.4% which is similar to previous reports from Spain and China. The prevalence of the risk haplotype is also similar to that found in other populations. To confirm that a high rate of the JAK2V617F mutation is present in this cluster area, baseline rates of the mutation must also be determined. The analysis of the prevalence of JAK2 mutation in this cluster area will lead to a better understanding of the etiology of myleoproliferative disorders and associated genetic risk factors. Analysis of JAK2 mutation rates regionally and nationally will provide necessary public health information that may lead to improved treatment and prevention strategies.

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Abstract ID: **1061409** Presentation Type: **Poster Presentation**

Title: **Evaluation of biomonitoring communications in a Minnesota community with contaminated water**

Committee: **Environmental Health**

Topic: **Biomonitoring**

Keywords: **Biomonitoring, Communication, Evaluation**

Abstract Text

Background:
The Minnesota Department of Health (MDH) conducted a state-funded biomonitoring pilot project that measured exposure to seven perflourochemicals (PFCs) in a community with contaminated drinking water. State law requires that biomonitoring subjects, recruited through an informed consent process, receive information about program findings and, if they choose, their individual results (PFC serum levels). Following the dissemination of results, MDH evaluated participants' responses to information provided and methods used for communicating the findings.

Methods:
Following IRB approval adult community members were selected at random, contacted by introductory letter and invited to participate. A total of 196 returned the signed consent document and received a second letter with instructions for obtaining the blood specimen. All 196 participants elected to receive the results of their PFC blood levels. Letters comparing individual PFC blood level results to national PFC exposure distributions reported by the CDC were mailed along with a booklet about PFCs and health to aide with interpretation. A physician consultant was available for counseling and concerned participants were encouraged to share results with their health care providers. Group results were shared in a report and at community meetings. Following the dissemination of results, a survey was mailed to participants asking them to evaluate project communications, including perceptions about the letters, booklet, community meetings, findings, the benefits of the project and actions taken since receiving their results.

Results:
Out of 196 participants, 119 completed the survey; 53 men and 66 women. Most (90%) strongly agreed or agreed that they understood the project and that the information provided was easy to understand (82%). Results were mixed as to whether participants felt that the PFC exposure was a cause for concern about their health (39% strongly agreed or agreed, 27% were neutral, and 34% disagreed, strongly disagreed, or were unsure). Most participants (84%) were glad that their PFC levels had been measured, though open ended questions revealed concerns about the uncertainty of scientific information on health effects, the need for more actions or studies in the community, and requests for individual counseling.

Conclusions:
Participants expressed overall satisfaction with the information received and their participation in the project. Uncertainty about the health effects of PFCs remained, a concern that could not be addressed by the project. Public health practitioners should continue to evaluate the benefits and risks of community-based biomonitoring of contaminants to individual participants and communities.

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Abstract ID: **1062440** Presentation Type: **Poster Presentation**

Title: **Groundwater contamination susceptibility, livestock density, and gastrointestinal illness in Wisconsin**

Committee: **Environmental Health**

Topic: **Other Emerging Environmental Epidemiology Issues**

Keywords: **Enteric infectious diseases, Environmental exposures, Geographic Information Systems**

Abstract Text

Background:
Gastrointestinal (GI) illness can be a significant public health burden, particularly for children and the elderly. One route of transmission for pathogens that cause GI illness is drinking water, particularly groundwater contaminated with pathogens of fecal origin. Certain geologic features may make groundwater more susceptible to contamination, and those living close to such features, particularly in areas with high livestock density, may have increased risk for endemic and epidemic GI illness. Climate change models predict increases in heavy rain events with resulting runoff, ground saturation and flooding that may also increase groundwater contamination. This study is one component in a climate change public health impact cooperative agreement examining whether groundwater susceptibility and livestock density are risk factors for GI illness in Wisconsin.

Methods:
The Wisconsin Department of Natural Resources and Wisconsin Geological and Natural History Survey has developed a Groundwater Contamination Susceptibility (GCS) model based on various geologic features, resulting in small-area polygons with susceptibility scores. These scores are matched to address-level and zip code-level GI illness data from reportable disease records and statewide hospitalization and emergency department records. Exact case definitions are dependent on the data source, but focus on giardiasis, cryptosporidiosis, and ICD-9 codes 001-009.3, 558.9, and 787.91. Cattle and hog densities are derived from the 2007 U.S. Census of Agriculture.
Exposure risk estimation is done at the address and zip code-levels with the merging of health data and respective GCS values for each case, as well as corresponding livestock density values. The data are analyzed with a Poisson regression model including the use of geographic centroids for GCS polygons, zip codes, and counties to address spatial autocorrelation.

Results:
A challenge in conducting this study is the differing levels of geographic resolution of the data. Environmental data are available at a sub-zip code level and a county level, whereas health data are available at an address level and zip code level. Detailed analysis and model fitting is ongoing and results are forthcoming.

Conclusions:
Heavy precipitation events that are predicted in climate change models are likely to impact the types of contaminants that penetrate into groundwater, particularly in geographic areas where environmental factors increase contamination vulnerability. Geologic characteristics and livestock density are two possible variables that increase risk. The results of this study can be applied as one component of a vulnerability assessment to help identify areas likely to be most affected by climate change factors such as extreme precipitation events.

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Abstract ID: **1060226** Presentation Type: **Poster Presentation**

Title: **The house that hurt me: Cluster of illnesses related to pesticide exposure**

Committee: **Environmental Health**

Topic: **Disease cluster investigations**

Keywords: **Pesticides, Unintentional/intentional poisoning**

Abstract Text

Background:
On October 18, 2010, the Tennessee Department of Health (TDOH) was notified by a regional health department of 3 Tennessee residents with similar symptoms upon presentation to a local hospital. All 3 were hospitalized. The residents were siblings, and in the process of renovating a century-old farmhouse. Five family canines, also living on the premises of the house, were recently deceased.

Methods:
As part of a multidisciplinary investigation that included poison control consultants and law enforcement, we performed active case finding. Family members and friends residing in and around the farmhouse were interviewed about potential infectious and environmental exposures, including pesticide use and human or canine illness. We obtained clinical specimens, performed environmental sampling and conducted a necropsy on the most recently deceased canine.

Results:
Five persons stayed overnight in the farmhouse during the previous 3 weeks. Four (80%) of them experienced illness, including chills, nausea, vomiting, uncontrolled diarrhea, increased salivation, confusion, incoherent speech, and neuromuscular symptoms. Time of illness onset ranged from October 3-17. The median age of subjects was 51 years (range, 12-54 years). Three of the four were hospitalized; 2 required mechanical ventilation.
Cholinesterase levels (serum, plasma, and RBC) from all 4 symptomatic persons revealed ≥ 50% cholinesterase inhibition from the lower range of normal. One of the four had a urine pesticide screen positive for propoxur (a carbamate pesticide). Screening of 53 household environmental samples identified traces of disulfoton (an organophosphate pesticide) in the contents of a vacuum cleaner bag. Of 7 water samples tested, all were negative for heavy metals and pesticides. Ephedrine and cocaine were detected in surface wipe samples in the house. Canine necropsy identified no evidence of organophosphates, but one canine reportedly died with rat poison in its mouth.
Potential toxins (e.g., pesticides, rat poison) were reported to have been used in the home, including pesticides for ‘flea infestation’ in a bedroom. During the investigation, opened containers of pesticides were noted inside and outside the home.

Conclusions:
This outbreak was probably caused by exposure to a cholinesterase inhibitor pesticide; toxicology consultants indicated chronic exposure with possible acute intermittent exposure was most likely. Adherence to manufacturer guidelines for pesticide application is recommended. Close attention is advised to wearing of personal protective equipment, proper ventilation, and timing between pesticide applications.

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Abstract ID: **1057855** Presentation Type: **Poster Presentation**

Title: **Alaska's early experience with a State Health Impact Assessment (HIA) Program**

Committee: **Environmental Health**

Topic: **Practical application of health impact assessments**

Keywords: **Alaska Natives, Assessments, Environmental Health**

Abstract Text

Background:
Health impact assessment (HIA) is a new component in the suite of impact assessments already conducted under the National Environmental Policy Act of 1969 (NEPA). Despite the highly developed impact assessment (IA) process for environmental (EIA) and social (SIA) and economic (EIA) impacts, explicit impacts to human health have not been addressed despite the widely recognized influence of policies, programs, and development projects on human well-being. A host of well-developed international guidelines for HIA fail to address many of NEPA's technical requirements. International guidance provides even less information for states like Alaska that face unique health concerns such as the nutritional importance of traditional subsistence foods and the importance of subsistence activities for Alaska Native cultural cohesion and identity. For these reasons, the State of Alaska proactively developed an HIA program and state-specific HIA guidance to ensure that the human health and safety of Alaskans is protected during the permitting process for large natural resource development projects.

Methods:
The Alaska Division of Public Health formally established an HIA program within its Epidemiology Section. A medical epidemiologist manages the program, which is funded through a combination of state general funds and reimbursable service agreements.

Results:
In 6 months, the HIA program completed an HIA for a development project on Alaska's North Slope. This stand-alone report informs the health sections of the Environmental Impact Statement (EIS) required by NEPA and exists as a technical appendix. State health surveillance data as well as surveillance information from Alaska Native health systems was used in the report. The Alaska HIA program works with the state's permitting team and with industry on HIAs for several major resource development projects. The program also collaborates with tribal groups and federal agencies to develop an Alaska-specific HIA toolkit that provides detailed technical guidance and sets performance benchmarks for statewide HIA practice.

Conclusions:
: HIA programs situated within state health departments have unique advantages that include a) direct

access to numerous health databases and health experts; b) established external public health partnerships that facilitate HIA work; and c) neutrality and credibility with local, regional, and national stakeholders. The Alaska HIA Program‘s approach to funding and organizing HIA work is a viable model for other states interested in creating an HIA program.

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Abstract ID: **1061489** Presentation Type: **Poster Presentation**

Title: **Building environmental public health tracking capacity in non-grantee states: ASTHO’s State-to-State Peer Fellowship Program**

Committee: **Environmental Health**

Topic: **Environmental Public Health Tracking**

Keywords: **Challenges and Opportunities, Environmental Health, Surveillance**

Abstract Text

Background:
The Association of State and Territorial Health Officials (ASTHO) has partnered with CDC's National Environmental Public Health Tracking (EPHT) Network since 2002 and has played an important role in guiding its development. The Network is a web-based, surveillance system that involves the ongoing collection, integration, analysis, interpretation and dissemination of data on environmental hazards, exposure to those hazards, and related health effects. Since its official launch in 2009, the Network has proven invaluable in advancing environmental epidemiological capacity and continues to evolve considerably. Recently, CDC has added seven additional states to the Network and now provides funding to 23 states and one city to build and maintain state-wide networks as components of Network. To aid in this progress and to help bridge the gap between grantees and non-grantee tracking states and territories, ASTHO launched its Environmental Public Health Tracking: State-to-State Peer Fellowship Program in 2009. ASTHO’s Tracking Fellowship Program has since helped build capacity of non-grantee states and territories by providing principal investigators with opportunities to gain first-hand tracking experience from peers in funded states and develop a small project that would advance EPHT. ASTHO’s Fellowship Program has supported a total of 13 Tracking Fellows. In the application year 2009, ASTHO awarded three fellowships to principal investigators from Louisiana, Michigan, and District of Columbia state health departments. In 2010, investigators from Delaware, Georgia, North Carolina, Kentucky, and West Virginia state health departments were awarded fellowships, and in its third installment of the fellowship program, ASTHO awarded fellowships to Virginia, Ohio, Arizona, Indiana, and Cincinnati. This presentation will highlight environmental epidemiology/data collection projects that former Tracking Fellows have piloted through the program in topic areas, such as 1) climate indicators and harmful algal events, 2) ambient air pollutants and chronic respiratory disease outcomes, and 3) residential blood mercury levels and its relation with fish consumption. The presentation will also report on the benefit and utility of EPHT and opportunities that ASTHO’s Tracking Fellowship Program offers on an annual basis.

Methods:

Environmental public health tracking or the linking of environmental hazards with human health data involves a multi-disciplinary collaboration among local, state, and federal agencies and the ongoing collection, integration, analyses, interpretation, and dissemination of environmental hazards and exposure data.

Results:
Establishing an EPHT network at the state and national levels will enable public health professionals to examine the link between exposures and health outcomes, rapidly detect emerging environmental public health threats, and develop, implement, and evaluate the efficacy of control strategies or targeted outreach efforts, for environmental concerns most relevant to their specific populations.

Conclusions:
Information from the EPHT Network has afforded many tracking states with the capacity to effectively plan, apply, and evaluate public health actions to prevent and control environmentally related diseases and has proven to be invaluable in advancing environmental epidemiological capacity. For states currently not funded by CDC to engage in tracking activities, the State-to-State Peer Fellowship Program offers non-grantee states opportunities for mentorship and lasting support to aid in their pioneering efforts.

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Abstract ID: **1062099** Presentation Type: **Poster Presentation**

Title: **Fish consumption and hair mercury levels in women of childbearing age, Martin County, Florida**

Committee: **Environmental Health**

Topic: **Environmental Public Health Tracking**

Keywords: **Biomonitoring, Food safety, Screening**

Abstract Text

Background:
Consumption of fish with elevated mercury levels is associated with mercury poisoning. This study sought to understand the demographic and fish-consumption patterns of women of childbearing age in Martin County, Florida, determine mercury levels in participants' hair and explore associations through survey responses.

Methods:
Mercury concentrations in hair samples of 408 volunteer women (age 18-50 y) from Martin County, Florida were assessed. Information on demographic factors, fish consumption patterns, and awareness of fish advisories were collected during personal interviews. Data were analyzed using descriptive statistics and multivariate logistic regression analysis (Proc freq, Proc logistic, SAS V 9.2). For logistic regression, mercury concentration was dichotomized based on the median value of 0.468 µ/ g.

Results:

The majority of respondents were non-Hispanic (87%) and of White/ Caucasian race (85%). Only 3% had less than a high school education, 56% were college graduates or had some post-college education. More than 70% of respondents had an annual income > $35,000. The median and geometric mean mercury concentrations were 0.468 (0.0113 - 4.6200) and 0.403 µg/ g, respectively. 25% of the respondents had a concentration ≥ 1 µg/ g (EPA Reference Dose Level).
Fish consumption was reported by 91% of respondents and 72% of respondents were aware of the need to limit fish consumption. However, only 42% were aware of local fish advisories. 44% reported consuming fish high in mercury in the last 60 days; 32% reported consuming locally-caught fish high in mercury. Tuna and Grouper were the most widely consumed fish types.
For every unit increase in total fish consumption per month, the likelihood of higher hair mercury level (above the median) increased (P<0.05) by 3%. Those who did not eat fish high in mercury were 18% less likely (P<0.05) to have higher hair mercury concentrations. Blacks were 85% less likely (P<0.05) to have higher mercury concentration than Whites. Women with incomes < $ 25,000 and incomes between 25,000-34,999 were 74 and 63% less likely to have higher mercury concentrations respectively than those with income ≥ 75000 (P<0.05 for both).

Conclusions:
Levels of mercury found in hair samples in this study were generally lower than the EPA reference dose level, but higher than levels reported previously in other Florida counties or by NHANES at the national level. Women of higher income were aware of the need to limit fish consumption but uncertain about specific species, indicating the need for education on local fish advisories.

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Abstract ID: **1055439** Presentation Type: **Poster Presentation**

Title: **Chemical mapping: Using geographic information system within the National Toxic Substance Incidents Program to identify vulnerabilities and set priorities**

Committee: **Environmental Health**

Topic: **Preparedness and environmental epidemiology**

Keywords: **Chemical and biological exposures, Geographic Information Systems, Vulnerable populations**

Abstract Text

Background:
In January 2010, the Agency for Toxic Substances and Disease Registry (ATSDR) established the National Toxic Substance Incidents Program (NTSIP). NTSIP uses a comprehensive approach to collect and combine information from many resources to protect people from harm caused by toxic substance releases. NTSIP has three components: a national database, state surveillance, and

incident investigations.
Seven states: Louisiana, New York, North Carolina, Oregon, Tennessee, Utah, Wisconsin contribute data to the state surveillance component. The objectives of the state surveillance component are to: 1) describe toxic substance releases and the public health consequences, 2) map location and movement of toxic substances throughout communities, 3) identify and prioritize vulnerabilities in industry, transportation, and communities related to toxic substance releases, and 4) identify, develop, and promote strategies that could prevent exposures to toxic substances and resultant health effects. This presentation will demonstrate how four NTSIP states (Louisiana, Utah, New York, and Tennessee) are using geographic information systems (GIS) to identify locations of toxic substances and associated vulnerabilities. Additionally, the presentation will show how ATSDR models the data, using GIS, in the national database.

Methods:
The states use a variety of GIS strategies to identify vulnerable populations. Louisiana and Utah used population demographics to identify vulnerabilities. Louisiana mapped population demographics surrounding several wastewater treatment facilities. Utah mapped population demographics in Salt Lake County, site of the most chemical releases in Utah. New York mapped swimming pool chemical incidents and manufacturers, distributors, and retailers of these substances. Tennessee used a social vulnerability index (SVI) to identify vulnerable communities. SVI refers to sensitivity of hazardous substance exposures based on population and housing characteristics, including age, low income, disability, and home value.

Results:
In Louisiana, some wastewater facilities are already in the process of shutting down because of potential danger to surrounding populations. Utah's map demonstrates that chemical incidents occurred more often near frequently traveled roads and rail lines. New York's maps identified the origins and distribution of pool chemicals and the areas with the highest density of private pools for targeted education and outreach. Tennessee's maps show that the majority of toxic chemical incidents occurred in areas of mid-range to high levels of vulnerability.

Conclusions:
Using GIS to locate toxic substances, surrounding infrastructure and population density is beneficial in developing plans to prevent future releases, such as promotion of inherently safer technologies. These data and strategies are being used as models for national surveillance.

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Abstract ID: **1059452** Presentation Type: **Poster Presentation**

Title: **Design and testing of epidemiological tools used in radiation emergencies**

Committee: **Environmental Health**

Topic: **Disaster epidemiology: best practices, long term studies, and lessons learned**

Keywords: **Disasters, Emergency response, Radiation**

Abstract Text

Background:
Epidemiological tools can be used to identify at-risk populations, prioritize the use of limited resources, and create registries for follow-up activities during the response phase of a radiation emergency. These tools can be deployed in a variety of settings, including community reception centers (CRCs). CRCs may be established shortly after a radiation emergency to conduct population monitoring activities and decontamination procedures for affected individuals who are not seriously injured. In addition, potentially-impacted individuals need to be prioritized for further bioassay testing, medical treatment, and follow-up, especially when medical and pharmaceutical resources are limited. Urine bioassay testing is used to screen people for internal contamination and identify those who could benefit the most from medical intervention. The Health Studies Branch (HSB) of the National Center for Environmental Health at the Centers for Disease Control and Prevention developed data collection forms and a urine bioassay prioritization approach for integration with the CRC population monitoring process.

Methods:
HSB staff worked with state and local public health officials to implement epidemiological tools at CRCs during two radiation exercises - a full-scale field exercise in Albany, New York, involving an explosive radiological dispersion device and a limited-scale field exercise in Barstow, California, involving detonation of an improvised nuclear device. Information collected included elements that were used to: 1) describe the affected population(s), including vulnerable populations, 2) identify those at increased risk of internal contamination, 3) prioritize samples for urine bioassay testing, 4) improve dose estimation associated with bioassay results, and 5) enable short- and long-term follow-up.

Results:
Epidemiological tools were successfully incorporated into the population monitoring process. HSB staff worked alongside state and local public health officials to administer the forms. Data were collected using both electronic and paper-based methods. Data elements collected include: 1) contact information, 2) demographics, 3) specific exposure variables, 4) radiological survey results, and 5) clinical symptom information. Key variables were identified and used for medical screening, follow-up, and prioritization of urine bioassay collection.

Conclusions:
Following a radiation emergency, the collection of information may be useful both in the initial and recovery phases of a public health response. Collection of data can be used to increase situational awareness, prioritize resources, create a post-event registry, and support epidemiologic studies. Pre-developed, modifiable epidemiological tools can facilitate implementation of these processes during a large-scale public health emergency response to a radiation event; examples used during the exercises will be available to conference participants.

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Abstract ID: **1061423** Presentation Type: **Poster Presentation**

Title: **Assessment of community awareness of health impacts from proposed coal gasification plants in western Kentucky**

Committee: **Environmental Health**

Topic: **Practical application of health impact assessments**

Keywords: **Community health assessment, Environmental Health, Local Public Health Agencies**

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Abstract ID: **1056761** Presentation Type: **Poster Presentation**

Title: **Legionella cluster in a rural Utah**

Committee: **Environmental Health**

Topic: **Disease cluster investigations**

Keywords: **Communicable disease, Environmental exposures, NORS (National Outbreak Reporting System)**

Abstract Text

Background:
Legionnaires' disease was named after an outbreak that occurred among people attending a convention of the American Legion in Philadelphia in 1976. Legionellosis has a worldwide distribution. An estimated 8,000-18,000 people develop Legionnaires' disease in the U.S. each year. Most of these are single, isolated cases that are not associated with an outbreak. The Utah Department of Health was alerted by the Centers for Disease Control and Prevention (CDC) of two cases of Legionella associated with a rural Utah hotel in November 2009. The objective for this study was to summarize the investigation of, response to and epidemilogy of a Legionela outbreak in a rural health department.

Methods:
The study design was observational. An Epicurve and descriptive statistics were used to describe the outbreak.

Results:
In the course of the investigation, 3 more cases were identified who noted the same exposure. The Utah Department of Health, Central Utah Public Health Department, and Unified State Laboratories: Public Health collaborated in investigating and responding to this situation.

This results of the study provide an overview of a Legionella outbreak investigation, discussion of the epidemiology of Legionella, the steps of an environmental assessment for Legionella, legal issues that arose during this investigation, remediation and post- remediation recommendations and actions, and lessons learned regarding interventions and remediation efforts.

Conclusions:
This cluster investigation displayed the benefits of good working relationships between the Local Health Department, the State Health Department, environmental sanitation specialists, CDC, and the Unified State Laboratories: Public Health.

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Abstract ID: **1060240** Presentation Type: **Poster Presentation**

Title: **Fine particle air pollution and cardiovascular health outcomes in Minnesota, 2003-2008 ***

Committee: **Environmental Health**

Topic: **Air and water quality related to environmental epidemiology**

Keywords: **Air quality, Cardiovascular disease**

Abstract Text

Background:
Large, multi-city studies have shown small but significant adverse short-term impacts of fine particulate matter ($PM_{2.5}$) on cardiovascular morbidity and mortality. However, smaller local area analyses have shown more nuanced results. Studies conducted in New York City and Boston found that increases in 24-hour average $PM_{2.5}$ concentrations were associated with increased cardiac deaths and emergency hospitalizations. In contrast, analyses in Seattle and Spokane, WA failed to detect associations between $PM_{2.5}$ and cardiovascular hospitalizations and death.
The Minneapolis-St. Paul (MSP) metropolitan area is in attainment with National Ambient Air Quality Standards for PM. However, previous investigations in this location have shown associations between $PM_{2.5}$ and respiratory health, and studies consistently indicate that there is no threshold for PM health effects. The objective of this study was to investigate short-term impacts of daily ambient $PM_{2.5}$ concentrations on daily measures of cardiovascular disease in the MSP metropolitan area.

Methods:
We assessed associations between daily 24-hour continuous $PM_{2.5}$ monitoring data and cardiovascular hospitalizations (ICD-9: 390-448) and mortality (ICD-10: I00-I78) during the years 2003-2008 via time-stratified case-crossover analyses. Using conditional logistic regression models that adjust for temperature and relative humidity, we generated risk estimates for $PM_{2.5}$ lags ranging from 0 to 4 days before the health event. For cardiovascular mortality analyses, we developed an overall model for the effect of $PM_{2.5}$ on cardiovascular deaths, as well as separate models stratified by location of death.

Results:
Risk estimates for the association between cardiovascular hospitalizations and $PM_{2.5}$ in the MSP metropolitan area during 2003-2008 exhibited peaks at later lags (lag 3), but were not statistically significant. The association between cardiovascular deaths and $PM_{2.5}$ peaked at lag 1. The estimated percent increased risk of cardiovascular death per 10-$\mu g/m^3$ increase in $PM_{2.5}$ at lag 1 was 2.6% (95% CI = 0.2% - 5.1%). The association between $PM_{2.5}$ and cardiovascular deaths that occurred in the emergency room also exhibited a lag structure that peaked at lag 1 (risk estimate not statistically significant). The subset of cardiovascular deaths that occurred among inpatient hospitalizations did not show this lag structure.

Conclusions:
There was no consistent association between daily 24-hour $PM_{2.5}$ levels and cardiovascular hospitalizations. The association between $PM_{2.5}$ and cardiovascular deaths in the MSP metropolitan area was small, and most closely related with a lag of approximately one day. A similar lag structure was found for cardiovascular deaths that occurred in the emergency room, but not for deaths that occurred during inpatient hospitalizations.

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Abstract ID: **1060067** Presentation Type: **Poster Presentation**

Title: **Climate change adaptation: Examining the partnership between public health preparedness and environmental health in reducing health risks from climate change**

Committee: **Environmental Health**

Topic: **Climate change epidemiology and public health**

Keywords: **Climate change, Environmental exposures, Preparedness**

Abstract Text

Background:
A fundamental component of climate change response is adaptation. Climate change adaptation is the ability to adjust to the impacts of climate change and lessen potential damage to the public's health. This similar concept is acknowledged by the public health preparedness community in that, while not all negative outcomes can be prevented, they can be reduced and managed. Adaptation is a key element of community resilience, which is one of the primary goals of the National Health Security Strategy. By employing these analogous schools of thought, the public health impacts of climate change, including the introduction or re-introduction of infectious diseases, heat-related illnesses or

injuries, health effects related to extreme weather events, respiratory illnesses, and more, can be reduced.

Methods:
Links between climate change and public health preparedness are drawn by canvassing state and territorial health agencies' response activities.

Results:
Response models to prevent injuries, illnesses and death are delineated, and activities in which both the public health preparedness responders and environmental health specialists can participate.

Conclusions:
This study will demonstrate how leaders in public health preparedness can participate and collaborate in effective climate change adaptation strategies.

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Abstract ID: **1062498** Presentation Type: **Poster Presentation**

Title: **Sport-caught fish consumption patterns of South Carolina women in regions at-risk for methyl mercury contamination**

Committee: **Environmental Health**

Topic: **Environmental Public Health Tracking**

Keywords: **Chemical and biological exposures, Food contaminantsÂ , Maternal and Child Health**

Abstract Text

Background:
Methylmercury is a toxic contaminant that bioaccumulates within the aquatic food chain. Older and larger fish can accumulate enough mercury to cause health problems among those who routinely consume contaminated fish. Within the coastal plain, the ecosystem is exceptionally efficient at methylating mercury deposited after atmospheric release. Most of the mercury deposited in South Carolina originates from coal combustion outside of the state and not local spills or releases. Because of the potential health risks to the developing fetus, state public health authorities have advised women who are pregnant or plan to soon become pregnant to avoid eating all fish from most water bodies within the Coastal Plain region.

Methods:
Two cross sectional telephone surveys were used to assess consumption patterns of local sport-caught fish. In 2008 a pilot survey was conducted in the coastal plain community of Walterboro, SC. In 2010, fish consumption questions were added to the routinely collected state-wide Behavioral Risk Factors Surveillance System (BRFSS) questionnaire. For this study, resulting data from these two surveys was subset for women of child bearing age (18 to 44). Herein we report findings for 301 women from our pilot survey and third quarter preliminary findings for 554 women residing in the coastal plain from the 2010 SC BRFSS survey.

Results:
Locally caught fish consumption recommendations for pregnant or breastfeeding women was zero fish meals per month. Women from Walterboro ate 1.9 fish meals per month. Women across the coastal plain region ate 0.55 fish meals per month. There were differences in fish meals consumed per month by race with black women consuming more fish in the inland coastal plains and lower Edisto/Savannah region while white women consumed more fish in the greater Myrtle Beach/Georgetown/Charleston areas. Women of higher socioeconomic status (education level or income) ate both more fish meals per month and more of the fish species which were more likely to be contaminated. Women of the lowest socioeconomic status ate more fish meals per month than middle-status women, but more often of the less likely contaminated fish species.

Conclusions:
While fish consumption by women of child-bearing age was relatively low within the South Carolina Coastal Plain our results suggest that some women are consuming wild caught freshwater fish from regions where fish tissue mercury levels are high. State public health officials will continue to refine and focus its fish consumption messages for the populations needing them most.

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Abstract ID: **1056819** Presentation Type: **Poster Presentation**

Title: **The Washington State Environmental Biomonitoring Survey - WEBS**

Committee: **Environmental Health**

Topic: **Biomonitoring**

Keywords: **Biomonitoring, Data/Surveillance, Environmental exposures**

Abstract Text

Background:
In 2009, the Centers for Disease Control and Prevention awarded the Washington State Department of Health (WS-DOH) Public Health Laboratory (PHL) a five-year cooperative agreement to increase PHL capacity to conduct biomonitoring and provide state and local comparisons to national biomonitoring data. WS-DOH laboratorians, epidemiologists, toxicologists and Washington's Environmental Public Health Tracking Network (WTN) collaborate to develop and implement activities. Year 1 goals included measuring urinary total and speciated arsenic, other metals, and organophosphate and pyrethroid pesticide metabolites in the general population. We selected these objectives by combining priorities in the 2003 state biomonitoring plan with new input from key informants from other state agencies, universities, local health, and non-governmental organizations. WTN added tap water collection to assess levels of arsenic and other metals. An advisory committee, similar in composition to the key informants, provides recommendations for additional activities. Year 2 objectives include enlarging the initial sample, adding bisphenol A analysis, and assessing populations at high risk for arsenic exposure

through drinking water.

Methods:
For the general population sample, WEBS has used a two-stage cluster sampling design, randomly selecting census block groups and housing units within block groups. Field staff enroll participants, asking household members ages six and older to provide first morning void urine samples and answer questions about potential exposures. All procedures occur in participants' homes. Participants currently receive feedback on total arsenic and selected metals. They will also receive feedback on pesticide metabolites when those data are available. Speciated arsenic will allow us to understand potential exposures among those with high total arsenic levels.

Results:
As of December 2010, WEBS collected about 800 urine and 200 water samples from 350 households. The PHL analyzed samples for total arsenic and selected metals, and urine samples for creatinine to normalize levels. We expect to compare Washington to national data and begin analyses for speciated arsenic and pyrethroid metabolites in early 2011. Organophosphate metabolite and bisphenol A analyses will occur later in 2011.

Conclusions:
WEBS provides an opportunity to expand PHL's biomonitoring capacity, while assessing environmental exposures potentially important for health in Washington. Collaborations within WS-DOH and with external stakeholders are essential for developing scientifically sound procedures and focusing on the most important potential exposures within budgetary constraints.

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Abstract ID: **1061518** Presentation Type: **Poster Presentation**

Title: **Relationship between vapor intrusion and human exposures**

Committee: **Environmental Health**

Topic: **Air and water quality related to environmental epidemiology**

Keywords: **Environmental exposures**

Abstract Text

Background:
Trichloroethylene groundwater plumes have been identified in three areas in Grand Prairie, Texas. The purpose of this investigation was to determine whether residents living above these groundwater plumes had higher levels of trichloroethylene in their bodies as compared to residents not living above a plume (comparison area). A secondary purpose was to provide information on the relationship between human exposures and the vapor intrusion pathway. For this investigation vapor intrusion is defined as the movement of trichloroethylene vapors from the contaminated groundwater through the soil into the homes.

Methods:
Tap water, indoor air, outdoor air, and soil gas samples were collected in and around 40 homes in 4 neighborhoods in Grand Prairie. Blood and urine samples were obtained from 74 people living in these homes. Environmental and blood samples were analyzed for trichloroethylene and urine samples were analyzed for trichloroacetic acid (a metabolite of trichloroethylene). Descriptive statistics were reported for each community. Non-parametric tests (Kruskal-Wallis and Wilcoxon rank-sum) were used to test differences in the number of detected samples between the three plume areas and the comparison population. Multiple linear regression analyses were performed in order to determine associations between environmental levels of trichloroethylene (in indoor air, outdoor air, and soil gas) and levels of trichloroethylene in residents' blood.

Results:
Residents living above one of the groundwater plumes had significantly higher levels of trichloroethylene in their blood than residents living in the comparison area (p=0.0238). In addition, the percentage of people with detectable levels of trichloroethylene in their blood was greater among those living over this plume (45%) than those living in the comparison area (5.9%). The multiple linear regression analysis indicated that the indoor air level of trichloroethylene was the best predictor of the blood trichloroethylene level. This relationship was most apparent in the area where the soil gas levels and indoor air levels were highest.

Conclusions:
Vapor intrusion and human exposure is occurring in one of the three groundwater plume areas. Although trichloroethylene was detected in the indoor air of some residences, the levels found were below those previously associated with adverse health effects. Nevertheless, EPA Region 6 is taking a health protective approach by offering mitigation systems to any homeowner in the area with evidence of significant vapor intrusion.

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Abstract ID: **1062586** Presentation Type: **Poster Presentation**

Title: **Michigan's state and local public health response to climate change**

Committee: **Environmental Health**

Topic: **Climate change epidemiology and public health**

Keywords: **Climate change, Environmental Health, Local Public Health Agencies**

Abstract Text

Background:
Climate change can affect human health by increasing exposure to biological and chemical agents in

the air and water, by causing more severe weather such as floods and heat waves, and by increasing the range and persistence of vector-borne infectious diseases. The Association of State and Territorial Health Officials (ASTHO) funded Michigan for a one-year planning project to address climate change and its impact on public health.

Methods:
The grant involved: 1) A public health needs assessment of knowledge and capacity to respond to climate change; 2) Creation of a strategic plan to address knowledge and capacity gaps; 3) Training to public health practitioners; and 3) Evaluation of the process.
The needs assessment involved 34 local health department (LHD) staff interviews, mainly health officers and environmental health directors, in-person or via a web-based tool. In addition, 15 public health partners received in-person key informant interviews, which were one-hour structured interviews with key informants from State of Michigan departments of health, environment, and agriculture; academics working on climate change research; environmental and health advocacy groups; and non-governmental organizations. Furthermore, local public health emergency response plans were reviewed and surveillance data systems were identified and reviewed.

Results:
Seventy-nine percent of LHD staff reported that they were knowledgeable about climate change; 38% thought their jurisdiction would experience public health effects from climate change over the next 20 years; 4% stated that climate change was one of the top 10 priorities in their agency; and 30% felt their agency had the resources to address the public health effects from climate change. Participants in the key informant interviews were interested in climate change and wanted to learn more, had activities in areas impacted by climate change, and felt their organization could contribute to the response. The strategic plan was developed by 35 stakeholders over two one-day meetings and included 3 long-term goals.

Conclusions:
Knowledge about public health effects from climate change is evolving rapidly and public health practitioners must be involved in decision-making. Key partners are vital to the planning process and need to be kept current on activities and information. Partners are necessary to advocate for resources; collaborate on grants and projects; and conduct research relevant to local issues. Education of public health staff, policy-makers, and the public is a key unmet need, and tools for local health assessments are needed. With 3-year CDC funding, Michigan will implement their strategic plan.

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Abstract ID: **1054265** Presentation Type: **Poster Presentation**

Title: **An evaluation of Michigan's potassium iodide (KI) distribution program ***

Committee: **Environmental Health**

Topic: **Preparedness and environmental epidemiology**

Keywords: **Bioterrorism, Evaluation, Preparedness**

Abstract Text

Background:
Potassium iodide (KI) is an antinuclear prophylactic capable of preventing thyroid cancer during a radiological release at a nuclear power plant (NPP). In 2009, the Michigan Department of Community Health (MDCH) made KI available at no cost to all residents living within a 10-mile radius of one of Michigan's three NPPs. These radii are known as Emergency Planning Zones (EPZs). KI vouchers, redeemable at collaborating pharmacies for a household supply of KI, were mailed to all EPZ addresses. To assess general nuclear preparedness among adult (≥18 years) Michigan EPZ residents and to identify program areas needing improvement for future KI distributions, MDCH conducted a small scale evaluation of the distribution project.

Methods:
A telephone survey instrument was developed to collect information on general nuclear preparedness knowledge, reasons for KI voucher use or non-use, KI use knowledge, and demographic data for consenting Michigan adult EPZ residents. Telephone interviews were conducted using a random sampling method stratified by EPZ and KI voucher use status to ensure that both KI voucher users and non-users from each Michigan EPZ were represented in the study sample.

Results:
A total of 153 Michigan residents completed the survey, including 78 KI voucher users and 75 KI voucher non-users. When residents were asked what they had done to prepare for a possible nuclear emergency event, 42.5% reported "nothing", 26.1% reported they had "purchased extra food or water", and 20.3% reported they had "planned an evacuation route". Of those respondents who redeemed a KI voucher, 57.7% correctly identified KI as protecting only the thyroid gland from radiation; however, 35.9% "didn’t know" which part of the body KI protects. Common reasons cited for KI program participation included "to be prepared" (57.7%) and "to be safe" (18.0%), while common reasons listed for non-participation were "didn't know about the program" (36.0%) and "failed to receive voucher” (12.0%).

Conclusions:
Results emphasize the need for improved communications with Michigan EPZ residents during future KI distribution campaigns to ensure the provision of information sufficient to make an informed decision regarding participation in the KI distribution program. Additionally, a large percentage of EPZ residents claimed to have done "nothing" in preparation for an emergency event, indicating the need for expanded community promotion of emergency preparedness awareness. A workgroup of state and county agencies involved in nuclear power plant emergency planning should develop programs to address issues with the KI voucher mailing and with emergency preparedness messages for the public.

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Abstract ID: **1062179** Presentation Type: **Poster Presentation**

Title: **Viral load and CD4 testing patterns among adults diagnosed with HIV in 2006**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **HIV/AIDS, Infection control, Surveillance**

Abstract Text

Background:
Regular CD4 and viral load (VL) testing is essential for monitoring disease progression and viral suppression in people living with HIV. Pennsylvania requires reporting of detectable HIV viral load tests and CD4 tests <14% or 200 cells to the Pennsylvania National Electronic Diseases Surveillance System (PA-NEDSS) although many laboratories submit all tests regardless of results. We examined patterns of CD4 and VL testing through 2009 for Pennsylvania adults diagnosed with HIV in 2006.

Methods:
Data for tests completed between 2006 through the end of 2010 were analyzed for all reported adult HIV cases among Pennsylvania residents (excluding Philadelphia) diagnosed in 2006 with at least one lab test reported in 2010 (to ensure the person remained alive through 2009). These data were examined to identify cases having gaps in test reporting history or no test reporting history.

Results:
Among the 468 cases analyzed, 77.3%, 65.4%, 64.7%, and 64.7% had at least one viral load test reported to PA-NEDSS in 2006, 2007, 2008, and 2009, respectively. The proportion of cases with at least two VL test reports annually ranged between 45% and 50%. For CD4 counts, the similar proportions were 51.5%, 35.0%, 29.1%, and 27.3% in 2006, 2007, 2008, and 2009. The proportion of cases with either a VL or CD4 count each year was 85.5%, 82.9%, 85.5% and 84.8%, with the proportion having at least two VL/CD4 tests in any combination ranged between 63.5% and 68.4%.

Conclusions:
The data suggest that a substantial number of persons diagnosed with HIV are not being adequately monitored for disease progression and response to therapy. Because undetectable viral load or CD4 counts >200 cells are not required to be reported to PA-NEDSS, our findings likely underestimate the amount of testing being performed. However, inclusion of only persons tested at least once in 2010 likely overestimates how much testing is occurring in this cohort. Further review of case data is needed to assess the extent of suboptimal VL and CD4 testing. Consideration should be given to requiring reporting of all CD4 and VL test results to improve HIV case identification and tracking of adequacy of care.

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Abstract ID: **1060342** Presentation Type: **Poster Presentation**

Title: **Nocardia cyriacigeorgica infections associated with cosmetic injections - New Jersey, 2010**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Infectious Diseases, Outbreak investigations**

Abstract Text

Abstract Text
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Abstract ID: **1062259** Presentation Type: **Poster Presentation**

Title: **Evaluation of a sentinel outpatient surveillance system for influenza from a data quality perspective**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Data/Surveillance, Evaluation, Influenza surveillance**

Abstract Text

Background:
Surveillance for influenza-like illness(ILI) visits in outpatient settings is conducted as one measurement of influenza activity in New Mexico (NM). Data on influenza-like illness, defined as fever >100F, cough and/or sore throat, are collected by the Influenza Surveillance system from approximately 26 sentinel sites geographically scattered across the state on a weekly basis. Data are aggregated and reported as an ILI percentage for health regions, and for the state. The data are collected using three methods: by chief complaint at triage, by automated computer query for chief complaint or by diagnostic code at discharge. Differing methods of data collection invite data quality difficiencies and questionable data validity. Evaluation of the system was undertaken to answer two related questions: 1) do the data collected via the sentinel system meet a standard of accuracy that allow accurate reporting of ILI in the state, and 2) is one method of data collection superior to others in detecting ILI?

Methods:
To measure data quality chart audits were performed. All 26 sites provided the charts that represented their total census as reported for a randomly selected week during the 2008-2009 season. These charts were reviewed for chief complaint, and provider and nursing notes to identify patients that met the ILI definition. Data analysis will compare ILI detected by the audit to the ILI reported for that week. The second analysis will compare the three methods of data collection for differences in accurately detecting ILI. Percent agreement between chart audit data and reported data will be calculated and statistical significance will be determined.

Results:
Preliminary data show differences between chart audit data versus surveillance site reported data.

Statistical analysis will be performed pending completion of chart audits.

Conclusions:
This study will evaluate the sentinel surveillance system for its ability to accurately detect ILI activity in the state and will test a null hypothesis that there is no difference between data collection methods utilized by the sentinel surveillance sites for detecting ILI.

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Abstract ID: **1061690** Presentation Type: **Poster Presentation**

Title: **Hepatitis C and it's transmission risk factors in Houston, Texas: An enhanced surveillance study (2008-2009)**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Chronic communicable diseases, Epidemiology, Sexually Transmitted Diseases**

Abstract Text

Background:
The Houston Department of Health and Human Services (HDHHS) receives over 4,000 Hepatitis C Virus (HCV) cases annually, which cannot be adequately investigated and reported in a timely manner. HDHHS developed the Enhanced Hepatitis C Surveillance (HEHCS) program in partnership with local health providers in Houston, TX. This was done in order to complete a comprehensive epidemic profile for HCV, understand the transmission risk factors and improve the timeliness of HCV outbreak response and case reporting.

Methods:
A Probability Proportional to Size (PPS) sampling method was used to adequately sample providers in proportion to the volume of HCV cases they report to HDHHS. Patients were randomly selected for investigations and follow-up. Data was extracted from Houston's HCV registry. Data processing involved data cleaning, removal of out-of-jurisdiction labs and facilities, de-duplication of cases in the sampling frame and standardization of facility names. A structured questionnaire was used to gather retrospective HCV data from the patients through telephone interviews. Medical Record Abstraction (MRA) was also conducted for data accuracy and completeness.

Results:
Of the 565 cases investigated, 61% were males (46% Black non-Hispanic, 20% Hispanics, 25% Caucasians and 3.7% Asians), 43% were 50-59 years old and 47.6% were single. About 52% of the males had a high school education or lower and 56% were unemployed. Most (97.7%) of the HCV cases were chronic compared to 2.3% acute cases. Risk factors reported include having more than six sexual partners (35%), incarceration (23%), history of STD (37%), IV drug use (16%), history of blood transfusion (14%) and tattoos (14%). Other risky behaviors reported include alcohol consumption (49%), and smoking (50%). While six percent of the selected cases were reported dead, others

reported having cirrhosis (7%), hepatocellular carcinoma (1%) and liver failure (4%). Other co-morbidities reported include Hypertension (48%), Type II Diabetes (24%), renal disease (17%) and HIV-AIDS (9%). Majority of participants (66%) reported being asymptomatic for HCV and having inadequate knowledge about HCV testing options (90.4%).

Conclusions:
This study showed that compared to other ethnicities, adult black non-Hispanic males in Houston, TX have a high prevalence of HCV infection. The most frequently reported risk factor in this study population was having multiple sex partners. The study also showed that majority of the cases did not have knowledge of HCV testing options, were not highly educated and were unemployed.

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Abstract ID: **1062233** Presentation Type: **Poster Presentation**

Title: **Maryland Central Line-Associated Blood Stream Infections (CLABSIs): Data quality review and chart audit**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Data/Surveillance, Healthcare associated infections (HAI), Hospital data**

Abstract Text

Background:
Maryland hospitals are required to report central line-associated blood stream infection (CLABSI) data to the Maryland Health Care Commission (MHCC) through the National Healthcare Safety Network (NHSN) system. To ensure accurate reporting of this data, the MHCC, with the assistance of its Healthcare-Associated Infections (HAI) Advisory Committee and APIC Consulting Services, Inc., conducted a retrospective chart audit and review of surveillance methods used to detect CLABSIs and their associated denominators.

Methods:
The Commission determined that the chart audit would include a sample of 200 patient records to identify the presence or absence of a CLABSI using the NHSN definition and protocol. Based on this guidance, several options for creation of a sampling framework were developed for review by the HAI Advisory Committee. Because this was the initial audit of CLABSI data, the Advisory Committee recommended that priority be given to including every hospital in the audit project and 4-5 charts in each hospital were selected. Five charts were reviewed in ICUs falling in the top and bottom 11 (i.e.,

25th percentile) of the ICU ranking list and four charts reviewed in the remaining hospitals. Records to review were randomly chosen from each hospital's list of ICU patients with positive blood cultures.

Results:
The audit consisted of two main activities, the actual review of the patient records and an interview of hospital staff involved in the collection of central line days and patient days. A total of 45 Maryland hospitals were reviewed. In the first part of the study, the auditors examined a total of 202 patient records. Among audited records were 73 CLABSIs that had been reported to NHSN by Maryland hospitals. The other 129 records reviewed were not reported to NHSN as CLABSIs.
After review of the patients' records, the auditors retrospectively matched 67 (91.7%) of the 73 reported CLABSIs. They identified eight discrepant CLABSIs in the patient records that had not been reported prospectively. There did not appear to be any trends in unreported CLABSI cases.
The audit determined there were 127 records reviewed in which no CLABSI was present. Auditors retrospectively matched 121 (95.2%) of these cases that were not reported to NHSN by the hospitals. Six cases were reported to NHSN in which the criteria for CLABSI were not met. In three of these cases, the CLABSI was secondary to another documented infection, in two cases, the CLABSIs were identified using outdated criteria; and, in one case a CLABSI was reported that should not have been attributed to the ICU. In total, the audit found that 14 of the 202 records reviewed were discrepant from the CLABSIs reported to NHSN or undetermined based on the information available.
During the interview, 9 hospitals were incorrectly counting line days. If a patient has more than one central line, only one central line per patient should be counted each day.

Conclusions:
The overall sensitivity and specificity of CLABSI data reported to NHSN by ICUs were 91.78% and 93.80%, respectively, with a positive predictive value (PPV) of 89.33% and a negative predictive value (NVP) of 95.28%. "Over-calling" CLABSIs by the facility was a combination of using outdated definitions and reporting BSIs that were secondary to another documented infection. There were no trends identified in "under-calling" CLABSIs.

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Abstract ID: **1061400** Presentation Type: **Poster Presentation**

Title: **Knowledge and attitudes influencing male inmate voluntary HIV test acceptance**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **HIV/AIDS, Vulnerable populations**

Abstract Text

Background:
Inmates are disportionately affected by HIV as compared to the general population. Healthy People 2010 Objective 13-10 iterates the importance of increasing the proportion of inmates in State prison systems who receive voluntary HIV counseling and testing. The State of Delaware has an opt-in HIV testing protocol, in which all inmates are invited upon entry to the prison to get a free voluntary HIV test. Therefore, the purpose of this study is to examine knowledge, attitudes, and perceived barriers that prevent inmates within an all male Delaware state correctional institution from accepting a voluntary HIV test.

Methods:
A cross-sectional theory-based structured interview was administered to 179 randomly selected male inmates in a Delaware correctional institution (80% participation rate) to assess knowledge and attitudes towards HIV and voluntary HIV testing. Upon the start of the interview, inmates were also offered another free voluntary HIV test with a 53.6% HIV testing acceptance rate.

Results:
The inmate sample was highly knowledgeable about HIV, reported a low perceived susceptibility and fear of HIV, and indicated a moderate level of agreement that fellow inmates and friends/family encourage HIV testing. Perceived susceptibility was statistically lower in inmates who declined versus accepted the voluntary HIV test at the time of the interview and who were African-American as compared to Caucasian. Requiring a blood draw was the most frequently reported barrier to HIV testing.

Conclusions:
This research supports the introduction of additional methods of HIV testing, such as oral swabs, and the design of educational materials to increase perceived susceptibility to HIV as a means of bolstering HIV testing acceptance rates.

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Abstract ID: **1053975** Presentation Type: **Poster Presentation**

Title: **Utilization of the standardized infection ratio for summarizing neonatal central line-associated bloodstream infection data**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI), Neonatal**

Abstract Text

Background:
Within the National Healthcare Safety Network (NHSN), central line-associated bloodstream infection (CLABSI) rates in neonatal intensive care units (NICUs) are stratified by NICU level (III vs. II/III), line type (central vs. umbilical), and five birth weight categories. Thus, each NICU may have as many as ten CLABSI rates, which are cumbersome to compare against national rates and difficult to display for multiple NICUs simultaneously. Our objective was to use a simplified standard measure to present NICU CLABSI data in Tennessee's second public report on healthcare-associated infections (HAIs).

Methods:
The standardized infection ratio (SIR) was utilized as a summary measure to compare CLABSI data in 26 Tennessee NICUs from July 2008-June 2009 to published national NICU data from 2006-8. The SIR is an indirect standardization method for summarizing the HAI experience across any number of stratified groups of data. Each NICU's SIR was calculated by dividing the total number of observed CLABSI events in a given NICU by the predicted (expected) number of CLABSIs for that NICU. The predicted number of infections was calculated by multiplying the observed number of line-days for each line type/birth weight stratum by the corresponding infection rate in the standard population (published national NHSN 2006-8 data). The numbers of predicted and observed infections were then summed across strata in each NICU in order to calculate the SIR. Fisher's exact test was used to calculate a 95% confidence interval (CI) for each SIR. A SIR that was significantly greater than 1 indicated that the NICU experienced more CLABSIs than predicted; a SIR that was significantly less than 1 indicated that the NICU experienced fewer infections than predicted. A SIR that was not significantly different from 1 indicated that the observed number of infections was not statistically different from the number of predicted infections.

Results:
The observed and predicted numbers of CLABSIs, SIR point estimates, and 95% CIs for all 26 Tennessee NICUs were calculated and published on a single, color-coded "caterpillar plot" in Tennessee's second public report on HAIs. The SIR provided a risk-adjusted summary measure of the CLABSI experience in each NICU, and the graphical display facilitated interpretation and presentation of NICU-level data. In particular, the plot allowed for rapid identification of facilities with significantly low or high SIRs.

Conclusions:
The SIR is a useful tool for analysis and presentation of NICU-level CLABSI data because it provides a single metric for performing comparisons across several strata. For more granular comparisons, infection rates remain the metric of choice.

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Abstract ID: **1053960** Presentation Type: **Poster Presentation**

Title: **Implementation of National Healthcare Safety Network laboratory-identified (LabID) event surveillance**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Healthcare associated infections (HAI), Surveillance**

Abstract Text

Background:
In the National Healthcare Safety Network (NHSN), laboratory-identified (LabID) events can be used for surveillance of multidrug-resistant organisms and Clostridium difficile infection (CDI). In July 2010, Tennessee mandated reporting of methicillin-resistant Staphylococcus aureus (MRSA, positive blood cultures only) and CDI LabID events occurring in the emergency department (ED) or in any inpatient location facility-wide (FacWideIN). Facilities participating in a MRSA prevention collaborative with the Tennessee Center for Patient Safety (TCPS) must also report MRSA LabID events (all clinical cultures) FacWideIN or in select units. Facilities participating in a MRSA prevention collaborative with the state quality improvement organization (QSource) must report MRSA LabID events (all clinical cultures) and "infection surveillance" events in one or more units. Tennessee Department of Health (TDH) staff recognized reporting differences as a source of confusion for infection preventionists (IPs), particularly when reporting events in multiple locations. To ensure data quality, TDH aimed to develop a standardized process that IPs could use to identify LabID events for TDH, TCPS, and QSource.

Methods:
Microsoft Excel was used to develop a process for identifying CDI and MRSA LabID events. TDH staff created Excel templates and step-by-step instructions with screen shots of corresponding Excel spreadsheets. For MRSA, separate instructions were created for facilities reporting to 1) TDH only, 2) TDH plus TCPS FacWideIN, and 3) TDH plus QSource select units. Each set of CDI and MRSA instructions was created in two versions: one using Excel 2003 and one using Excel 2007.

Results:
Each set of instructions listed a series of steps for identifying LabID events. First, IPs would obtain a spreadsheet of necessary laboratory information, such as patient information, date of admission, date of specimen collection, and specimen source. Instructions for generating a spreadsheet from a comma separated values (CSV) file were also provided. IPs would then filter the data for the appropriate specimen type (e.g., blood or all clinical cultures) and location (FacWideIN, ED, or select unit). Next, IPs would sort the data by patient identifier and date of specimen collection and identify LabID events by implementing the "14-day rule" (for MRSA blood cultures only or CDI) or the "first-in-month rule" (for all clinical MRSA cultures). These steps were repeated as needed for additional specimen types and locations. IPs would then filter the results for LabID events, which could be entered into NHSN all at once.

Conclusions:
Identification of LabID events was standardized, and IPs were better equipped to follow MRSA

reporting requirements.

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Abstract ID: **1046532** Presentation Type: **Poster Presentation**

Title: **Epidemiology of influenza-like illness and treatment during the 2009 H1N1 pandemic through the Behavioral Risk Factor Surveillance System - United States, 2009â€“2010**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Health care, Influenza / Pandemic influenza, Influenza surveillance**

Abstract Text

Background:
CDC estimates that in the United States about 61 million cases of 2009 H1N1 may have occurred April 2009 - 2010, a majority in individuals who likely did not seek healthcare. Before 2009 H1N1, no population-based surveillance monitored non-medically attended persons reporting influenza-like illness (ILI). To better capture this population, CDC deployed an ILI module through the Behavioral Risk Factor Surveillance System (BRFSS) in 51 sites.

Methods:
We analyzed responses from 51 sites for September 2009 - March 2010. We evaluated reported ILI (fever with cough or sore throat), healthcare-seeking behavior, reported medical diagnosis of influenza infection, and receipt of antiviral treatment. Outcomes were stratified by sex and age group, and linear contrasts were used to evaluate statistical differences.

Results:
Among 217,120 respondents, 8.1% reported ILI; this varied significantly by sex and age. Females reported ILI more often (9.0%) than males (7.1%). Respondents aged 18-49 years reported ILI more often (10%) than those respondents aged 50-64 years (6.8%) or ≥65 years (3.2%).
Among respondents with ILI, 40% sought healthcare; this varied significantly by sex and age. Females sought healthcare for ILI more frequently (45%) than males (33%). Respondents aged ≥65 years sought healthcare more often (56%) than those respondents aged 18-49 years (38%) or 50-64 years (43%).
Among respondents with ILI who sought healthcare, 26% reported receiving a medical diagnosis of influenza; this varied significantly by age but not by sex. Respondents aged 18-49 years received a clinical diagnosis of influenza more often (30%) than did respondents aged 50-64 years (20%) or ≥65 years (17%).
Among respondents diagnosed with influenza, 36% reported treatment with influenza antiviral medications; this varied significantly by age but not by sex. Respondents aged 18-49 years reported receiving antiviral medication more often (39%) than did respondents aged 50-64 years (27%) or ≥65 years (22%).

Conclusions:
Females were more likely to report ILI and to seek healthcare than males were. While older respondents were more likely to seek healthcare for ILI, younger respondents were more likely to report a medical diagnosis of influenza as well as antiviral treatment. Although the true percentage of reported ILI due to 2009 H1N1 remains unknown, these data were a useful adjunct to national influenza surveillance and provided an important source of information on the epidemiology of influenza in a population that has been previously difficult to assess-- persons with ILI who did not seek healthcare.

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Abstract ID: **1060267** Presentation Type: **Poster Presentation**

Title: **Hospital charges and length of stay associated with surgical site infections following coronary artery bypass grafts in New York State, 2008â€“2009 ***

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Healthcare associated infections (HAI), Hospital data, Infection control**

Abstract Text

Background:
The financial burden of surgical site infections (SSIs) in the U.S. was estimated at $1.6 billion annually in 1998. Individual and multi-center studies have evaluated the increase in hospital charges and length of stay (LOS) attributable to SSIs. This study used statewide data to determine the impact of SSIs of the chest following coronary artery bypass grafts (CABGs) on hospital charges and LOS in New York State (NYS).

Methods:
Data from the National Healthcare Safety Network, NYS Cardiac Surgery Reporting System, and Statewide Planning and Research Cooperative System were used to perform a statewide analysis of all patients who had CABGs in NYS in 2008 and 2009. The outcome variables were hospital charges and LOS following CABG, both of which included data for initial stay and readmission, and both of which were log-transformed to produce a normal distribution for regression analysis. Independent variables included chest infection status, age, sex, body mass index, duration of procedure, diabetes, congestive heart failure, renal disease, chronic obstructive pulmonary disease, respiratory failure, American Society of Anesthesiologists (ASA) score, and type of health insurance. Multiple linear regressions were used to estimate the mean increase in hospital charges and LOS attributable to CABG SSIs.

Results:
After eliminating 1772 cases with incomplete data, the analysis included 27,388 patients; 571 (2.2%) patients developed post-CABG SSIs. Patients who had SSIs following CABG had hospital charges that were 1.55 times higher (p<.0001, 95% CI 1.49, 1.62) and a LOS that was 2.15 times longer (p<.0001,

95% CI 2.05, 2.25) than patients who did not have SSIs. Twenty-nine million dollars (0.8%) in CABG-related hospital charges and over 4,800 (1.7%) hospital days after CABG statewide per year were attributable to SSIs of the chest. Although patients with SSIs comprised only 2.2% of the procedures, they accounted for 3.0% of the hospital charges and 3.9% of the hospital days. Government-funded health insurance programs were charged over $21 million attributable to CABG SSIs.

Conclusions:
In NYS, patients with SSIs following CABGs had significantly increased hospital charges and lengths of hospital stay compared to patients without SSIs. Public reporting of CABG SSIs may increase awareness and should prompt collaborations within the healthcare community to develop evidence-based interventions aimed at further reducing CABG SSIs.

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Abstract ID: **1059568** Presentation Type: **Poster Presentation**

Title: **Differences in assisted living facility and nursing home compliance with federal bloodborne pathogen regulations, Virginia, 2010**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI), Hepatitis, Occupational safety**

Abstract Text

Background:
Multiple hepatitis B outbreaks associated with inappropriate glucose monitoring practices have occurred over the last decade in Virginia assisted living facilities (ALFs) and nursing homes (NHs) and continue to occur. The Virginia Department of Health (VDH) assessed awareness of and compliance with bloodborne pathogen (BBP) regulations to identify differences between the ALF and NH settings and plan to bridge recognized gaps.

Methods:
VDH staff distributed an online infection prevention needs assessment to NHs and ALFs in September 2010. VDH identified components of the Occupational Safety and Health Administration (OSHA) BBP regulations as proxy measures for current awareness of and compliance with proper glucose monitoring practices. These components included: having a written exposure control plan; training employees with potential occupational exposure to infectious materials upon initial assignment and at least annually thereafter; and maintaining staff hepatitis B vaccination records. ALFs were defined as stand-alone assisted living facilities. Frequencies and analyses were conducted using SAS v. 9.2.

Results:
Eleven percent of ALFs (n=56) and 34% of NHs (n=88) responded to the assessment. All stand-alone ALFs (n=36) and nearly all NHs (98%) were aware of the OSHA BBP Exposure Control Plan. Proportionally, significantly fewer ALFs than NHs reported compliance in the following areas: having written policies addressing glucose monitoring (82% vs. 99%, $p<0.001$); providing applicable training

upon employment (67% vs. 86%, p=0.02); providing applicable training at least annually (76% vs. 93%, p=0.01); and recording employee hepatitis B immunizations or proof of immunization (73% vs. 98%, p<0.001). More ALFs than NHs indicated the need for training on BBP-related policies (53% vs. 29%, p-value=0.02) or BBP-related practices (50% vs. 22%, p <0.01).

Conclusions:
The OSHA BBP regulations provide facility staff and residents with protection against disease transmission. Results from the ALF and NH needs assessment demonstrate that there are OSHA BBP compliance gaps that vary by setting. Nursing homes can enhance their prevention practices by ensuring their facility provides BBP training at least annually as well as upon employment. Assisted living facilities have more areas for improvement including maintaining sufficient written BBP policies, conducting employee BBP training, and keeping employee hepatitis B immunization records. Although many ALFs may not currently meet OSHA BBP standards, ALFs recognize the need for BBP training. In spring 2011, VDH will provide infection control training to ALF and NH providers, inspectors, and local epidemiologists to address identified inconsistencies between policies and practices including compliance with the OSHA BBP regulations.

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Abstract ID: **1048971** Presentation Type: **Poster Presentation**

Title: **Population-based surveillance for methicillin-resistant Staphylococcus aureus infections among high school football and wrestling participants - Nebraska, 2008â€“2010**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Data/Surveillance, Epidemiology, School health**

Abstract Text

Background:
To monitor occurrence of methicillin-resistant Staphylococcus aureus (MRSA) infections among Nebraska high school athletes, the Nebraska Department of Health and Human Services Office of Epidemiology first initiated population-based surveillance during the 2006-07 and 2007-08 school years. Findings of this surveillance established MRSA as an emerging cause of infections among Nebraska youth, particularly football and wrestling participants; from 2006-07 to 2007-08, physician-diagnosed MRSA incidence per 10,000 wrestlers increased from 19.6 to 60.1, and incidence per 10,000 football players increased from 5.0 to 25.1. Surveillance conducted at regular intervals has since been continued to monitor trends.

Methods:
To facilitate ongoing surveillance, a list of delegated official contacts in each of Nebraska's 312 high schools has been maintained; prevention and control resources and surveillance findings are regularly provided. During both the 2008-09 and 2009-10 school years, we developed four Internet-based

questionnaires to survey schools following the completion of the respective football and wrestling seasons. Each school's administration has delegated responsibility for completing the survey to an appropriate official having knowledge of procedures for prevention, identification, and control of infections among athletes. We collected number of participants for both football and wrestling in each school and number of athletes with physician-diagnosed MRSA infections to calculate statewide attack rates per 10,000 participants.

Results:
Of 312 Nebraska schools, 239 (76.6%) and 251 (80.4%) responded to 2008-09 and 2009-10 football surveys, respectively. Of respondents, 97.5% (233/239) and 98.4% (247/251) had football programs of which 6.4% (15/233) and 3.6% (9/247) reported ≥1 physician-diagnosed MRSA-affected participant. Similarly, of 312 schools, 177 (56.7%), and 251 (80.4%) responded to 2008-09 and 2009-10 wrestling surveys, respectively. Of respondents, 78.0% (138/177) and 75.3% (189/251) had wrestling programs of which 7.2% (10/138) and 7.4% (14/189) reported ≥1 physician-diagnosed MRSA-affected participant. Incidence per 10,000 football players decreased from 19.0 to 11.5, and incidence per 10,000 wrestlers decreased from 60.8 to 50.0 from 2008-09 to 2009-10, respectively.

Conclusions:
Estimated incidence of physician-diagnosed MRSA infections among Nebraska high school football and wrestling participants decreased substantially during 2009-10 compared with 2008-09 demonstrating that the apparent increasing incidence has not continued. By maintaining updated contact information of at least one official in each Nebraska high school and communicating regularly, we have continued surveillance with high rates of participation to monitor MRSA incidence among high school athletes over four consecutive school years.

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Abstract ID: **1057692** Presentation Type: **Poster Presentation**

Title: **Adherence to central line insertion practices in intensive care units in New Hampshire under mandated state reporting, January 2009 â€“ June 2010**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI)**

Abstract Text

Background:

Central line-associated blood stream infections (CLABSIs) increase morbidity, mortality and financial cost for hospitalized patients. Adherence to proper central line insertion practices (CLIP) can decrease CLABSIs in the healthcare setting. In 2009, New Hampshire (NH) mandated acute care hospitals to monitor and report CLIP in adult intensive care units (ICUs) using the National Healthcare Safety Network (NHSN).

Methods:

The central-line inserter or a third party observer recorded CLIP for all ICU central-line insertions, using the NHSN CLIP adherence monitoring form. Adherence to the CLIP "bundle" was based on documented compliance with four practices:
1. Hand hygiene,
2. Use of maximal barrier precautions (mask, cap, full sterile drape, sterile gown and gloves),
3. Skin preparation with chlorhexidine gluconate and,
4. Assuring skin is fully dry prior to skin puncture.

Bundle adherence was calculated as a percentage of all insertions and differences were assessed using chi-square statistics and the Cochran-Armitage test for trend.

Results:

Between January 1, 2009 and June 30, 2010, 24 hospitals documented 3,212 ICU central line insertions, with 94.5% adherence to the NHSN CLIP bundle (95% confidence interval: 93.6, 95.2). Statewide bundle adherence increased significantly over this time period, from 90.0% in the first quarter of 2009, to 97.0% in the second quarter of 2010 ($p<0.0001$).
Bundle adherence was higher in larger (non-critical access) hospitals (n=13) compared to critical access hospitals (n=11) (94.8% vs. 88.9%, $p=0.0003$). Over the same time period, the larger hospitals had lower CLABSI rates in medical-surgical ICUs than the national average (0.9 vs. 1.5 infections per 1,000 central-line days, $p=0.04$). The corresponding rate in critical access hospitals was similar to national rates (1.7 vs. 1.5 infections per 1,000 central-line days, $p=0.50$).
Of the 178 insertions that did not adhere to the bundle, lack of maximal barrier precautions accounted for 140 (78.7%). The most frequently omitted barriers were cap (50.0%) and mask (46.4%). Insertions with the lowest bundle compliance were femoral site insertions (88.1%) and insertions by fellows or medical residents (86.4%). Insertions with the highest bundle compliance were those performed by an IV team (99.2%).

Conclusions:

Statewide CLIP bundle adherence increased significantly over the first year and a half of mandatory reporting. This may suggest that mandated reporting has encouraged safer insertion practices, although observation bias may have played a role. These results provide concrete suggestions for improvement, such as encouraging use of maximal barrier precautions, targeting education to critical access hospitals, and using IV teams when available.

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Abstract ID: **1056244** Presentation Type: **Poster Presentation**

Title: **Antibiogram 2002-2009 in Washoe County Nevada - Know the local data, prevent antimicrobial resistance**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Antimicrobial resistance, Healthcare associated infections (HAI), Local epidemiology**

Abstract Text

Background:
Antibiogram is an overall profile of antimicrobial susceptibility of a microbial species to a battery of antimicrobial agents. One of the 12 steps to prevent antimiobial resistance in various healthcare settings recommended by CDC is to encourage clinicians to use local data. Since 2002, Washoe County Health District (WCHD) has been collaborating with local laboratories to produce an aggregated community-wide antibiogram every year. Antibiogram has been well received by local medical community. The objectives of this paper are: 1) to summarize findings on major drug resistant organism such as Methcillin-resistant staphylococcus aureus (MRSA), Vancomycin-resistant enterococci (VRE), drug-resistant streptococcus pneumoniae (DRSP), extended-spectrum beta-lactamase (ESBLs), and carbapenem resistant enterobacteriaceae (CRE); 2) to present detailed antibiotic susceptibility data and their trends on 18 commonly seen organisms in healthcare setting for 2002-2009.

Methods:
Between 2002 and 2006, WCHD collected institutional antibiograms from local laboratories every year. Between 2007 and present, only local clinical laboratories provided such data. An excel template was developed for each organism to covert susceptibility percent to the number of isolates susceptible and then aggregate them together to produce an overall antibiotic susceptibility percentage. Number of isolates tested less than 10 was excluded from data conversion process. Aggregated number of isolates less than 30 was excluded from final calculation and therefore not reported. All isolates reported represented inpatients seen in local hospitals and outpatients seen in emergency departments. The resistance rate comparison between years was assessed by Chi-square statistics using OpenEpi Program.

Results:
The rate of MRSA significantly increased from 35% in 2002 to 48% in 2007 ($P<0.001$). The MRSA rate was 47% in 2009, no statistical difference compared to 48% in 2007 ($P=0.36$). The rate of VRE increased from 9.8% in 2002 to 11.6% in 2007 ($P<0.001$). The VRE rate was 11.9% in 2009, no statistical difference compared to 11.6% in 2007 ($P=0.87$). The rate of DRSP decreased in the past several years in Washoe County. ESBL screening data reported from one laboratory showed 2.3% of E. coli/Klebsiella spp./Proteus mirabilis produced ESBLs. The rate of CRE was 0.7% (26/3879) in 2009 in Washoe County. An enhanced surveillance for CRE began in June 2010 and is ongoing in Washoe County.

Conclusions:
The antibiotic resistant rate increased significantly between 2002 and 2007 but was stable between 2007 and 2009. The rates of ESBLs and CRE were low in Washoe County.

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Abstract ID: **1062089** Presentation Type: **Poster Presentation**

Title: **Decreasing incidence of pertussis in Massachusetts following introduction of Tdap ***

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Epidemiology, Surveillance, Vaccination**

Abstract Text

Background:
The Massachusetts Department of Public Health (MDPH) has conducted enhanced pertussis surveillance since the early 1990s. Since then, every laboratory-confirmed case has been investigated by an MDPH epidemiologist or an MDPH trained local board of health nurse. The MDPH Hinton State Laboratory Institute (HSLI) is the only state laboratory in the US that produces pertussis serology test results that are recognized by the Centers for Disease Control and Prevention as meeting the case definition of pertussis, allowing MDPH to capture cases with longer cough durations compared to PCR and culture testing alone. MDPH began providing Tdap for adolescents in the fall of 2005. There have been reports of increasing pertussis incidence in cities and states across the US in 2010 and early 2011, but this trend is not evident in Massachusetts. We hypothesize that the decrease in pertussis incidence is due to adolescent vaccination with Tdap, as demonstrated by the changing age distribution of cases.

Methods:
We calculated the incidence of confirmed pertussis cases from 2000 through 2010 in Massachusetts. We also evaluated the age distribution of cases during these years. A confirmed case must meet one of the following criteria: (1) culture confirmed, (2) serology positive at HSLI with at least 14 days of cough, (3) PCR positive with at least 14 days of cough plus an additional symptom (whoop, paroxysms, or post-tussive vomiting), or (4) meets clinical case definition in criteria 3 and is epi-linked to a lab-confirmed case. Tdap vaccination rates in 7th graders are captured by our annual survey of school nurses.

Results:
The highest annual incidence of pertussis in Massachusetts in recent years was in 2004, with an incidence of approximately 20 cases per 100,000. In comparison, there were approximately 12 cases/100,000 in 2008, 6 cases/100,000 in 2009, and 5 cases/100,000 in 2010. Since 2007, we have seen that adults aged 20 years and older make up an increasing proportion of the total cases while the proportion of cases among 11-19 year olds continues to decline.

Conclusions:
Pertussis incidence has substantially declined since the introduction of Tdap. Annual school immunization surveys show that at least 78% of 7th grade children received a dose of Tdap in 2009. Given that there have been no significant changes to our enhanced surveillance methodology, and given the consistent change in the age of pertussis cases in Massachusetts in recent years, we believe the steady decline in pertussis incidence is likely due to the use of Tdap among adolescents.

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Abstract ID: **1024028** Presentation Type: **Poster Presentation**

Title: **Changing epidemiology of pertussis in Dakota County, MN: 2002 â€“ 2009**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Children and adolescents, Outbreaks, Vaccination**

Abstract Text

Background:
Pertussis is a vaccine-preventable disease that is currently on the rise in the United States. Recent trends show that it is disproportionately affecting adolescents. Reasons for these changes are currently unknown. This study aims to compare epidemiology of the three most recent pertussis outbreaks in Dakota County, MN and to identify potential causes of the increased incidence of pertussis in adolescents.

Methods:
All Dakota County pertussis cases reported to the Minnesota Department of Health during 2002-2009 were included in the study. Cases were compared by age, sex, vaccine history, and birth cohort.

Results:
The 2004-05 and 2008-09 outbreaks were 2.12 and 3.32-times larger than the 2002 outbreak, respectively. Persons born in 1997-1999 had a significantly higher odds of infection in 2008-09 compared to the 2004-05 (OR=8.77) and 2002 (OR=6.07) outbreaks. For cohorts 1991-93, the odds of being a case decreased between 2004-05 and 2008-09. The proportion of cases receiving more acellular (versus whole-cell) vaccine was significantly higher for birth cohorts 1997-2002.

Conclusions:
Persons born in 1997-99 experienced the largest pertussis increase between 2004-05 and 2008-09 outbreaks. This group was among the first to receive the acellular pertussis vaccine, suggesting that the acellular-conferred immunity may have waned between the two outbreaks. Persons receiving only acellular vaccine may have an increased risk for pertussis infection as they reach 9-11 years old. Increased surveillance of adolescents entering this age group is needed to assess if trends persist.

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Abstract ID: **1056105** Presentation Type: **Poster Presentation**

Title: **Case-control study of sporadic salmonellosis cases in Florida**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Epidemiology**

Abstract Text

Background:
Among bacterial enteric diseases, Salmonella is one of the most common causes of illnesses, with 51,000 cases in the U.S. reported to the Centers for Disease Control and Prevention in 2008. During 2009, Florida reported 6,741 cases of salmonellosis, more than any other state in the country. The 2009 incidence rate (35.8 per 100,000) of salmonellosis increased 30.8% from the previous five years. The increase in 2009 was geographically concentrated in Florida's central region and among infants and children.
Most salmonellosis cases are not part of a recognized outbreak, nor do public health investigators understand clearly how or why the person became infected.
The Florida Department of Health initiated a case-control study in order to determine risk factors for sporadic cases of salmonellosis in children less than 5 years old in the central region of Florida and to determine whether risk factors vary by age group and across seasons of the year.

Methods:
The study aimed to enroll 200 cases and 400 controls from 8 central Florida counties. Cases and controls were enrolled between October 4, 2010 and March 31, 2011. Community controls were identified using purchased targeted phone list to randomly select and contact parents of children 0-4 years old in the 8 county study area. Cases and controls were frequency matched on age group (<1, 1-2, 3-4) and month of interview with a goal of a 2:1 ratio of controls to cases. Isolates for all cases enrolled in the study were forwarded to Bureau of Laboratories where serogrouping and pulsed-field gel electrophoresis (PFGE) tests were performed. Univariate analyses, stratified analysis, and logistic regression will be used to assess risk factors.

Results:
As of December, 2010, 77 cases and 59 controls were enrolled in the study. Of the 77 enrolled cases, 25 cases (33%) were <1 year old, 32 cases (42%) were 1-2 years old, and 20 cases (26%) were 3-4 years . Serogroup D1 was the most common serogroup, accounting for 37% of all cases. Similarly, serotype Javiana accounted for 41% the reported serotypes. Case and control enrollment will continue through March 31, 2010. Complete study results will be available by June, 2011.

Conclusions:
Many Salmonella illnesses could be prevented if public health officials had a better understanding of the risk factors of this disease, and thus could recommend specific preventive measures. The knowledge gained from this study will be applied to future prevention efforts of sporadic cases and will

help improve educational messages in Florida.

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Abstract ID: **1055436** Presentation Type: **Poster Presentation**

Title: **Social networking for infection preventionists: A communication tool implemented by the Tennesssee Department of Health**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Communication, Healthcare associated infections (HAI), Infection control**

Abstract Text

Background:
Communication between the Tennessee Department of Health (TDH) and infection preventionists (IPs) throughout the state is a critical component of monitoring healthcare-associated infections (HAIs). Dissemination of up to date information to IPs is a high priority. Email list serves are expensive and often members have to read many messages that do not apply to them. Files can also be too large to attach to email. We thus developed a secure and cost efficient online resource where the TDH HAI section and IPs in Tennessee (TN) can communicate, post information, and learn from one another.

Methods:
TDH created an online workspace at Ning.com. IPs were encouraged to join the site through emails and during monthly phone calls for state users of the National Healthcare Safety Network (NHSN). Specific working groups were created on the site which members can join if they are interested in specific topics. These include groups for surveillance of multiple types of infections reported to NHSN as well as groups on other topics such as information technology and performance improvement. TDH maintains administration rights and has to approve all new members to maintain the security of the site and keep it closed from the press and general public. As this is classified as a social networking site some facility computer systems have blocked access. Thus, a form letter explaining the purpose of the site was provided to IPs at these facilities to submit to their administration and request approval.

Results:
The TN HAI workspace now has 182 members and 11 working groups. TDH has used the site to post important event dates, recruit for studies in the Emerging Infections Program and disseminate educational material regarding monitoring and reporting HAIs. Slide sets too large for email are often posted to the site. In turn, IPs have utilized the site to ask questions to TDH, discuss problems encountered, and share information with each other enabling them to learn from their colleagues' experiences. The cost of the site has been a fraction of the cost that would have been required for TDH to build its own online website. Providing the letter from TDH to hospital administrators has been very successful in obtaining approval for IPs to access the site.

Conclusions:
Utilization of a social network site has proved to be a secure, cost efficient, and time efficient method

for communication between TDH and IPs in the state of TN. The online workspace has been an invaluable tool in providing resources to IPs and their participation in the site has been excellent. We will continue to look for new ways to take advantage of the site which can be of further benefit to IPs across the state.

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Abstract ID: **1025254** Presentation Type: **Poster Presentation**

Title: **Implications of changes in the characteristics of homeless tuberculosis patients on tuberculosis prevention and control -- California, 1994 - 2008 ***

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Health disparities, Infectious Diseases, Vulnerable populations**

Abstract Text

Background:
Homelessness is a risk factor for tuberculosis. At least eight outbreaks in the homeless population have occurred in California in the last five years. Homelessness is a complex and changing issue that can challenge tuberculosis control and successful treatment of tuberculosis patients.

Methods:
We analyzed routine surveillance data reported to the California Department of Public Health during 1994 to 2008. Trends in demographic characteristics, risk factors, and outcomes of tuberculosis patients who were reported as experiencing homelessness in the 12 months prior to diagnosis were evaluated. We also compared characteristics of homeless and non-homeless tuberculosis patients reported in 2006 through 2008.

Results:
The number of homeless cases decreased 58%, from 390 in 1994 to 164 in 2008. Of all tuberculosis cases, the percentage that were homeless decreased from 8.1 in 1994 to 6.1 in 2008 (p-value for trend <0.0001). Homeless cases were decreasingly African American and increasingly older, Hispanic, and foreign-born (all p-values <0.0001). No change over time was observed for gender or substance use. There was a nonsignificant trend towards increasing infectiousness based on sputum smear positivity among homelesss pulmonary tuberculosis patients (p=0.0846). Homeless patients were increasingly likely to receive some directly observed therapy and to complete treatment (both p<0.0001), and decreasingly likely to die (p=0.0039). Compared to non-homeless tuberculosis patients, homeless patients reported between 2006 and 2008 were significantly more likely to be male, United States (US)-born, sputum smear positive, substance users, and directly observed therapy recipients (all p-values

<0.001). Homeless patients were less likely to complete treatment than non-homeless patients (p=0.0022). The difference in treatment completion was accounted for by foreign-born homeless patients, who were more likely than US-born homeless patients to be lost after beginning treatment. US-born homeless tuberculosis patients completed treatment at similar percentages as non-homeless tuberculosis patients.

Conclusions:
Despite shifting demographics and improving treatment outcomes, homeless tuberculosis patients remain different from non-homeless tuberculosis patients. Our results show that providers successfully treat most homeless tuberculosis patients, with the exception being recent decreases in treatment completion for foreign-born homeless persons. Homeless patients likely require more resources as indicated by the more frequent use of directly observed therapy than in non-homeless patients. Tuberculosis control strategies for homeless patients need to take shifting demographics into account.

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Abstract ID: **1061471** Presentation Type: **Poster Presentation**

Title: **Strategies used by local health departments to prevent and control tuberculosis in homeless persons â€“ California, 2010**

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Infectious Diseases, Local Public Health Agencies, Vulnerable populations**

Abstract Text

Background:
While the number of homeless tuberculosis patients has steadily decreased in California, tuberculosis outbreaks within homeless populations continue to occur. Systematic information about efforts to address tuberculosis in the homeless population in California was not available.

Methods:
We surveyed 18 local health departments (“departments”) that reported an average of at least one homeless tuberculosis case per year between 2007 and 2009. The survey covered possible strategies for addressing tuberculosis in homeless populations including case management and contact investigation, case finding, standardized screening, and education.

Results:
All 18 departments responded. Eight (44.4%) departments experienced at least one outbreak in the homeless population in the prior five years. All departments reported that they use directly observed therapy throughout treatment in homeless tuberculosis patients. Sixteen (88.9%) respondents provided housing, increased use of incentives/enablers, or enhanced case management for homeless persons. Of the 17 departments in which an infectious tuberculosis patient resided in a homeless shelter prior to

diagnosis, 15 (88.2%) departments screened all exposed persons including close contacts, other shelter residents, staff, and volunteers. Eleven (61.1%) jurisdictions have a standardized shelter-based screening program run by the health department or an outside organization, but not all shelters participate and/or screening is not required in nine (81.8%) programs. Departments in jurisdictions with a screening program reported 80% of all homeless tuberculosis cases reported in California between 2007 and 2009. Of the eleven jurisdictions with a homeless screening program, seven (63.6%) implemented the program fully or partly in response to outbreaks. Departments have limited information about whether shelters refer symptomatic clients for evaluation; four (22.2%) departments had information about referral practices at all shelters, ten (55.6%) had information about only some shelters, and four (22.2%) were unaware of shelter practices.

Conclusions:
Of the surveyed departments, nearly all had strong case management practices to ensure completion of treatment for homeless tuberculosis patients. While many jurisdictions have shelter screening programs, most do not appear to be comprehensive. Most jurisdictions with standardized shelter-based screening initiated the program due to outbreaks, suggesting that activities are often reactive. Shelter screening programs and knowledge about shelter referral practices are heterogeneous across the surveyed departments. Further research and updated evidence-based national recommendations are needed to help resource-constrained departments prioritize activities to control tuberculosis in homeless persons.

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Abstract ID: **1060417** Presentation Type: **Poster Presentation**

Title: **Transmission of hepatitis B virus associated with unsafe blood glucose monitoring practices in an assisted living facility - North Carolina, 2010**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Healthcare associated infections (HAI), Outbreak investigations, Viral hepatitis**

Abstract Text

Background:
Because of their association with outbreaks of acute hepatitis B virus (HBV) infection, the Centers for Disease Control and Prevention recommend that diabetes fingerstick devices be restricted to individual use. On October 12, 2010, the North Carolina Division of Public Health was notified of 4 cases of acute HBV infection among residents with diabetes from an assisted living facility. We investigated to identify risk factors and recommend control measures.

Methods:
We conducted a retrospective cohort study of all persons who had resided in the facility at any time during January 1-October 13, 2010. We reviewed facility records regarding potential healthcare

exposures and behavioral risk factors. We requested HBV testing of the cohort and defined a case of HBV infection in a resident ≥6 weeks after admission to the facility as either (1) positive HBV surface antigen and HBV core IgM results from serum, or (2) clinical evidence of acute hepatitis (i.e., jaundice or elevated serum transaminase levels) identified in a resident without HBV surface antigen results. We observed diabetes care practices within the facility and interviewed staff regarding infection control policies and practices.

Results:
Among 87 patients in the cohort, 8 had HBV infection and 32 were considered susceptible to infection. Residents were excluded if they were immune to HBV (20), had chronic HBV infection (1), or if they had unknown HBV infection status (26). All 8 residents with HBV infection were hospitalized, and 6 (75%) died from complications of hepatitis. All 8 residents had been exposed to assisted blood glucose monitoring (AMBG) in the facility (risk ratio [RR]: undefined). Diabetes was significantly associated with acute HBV infection (RR: 16.3; 95% confidence interval [CI]: 2.2-118.7). We identified breaches in infection control during diabetes care, including sharing of fingerstick lancing devices that are intended for single patient use and sharing of blood glucose meters absent cleaning and disinfection between residents.

Conclusions:
Eight cases of facility-associated HBV infection, including 6 deaths, occurred in association with unsafe practices during AMBG. This outbreak underscores the need for continuing efforts to increase awareness of and compliance with infection control guidelines in assisted living facilities.

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Abstract ID: **1062321** Presentation Type: **Poster Presentation**

Title: **Hospital reporting practices and resource needs for mandatory healthcare-associated infections reporting using the National Healthcare Safety Network**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Healthcare associated infections (HAI), Infectious Diseases, Surveillance**

Abstract Text

Background:
Healthcare-associated infections (HAI) are an important public health issue, causing an estimated 1.7 million infections annually in the United States. In 2009, New Hampshire (NH) required hospitals to report HAI using the National Healthcare Safety Network (NHSN). NH HAI Program surveyed hospitals in an effort to describe NHSN reporting methods for HAI surveillance.

Methods:
A web-based survey was distributed to all 26 acute care hospitals in NH. Reporting processes for

central line-associated bloodstream infections (CLABSI), central line insertion practices (CLIP), and surgical site infections (SSI) were included. For each measure, questions were asked about data collection and entry methods and estimates of staff and staff hours required to report HAI data in NHSN. Data were analyzed and frequencies calculated for each response.

Results:
Twenty-five (96%) of 26 hospitals responded to the survey. The CLABSI section was responded to by 24 (92%) of 26 hospitals. Fourteen (58%) hospitals calculated central line days via daily hand counting in the unit, 7 (29%) used information available in hospital information systems, and 4 (17%) hospitals used some other method. CLABSI reporting required on average 5 hours per month and involved 3 individuals. The CLIP section was responded to by 23 (89%) of 26 hospitals. Twenty (87%) hospitals recorded CLIP data on paper forms and 3 (13%) entered information directly in a hospital information system at the time of insertion. Thirteen (57%) hospitals had an observer complete the CLIP form, 3 (13%) had the inserter, 5 (22%) used some combination, and 2 (13%) did not respond. CLIP reporting required on average 7 hours per month and involved 3 individuals. The SSI section was responded to by 25 (96%) of 26 hospitals. Fifteen (60%) hospitals manually entered denominator surgical procedure data into NHSN, 8 (32%) uploaded a data file, 1 (4%) used both methods, and 1 (4%) did not respond. SSI reporting required on average 8 hours per month and involved 3 individuals. For 25 responding hospitals, data entry into NHSN was performed by infection prevention staff in 3 (12%), quality staff in 1 (4%), and a combination in 21 (84%) hospitals.

Conclusions:
HAI reporting in NHSN requires significant hospital effort to collect and enter data. HAI surveillance and reporting practices vary by hospital. Determination as to whether such variations impact data quality or reported HAI rates requires further evaluation. Assessment of reporting practices is useful to identify target areas for resources and technical assistance from the Health Department.

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Abstract ID: **1062302** Presentation Type: **Poster Presentation**

Title: **Varicella incidence reduction in relation to vaccine recommendations and school entry requirements-New Hampshire, 2006 - 2010**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Infectious Diseases, Policy/Policy Development, Vaccination**

Abstract Text

Background:
Primary infection with varicella-zoster virus is a common pediatric vaccine-preventable illness. Varicella vaccine was licensed for use in the United States in 1995 and in 1996 the Advisory Committee on Immunization Practices (ACIP) recommended vaccination of healthy children. In 2003, New Hampshire (NH) began requiring one dose of varicella vaccine for childcare and school entry and in 2009, the requirement was increased to two doses, reflecting the 2006 updated ACIP recommendations. NH

varicella vaccination coverage is measured by the National Immunization Survey (NIS), NIS-Teen, and the NH School Vaccination Survey (SVS). Varicella case reporting began in 1983, was discontinued in 1995, and reinstituted in 2005 to monitor impact of vaccine.

Methods:
Varicella vaccine uptake data from the series of national cross-sectional surveys and state-based school surveys were used to assess impact of changing recommendations and state requirements on varicella incidence. Varicella case report data from 2006 through 2010 were analyzed using descriptive epidemiologic methods to assess varicella incidence. Incidence calculations were stratified by age group and statistical significance testing was performed to compare incidence across groups.

Results:
Between 2000 and 2009, the NIS-measured vaccination coverage with one or more doses of varicella vaccine among 19-35 month old children increased significantly from 66.0% to 89.0%, with marginal non-significant increases since 2006 (86.3%). In 2009, the NIS-estimated vaccination coverage among 13-17 year olds was 97.2%. Estimated vaccination coverage for children entering kindergarten was 98.0% and 99.6% for those attending 7th grade in 2008 as measured by NH SVS. Between 2006 and 2010, varicella incidence decreased 60% from 420 cases in 2006 to 168 cases in 2010. Greatest reductions were in ages 5-9 and 10-14 years, where incidence decreased more than 70%. In 2006, varicella incidence in the 5-9 year age group was 237.6 cases per 100,000 persons compared to 67.5 cases per 100,000 in 2010 ($p<0.001$). In the 10-14 year age group, varicella incidence was 141.9 cases per 100,000 persons in 2006 compared to 40.9 cases per 100,000 in 2010 ($p<0.001$).

Conclusions:
Varicella incidence in NH has declined significantly since 2006 following increases in vaccination coverage among NH children. Reduction in varicella incidence in the 5-14 year age groups is likely partially attributable to enforced childcare and school entry requirements. The institution of a requirement for two doses of varicella vaccine in 2009 is expected to further decrease incidence of varicella in NH. Analysis of surveillance data is critical to informing public health policy decisions.

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Abstract ID: **1050285** Presentation Type: **Poster Presentation**

Title: **Validation of communicable disease reporting from hospitals using the hospital discharge database, Arizona, 2007-2009**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Assessments, Communicable disease, Data/Surveillance**

Abstract Text

Background:

Public health communicable disease reporting is critical to identifying outbreaks and controlling disease spread. Selected diseases are reportable by healthcare providers in Arizona via a passive system. Periodic evaluation of the surveillance system is important for identifying reporting gaps and strengthening the system. The goal of this three-year study is to assess the completeness of reporting for selected morbidities from hospitals, while refining validation methods for future use.

Methods:
The Arizona hospital discharge database (HDD) was used to identify inpatient and emergency department records with diagnoses corresponding to ICD-9 codes for 39 reportable morbidities for 2007 (inpatient only), 2008 (first half) and 2009. These records were matched to Arizona's surveillance database using an identifier created from date of birth, sex, and name. Medical records for a sample of unmatched HDD records were reviewed by county health departments to identify cases that should have been reported. The percentage of HDD records reported was calculated by morbidity and year. Revised estimates of the percentage of reportable cases reported were calculated using the findings of the medical record review. Each year's assessment was conducted separately, when HDD records became available, and with slight methodological refinements. For the 2009 analysis, only the primary and secondary diagnostic codes were used to select records.

Results:
454 (2007), 580 (2008) and 959 (2009) HDD records with the selected ICD-9 codes were analyzed. The overall percentage of HDD patients reported to the surveillance system varied by year (39%, 25%, and 64%, respectively) and morbidity. Morbidities with a high proportion reported include salmonellosis and listeriosis; morbidities with low reporting include hepatitis A, Haemophilus influenzae, and aseptic meningitis. However, medical record reviews in 2007-2008 revealed variation in the number of unmatched HDD records that were reportable—0 of 59 hepatitis A, 1 of 20 H. influenzae, 3 of 9 salmonellosis, and 35 of 58 aseptic meningitis—increasing the estimate of the proportion of reportable HDD records captured in the surveillance system to 67% for 2008.

Conclusions:
HDDs are imperfect for validating surveillance reporting; that is not their purpose and ICD-9 codes may not directly match for all morbidities. One example is the low proportion of unmatched hepatitis A and H. influenzae determined by record review to be reportable. Limiting record selection to primary and secondary diagnoses seems initially helpful. Despite the limitations of the method, comparison of these data, combined with selected medical record review, provides useful information about the reporting of hospitalized cases and has served as a basis for discussions between county health departments and reporting facilities.

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Abstract ID: **1062307** Presentation Type: **Poster Presentation**

Title: **Impact of laboratory-reporting on influenza surveillance, Arizona, 2004-2010**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Influenza surveillance**

Abstract Text

Background:
Influenza surveillance is an important way for public health authorities to assess the severity of an influenza season and make local policy recommendations. The challenge for many localities, however, is determining the most useful and feasible methods for tracking activity. In 2004, Arizona implemented a rule making positive influenza tests reportable to public health officials by laboratories performing the tests. Our objective is to compare surveillance sources and describe the value and limitations of influenza laboratory-reporting after six years.

Methods:
Three data sources from six seasons (2004-2010) were compared: laboratory-reported cases, state laboratory influenza testing, and the percentage of visits for influenza-like illness (ILI) from sentinel outpatient providers. Laboratory reports were analyzed by the week received and state laboratory data by the week tests were finalized. Cases with multiple reports were assigned to the earliest week. Reports were also assigned to four geographic regions. All three data sources were plotted together to examine differences in the timing of changing trends, statewide and by region.

Results:
Reports of rapid diagnostic tests were received prior to initial state laboratory influenza confirmation on 14 weeks across the six seasons. After the first case of each season was confirmed, 15% of weeks with statewide laboratory-reported cases had no state laboratory results available, with variation across regions (18-53%). Laboratories continued to report positive tests after state laboratory testing declined in all seasons. 15% of weeks with laboratory-reported cases did not have a statewide increase in ILI; regions varied from -9 to 25%. Small changes in ILI were generally seen several weeks after the initial laboratory reported-cases, and then increased somewhat earlier than either laboratory indicator in this retrospective analysis.

Conclusions:
Laboratory-reporting has greatly influenced Arizona's influenza surveillance activities, assisting with earlier detection of suspect cases, continued situational awareness throughout the season, and wider geographic coverage than from state laboratory and ILI activities alone. While ILI seems to be an earlier indicator in this analysis, during the season the increases are often subtle and heavily affected by late reporting from many providers. Limitations to laboratory reporting include lack of knowledge of the completeness and consistency of reporting and the data entry resources required prior to full implementation of electronic laboratory reporting. During the pandemic, influenza laboratory-reporting also helped with detection and later reporting of 2009 H1N1 cases.

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Abstract ID: **1059049** Presentation Type: **Poster Presentation**

Title: **Evaluation of the Centers for Disease Control and Prevention Chicago Quarantine Station's immigrant tuberculosis referral process**

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Evaluation, Immigration, Migrant health**

Abstract Text

Background:
Of the 12,904 tuberculosis (TB) cases reported in the United States in 2008, 59% occurred in foreign-born persons. Immigrants with inactive or latent TB conditions are strongly encouraged to complete a medical evaluation upon US arrival. The Centers for Disease Control and Prevention (CDC) Chicago Quarantine Station (CQS) has a unique immigrant referral process based on immigrants' stated destination address. For Chicago addresses, CQS staff makes an appointment for the immigrant at a Chicago-based TB clinic (referral type R1). For non-Chicago destination addresses, the immigrant is given the phone number for TB Control Program of either Cook County (R2) or the destination state (R3). CDC evaluated this referral process to determine its impact on initiation of and time to medical domestic evaluation.

Methods:
Illinois-bound immigrants with TB conditions arriving during October 1, 2008 - September 30, 2010, were identified through CDC's Electronic Disease Notification system. Referral type was determined by point of entry (POE) (O'Hare International Airport vs. other) and destination (Chicago, suburban Cook County, other Illinois county). Immigrants arriving through other POE were assumed not to have received any referral. During October-November 2010, investigators reviewed medical records in Illinois to determine if and when immigrants initiated TB domestic evaluations. Exclusion criteria included immigrants who possibly received referrals in Detroit or Honolulu, and those without available data. Chi-squared and Z tests evaluated impact of referral type on initiation and time to evaluation ($p \leq 0.05$).

Results:
During the evaluation period, 1,513 immigrants were identified; 1,242 (82%) were included. Of these, 59% initiated domestic medical evaluations. Referrals were received by 75% (30% R1, 22% R2, and 24% R3). Those who received any referral were 83% more likely to initiate evaluation ($p<0.0001$). Immigrants receiving either R1 or R2 were 4 times more likely to initiate evaluation than those who had no referral ($p<0.0001$). Those receiving R1 were 80% more likely to initiate evaluation than R2 and R3 groups combined ($p<0.0001$). Median time to initiation was 20 days (range: 1-602 days) and was significantly lower among those who received any referral (16 vs. 68 days; $p <0.0001$). Those receiving R1 and R2 had shortest median times to initiation (14 days).

Conclusions:
Preliminary results indicated immigrants receiving any referral were more likely to initiate evaluation and had shorter time to initiation. While each CDC Quarantine Station has different resources available, implementing some type of referral will likely increase the proportion of immigrants initiating domestic evaluation.

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Abstract ID: **1062450** Presentation Type: **Poster Presentation**

Title: **Endemic Lyme disease in North Dakota: Are we there yet?**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Infectious Diseases, Vectorborne disease**

Abstract Text

Background:
North Dakota (ND) is not considered a Lyme disease endemic state. However, in recent years, non-travel related Lyme disease cases have been reported as well as an overall increase in the number of reported cases. Limited tick population data are available in ND because tick surveillance has not been conducted for more than two decades. Lyme disease is considered endemic in a county if two confirmed cases have been acquired in the county or established populations of a known tick vector for Lyme disease are infected with Borrelia burgdorferi. We looked to determine if locally acquired Lyme disease was occurring and if endemic counties could be identified in ND.

Methods:
We evaluated confirmed Lyme disease cases from 2000 to 2010 to determine the county and state of each patient's likely exposure. We partnered with two ND University systems to conduct tick surveillance in ND during the spring and summer of 2010. The university researchers used tick drags and small mammal traps to collect ticks and identified the ticks by species and life stage. All adult and nymph Ixodes scapularis ticks were tested for B. burgdorferi using polymerase chain reaction (PCR) testing.

Results:
Sixty-two confirmed Lyme disease cases were identified from 2000 to 2010. Thirty-four patients indicated the state where they were most likely exposed and of those, six (17.6%) were in ND. Twenty-two patients indicated the county in which exposure likely occurred and of those, five (22.7%) were each in a different ND county (Grand Forks, Mercer, Ramsey, Traill and Walsh Counties). Ixodes scapularis ticks (n=85) were identified in six counties (Eddy, Grand Forks, Pembina, Ramsey, Rolette and Steele Counties). All Ixodes scapularis tick life stages were present in each of these counties. One adult female tick from Grand Forks County tested positive for B. burgdorferi.

Conclusions:
No counties in ND were identified as having at least two confirmed cases of Lyme disease acquired in the county. Therefore, none of the five named counties were classified as being endemic.
Tick surveillance data verifies established Ixodes scapularis tick populations in six northeastern ND counties. Further tick surveillance data is needed to determine if the established tick vector populations in Grand Forks County are truly infected with B. burgdorferi or if the single identified infected tick was an anomaly.

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Abstract ID: **1051549** Presentation Type: **Poster Presentation**

Title: **Impact of an accelerated MMR immunization schedule on completion of childhood vaccinations during a measles outbreak**

Committee: **Infectious Diseases**

Topic: **Immunizations**

Keywords: **Infectious Diseases, Outbreaks, Vaccination**

Abstract Text

Background:
In response to an outbreak of measles, in February 2008, the Arizona Department of Health Services (ADHS) recommended an accelerated measles-mumps-rubella (MMR) vaccination schedule. Under this vaccine schedule an initial dose of MMR was administered between 6-12 months of age. ADHS selected a cohort of children who were eligible to receive an accelerated dose during the outbreak and evaluated vaccine outcomes. More specifically, we aimed to determine if receipt of accelerated MMR vaccine impacted completion of subsequent MMR doses and other childhood vaccination schedules.

Methods:
Immunization data from the selected cohort of children who were 6-12 months of age during the outbreak period were extracted from the Arizona State Immunization Information System and analyzed retrospectively. Children with a recorded MMR dose before 1 year of age were assigned to the accelerated vaccination group. All other children comprised the standard group. Furthermore, 100 randomly sampled children from the accelerated vaccination group were selected for medical record review. Records were systematically reviewed for immunization history in order to verify administration of MMR and to determine if additional visits were required for accelerated MMR doses. For each group we calculated the timeliness and percent completion for MMR vaccination (two doses) and other age appropriate recommended vaccinations (4:3:1:3:3:1).

Results:
Vaccination records for 11,768 children were included in this study. Thirty-seven percent of children received an accelerated dose of MMR during the outbreak, of which 52% were male. Children in the accelerated group were much more likely to have received a valid dose of MMR after age 1 (83% vs. 68%; p<.0001). Additionally, children in this group were 1.7 times more likely to complete the 4:3:1:3:3:1 series (p<.0001). The accelerated group required 6.4 office visits to complete the 4:3:1:3:3:1 series compared with 5.9 visits for the standard group. Of the 88 medical records included in this analysis, 81% of children received their accelerated dose during a routine visit.

Conclusions:
The recommendation for the accelerated MMR vaccine was well accepted by providers. Many providers were able to incorporate accelerated vaccinations into routine childhood visits, thus special visits for these MMR doses were not required. Moreover, children with an accelerated dose were more likely to complete their vaccine series on time. These data suggest that accelerated vaccine programs for outbreak control may not adversely affect other vaccination schedules.

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Abstract ID: **1053997** Presentation Type: **Poster Presentation**

Title: **Impact of disseminated coccidiodomycosis in Arizona, 2007-2008**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Infectious Diseases, Social determinants, Surveillance**

Abstract Text

Background:
Arizona represents approximately 60% of the nationally reported coccidiodomycosis cases each year. *Coccidiodes* is found in the soils of the desert southwest and while most infections are mild, these fungi can disseminate throughout the body, resulting in severe debilitation and death. In 2007, the Arizona Department of Health Services (ADHS) sought to understand the impact of coccidiodomycosis in Arizona by conducting extensive patient interviews (enhanced surveillance). In addition, we reviewed medical records to confirm data reported by patients, and to better characterize symptoms and site of infection. Using these data, we aimed to better understand the impact of disseminated coccidiomycosis in Arizona.

Methods:
From January 2007 to February 2008, every tenth reported coccidiodomycosis case was contacted for an interview. Enrolled persons were asked about their symptoms, site of infection, healthcare-seeking behavior, medical history, and demographic information. Medical records were requested for all individuals interviewed during enhanced surveillance. Records were reviewed to examine previous medical history, including medications prescribed and site of infection, and were used to classify cases as having either pulmonary-only or disseminated disease. Dissemination was defined as having clinical or radiological evidence of *Coccidiodes spp.* outside the lung.

Results:
Data from 324 (65.7%) patients were included in the analysis. Of these, 26 (8.0%) had evidence of dissemination. Males comprised a higher proportion of the disseminated group (69% vs. 50%), and there was no difference in age when comparing the groups. Patients reporting their race as black were more likely to have dissemination ($p=0.02$), while those reporting their race as white tended to have pulmonary-only disease ($p=0.02$). Also, patients with dissemination were more likely to report being infected with HIV ($p=0.02$), or requiring hospitalization for their disease ($p<.0001$). Despite those with disseminated disease having a significantly longer symptom duration on average ($p=0.02$), there was no difference in the amount of reported time missed from daily activities due to this disease. Additionally, 65% of the disseminated disease group reported having a job or performing daily activities involving dust exposure.

Conclusions:
Our results support previous studies, suggesting that race, sex and HIV infection may contribute to the development of disseminated disease. Coccidiodomycosis has a considerable impact on people's lives, and to identify additional risk factors and behaviors that put people at risk for disseminated disease, larger studies are needed. Based on the findings of this study, clinicians should recognize the impact coccidiodomycosis has on all patients, not only those with disseminated disease.

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Abstract ID: **1062306** Presentation Type: **Poster Presentation**

Title: **Don't break my heart: Analysis of risk factors in coronary artery bypass graft procedures to streamline validation methodology for surgical site infections**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI)**

Abstract Text

Background:
Reporting of surgical site infections (SSI) became mandatory in 2008 throughout Tennessee. Facilities were required to report coronary artery bypass graft surgery with chest and donor site incision (CBGB) and coronary artery bypass graft surgery with only chest incision (CBGC) separately. Facility-specific data will be reported publicly on the Hospital Compare website and reported infections will also influence value based purchasing under the Patient Protection Affordable Care Act with implications for hospital payment/reimbursement. Thus, validation of data is crucial, as is a sustainable method of SSI validation. Current methods of validation are resource intensive. Risk factor data are used in risk adjustment, which is influential to current selection methods, therefore correct classification of risk factors is critical for valid selection. Streamlining the selection of facilities and the sample population could aid in developing sustainable validation. The objective of this study was to analyze the distribution of risk factors among surgical site infection resulting from CBGB/CBGC procedures. Understanding the distribution of risk factors of surgical site infections could allow for a more informed and streamlined selection of facilities and sample populations for validation.

Methods:
We conducted a retrospective data analysis of CBGB and CBGC procedures and subsequent SSIs reported by Tennessee healthcare facilities to the National Healthcare Safety Network (NHSN) during the calendar year 2008. We analyzed the distribution of the risk factors reported to NHSN including gender, age, endoscope use, depth, duration of procedure and the American Society of Anesthesiologist (ASA) score.

Results:
Almost all patients, 99% of CBGB and 100% of CBGC, had an ASA score greater than three. The wound class was 'clean' in 97% of all CBGBs, 97 % of the CBGBs resulting in SSIs and 100% of the CBGCs resulting in SSIs. Endoscopes were used in 70% of all CBGBs and 70% of CBGBs resulting in SSIs.

Conclusions:
Although the distribution of risk factors did not vary significantly for CBGB and CBGC procedures, this methodology could be applied to sample population selection for other procedures being monitored for SSI surveillance.

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Abstract ID: **1057080** Presentation Type: **Poster Presentation**

Title: **Colorado Tick Fever Surveys of Humans and Ticks - Wyoming, 2010**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Vectorborne disease**

Abstract Text

Background:
Colorado tick fever (CTF) is an emerging and underreported tickborne viral disease in the western United States. CTF illness includes fever, headache, and severe myalgia lasting ≤3 weeks. In 2009, Wyoming had the highest CTF incidence (2/100,000 persons); 30% of patients reported tick exposure in Wyoming National Parks/Forests. This is the first study to assess CTF prevalence among humans and its vector, Dermacentor andersoni.

Methods:
During June-August, a baseline and 3-month follow-up serosurvey were conducted on a cohort of 526 Grand Teton National Park (GTNP) and Bridger Teton National Forest (BTNF) employees. Seropositivity was defined as antibody levels ≥1:10 by plaque-reduction neutralization test. Participants completed risk behavior surveys during baseline and follow-up serosurveys. Ticks collected at 27 GTNP/BTNF sites were tested by reverse-transcriptase-polymerase chain reaction for presence of virus.

Results:
Three (2%) of 126 GTNP/BTNF participating employees had baseline seropositive results. During the study, 47 (37%) participants had found unattached ticks on themselves, and 12 (10%) had found attached ticks; no participants seroconverted. Walking through sage brush (P = 0.007) and spending time at ≥7,000 feet elevation (P = 0.001) were significantly associated with tick exposure. Forty percent of ticks tested CTF-positive and were found at 10 (37%) of 27 sites; 177/179 (99%) of ticks collected were D. andersoni and all were found at ≥7,000 feet elevation in sage brush areas.

Conclusions:
GTNP/BTNF employees exposed to sage brush and elevations ≥7,000 feet were at increased exposure risk for CTF-infected ticks; therefore, that no study participants acquired CTF infection is noteworthy. CTF education and personal protection measures against tick exposure are needed for visitors and employees traveling to high-risk environs identified in this study.

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Abstract ID: **1057774** Presentation Type: **Poster Presentation**

Title: **Predictors of acceptance of H1N1 influenza vaccination by FDNY firefighters and EMS workers**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Influenza / Pandemic influenza, Occupational Health, Vaccination**

Abstract Text

Background:
The 2009 H1N1 influenza vaccine was licensed on September 15, 2009 and became available two weeks later. Health care and emergency medical service workers (EMS) were among the first groups recommended for H1N1 vaccination, which included Fire Department of New York City (FDNY) firefighters and EMS workers. We undertook this study to assess H1N1 vaccination rates in approximately 14,000 firefighters and emergency medical service (EMS) workers. Our goals were to determine predictors of H1N1 vaccine acceptance, to examine whether vaccination was associated with reductions in work absenteeism, and to see if vaccination rates differed among a smaller group of workers with co-morbid pulmonary disease.

Methods:
FDNY has offered free seasonal influenza vaccinations at routine medical monitoring/treatment examinations since the early 1990's. After 9/11/01, FDNY developed a bio-preparedness drill where units are dispatched to FDNY-BIOPOD (biologic points of distributions) for rapid distribution of medications/vaccines in the event of a bio-disaster. Since 2005, FDNY has used the BIOPOD drill to offer free, voluntary, seasonal influenza vaccination to those who were not vaccinated during their routine medical monitoring/treatment examinations. During 2009, FDNY-BIOPOD offered the H1N1 vaccine instead of the seasonal influenza vaccine. We report on FDNY H1N1 vaccination rates and on predictors of acceptance using bivariate and multivariable techniques.

Results:
Overall, 10,612 (77%) FDNY workers were offered H1N1 vaccination, of whom 5,831 (55%) accepted. Acceptance was 57.2% during FDNY-BIOPOD compared with 34.4% during medical monitoring/treatment exams (p=0.0001). Workers who accepted prior seasonal influenza vaccinations were 4 times more likely to accept H1N1 vaccination (AOR=4.4, CI95=4.0-4.8). H1N1 vaccine acceptors were less likely to be absent for at least one day (7.8%) compared to refusers (9.3%, p=0.007). However, among those who took sick leave, there was no difference in the average sick leave duration (8.6±5.4 days among acceptors vs. 8.1±5.3 among refusers). Finally, FDNY workers with co-morbid respiratory diseases (n=506) were 40% more likely to accept H1N1 vaccination (AOR = 1.4, CI95 = 1.1-1.7) than those without respiratory disease.

Conclusions:

FDNY offered H1N1 vaccination to 77% of its workforce during the 2009-2010 season and successfully vaccinated 55%. Prior seasonal vaccine acceptance and vaccination in a group setting such as FDNY-BIOPOD dramatically increased acceptance of the H1N1 vaccine. Additional strategies are needed, however, to increase vaccine acceptance in first responders and other HCWs to recommended rates.

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Abstract ID: **1055716** Presentation Type: **Poster Presentation**

Title: **Evaluation of under-reporting of meningococcal disease cases and deaths**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Epidemiology, Infectious Diseases**

Abstract Text

Background:
Meningococcal disease is a severe bacterial infection caused by Neisseria meningitidis. Rapid identification of cases and their close contacts is essential to limit transmission. To quantify possible under-reporting of cases to public health, an evaluation of death certificates was conducted. In Florida, all licensed health care practitioners and laboratories are required to report cases to public health when

they first suspect meningococcal disease or when they first receive the order for a test diagnostic of meningococcal disease.

Methods:
Electronic death certificates were obtained for 2007-2009. Records were searched for meningococcal disease-related key words and ICD10 code A39 to identify potential cases. Reports of meningococcal disease cases were extracted from Florida's statewide reportable disease surveillance system, Merlin. Case records were matched to corresponding death certificates based on first name, last name, and date of birth. Autopsy records were used to identify laboratory results indicative of N. meningitidis.

Results:
Between 2007-2009, there were 177 reported cases of meningococcal disease in Florida, with 20 listed as having died. Eighteen of those deaths had corresponding death certificates, one case died out of state, and one case did not have a matching death certificate. One additional reported case was identified as having died, on death certificate match.
The death certificate search identified 8 death certificates where a corresponding case had not been reported. These deaths were more likely to: be coded as Waterhouse-Friderichsen syndrome (N=5), have died in the emergency room (N=5), and have had an autopsy (N=7). Autopsy results were available for four of the eight deaths, three of which indicated infection with an organism other than N. meningitidis. If the other four death certificates are similar to those evaluated (assessment in progress), there would be two unreported deaths with meningococcal disease, compared to 20 reported fatal cases. If non-fatal cases are unreported at the same rate, there could be approximately 18 unreported cases during the study period or about 6 per year.

Conclusions:
Under-reporting of meningococcal disease cases to public health can have serious implications for disease control. Deaths that required follow-up confirmation were more likely to have occurred in an emergency room (N=5) and have an autopsy (N=7). This indicates that there are two important groups whose members could benefit from increased education about state reporting regulations, emergency room physicians and pathologists, including medical examiners. Additional education to emergency departments and urgent care facilities might improve the estimated under-reporting in both fatal and non-fatal cases.

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Abstract ID: **1055408** Presentation Type: **Poster Presentation**

Title: **Using the internet to trace contacts of a fatal meningococcemia case - New York City, 2010**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Communicable disease, Local Public Health Agencies, Social determinants**

Abstract Text

Background:

Reports indicate that prophylaxis of all members of a defined social network, even those without an obvious direct contact with infectious persons, can interrupt Neisseria meningitidis transmission. Common techniques for mapping social networks (e.g., serial interviews and environmental observation) might be of limited value in uncovering hidden sexual and drug-sharing networks, especially with patients who have died. A New York City Department of Health and Mental Hygiene (DOHMH) investigation of a fatal meningococcemia case demonstrates how tracing network members for prophylaxis by using an online community can help overcome these challenges.

Methods:
DOHMH identified the decedent's direct contacts who met traditional criteria for ciprofloxacin prophylaxis through interviews. Upon DOHMH's request, the administrator of an online community's website regularly used by the person to arrange casual sexual encounters notified members who had communicated with that person to seek prophylaxis regardless of whether they had directly met him. Similarly, the host of a drug-sharing party, held during the decedent's infectious period and attended by members of his social network, advised attendees to seek prophylaxis.

Results:
Contact tracing by traditional criteria identified 2 household members, 1 intimate partner, and 17 healthcare workers, all of whom received prophylaxis. Mapping the decedent's social network identified 36 members potentially at risk, but no additional intimate contacts were confirmed; 6 took prophylaxis. No secondary cases were reported during the subsequent 2 months.

Conclusions:
Although additional contacts at risk were identified, we cannot empirically prove that treating indirect social networking contacts prevented transmission. Rather, our investigation illustrates how online social communities can aid epidemiologic investigations in tracing hidden social contacts, especially when patients have died and contact identification is urgent.

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Abstract ID: **1061642** Presentation Type: **Poster Presentation**

Title: **Enhanced provider recruitment in the New York State Department of Health ILINet Program**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Infectious Diseases, Influenza surveillance, Surveillance**

Abstract Text

Background:
The ILINet Program, conducted in collaboration with the Centers for Disease Control and Prevention (CDC), is an influenza surveillance method to calculate state, regional, and national rates of influenza-like illness (ILI) in the outpatient setting on a weekly basis. Each state recruits health care providers to

report the number of patients seen in their offices for ILI in five age categories and the total number of patients seen for any reason. CDC recommends at least one provider per 250,000 population and the New York State Department of Health (NYSDOH) ILINet Program has always exceeded this basic requirement; however, significant gaps in geographic coverage and among certain demographic groups have been recognized. During the 2009 H1N1 pandemic, the NYSDOH launched an intensive effort to address these gaps.

Methods:
New provider recruitment methods employed by NYSDOH during the 2009 H1N1 pandemic included outreach to all local health departments to identify potential providers, with the greatest emphasis placed on recruitment from counties with no participating providers. Additionally, certain specialties, such as Obstetrics, Family Medicine, and Geriatrics, were targeted. Recruitment articles were placed in newsletters and websites of the Medical Society of the State of New York and the New York State Academy of Family Physicians, emphasizing the increased number of specimens that providers could submit at no cost.

Results:
Between May 2009 and December 2010, the number of providers more than doubled, from 69 to 153 (3.4/250,000), including 17 from the specialties of Obstetrics, Geriatrics, and Asthma/Allergy. Presently, 72% of the counties in the state have participating providers, including six counties that were previously unrepresented. The number of providers reporting weekly increased from 62% during the 2008-09 season to 85% during the 2009-10 season, and the number reporting year-round increased from 24 to 66 for this same time frame. Total respiratory specimen submissions increased from 30 providers submitting 101 specimens from October 2008 to August 2009 to 84 providers submitting 473 specimens from September 2009 to May 2010.

Conclusions:
By implementing targeted recruitment, NYSDOH significantly increased provider enrollment into the NYS ILINet Program and expanded geographic coverage. Improved standardization of provider participation results in higher quality data, enhancing the ability to more uniformly monitor disease activity across the state to promote early detection of influenza. This robust approach substantially supports situational awareness of influenza both in NYS and nationally.

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Abstract ID: **1061503** Presentation Type: **Poster Presentation**

Title: **An evaluation of Methicillin-resistant *Staphlococcus aureus* blood stream infection surveillance in South Carolina, 2009**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI), Program evaluation, Surveillance**

Abstract Text

Background:
Methicillin-resistant *Staphylococcus aureus* (MRSA) is a significant cause of blood stream infections (BSIs). Studies from the Active Bacterial Core Surveillance (ABCs)/Emerging Infections Program Network estimate that 70,770 MRSA BSIs occur in the United States each year. MRSA BSIs result in serious illness and death, and are an important public health concern. In 2008, MRSA BSI became a laboratory reportable condition to the South Carolina Department of Health and Environmental Control (DHEC) disease reporting system. This presentation will discuss an evaluation of MRSA BSI reporting system attributes.

Methods:
The evaluation was based on CDC guidelines for evaluating public health surveillance systems, and focused on the simplicity, timeliness, acceptability, flexibility and stability of the reporting system. The quality and representativeness of the MRSA BSI data was also assessed.

Results:
In 2009, 3459 MRSA BSI isolates were reported. MRSA BSI reporting is complex: electronic laboratory reporting (ELR), manual input as a laboratory report, or a morbidity report are acceptable forms of reporting. The majority of demographic variables were complete, whereas disease-related variables (such as the antimicrobial susceptibilities, ordering lab name and specimen site description) were missing in a large proportion of isolates, especially those reported through ELR. Reporting interval (from the date of MRSA laboratory test to the date received by public health) varied with reporting modality: 99% of ELRs were received ≤ seven days (mean = 1.62 days), whereas over 50% of manual-input lab reports were received ≥ fifteen days (mean = 38.74 days). Approximately 50% of acceptability survey responders claimed to find the data entry process challenging and time consuming. The system is flexible (responds quickly to new reporting demands) and stable (very few outages). South Carolina data are representative of national statistics, showing similar MRSA BSI infection rates to the Active Bacterial Core surveillance (ABCs).

Conclusions:
Overall, MRSA BSI surveillance performs well in terms of flexibility and stability. Data collected in 2008 and 2009 were representative of MRSA BSI data from the ABCs. Improvements in the system's simplicity and acceptability are needed to improve the timeliness of manual data submission, as well as improvements in the quality/completeness of the data submitted through ELR. The results of this evaluation can be used to determine whether DHEC should continue using the current MRSA BSI surveillance system or pursue another surveillance method (e.g. National Healthcare Safety Network Multi-drug Resistant Organism reporting module).

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Abstract ID: **1061436** Presentation Type: **Poster Presentation**

Title: **Linking Methicillin-resistant *Staphylococcus aureus* blood stream infection data with claims data - South Carolina, 2008-2009**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Data/Surveillance, Healthcare associated infections (HAI)**

Abstract Text

Background:
A high percentage of Methicillin-resistant *Staphylococcus aureus* blood stream infections (MRSA BSIs) occur among patients exposed to healthcare settings, resulting in serious illness and death, as well as increased healthcare costs. The Active Bacteria Core surveillance (ABCs)/Emerging Infections Program Network reports that 75% of healthcare associated infections occur outside healthcare settings while 25% occur in healthcare settings. The estimated national cost of healthcare associated infections range from 37.5 to 45 billion dollars annually. In 2008, MRSA BSIs became reportable in South Carolina and need for further exploration of metrics was identified.

Methods:
MRSA BSI infections were identified from isolates reported from January 1st 2008 through December 31st 2009. Patients with multiple isolates represented multiple MRSA BSIs if their dates of specimen collection were more than 14 days apart. Infections were matched with admission, discharge and billing data from January 1st, 2007 through December 31st, 2009. Matching was based on patient social security number, date of birth, first and last name, and gender. MRSA BSIs were classified as healthcare-associated (either community-onset or hospital-onset) or community-associated (patients without established healthcare risk factors for MRSA BSIs) based on specific temporal and clinical criteria. Discharge diagnoses, length of hospital stay, and charges, as well as age and race were investigated.

Results:
There were 2051 MRSA BSIs reported from January 1st 2008 through December 31st, 2009; 1767 (86.15%) successfully matched. Based on temporal criteria 1379 matched infections were classified as community-onset (≤ 72 hours after admission) and 388 were hospital-onset (>72 after admission). Based on clinical criteria, 1625 matched infections were further classified as healthcare-associated (hospital-onset and/or history of hospitalization, dialysis, surgery or residence in a long term facility in the year prior to the date of specimen collection); 142 infections were classified as community-associated (community-onset and no history of healthcare exposure in the year prior to the specimen collection date). Septicemia was the primary discharge diagnosis for 31.43% of community-onset and 14.57% of hospital-onset infections. The average hospital stay was 11.4 days for community-onset infections and 38.7 days for hospital-onset infections. The average charge for community-onset infections was $72,209 whereas the average charge for hospital-onset infections was 3.5 times greater. Infections were most common among Caucasians (54.84%), age 50 years and older (74.19%).

Conclusions:
South Carolina data are representative of national statistics showing similar rates of MRSA BSIs as reported by ABCs. A large proportion of MRSA BSI infections in South Carolina were healthcare-associated. Public health professionals and healthcare workers are developing MRSA BSI prevention measures.

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Abstract ID: **1062170** Presentation Type: **Poster Presentation**

Title: **Measuring rabies immunity in humans: Knowns and Unknowns**

Committee: **Infectious Diseases**

Topic: **Rabies**

Keywords: **One Health, Rabies, Zoonotic disease**

Abstract Text

Background:
The USA is enzootic for a number of rabies virus variants among a variety of wildlife species with 7-10,000 cases diagnosed annually. Nevertheless, human rabies prevention is nearly absolute due to effective human post-exposure prophylaxis and pre-exposure prophylaxis for high risk groups. While methods for measuring immunity to rabies and for diagnosis are powerful, they include some limitations innate to biological assays.

Methods:
An inter-laboratory comparison of serology was conducted by Kansas State University (KSU) and the NY State Department of Health (NYSDOH). The Rapid Fluorescent Focus Inhibition Test (RFFIT) and a modification of the RFFIT, as well as experimental ELISA's were conducted. Of 90 human samples, 37 were from rabies vaccinated individuals and 53 were from patients sero-positive for other pathogens. Titres were calculated by the Spearman-Karber method or Reed and muench method and compared for statistical significance.

Results:
Among sera from vaccinated persons, 87% of results ≥ 0.50 IU/ml were concordant. Five samples at or near 0.50 IU/ml were discordant. Among 53 samples from non-rabies-vaccinates, a low level of neutralizing activity was reported by NYSDOH in 21 samples and by KSU in 9 samples, most likely indicative of nonspecific antiviral activity or cross-reactive antibodies.

Conclusions:
This study demonstrates that results from expert laboratories may be discordant and may also report false positive or negative reactivity. Factors to consider are the threshold of the assay, the validity of the method, as documented by each laboratory, and the robustness of quality programs, especially for highly specialized assays limited to a few laboratories. There remains a need for proficiency testing and advancement of quality control practices to optimize human and animal rabies diagnostic practices. Although rabies excites the imagination, serious vulnerabilities include the potential for re-introduction of dog-to-dog transmitted rabies, a decline in diagnostic expertise and capacity, and a paucity of basic research, especially to understand recent advances towards treatment of clinical

rabies. Public health practice is a partnering of human and veterinary medical care providers, epidemiologists, statisticians, and other professionals which may be indiscernible to a community. As a global community, diligent attention and dedicated effort will be required to address the threats of emerging and zoonotic diseases from the rapid and high volume exchange of animate beings and inanimate products. Rabies prevention is “One Health in action” but it needs attention and perhaps could be used a “tangible model” to preserve, and indeed advance beyond, the achievements of the last half-century.

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Abstract ID: **1062793** Presentation Type: **Poster Presentation**

Title: **A summary of rabies cases in currently vaccinated animals in the USA in 2002**

Committee: **Infectious Diseases**

Topic: **Rabies**

Keywords: **Animals and Public Health, Rabies, Zoonotic disease**

Abstract Text

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Abstract ID: **1062747** Presentation Type: **Poster Presentation**

Title: **Global travel and best practices for disease prevention: Is canine rabies a foreign animal disease?**

Committee: **Infectious Diseases**

Topic: **Rabies**

Keywords: **Animals and Public Health, Emerging diseases, Rabies**

Abstract Text

Background:
Throughout the USA, dog-to-dog types of rabies viruses were forced into extinction through mandatory vaccination and stray dog control. Although there are 6-10,000 animal rabies cases diagnosed annually

in the USA, the main reservoirs are among wildlife species such as raccoons, skunks, mongoose, and a number of insectivorous bat species. Nonetheless, the USA remains vulnerable to re-introduction of canine rabies virus variants due human travel and animal movement. This was aptly demonstrated by the recent translocation of four puppies from Puerto Rico, Thailand, India and Iraq into Massachusetts, California, Alaska and New Jersey with rabies virus variants capable of sustained dog-to-dog transmission. The objective of this study is to review serology data on low- and non-responders to rabies vaccination and to consider criteria for ideal prevention of the re-introduction of dog-to-dog transmission of rabies into the Americas.

Methods:
A retrospective review of animal serology for travel of pets to rabies-free areas was conducted at the Kansas State University Rabies Laboratory to identify low- and non-responders to rabies vaccination. The records of vaccinated animals failing to meet adequate rabies antibody levels were further examined for species, age and other variables.

Results:
Within a 4-yr-period, 3,318 rabies-vaccinated dogs of 83,744 tested (4.0 %) failed to meet >0.5 IU/ml by the Fluorescent Antibody Virus Neutralization test (FAVN) which is defined as an acceptable response to rabies vaccination by all the rabies-free areas requiring rabies serology results as proof of vaccination response; 60% were less than 4 yrs of age. In contrast, 936 cats of 40,945 (2.3 %) tested “failed” the FAVN test; 57% of these were >12 yrs of age.

Conclusions:
As demonstrated in this study, there are low- and non-responders to rabies vaccination. Serology is an estimate of response to vaccination. Vaccination documents can be readily falsified; it is more difficult to collude with someone for a serum sample. A restricted on-line database of serology results from qualified laboratories and accessible by regulatory authorities would facilitate management of these risks. Harmonization and cooperation will be essential to minimize the risk of disease translocation through carefully crafted requirements for animal identification, vaccination, serological monitoring, and advance planning essentially equivalent to a quarantine period, if we wish to maintain and indeed even enhance the current state of human and animal rabies prevention.

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Abstract ID: **1062536** Presentation Type: **Poster Presentation**

Title: **Surveillance for gastrointestinal illness outbreaks, Puerto Rico, 2008-2010**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Foodborne disease, Infectious Diseases, Waterborne disease**

Abstract Text

Background:

Gastroenteritis is an important cause of illness in Puerto Rico. The Puerto Rico Department of Health (PRDOH) receives weekly reports from health care providers on the number of gastroenteritis cases. These reports ranged from 1,898 cases in week number 1 in January 2010 to 8,040 cases in week 14 in April 2010. However, much of this cases are considered sporadic and only a small proportion are identified as associated with outbreaks even when measures have been taken since 2006 to improve the gastrointestinal illness outbreak surveillance. A statewide food and waterborne diseases coordinator was assign for the first time in the PRDOH in 2006. This led to the development of tools and trainings for outbreak investigations and the integration of epidemiology, environmental health and the laboratory.

Methods:
This summary includes outbreaks reported from 2008 to 2010. Gastrointestinal illness outbreaks are investigated at the regional level and are notified to the state coordinator who gives advice and guidance and leads complex investigations. Reported outbreak data include the number of illnesses, hospitalizations and deaths associated with each outbreak; the etiologic agent if identified, either confirmed or suspected and the primary mode of transmission among other variables. Population-based rates of reported outbreaks were calculated for each year. Data analysis was performed with Epi Info v. 3.5.1.

Results:
Preliminary analysis shows that a total of 71 gastrointestinal illness outbreaks were reported to the PRDOH during the period 2008 to 2010. On 2008, 33 outbreaks were investigated, 16 on 2009 and 22 on 2010 with rates of 0.8, 0.4 and 0.6 per 100,000 population, respectively. The number of outbreaks reported by each of the eight health regions varied from 3 to 17 in the period of 2008-2010. Drinking water was identified as the primary mode of transmission in one outbreak of 2008 with the confirmed etiology cyclospora and recreational water in one outbreak of 2009 with suspected etiology norovirus. The affected persons identified were 82 and 60, respectively. On 2010 an island wide norovirus outbreak was investigated. Food was the primary mode of transmission in some outbreaks but the mode of transmission was indeterminate in several investigations.

Conclusions:
Surveillance for gastrointestinal illness outbreaks provides valuable information to develop strategies for prevention and control. The delayed in reporting illnesses to the health department influences the capacity to identify the etiology, the mode of transmission and also the vehicle in foodborne outbreaks.

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Abstract ID: **1062313** Presentation Type: **Poster Presentation**

Title: **Creation of a statewide prevention collaborative regarding multidrug-resistant organisms (MDRO) ***

Committee: **Infectious Diseases**

Topic: **Multi-Drug Resistant Organisms (MDROs)/ Carbapenem-resistant Enterobacteriaceae (CRE)**

Keywords: **Antibiotic resistance, Collaboration, Infection control**

Abstract Text

Background:
In 2009, the Maryland Department of Health and Mental Hygiene formed a multidisciplinary advisory group of healthcare partners to address surveillance and prevention of multidrug-resistant organisms (MDROs), initially focusing on multidrug-resistant *Acinetobacter baumannii* (MDR-Ab). MDR-Ab is a rapidly emerging pathogen in a variety of healthcare settings, and is an important patient safety concern. Several acute care hospitals and other healthcare facilities in Maryland identified MDR-Ab as a problem and expressed a desire to address surveillance and infection control concerns in a collaborative fashion.

Methods:
A diverse, experienced group of healthcare professionals including epidemiologists, physicians, laboratorians, infection preventionists, representatives from state agencies, and acute care hospitals were convened to establish an MDRO prevention collaborative. By consensus, the members determined as its first priority the establishment of baseline MDR-Ab prevalence among mechanically ventilated patients, via a statewide MDR-Ab prevalence survey. The Collaborative regularly met throughout the year to establish priorities and design a survey protocol. All 46 acute care and 12 long term care facilities (LTCF) were invited to participate in the survey, which resulted in the participation of 30 acute care and 10 LTCF. Concurrently, the Collaborative prepared and disseminated a questionnaire to assess MDRO surveillance and prevention practices in these facilities. All 46 acute care hospitals and all 12 LTCF with ventilator beds completed this questionnaire.

Results:
The MDR-Ab prevalence survey was conducted in August 2010, in which sputum and peri-anal samples were collected from mechanically ventilated patients. Overall, 33% of patients surveyed were positive for *A. baumannii*. Of those testing positive, 54% were MDR-Ab. In acute care hospitals and LTCF, *A. baumannii* was isolated in 17% and 63% of patients, respectively. Facility-specific results were provided to participating facilities, and aggregate survey results were shared with acute care hospitals. The statewide questionnaire results highlighted disparities in facilities' MDRO screening policies via active surveillance cultures.

Conclusions:
The MDR-Ab prevalence survey was a successful project due to the combined expertise of the MDRO/MDR-Ab Prevention Collaborative members and the statewide participation of both acute care and LTCF. The survey revealed higher than expected rates of MDR-Ab. Based on the high prevalence rates seen among the mechanically ventilated patient population, the Collaborative is exploring factors potentially contributing to the spread of MDR-Ab, including respiratory personnel and equipment. This project demonstrates that collaborative efforts may serve to direct state priorities in MDRO surveillance, prevention, and control.

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Abstract ID: **1062191** Presentation Type: **Poster Presentation**

Title: **Evaluation of hepatitis C surveillance in Illinois**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Hepatitis, Surveillance**

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Abstract ID: **1054154** Presentation Type: **Poster Presentation**

Title: **Unprotected anal intercourse with a discordant serostatus partner among men who have sex with men in care for HIV, San Francisco 2007-2008**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **Health care, HIV/AIDS**

Abstract Text

Background:
The CDC-funded Medical Monitoring Project (MMP) assesses health care utilization, clinical outcomes, and HIV risk behaviors among HIV-infected persons receiving care. This project aims to identify gaps in HIV care and ancillary services and describe disease management and co-morbidities to target HIV prevention and care efforts. We investigated factors associated with unprotected anal intercourse (UAI) with a discordant serostatus partner among men who have sex with men (MSM) in San Francisco.

Methods:
Multi-stage probability-proportional-to-size sampling was used to recruit HIV-infected adults at health care facilities in San Francisco from 2007 to 2008. This analysis was restricted to MSM defined as men who reported at least one male sex partner in the past 12 months. Logistic regression was utilized to assess demographic and behavioral factors associated with UAI with an HIV-negative or unknown serostatus male partner during their most recent sexual encounter. All variables, including clinical status, were self-reported.

Results:

Between 2007-2008, 235 MSM participated in MMP. The majority of MSM were 40 years or older (79%), white (64%) and had a college degree or higher (60%). Access and receipt of medical care was high; 88% reported having health insurance for the entire past 12 months, 100% reported a usual source of care and 90% reported currently taking anti-retroviral therapy. Seventy-one percent of participants reported UAI in the past 12 months and the median number of male partners was three. Eighty percent of MSM reported that both partners disclosed their HIV status during their most recent sexual encounter. In addition, 14% (n=33) of participants reported having UAI with an HIV-negative or unknown serostatus partner at their most recent sexual encounter and only 38% of participants reported someone at their usual source of care talking to them about safe sex in the past year. UAI with an HIV-negative or unknown serostatus partner was significantly associated with having had an STD in the past 12 months (OR=2.83, p=0.007), having a most recent CD4 count of 1-199 cells/mm3 compared with those with a CD4 count over 200 cells/mm3 (OR=3.69, p=0.047) and using drugs and/or alcohol before or during last sex (OR=2.94, p=0.005).

Conclusions:
HIV risk behaviors were high and most MSM did not receive prevention messages about safe sex from their care providers. STD screenings and routine care appointments for HIV-infected MSM could be a useful setting for addressing substance abuse and safe sex practices to prevent secondary HIV transmission.

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Abstract ID: **1059364** Presentation Type: **Poster Presentation**

Title: **Need for a mandatory immunization registry to determine vaccine efficacy as demonstrated by increase of community wide Pertussis outbreaks in St Louis County**

Committee: **Infectious Diseases**

Topic: **Immunizations**

Keywords: **Immunization, Registry, Vaccination**

Abstract Text

Background:
The frequency of pertussis outbreaks has increased in St Louis County over the last ten years. Despite licensing of Tdap booster vaccine in 2005, recommendations by the American Academy of Pediatrics (ACIP) and Centers for Disease Control (CDC) 2008, and revised Missouri school immunization requirements for students 2010 - 2011, St Louis County had four major community wide outbreaks in the last six years.

Methods:
A retrospective cohort analysis comparing outbreak versus non-outbreak years by different age groups

was carried out using Missouri Department of Health and Senior Services (MODHSS) pertussis data from 2000 through 2010. Additionally, the distribution of disease among school age children who received Tdap booster vaccine versus those who did not, was analyzed using St Louis County Department of Health pertussis immunization data during the outbreak period of September through December 2010.

Results:
Using MODHSS data 962 (84%) pertussis cases were identified as outbreak and 185 (16%) as non outbreak cases. Among outbreak cases six hundred and sixty two (65%) cases were 7-19 years old, one hundred and ninety nine (20%) were 0-6 years old and one hundred and forty one cases (15%) were >20 years old. Among all age groups 7-19 years old were more likely to be affected during outbreak than non outbreak period. (Relative Risk = 1.3), (95% Confidence Interval, 1.2 to 1.3), p <0.05. St Louis County Department of Health pertussis immunization data showed that among ACIP recommended age group for Tdap booster i.e.10-19 years old, 50% of cases received a Tdap booster. Of those, 65% received it ≤1year, 25% received it in 2 years and 7% received it at least 3 years prior to diagnosis.

Conclusions:
St Louis County data explained some of the factors behind these community wide outbreaks. Due to lack of immunization data for previous years, it cannot be explained if the high number of kids diagnosed with pertussis within one year of getting Tdap booster is due to low efficacy of vaccine, or some mutagenic shift in Bordetalla pertussis strain. Establishing a centralized immunization registry, especially for school age children, is crucial to provide evidence-based assessment of the vaccination status. This will eventually help public health policy and decision makers to effectively respond to community wide outbreaks at St Louis County.

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Abstract ID: **1060195** Presentation Type: **Poster Presentation**

Title: **Cost effectiveness of using Quantiferon Gold (QFT-G) versus Tuberculin skin test (TST) at St Louis County Department of Health TB clinic in US and Foreign born population**

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Communicable disease, Cost-Effectiveness, Screening**

Abstract Text

Background:
Early detection and treatment of latent tuberculosis infection (LTBI) is vital to reduce the burden of tuberculosis disease (TB). Numerous studies have compared the efficacy of Quantiferon Gold (QFT-G) and tuberculin skin test (TST), in screening for LTBI. Although the TST has been used for decades,

these comparative studies show it has low specificity. Screening foreign born populations that were previously vaccinated with BCG, yields higher false positive results with TST. This leads to non-compliance and refusal of prophylactic treatment. In contrast, prior BCG vaccination status has no effect on QFT-G. Furthermore, it does not require boosting to generate immune response, reduces interpreter`s bias, and requires only one patient visit. St Louis County Department of Health, in commitment to reducing the burden of disease in the community, aimed at using QFT-G for screening. The main objective of this study was to determine the cost effectiveness of routinely using QFT-G over TST.

Methods:
St Louis County Department of Health`s data from 2006 - 2007 electronic medical records was used. Using the sensitivity and specificity of the two tests and LTBI prevalence rates, positive and negative predictive values were calculated. Additionally percent of false positives and false negatives were calculated for each test among US and Foreign born population. General cost per patient was categorically determined, and included administrative costs, cost of the tuberculin skin test, laboratory tests, chest X-rays, and medications.

Results:
Clinical data revealed 168 (61%) foreign born and 108 (39%) US born with LTBI. Non-compliance with ongoing treatment is higher in US born (53%) compared to foreign born patients (43%). However foreign born refused treatment more than US born patients. (19%, 3%). The median expense on a US born patient with positive TST is 25% higher than the total expense for a foreign born patient. Estimated expense on a US born patient with QFT-G is 15% higher than the expense for a foreign born patient. Among foreign born 68% screened with TST could be false positive based on an LTBI prevalence rate of 19%. Projected savings for 2008 based on potential false positive cases was 41%.

Conclusions:
Screening individuals with QFT-G when the LTBI prevalence rate is low is not cost effective. It is cost effective and should be used only on high risk populations such as foreign born individuals.

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Abstract ID: **1054124** Presentation Type: **Poster Presentation**

Title: **Botulism mortality in the United States, 1975â€“2008**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Data/Surveillance, Epidemiology**

Abstract Text

Background:
Botulism is a rare but severe neuroparalytic disease caused by neurotoxins produced by the anaerobic, spore-forming bacterium Clostridium botulinum. C. botulinum can produce seven distinct toxin types

(A-G); human botulism is caused primarily by toxin serotypes A, B, E, and F. Four kinds of botulism can occur in humans: foodborne, wound, infant, and other/unknown. Without medical intervention, botulism mortality rates can be as high as 50-60%.

Methods:
Botulism is a nationally reportable disease in the United States. Case patients were residents of the United States who developed laboratory-confirmed or epidemiologically linked botulism during 1975-2008. Cases were grouped according to kind, five year period (four years for 2005-2008), infant and non-infant (combined foodborne, wound, other/unknown cases) categorizations, toxin type, ten year age groups, or sex. Data were analyzed using SAS version 9.2 (SAS Institute Inc., USA).

Results:
During 1975-2008, a total of 106 botulism-related deaths among 3,998 botulism cases were reported, for an overall mortality rate of 3.0%. Mortality varied by kind and was 20.4% (11/54) for other/unknown, followed by 7.0% (61/875) for foodborne, 4.6% (16/349) for wound, and 0.8% (18/2317) for infant. When analyzed by period, mortality decreased from 6.9% in 1975-1979 to 2.7% in 2005-2008. Mortality among all non-infant cases was 6.9% overall and 7.5% in 2005-2008. Persons with toxin type F had the highest mortality (11.1%, 3/27), followed by type A (4.0%, 74/1860), type E (3.5%, 8/229), and type B (1.4%, 20/1415). Among non-infant botulism cases, the mortality increased with age, from <6.5% among persons aged <50 years to 36.7% cases among persons aged ≥80 years. Overall, males and females had similar case fatality rates.

Conclusions:
During 1975-2008, botulism mortality varied substantially according to clinical form and toxin serotype, and increased dramatically with age among persons with non-infant forms of botulism. Infant botulism is the most common yet least fatal form of botulism in the United States. Efforts to reduce botulism mortality are needed. In particular, the finding that mortality remains >5% among non-infant cases warrants additional, targeted investigation.

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Abstract ID: **1058617** Presentation Type: **Poster Presentation**

Title: **Still a need for knowledge: Assessment of hepatitis screening and infection control practices in county outpatient hemodialysis facilities**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI), Hepatitis, Infection control**

Abstract Text

Background:
In 2010, the Dallas County Department of Health and Human Services (DCHHS) received reports of

two hemodialysis patients from the same outpatient center seroconverting from anti-hepatitis C virus (HCV) negative to anti-HCV positive. Each case was virologically linked to source patients with known chronic HCV infection being serviced at the same dialysis facility, through viral sequencing and genotyping performed by the CDC. Challenges encountered during this outbreak investigation prompted an interest in assessing the general knowledge of hemodialysis facilities in this jurisdiction regarding awareness and implementation of the CDC guidelines for screening and prevention of hepatitis transmission.

Methods:
Of 40 area outpatient hemodialysis facilities identified, a total of 18 facilities agreed to voluntarily participate in health department interviews. A survey instrument was created to assess knowledge and implementation of CDC recommendations for hepatitis B virus (HBV) and HCV screening, and infection control practices. Phone interviews were conducted with the designated respective Directors of Nursing for each facility over a three-week period.

Results:
The facilities reported servicing a combined patient base of 1,748 hemodialysis patients, including 257 (15%) with known chronic HCV infection and 20 (1%) with chronic HBV infection. All facilities reported conducting infection control training and audits of staff on a regular basis, however there was substantial variability in frequency of such sessions. All centers denied using mobile carts for preparation of medications. Although all facilities reported screening all patients for both HBV and HCV on admission, only 4 (22%) practiced subsequent routine screening of susceptible patients every 6 months for HCV in accordance with CDC recommendations. The remaining 14 (78%) of facilities screened such patients once a year. One facility cited reimbursement issues as affecting the frequency of hepatitis screening. Two (11%) facilities reported ever identifying cases of HBV or HCV seroconversion in their patient populations. Although all centers reported the existence of a written response plan in the event of detection of a HBV or HCV seroconversion, seven (39%) facilities reported that they unaware of the requirement to report such new cases to the health department.

Conclusions:
Greater awareness and implementation of CDC recommendations for screening and prevention of hepatitis transmission needs to be promoted in outpatient dialysis centers, so that potentially health-care associated instances of transmission can be detected and investigated in a timely manner, and appropriate interventions conducted by health departments.

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Abstract ID: **1060659** Presentation Type: **Poster Presentation**

Title: **Don’t eat the beans: Lessons learned from three outbreaks of C. perfringens in Colorado correctional facilities in three years (2007-2009)**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Enteric infectious diseases, Outbreak investigations, Toxins**

Abstract Text

Background:
Bacterial toxins caused 13% (1137 of 10346) of all non-correctional facility related foodborne outbreaks reported to the CDC from 2000-2008, but 28% (32 of 114) of foodborne outbreaks in correctional facilities. In Colorado from 2000-2009, bacterial toxins caused 40% (4 of 10) of foodborne outbreaks in correctional facilities, as compared to only 19% (30 of 326) of foodborne outbreaks outside the correctional facility setting. During 2007 - 2009, three lab-confirmed outbreaks of C. perfringens (CP) were detected at correctional facilities in Colorado. This evaluation characterizes common deficiencies in correctional facility kitchens that increase risk for proliferation of CP and other foodborne pathogens.

Methods:
We reviewed investigations from three CP outbreaks occurring in correctional facilities in El Paso (2009), Larimer (2008), and Pueblo Counties (2007). The review focused on kitchen staffing structure and kitchen violations identified by environmental health inspectors.

Results:
All three correctional facilities contract with the same national foodservice company, and their kitchens are managed by contract employees and staffed by inmates. There is limited, if any, training for inmates working in the kitchens. Turnover is high as inmates are transient.
All three outbreaks were lab-confirmed with two or more positive stool specimens for CP. In total, 272 inmates were sickened in the outbreaks (29-125 per outbreak). Pueblo County's outbreak was epidemiologically linked to chili beans (odds ratio 12.5; 95% CI 1.4, 107.6), Larimer County's to chili (relative risk 91.2; 95% CI 76.3, 97.7), and El Paso County's to a mixture of beans, rice, and meat (odds ratio 34.2; 95% CI 2.0, 573.7). Chili beans from Pueblo County tested positive for CP, but CP was not detected in the suspect food in El Paso County; food was not tested in Larimer County. Environmental health inspections identified significant time and temperature violations in each kitchen. Food was prepared in large batches and none of the kitchens had appropriate leftover cooling practices or adequate temperature logs. At one facility, kitchen staff gave conflicting information about whether leftovers were stored and re-served.

Conclusions:
Improper food preparation and storage practices likely caused three CP outbreaks in correctional facilities, which in turn could be related to lack of oversight by kitchen contractors and insufficient training of inmate foodhandlers. Public health agencies should identify opportunities to work with correctional facility administration and contractors to assure continuing training of foodhandlers, as well as implement procedures to ensure food safety protocols are maintained despite transient inmate staff.

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Abstract ID: **1062098** Presentation Type: **Poster Presentation**

Title: **Surveillance for and knowledge, attitudes and practices regarding Lyme disease in visitors and employees of Greenbelt Park, Maryland**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Disease prevention, Surveillance, Vectorborne disease**

Abstract Text

Background:
Community concern about Lyme disease (LD) and Greenbelt Park (GREE), a national park with high tick density located in Maryland, prompted collaboration between the Maryland Department of Health and Mental Hygiene (DHMH) and the National Park Service (NPS). In summer 2010, to determine if tickborne disease occurs from exposure in GREE, we implemented surveillance in visitors and we surveyed a convenience sample of visitors and employees.

Methods:
We assessed LD knowledge, attitudes, practices, and self-reported tickborne disease among three groups: 1) Employees completed paper surveys before and one month after a NPS tickborne disease training; 2) Visitors completed postage-paid paper or online surveys after their park visit; and 3) On five occasions, campers completed surveys on-site and one month later online. Participation was voluntary and anonymous. Analyses were conducted using Excel and SAS. The DHMH Institutional Review Board approved the study.

Results:
Employees: Thirty-two employees completed pre-training and 19 completed post-training surveys. Five (16%) reported previous LD, 4 while employed at GREE. Twenty-six (81%) reported using >1 repellent-based preventive measure and 28 (88%) reported using >1 clothing-based preventive measure. Before training, 11 (35%) correctly answered that ticks are attached for >24 hours for LD transmission while 15 (47%) answered correctly after training. Thirteen (41%) correctly answered before training that erythema migrans is not always present with LD but only 6 (19%) answered correctly after training. Prior LD was not significantly associated with applying repellent, wearing protective clothing, or performing tick checks.
Visitors: Of 127 respondents (62% paper, 38% online), 13 (10%) reported previous LD, none reported tickborne disease after their visit. Fifty-one (40%) reported using >1 repellent-based preventive measure and 91 (72%) reported using >1 clothing-related preventive measure. Prior LD was not significantly associated with prevention measures. Of 81 respondents who visited in 2010 and provided departure date, 30 (37%) responded that day and 14 (17%) responded >30 days after departure.
Campers: Nine (17%) of 53 responding campers also completed a survey one month later. One reported prior LD; none reported tickborne disease diagnosis post-visit.

Conclusions:
We did not identify tickborne disease arising from exposure in GREE; this may result from the limited number of visitor surveys completed one month after the visit. We increased our understanding of LD knowledge, misconceptions, and prevention measures used by employees and visitors in a high-density tick environment. Paradoxically, respondents with previous LD were no more likely to implement personal protective measures suggesting reassessment of best LD prevention strategies. Reinforcement of prevention messages is warranted for employees. Because there were few LD diagnoses, our understanding of risk factors is limited. NPS is implementing a LD educational panel and podcast for visitors.

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Abstract ID: **1062019** Presentation Type: **Poster Presentation**

Title: **Characterization of confirmed and suspect PCR positive pertussis cases**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Data/Surveillance, Respiratory diseases: Non-influenza, Surveillance**

Abstract Text

Background:
Polymerase chain reaction (PCR) for B. pertussis provides improved sensitivity and faster results compared to culture; however, false positives have been reported. Since the 1990's, PCR testing has been increasingly utilized, although there is lack of standardization between labs and specificity varies according to the targets and interpretation of results. PCR positivity alone is not currently accepted by CSTE as confirmatory for B. pertussis; confirmed cases must also meet the clinical case definition for pertussis that includes cough of at least 14 days duration. To characterize PCR-positive patients with suspect pertussis who are excluded from case counting based on these criteria, a descriptive analysis was performed using Minnesota surveillance data.

Methods:
Minnesota routinely maintains data on all suspected pertussis cases. Descriptive analyses were done using surveillance data from four peak incidence years including, 2004, 2005, 2008 and 2009. Both PCR positive confirmed cases and those that did not meet the clinical case definition were compared on variables including age, cough duration at the start of treatment, epidemiologic linkage, and association with known outbreaks. The differences are described using Wilcoxon-Mann-Whitney and Pearson’s chi-square tests for significance.

Results:
A total of 3,608 PCR positive persons were included in the analysis, comparing 3,356 confirmed cases and 252 suspect cases. A significant difference was identified between the two groups in median duration of cough at the start of treatment (12 days for confirmed compared with 7 days for suspect). Furthermore, a significant difference was found between the two groups with regard to the proportion of cases that were associated with outbreaks (16% of confirmed compared with 39% of suspect) and also those that had a known epidemiological link to a confirmed case (27% of confirmed compared with 58% of suspect).

Conclusions:
The early administration of antibiotics has been shown to reduce the severity and duration of symptoms. Our results demonstrate that PCR positive suspect cases were more likely to receive antibiotics earlier in their course of illness. The findings that suspect cases were more often associated with outbreaks and epidemiologic linkage may be explained by two divergent factors. Public health investigations may increase the likelihood of early antibiotic use, but may also increase the amount of indiscriminate diagnostic testing. Testing indiscriminately lowers the pretest probability and increases the probability of false-positives. Before such exploratory findings can be used when considering future

modifications of the CSTE pertussis case definition, further evaluation of suspect cases is needed.

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Abstract ID: **1062162** Presentation Type: **Poster Presentation**

Title: **Rapid response to measles exposures at a pediatrician's office: A description of methods and tools**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Communicable disease, Infectious Diseases, Local Public Health Agencies**

Abstract Text

Background:
Foreign travel and decreasing MMR vaccination rates increase the likelihood of measles exposures in U.S. communities that rarely encounter measles disease. Rapid and efficient response to such measles exposures can limit disease spread. During a 2008 measles outbreak, the Fairfax County Health Department (FCHD), in conjunction with the Virginia Department of Health, created standardized methods and tools for efficient measles case investigation. These methods and tools were most recently utilized to identify and administer prophylaxis to individuals exposed to a previously confirmed measles case who visited a pediatrician's office on 8/14/2010. FCHD was notified one hour after the case left the clinic and FCHD staff conducted an on-site visit within 3 hours.

Methods:
An exposed individual was defined as any individual who visited the clinic while the case was present or during the two-hour period following the case's departure. Contact information was obtained for 92 individuals who met this exposure definition. A call center was activated on 8/15/2010. The callers (PHNs) used a standardized questionnaire and algorithm to determine immune status. Based on questionnaire responses, exposed individuals were divided into 6 groups: A (Susceptible- Zero Doses Received), B (Partially Protected- One Dose Received), C (Protected- 2 Doses or History of Disease), D (Protected - Born Before 1957), E (HCW- Documented Protection), and F (HCW- No Documented Protection). Verbal recommendations for prophylaxis and/or exclusion were given, as appropriate. The pediatric practice administered prophylactic vaccine for children and FCHD administered prophylactic vaccine for adults and Immune Globulin for children. Questionnaire responses were tabulated and recommendation letters specific to each exposed individual's immune status (groups A through F) were mailed within 24 hours of initial FCHD contact. Active surveillance in the form of symptom check follow-up was conducted for three weeks after the exposure for groups A and F.

Results:
The 92 exposed individuals were initially classified as follows: A-18, B-30, C-39, D-2, E-2, and F-1. In terms of prophylaxis, 13 individuals received their 1st dose of measles containing vaccine, 18

individuals received their 2nd dose, and 3 individuals received Immune Globulin. No individuals developed symptoms during active surveillance. Of the individuals in groups A and F for whom prophylaxis was indicated, 100% received appropriate prophylaxis within 72 hours of exposure.

Conclusions:
In this investigation, timely reporting to FCHD and availability of pre-planned methods and pre-existing tools enabled FCHD staff to rapidly evaluate and classify exposed individuals and provide appropriate prophylaxis recommendations and infection control guidance.

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Abstract ID: **1050690** Presentation Type: **Poster Presentation**

Title: **Single source exposure of Norovirus among multi-state residents: A tale of the 2010 National Association County and City Health Officials (NACCHO) annual conference**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Foodborne disease, Outbreak investigations**

Abstract Text

Background:
The Shelby County Health Department in TN investigated an outbreak following reports of gastrointestinal (GI) illness characterized by vomiting and diarrhea among several conference attendees. Respondents consumed meals served by hotel catering staff at the conference, which was held July 14-16. Based on the incubation periods and disease presentation, it was hypothesized that the lunch meals were the likely culprits and the organism was norovirus.

Methods:
A two-pronged approach was adopted in the investigation of the outbreak; phase 1, an initial survey of conference attendees' food and illness diaries to direct public health response and environmental assessments at the hotel's kitchens. Phase 2, an analytic investigation of the outbreak using case-control study of 71 patients (mean age= 46 years) and 256 controls. All stool samples from case-patients showed laboratory confirmed norovirus GII (n=10).

Results:
Of the 992 attendees, 347 responded to a web-based survey. Of the 347 respondents, 91 reported illness. Seventy-one (78%) were included in the study. Of the 20 cases that were excluded, 80% did not fall within study time frame, 15% were missing information on date illness occurred, and 5% did not meet the illness symptom criteria. The attack rate based on the responses was 26%. Of the 71 ill, 91.5% reported fatigue, diarrhea (87.3%), nausea (84.5%), stomach cramps (69.0%) and vomiting (62.0%). Odds ratio estimates were calculated for food items consumed at the conference. Those who ate the pasta salad were three times as likely to have illness satisfying the case definition as compared with those who did not eat the pasta salad (OR=3.3 p=0.016). The odds of getting ill after eating the

turkey wrap, chicken sandwich, veggie wrap, roast beef sandwich and fruits were statistically insignificant, though notable. Those who consumed the chicken sandwich were almost twice as likely to report illness (OR=1.9). A person-to-person transmission was not determined during the investigation.
Environmental assessments found critical violations including improper food storage and preparation practices at both kitchens. Sanctions were made and enforced to prevent further spread of infection.

Conclusions:
Though we identified the norovirus outbreak was associated with the consumption of food items served at the conference, we were unable to identify the contamination source for the tortellini vinaigrette pasta salad due to inability to test all food handlers for norovirus. Also, circumstances surrounding the storage, preparation and serving of foods could have contributed in the spread of the norovirus.

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Abstract ID: **1058443** Presentation Type: **Poster Presentation**

Title: **Evaluation of the quarantine activity reporting system (QARS) as a surveillance system for cases of measles in travelers**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Border / International health, Evaluation, Infectious Diseases**

Abstract Text

Background:
CDC Quarantine Stations (QS) are notified of infectious illnesses identified among travelers. Cases are recorded and tracked in the Quarantine Activity Reporting System (QARS). For contact investigations, ill traveler contacts are identified through airline manifests and distributed to health departments through the CDC Epidemic Information Exchange (Epi-X). For measles, susceptible travelers can receive post-exposure prophylaxis with MMR vaccine within 72 hours of exposure or within 6 days with immune globulin. We evaluated the QS surveillance system for measles in international travelers.

Methods:
To assess completeness, quality and timeliness of notification to QS, confirmed cases of measles contagious during travel (within 4 days of rash onset) recorded in QARS were compared with reports in the National Notifiable Disease Surveillance System (NNDSS) from August 1, 2005 to August 15, 2010.

Results:
Of 135 imported cases of measles reported to NNDSS, 102 (76%) persons had a date of travel recorded; of these, 58 (57%) traveled during the contagious period, 55 (95%) were identified in QARS. Fifteen cases in QARS were not found in NNDSS. Analysis was conducted for the 70 cases in QARS presumed infectious during travel.

Notifications came from health departments (73%), CDC (16%), international public health authorities (7%), and travel industry (4%). Median time from date of travel to QS notification was 8 days (IQR 4-11). QARS reports were complete for date of onset (100%) and flight (95%). Seat location was missing for 39% of airplane travelers. Epi-X notifications were sent a median of 4 days after QS notification (IQR 2-8), 4% within 72 hours and 81% more than 6 days after exposure.

Conclusions:
Despite excellent notification, 5% of cases known to be infectious during travel were not reported to CDC QS, and travel dates were not available for 24% of cases, representing probable missed opportunities to investigate travel contacts. Because persons with measles are infectious before symptoms onset and time is needed to confirm the diagnosis, notify health departments and contact travelers; providing measles prophylaxis to exposed airline passengers is challenging. Travel history, including dates of travel, should be elicited for all suspect measles cases. Health department staff should report suspect measles cases with airline travel during their infectious period to QS staff as soon as possible. Once notification to QS occurs, efforts should be made to obtain flight manifests promptly.

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Abstract ID: **1062460** Presentation Type: **Poster Presentation**

Title: **Carbapenem-Resistant *Enterobacteriacaea* (CRE) survey in Maryland acute care hospitals**

Committee: **Infectious Diseases**

Topic: **Multi-Drug Resistant Organisms (MDROs)/ Carbapenem-resistant Enterobacteriaceae (CRE)**

Keywords: **Antimicrobial resistance, Surveillance**

Abstract Text

Background:
CRE are an important, emerging public health problem. Between January and July 2010, new carbapenem-resistant strains of *Enterobacteriacaea* were identified by the United States Centers for Disease Control and Prevention (CDC), which had never before been reported in the US. Recognizing carbapenem resistance in clinical specimens and placing colonized or infected patients in contact isolation is appropriate. Based on these findings the Maryland Department of Health & Mental Hygiene staff determined that estimating CRE prevalence to establish baseline data was indicated. Our primary objective was to assess the frequency and distribution of CRE in acute care hospitals throughout the state of Maryland.

Methods:
In the fall of 2010 a brief questionnaire was developed to ascertain the number of unduplicated patients who tested positive for CRE (all species) from September 2009 to August 2010. The questionnaire, accompanied with a letter providing the rationale for this surveillance, was sent via e-mail to the

directors of all Maryland acute care hospital microbiology laboratories, with follow-up for non-responders via telephone. Discussions with microbiology personnel revealed that some laboratories processed specimens from multiple hospitals and/or long term care facilities. Others did not routinely perform active surveillance for CRE, with testing per physician order on a case by case basis.

Results:
Preliminary data show 590 CRE-positive patients from 38 reporting hospitals. There was a wide frequency range of 0 to 79. Four facilities (10%) reported no CRE. The highest case-counts were 79, 68, and 46 from three urban hospitals; one was a large academic medical center while the other two were medium sized community hospitals. Frequency distribution was 0-5 CRE positive patients in 13 (34%) facilities; 7-15 in 14 (37%) facilities; and 20-79 in 11 (29%) facilities. The median CRE count was 10 and the mean 16.

Conclusions:
The wide range of cases in a variety of facilities indicates CRE is not entrenched statewide, and suggests the need for different prevention strategies compared to those indicated for other multidrug-resistant organisms. Providing feedback to healthcare professionals will help to raise awareness about CRE, encourage detection and internal reporting by microbiology laboratories, and assist hospital personnel in prioritizing their prevention and control measures. CRE survey results provide baseline data at the state level for future surveillance efforts, identification of trends, and coordination of prevention efforts.

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Abstract ID: **1058349** Presentation Type: **Poster Presentation**

Title: **Follow-up examination of US-bound immigrants and refugees with tuberculosis(TB)**

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Electronic data, Infectious Diseases, Information systems**

Abstract Text

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Abstract ID: **1054078** Presentation Type: **Poster Presentation**

Title: **Clostridium difficile infections in Florida Hospitals, 1997-2009**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Cancer, Healthcare associated infections (HAI), Hospital data**

Abstract Text

Background:
Clostridium difficile is a spore-forming bacterium that is predominantly transmitted within healthcare settings. Patients with C. difficile infection (CDI) are at higher risk for readmission to the hospital and mortality than patients without CDI. They also have an increased length of stay. Published estimates of the cost of a case of CDI range from $2,454-$7,179. The use of International Classification of Diseases, Ninth Revision, Clinical Modifications (ICD-9-CM) diagnosis codes in hospital discharge data to detect CDI has been shown to have good sensitivity (71% to 99.6%) and high specificity (99% to 99.7%). Older age is recognized risk factor for CDI. The proportion of Florida's population age 60 and over is higher than that of the United States (22.9% versus 18.0%). Additionally, many older non-Florida residents winter in Florida. With such a large at-risk population, it is important to understand the epidemiology of CDI in Florida.

Methods:
A retrospective analysis of Florida hospital discharge data from 1997-2009 was conducted. Cases of C. difficile were identified using ICD-9-CM code 008.45. Patients were tracked longitudinally and cases were classified by applying the Society of Healthcare Epidemiology of America (SHEA) and the National Healthcare Safety Network (NHSN) definitions to the data elements available in the discharge data as duplicate, recurrent, or new cases and as Community-Associated, Indeterminate Association, or Healthcare Facility-Associated.

Results:
The statewide discharge prevalence of CDI was steady from 1997 to 2000, when it began increasing an average of 19.1% per year until leveling off in 2006. The plurality of C. difficile cases in 2009 were Healthcare Facility-Associated (48.9%). The discharge prevalence of CDI increased with increasing age, starting with individuals aged 30 to 40 years, except for a spike among children between 1 and 10 years, and was highest among patients admitted from skilled nursing facilities and among patients who expired or were discharged to hospice or to a skilled nursing facility.

Conclusions:
While the increasing CDI risk with increasing age has been elsewhere documented, it is still noteworthy given the age distribution of Florida's population. There is limited published literature on CDI in children to explain the elevated rates seen in this population in our study. Given the predominance of transfers between acute care facilities and skilled nursing homes for patients with CDI, prevention activities should be undertaken as a coordinated effort that includes all healthcare providers in the patient's continuum of care.

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Abstract ID: **1054082** Presentation Type: **Poster Presentation**

Title: **An antibiogram for community-associated Staphylococcus aureus in Florida, 2006-2009**

Committee: **Infectious Diseases**

Topic: **Multi-Drug Resistant Organisms (MDROs)/ Carbapenem-resistant Enterobacteriaceae (CRE)**

Keywords: **Antibiotic resistance**

Abstract Text

Background:
Long recognized for their potential to cause disease in healthcare settings, in recent years community-acquired S. aureus infections in individuals with no healthcare exposures have become more commonly recognized. Staphylococcus aureus is a common skin contaminant. About 20% of the population are long-term carriers of S. aureus and over 60% may carry it intermittently. While the line between healthcare-associated (HA) and community-associated (CA) S. aureus infections has become increasingly blurred, they are still in general caused by distinct strains of the bacteria with different antibiotic resistance patterns.

Methods:
This study examined the antibiotic resistance patterns of S. aureus isolates from a large commercial laboratory in Florida that almost exclusively serves outpatient providers. While it was not possible to determine whether an individual ordering provider was affiliated with an outpatient or hospital setting, because of the clients served by the laboratory the isolates in the dataset were assumed to represent isolates taken in outpatient settings and CA-S. aureus infections. Four years of data were used in this analysis, 2006 to 2009; year was based on MMWR year of the date of specimen collection. As per National Committee for Clinical Laboratory Standards (NCCLS) guidelines, only the first isolate per individual per 365 days was included.

Results:
Half (50-52%) of isolates tested from 2006 through 2009 were methicillin-resistant S. aureus (MRSA) and thus considered to be resistant to all β-lactam drugs. Penicillin resistance was nearly universal. Resistance to the fluoroquinolones was substantial (24%-29% resistance to both ciprofloxacin and levofloxacin over the four years of the study), as was resistance to erythromycin (65%-67%). Resistance to erythromycin is a marker for inducible clindamycin resistance; full resistance for clindamycin ranged from 16%-18% between 2006 and 2009. Antibiotic resistance was more common among isolates from individuals 65 years of age and older and from residents of the northern part of the state. Methicillin-sensitive S. aureus (MSSA) isolates were more susceptible to all classes of drugs when compared with MRSA isolates, with the exception of tetracycline and clindamycin. Resistance to 3 or more classes of antibiotics other than β-lactams was more than three times as prevalent among MRSA isolates as among MSSA isolates.

Conclusions:
Knowledge of the specific antibiotic resistance patterns of S. aureus in the community can be clinically useful when considering options for empirical treatment and epidemiologically useful for tracking trends in resistance.

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Abstract ID: **1061359** Presentation Type: **Poster Presentation**

Title: **Update on policy changes by the Advisory Committee on Immunization Practices on the use of tetanus-reduced diphtheria-acellular pertussis vaccines (Tdap) in the United States**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Immunization**

Abstract Text

Background:
In response to increasing disease incidence in adolescents and adults, in 2005, the Advisory Committee on Immunization Practices (ACIP) recommended a dose of tetanus-reduced diphtheria-acellular pertussis (Tdap) vaccine for persons aged 11 through 64 years to reduce the morbidity and decrease transmission of pertussis with emphasis on adolescents, health care providers, and postpartum women. In 2009, Tdap coverage among adolescents was 56% and less than 6% in adults; in contrast, national vaccine coverage for 3 or more doses of diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine in children was 97%.

Methods:
ACIP considered pertussis epidemiology, immunogenicity and safety evaluations, effectiveness data, and expert opinion on impact of the current vaccination strategy and to identify barriers and programmatic challenges to improve Tdap uptake.

Results:
To remove identified barriers to vaccination and to focus on protecting vulnerable infants ages less than 12 months, the following changes have been made to the 2005 recommendations: 1) removal of recommended minimum interval between last Td booster and Tdap; 2) use of Tdap in adults ages 65 years and older who are close contacts of infants (e.g., grandparents and health care providers); 3) use of Tdap in under-vaccinated children ages 7 through 10 years. Discussions are ongoing on other potential changes including use of Tdap in pregnant women, revaccination with Tdap, and chemoprophylaxis practices in vaccinated healthcare providers.

Conclusions:
Changes to the 2005 Tdap recommendations are intended to remove identified barriers and programmatic gaps, improve vaccination in these important groups and further reduce the burden of disease and risk to infants.

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Abstract ID: **1060062** Presentation Type: **Poster Presentation**

Title: **Human paragonimiasis - Missouri, July 2006â€“October 2010 ***

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Emerging infections, Foodborne disease**

Abstract Text

Background:
Paragonimus is a lung parasite acquired through eating raw or undercooked freshwater crustaceans. Only six nonimported U.S. cases were reported during 1965-2007. In 2009, physicians published a report of three paragonimiasis cases diagnosed in Missouri during 2006-2008. We enhanced case finding and investigated epidemiologic characteristics.

Methods:
We collaborated with two medical centers to collect clinical and exposure information retrospectively and prospectively through chart review and patient/parent interview. A clinical case was defined as fever, pneumonia or pleural effusion, eosinophilia (>500 eosinophils/mm3 in peripheral blood), and a prompt response to praziquantel, the recommended paragonimiasis treatment. Cases were confirmed if testing revealed Paragonimus eggs in respiratory specimens (sputum, bronchoalveolar lavage fluid, or tissue) or antibodies in serum.

Results:
During July 2006-October 2010, 8 laboratory-confirmed and 2 additional clinical cases were identified. All 10 patients, aged 10-32 years, had eaten raw or undercooked crayfish collected from Missouri rivers while canoeing or camping. Seven patients had been intoxicated by alcohol; 2 had eaten raw crayfish as dares, and 1 had eaten raw crayfish to demonstrate survival skills. Three patients had undergone multiple clinical tests and empiric treatments 9-11 months before paragonimiasis was diagnosed; four experienced severe manifestations: pneumothorax (1), cardiac tamponade (1), and cerebral lesions causing blurred vision (2).

Conclusions:
Paragonimiasis cases reported in Missouri occurred after eating raw or undercooked crayfish. Delayed diagnosis and severe manifestations were common. Health-care providers should consider paragonimiasis and inquire about eating raw or undercooked crayfish among patients with unexplained fever, pneumonia or pleural effusion, and eosinophilia. Owners and patrons of campgrounds and canoe rental businesses should be alerted that crayfish should be thoroughly cooked before ingestion.

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Abstract ID: **1058445** Presentation Type: **Poster Presentation**

Title: **Imported viral hemorrhagic fevers in the United States, 2008 - 2010**

Committee: **Infectious Diseases**

Topic: **Zoonotic disease**

Keywords: **Border / International health, Emerging infections, Zoonotic disease**

Abstract Text

Background:
Viral hemorrhagic fevers (VHFs) are caused by a diverse group of viruses, from five different virus families. While not all have hemorrhagic manifestations, these represent a broad group of clinical syndromes with high potential case fatality in humans and risk of person-to-person transmission in some instances. All VHF-associated viruses are maintained in a zoonotic reservoir and are endemic exclusively outside of the United States (with the exception of some hantaviruses and lymphocytic choriomeningitis virus), and thus VHF cases in the United States are the result of imported disease.

Methods:
The Viral Special Pathogens Branch, CDC, has available diagnostic capacity for all known VHFs, and provides consultation and rule-out testing for suspect VHF, in collaboration with state health departments.

Results:
Since 2008, 5 instances of imported VHFs have been diagnosed in the United States, including cases of Marburg hemorrhagic fever (MHF) and tick-borne encephalitis (TBE) in 2008, hemorrhagic fever with renal syndrome (HFRS) in 2009, and Lassa fever (LF) and hantavirus pulmonary syndrome (HPS) in 2010. Importations occurred among travelers from four different continents: Africa (MHF and LF), Europe (TBE), Asia (HFRS), and South America (HPS). Two of these instances involved individuals who developed symptoms prior to arrival in the United States (LF and HPS), while the other three instances involved individuals traveling during the incubation period, who became symptomatic in the United States. While person-to-person transmission is possible for MHF and LF, no secondary cases occurred.

Conclusions:
These recent cases of VHF-associated infections in the United States underscore the potential for importation of high hazard viruses among travelers, from a wide range of geographic locations. Owing to possible person-to-person transmission, a subset of VHFs, including Ebola hemorrhagic fever, MHF, Crimean Congo hemorrhagic fever, LF, Lujo and South American arenavirus infections, are nationally notifiable in the United States. However, through surveillance, patient isolation and contact precautions, rapid reporting and diagnostic sample testing, and contact tracing, risk of secondary transmission can be largely minimized. Epidemiologic aspects to consider for assessing a potential VHF case include the geographic location of travel, endemnicity and ongoing occurrence of human VHFs in that location, timing of travel relative to onset of symptoms, and other potential infectious etiologies associated with travel.

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Abstract ID: **1057373** Presentation Type: **Poster Presentation**

Title: **Assessing Excess Pneumonia and Influenza Mortality During the 2009 H1N1 Influenza A Pandemic**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Infectious Diseases, Influenza / Pandemic influenza, Influenza surveillance**

Abstract Text

Background:
During the Fall 2009 H1N1 influenza A pandemic, influenza virus circulated and activity peaked earlier than during traditional flu season. In Florida elevated influenza activity was from mid-August (week 32) to mid-December (week 50). This analysis uses death certificate data to compare pneumonia and influenza (P&I) mortality during the 2009 H1N1 pandemic to all-cause mortality during the pandemic, and to P&I and all-cause mortality in previous non-pandemic years.

Methods:
Death certificate data from the Florida Office of Vital Statistics were analyzed using Florida's ESSENCE system. A free-text query of the literal physician statements in death certificate fields was used to search for P&I deaths. The query included all mentions of "influenza," "pneumonia," and "H1N1," excluding unrelated illnesses like aspiration pneumonia and Haemophilus influenzae. Weekly P&I and total mortality counts from the 2007-08 and 2008-09 influenza seasons were averaged, then subtracted from the P&I and total mortality counts during the 2009-10 season to create a crude estimate of excess mortality. Peak weeks of activity were compared to non-peak weeks to determine if excess mortality differed throughout the pandemic.

Results:
In the entire 2009-2010 H1N1 influenza season (from mid-August, 2009 to April, 2010) there were 150 more P&I deaths reported and 399 fewer all-cause deaths reported than the average of the same periods in 2007-08 and 2008-09. During the peak weeks of influenza morbidity (August—December), there were 369 more cumulative P&I deaths in the 2009-10 season reported than over the average of 2007-09 seasons, and 511 more cumulative all-cause deaths. P& I deaths accounted for 72.3% of the excess deaths during this period.. For the rest of the traditional influenza season (mid-December, 2009-April, 2010), there were 219 fewer P&I deaths reported, and 910 fewer all-cause deaths reported. than for the same periods in previous years. In previous seasons the proportion of P&I deaths among total deaths during the influenza season is 5.9%.

Conclusions:
During the Fall 2009 H1N1 pandemic, P&I mortality in Florida increased compared to non-pandemic years. The highest P&I mortality coincided with the time of greatest morbidity from 2009 H1N1. In early 2010, the proportion of P&I deaths among the total decrease in deaths is five times greater than the proportion of P&I deaths in the total population in previous years' influenza seasons, indicating that the decrease may be due to a reduction in disease-specific death rates.

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Abstract ID: **1058201** Presentation Type: **Poster Presentation**

Title: **Enhancement of ILINet surveillance in New Jersey during H1N1 pandemic**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Influenza / Pandemic influenza, Surveillance**

Abstract Text

Background:
Each influenza season, health care providers enroll in the United States Outpatient Influenza-like Illness Surveillance Network (ILINet) and report total patient visits and influenza-like illness (ILI) visits each week. During the 2009 Influenza H1N1 outbreak, additional clinical and epidemiologic data was needed to track the disease in outpatient settings and identify any changes in the virus or the clinical course associated with the illness. In order to facilitate this need, the New Jersey Department of Health and Senior Services (NJDHSS) Communicable Disease Services (CDS) made available rapid influenza diagnostic assays (RIDA) for use by ILINet providers and asked them to complete a brief clinical and epidemiologic form on each patient tested with a RIDA.

Methods:
In May 2009, we asked local health departments to identify ILINet providers in their area who would be interested in assisting with this enhanced surveillance project. Interested providers received RIDA's and a data collection form requesting information on symptoms, underlying medical conditions, travel, vaccination status, RIDA result, treatment and contacts which was to be completed on each patient tested. Forms were faxed to the state health department and entered into a database.

Results:
From May 2009 to April 2010, NJDHSS received 463 patient forms from 15 providers. The majority of cases were less than 18 years of age (95%) and the most commonly reported symptoms were fever (64%), cough (76%), headache (55%), and sore throat (62%). Of the 463, 87 (19%) patients reported an underlying medical conditions with asthma (n=51, 59%) being the most frequently reported. Vaccination in the past year was reported in 120 (26%) cases. Treatment with oseltamivir was reported in 132 (29%) patients. ILI, defined as fever plus cough and/or sore throat, was reported in 270 (58%) and of those with ILI only 36% received antiviral treatment. Almost half (45%, n=26) of those identified as having ILI and an underlying condition (n=58) were treated with antivirals.

Conclusions:
Enhancement of an existing surveillance system proved to be a useful mechanism to collect information from outpatient settings during the H1N1 pandemic. Information collected allowed NJDHSS to ensure that educational messaging and public health control measures were targeted to appropriate

groups and ensured that patient characteristics were similar to what was reported nationally. While this data was limited by the large number of pediatric cases, the relative ease of implementation and the usefulness of data made this enhancement a successful part of H1N1 surveillance activities.

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Abstract ID: **1061941** Presentation Type: **Poster Presentation**

Title: **Contact investigation of staff and patients exposed to a private dental care provider with active pulmonary tuberculosis**

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Infectious Diseases, Respiratory diseases: Non-influenza, Surveillance**

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Abstract ID: **1055054** Presentation Type: **Poster Presentation**

Title: **Evaluation of laboratory-confirmed influenza death reporting through the Public Health Issues Management System (PHIMS), Washington 2009**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Data/Surveillance, Evaluation, Influenza / Pandemic influenza**

Abstract Text

Background:
PHIMS is a web-based system used to transmit data on notifiable conditions to the Washington State Department of Health (DOH). In response to the H1N1 pandemic, healthcare providers and hospitals in Washington were required to report deaths due to laboratory-confirmed H1N1 influenza from April through August 2009 and deaths due to laboratory-confirmed influenza of any type from September through December 2009 to local health jurisdictions (LHJs). LHJs reported cases to DOH using PHIMS. The objective of this study was to evaluate the sensitivity, timeliness, data quality, flexibility,

Abstract Text

Background:
The majority of human rabies cases acquired in the United States are caused by bat-associated rabies virus variants, therefore, potential exposures to bats requires a thorough evaluation. The risk for rabies resulting from a bat encounter might be difficult to determine, in part, because tissue damage from a bat bite may be minimal and not visibly apparent after a few hours. The Advisory Committee on Immunization Practices (ACIP) recommends in "Human Rabies Prevention, United States, 2008" that any direct contact between a human and a bat should be evaluated for an exposure and, in addition, other situations that might qualify as exposures include finding a bat in the same room as a person who might be unaware that a bite or direct contact had occurred (e.g., a deeply sleeping person awakens to find a bat in the room or an adult witnesses a bat in the room with a previously unattended child, mentally disabled person, or intoxicated person).
In July 2009, the Virginia Department of Health (VDH) was contacted in reference to a concern about potential rabies exposures via bats in a group of 70 people comprised of North Carolina and New Jersey residents visiting Virginia for one week as part of a service project. Members of this group reported to VDH multiple, separate bat sightings early one morning in the group's sleeping quarters while the majority of the group was asleep.

Methods:
In response to this report, the VDH contacted representatives from the North Carolina and New Jersey departments of health and public health officials from each state and the affected locality developed a response plan. The plan included a survey tool to assess exposures and basic information about bats and rabies. Individual assessments and rabies education were coordinated by local public health authorities. PEP was recommend for those meeting the definition of exposure and PEP administration was coordinated by all three states.

Results:
All 70 members of the group received rabies education and were assessed using the survey tool. Sixty-eight were assessed as exposed. Four of those assessed identified themselves as immunosuppressed and two reported that they had previously received PEP. Fifty six members of the group (80%) initiated PEP. Six members of the group initiated PEP prior to leaving Virginia and 50 initiated the series upon returning to their state of residence. Public health officials in New Jersey coordinated PEP via private providers and public health authorities in North Carolina organized a vaccination clinic to facilitate PEP administration.

Conclusions:
Any potential exposure to rabies via a bat requires a thorough evaluation and should include considerations regarding persons who were not aware of being bitten or having direct contact with bats. Those involved in multistate investigations of this type should be prepared to coordinate and facilitate PEP administration and consider factors such as the availability of rabies biologicals to accommodate a large group. In addition, investigations of this scope offer the opportunity to review and discuss how best to implement the ACIP guidelines.

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Abstract ID: **1061695** Presentation Type: **Poster Presentation**

Title: **Low risk of mumps transmission during air travel, November 1, 2006-November 1, 2010**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **CDC Guidelines, Communicable disease, Evidence based practice**

Abstract Text

Background:
Since November 2006, contact investigations have been conducted in the United States for passengers infectious with mumps, traveling on flights ≥5 hours long. This protocol was based on an internal CDC investigation that showed a minimal risk of mumps transmission on flights <5 hours long. However, the risk of mumps transmission on longer flights has not been evaluated. We performed this evaluation to determine if the current protocol for conducting mumps investigations is evidence-based.

Methods:
To evaluate the risk of mumps transmission on flights ≥5 hours long, we analyzed data from case-travelers with mumps and reported outcomes of passenger contact investigations initiated by the Centers for Disease Control and Prevention (CDC) from November 2006 through October 2010. A passenger-contact was defined as a passenger on a flight who was seated in the same row as, or the row in front of or behind a case-traveler with confirmed or probable mumps, with bulkheads and aisles considered barriers. Demographic information on passenger-contacts was obtained from airline flight manifests. To identify secondary mumps cases that were not reported to CDC, mumps cases reported to the National Notifiable Diseases Surveillance System (NNDSS) within one incubation period (12-25 days) plus 7 days of a flight with an infectious case-traveler were cross-referenced with information on passenger-contacts.

Results:
Contact investigations for 27 case-travelers on 28 flights met the inclusion criteria. Median flight duration was 9.3 hours (range, 5.6 to 15.8 hours). All but two of the index case flights originated internationally, and 18 (67%) of mumps cases in case-travelers were laboratory confirmed. Two hundred sixty-six passengers were identified as contacts on the flights; 20 (8%) were excluded from the analysis because they were traveling companions of a case-traveler. Of the remaining passenger-contacts, 166 (67%) were assigned to a U.S. health department for investigation. Outcomes were reported for 31 (19%) of these 166 passenger-contacts, of whom 21 (68%) were interviewed by health department staff. No symptoms consistent with mumps disease or secondary mumps cases among passenger-contacts were reported to CDC. No unreported secondary mumps cases were identified from NNDSS data.

Conclusions:
Despite the low proportion of outcomes data reported by States to CDC, the absence of secondary cases identified by review of NNDSS suggests that the risk of in-flight transmission of mumps is low. Taken together, the data indicate that continued conduct of contact investigations of mumps in association with air travel may not be warranted.

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Abstract ID: **1055165** Presentation Type: **Poster Presentation**

Title: **Two clusters of HIV-1 infection distinguished by phylogenetic analysis - Idaho, 2008**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **HIV/AIDS, Outbreaks**

Abstract Text

Background:
In March 2008, one cluster of newly identified human immunodeficiency virus-1 (HIV-1) infections that included five cases (cluster A) in a rural Idaho city (city A) was reported. Cluster A included two men; one man (also an injection-drug user) and two women reported both male and female sex partners. All five reported methamphetamine use. During September-December 2008, another cluster of newly identified HIV-1 infections in Idaho (cluster B) was reported. Cluster B included 10 cases, all among men who reported living within a 50-mile radius of city A, with the majority in a rural city (city B) located <30 miles from city A. Each patient reported having had unprotected sex with male partners. Although we suspected transmission of HIV-1 between persons in clusters A and B, whether the clusters were linked epidemiologically remained unclear. A laboratory investigation was initiated to further characterize and determine linkage between clusters A and B, information valuable for refining HIV prevention activities.

Methods:
HIV-1 pol consensus sequence data for four cases from cluster A and six cases from cluster B were obtained from five commercial laboratories. No patients had received antiretroviral (ARV) therapy. Additionally, we used sequence data from a patient residing in city B who had received an HIV-1 diagnosis in December 2008 but was not epidemiologically linked to either cluster. HIV-1 control sequences from two Idaho HIV clinics, including 34 HIV-1-infected persons within a 275-mile radius of city B who had not received ARV and who had resistance testing performed during 2005-2008, were used to represent the regional epidemic. Control sequences were aligned with cluster A and B sequences and analyzed.

Results:
Ten patients were placed into two distinct phylogenetic-related groupings. Group 1 contained four patients from cluster A and one patient with no known epidemiologic link to either cluster. Group 2 contained five patients from cluster B. The average pol genetic distance among viruses from members of group 1 was 0.2% (median = 0.1%; standard deviation [SD] = 0.2%) and from members of group 2 was 0.1% (median = 0.1%; SD = 0.1%). The average distance between groups 1 and 2 was 4.8% (median = 4.8%; SD = 0.2%), which does not demonstrate a linkage between the two groups.

Conclusions:
Use of phylogenetic analysis of HIV-1 sequences obtained from commercial laboratories demonstrated that clusters A and B were not epidemiologically related and helped target specific HIV prevention activities.

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Abstract ID: **1061615** Presentation Type: **Poster Presentation**

Title: **Latent infection with neurotropic herpes viruses and cognitive impairment**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Mental health**

Abstract Text

Background:
We examined cognitive function in relation to exposure to selected neurotropic herpes viruses in families ascertained through schizophrenia (SZ) cases and controls. On average, patients with SZ and their non-psychotic relatives show cognitive impairment compared with controls. While shared genetic variation can explain the impairment, shared exposure to environmental insults is also plausible. Exposure to neurotropic herpes viruses has been repeatedly associated with cognitive impairment among SZ patients. The associations have medium effect sizes, with exposure indexed by elevated antibody titers. Among individuals with SZ, exposure to herpes simplex virus type 1 (HSV) is also associated with decreased grey matter volume in the prefrontal cortex, a region that plays a pivotal role in the regulation of working memory and executive functions. Similar associations between cognitive impairments and exposure to cytomegalovirus (CMV), another herpes virus have also been reported. A recent doubleblind pilot trial with the anti-viral drug valacyclovir suggested cognitive improvement in early course HSV1 exposed SZ patients. Cognitive impairment traceable to viral exposure can occur in not only SZ patients, but even among apparently healthy persons without a history of encephalitis. So far no studies have examined cognitive impairment associated with herpes viruses in non-psychotic relatives of SZ patients.

Methods:
Among African-Americans with SZ, their relatives and screened adult controls (n = 1852), nine cognitive domains, exposure to HSV1, Herpes Simplex type 2 (HSV2) and Cytomegalovirus (CMV), familial and diagnostic status, and socio-demographic variables were evaluated by multivariate models. Composite cognitive measures were derived using principal components of heritability (PCH) and

PCH1, the most heritable component was used.

Results:
Exposure to CMV or HSV1 was negatively correlated with PCH1, regardless of case/relative/control status ($p = 8.57 \times 10^{-6}$ and 0.01, respectively), with stronger association with exposure to multiple herpes viruses (beta= -0.25, $p = 5.19 \times 10^{-10}$). There were no significant interactions between exposure and group status.

Conclusions:
While causality cannot be proven, none of our participants had a history of encephalitis, so latent infection of herpes viruses may not be entirely benign. Indeed the exposure explains a portion of the cognitive impairment among SZ cases and their relatives, as well as the population more generally. This has implications for genetic studies using cognitive measures in SZ, as well as possible public health implications. Prospective studies to test causal relationships are suggested.

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Abstract ID: **1060517** Presentation Type: **Poster Presentation**
Title: **Norovirus outbreak associated with an untreated artificial lake in an Alabama state park**
Committee: **Infectious Diseases**

Topic: **Waterborne disease**

Keywords: **Infectious Diseases, Outbreak investigations, Waterborne disease**

Abstract Text

Background:
On May 29 2010, the Alabama Department of Public Health (ADPH) was notified of a possible outbreak involving visitors of a state park. Visitors noticed they were part of an outbreak after conversations on Facebook. Over 35 families of home-schooled children from all over the state had their end-of-the-school-year party at the park on May 27. The park is a popular recreational destination which includes swimming and picnic areas, petting/exhibit farm, and a snack bar. Activities shared by this specific group were swimming and a potluck lunch.

Methods:
A cohort study was designed to test the initial hypothesis of possible foodborne transmission. Information on demographics, swimming and eating exposures, signs and symptoms (including onset) was collected by telephone interviews. Water quality analysis was performed on samples collected from the lake. Families were re-interviewed in July to ascertain possible secondary cases.

Results:
Information was collected on 126 people, including 15 people not associated with the home-schooled children. Eating and swimming exposures occurred at the same time from around 11 a.m. to 2:30 p.m. Sixty-nine people were ill (1 laboratory confirmed as norovirus GII) and 56 were not ill (event attack rate 55.2%). Of the ill, 76.8% were between 5-19 years and 54.4% were female. Most commonly reported symptoms were vomiting (82%), diarrhea (64%), and abdominal cramps (39%). There were no reports of either fever or bloody stools. Three ill visited emergency rooms and two people were hospitalized. Median incubation period was 34 hours (range 3-75 hours). Most significant exposure was swimming (Relative Risk = 33.5; p-value <0.001). Eating at the potluck lunch was not associated with illness (Relative Risk = 1.02; p-value = 0.9359). Secondary attack rate (person-to-person) was 51% (18/35). Water quality testing on samples from the lake were within the normal range for amount of Enterococcus, fecal Coliform, and Escherichia coli. Norovirus testing on water samples was not performed.

Conclusions:
This outbreak was most likely due to waterborne transmission (ingestion) of norovirus. As part of the public health actions taken during this outbreak, a press release was issued. This outbreak investigation revealed the increasing role of social media (Facebook) and the internet (on-line news postings), which were the forums of preference of most in the group to find out about each other's illnesses, gather an initial menu of the potluck lunch, and express their concerns about the park's water safety.

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Abstract ID: **1061487** Presentation Type: **Poster Presentation**

Title: **Communicating about Lyme disease: New messages, new mediums**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Communication, Prevention, Vectorborne disease**

Abstract Text

Background:
Lyme disease is the most commonly reported vector-borne illness in the United States, with over 250,000 cases reported nationally during 1991-2009. Without a vaccine or other highly effective intervention, communication remains a principal mechanism for preventing and controlling Lyme disease and other tickborne infections. Communication efforts have been frustrated by the online proliferation of unsubstantiated anecdotes and misinformation, particularly in regard to diagnosis, testing, and treatment.

Methods:
In 2009, CDC conducted a communications audit and initiated ongoing, formative research to develop new approaches to communicating information about Lyme disease. The communications audit assessed information from the Web, CDC Info, and news articles to highlight needed improvements in communication. Subsequent formative research used focus groups, interviews, and message testing to develop guiding principles for communication and to determine which messages are best received by the public.

Results:
Findings from the initial communications audit were used to refine Lyme disease prevention messages. An extensive list of potential but unproven prevention measures was narrowed to a handful of personal preventive measures that have been shown effective in one or more studies. More empathetic approaches to communication also began. New messages and communication tools were developed, including fact sheets, trail signs, updated web pages, social media, public inquiry replies, and talking points (examples provided).
Early formative research indicated that people do not frequently recognize the early symptoms of Lyme disease, or know what to do if these symptoms develop. We began to pair the new prevention messages with early detection messages for groups at increased risk: outdoor workers, hikers, campers, parents of children, and other populations.
Finally, we used the guiding principles to implement changes to www.cdc.gov/Lyme. These principles direct the tone and content of the new web content. Feedback from state and local health departments, clinicians, patients, and social media outlets such as Facebook and Twitter will be monitored. Adjustments will be made accordingly.

Conclusions:
CDC has developed a suite of new Lyme disease communication materials to assist state and local health departments seeking to provide patients and clinicians with the factual information they want. Efforts have been made to create materials that speak to the patient in a personable, respectful manner while remaining true to evidence-based medicine. These materials require ongoing evaluation and revision.

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Abstract ID: **1059169** Presentation Type: **Poster Presentation**

Title: **Human metapneumovirus outbreak in a Michigan adult care facility**

Committee: **Infectious Diseases**

Topic: **Respiratory diseases: Non-influenza**

Keywords: **Infectious Diseases, Outbreak investigations, Respiratory diseases: Non-influenza**

Abstract Text

Background:
In February 2010, the Michigan Department of Community Health (MDCH) received notification of an outbreak of respiratory illness in an adult care facility within the southwest region of the state. We report on the epidemiologic and laboratory investigation of this outbreak, which is the first described facility outbreak of human metapneumovirus (hMPV) in Michigan.

Methods:
The local health department, with MDCH assistance, conducted an outbreak investigation. A case was defined as a person who had contact with the identified facility during the week prior to an acute onset of respiratory illness, including symptoms such as cough, sore throat, congestion or pneumonia.
A local hospital laboratory conducted rapid antigen testing for influenza and direct fluorescent antibody testing for respiratory viruses on nasopharyngeal specimens. MDCH performed additional testing for influenza viruses and hMPV on nasopharyngeal and nasal specimens via real-time reverse transcription-PCR. All specimens were collected from ill residents of the facility within 5 days of symptom onset.

Results:
The facility employed 120 staff who provided adult short- and long-term care to 81 residents housed in 3 units. 32 (39.5%) residents and 21 (17.5%) staff met the case definition. The age range of cases was 46-95 years for residents (mean 83 years; median 85 years) and 18-63 years for staff (mean 38 years; median 36 years). Onset dates ranged from February 16 through March 5, 2010 and peaked on February 19. Duration of illness was 3-24 days (mean 13.4 days; median 13 days). Pneumonia or chest infiltrates were diagnosed in 6 residents and 2 staff. One staff member was hospitalized. hMPV was detected in 5 of 7 (71.4%) residents tested.
Implementation of recommended infection control procedures by the facility was sporadic but did improve after a local health department site visit. Staff working while ill, staff shortages, and staff working in multiple facility units all contributed to ongoing transmission.

Conclusions:
Our investigation of the first described hMPV outbreak in Michigan demonstrates that hMPV can spread quickly and cause moderate to severe respiratory illness among residents and staff in adult care facilities. The role of hMPV in respiratory outbreaks in Michigan is not well understood, as testing is not routinely performed. Based on this outbreak, we recommend strict adherence to infection control procedures during respiratory outbreaks, additional hMPV surveillance and laboratory testing, and enhanced regional and national communications regarding hMPV surveillance.

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Abstract ID: **1062446** Presentation Type: **Poster Presentation**

Title: **Pertussis vaccination coverage at the 7-month milestone - Kansas, 2005â€“2006**

Committee: **Infectious Diseases**

Topic: **Immunizations**

Keywords: **Communicable disease, Disease prevention, Vaccination**

Abstract Text

Background:
In the United States, pertussis is an important cause of infant morbidity and death. In 2008, >16,000 cases and 14 deaths were reported; 12 deaths were among infants aged <3 months. To protect infants from severe disease, all infants should receive 3 pertussis vaccine doses by age 6 months. We sought to determine if vaccination coverage in Kansas varied by population density at the county level.

Methods:
We analyzed retrospective vaccination data from immunization certificates for kindergarten-enrolled children in 2009-10, using a probability sampling method based on county enrollment rates capturing 39.4% of the birth cohort. Age at vaccination was determined from birth and vaccination dates; 98.5% of certificates had complete data. We used age 7-month vaccination milestone to estimate 3-dose coverage at age 6 months with a 1-month grace period. Result weights were determined by sampling methods; frequencies were compared with published July 2005-June 2006 National Immunization Survey (NIS) rates with the same birth-date range. We examined coverage by county-level population density (sparsely populated [≤19.9 persons/mile2]), moderately populated [20-149.9 persons/mile2], and urban [≥150 persons/mile2]).

Results:
Pertussis coverage with 3 doses was 65.8% ± 1.3% at the age 7-month milestone. Our results were significantly lower than NIS rates (71.8% ± 5.3%) for the children aged 7 months ($P < 0.05$). Compared with urban (67.6% ± 1.8%) rates, coverage was lower ($P < 0.05$) among sparsely populated (58.9% ± 1.5%) and similar to moderately populated counties (61.8 ± 1.2%).

Conclusions:
NIS estimates of DTaP coverage were somewhat higher than estimates based on a sample of state-based school immunization certificates. State-level school-based immunization data from an existing surveillance system allowed for examination of previously unrecognized variation by population density.

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Abstract ID: **1058596** Presentation Type: **Poster Presentation**

Title: **Recreational water illness: US burden of swimmer's ear**

Committee: **Infectious Diseases**

Topic: **Waterborne disease**

Keywords: **Environmental exposures, Infectious Diseases, Waterborne disease**

Abstract Text

Background:
Acute otitis externa (AOE), commonly known as "swimmer's ear," is characterized by inflammation of the external ear canal most often caused by bacteria such as *Pseudomonas aeruginosa* and *Staphylococcus* species. Recreational water exposure and warm, humid climates are risk factors for AOE. Reducing water content in the outer ear by limiting head submersion, using earplugs or swim caps, and use of ear-drying solutions have been proposed methods to prevent AOE. This is the first US national study to describe the epidemiology of AOE and to estimate the overall disease burden.

Methods:
Data from the National Ambulatory Medical Care Survey (2003-2007), National Emergency Department Sample (2007) and the Marketscan insurance claims database (2006-2007) were used to describe the incidence, demographics, seasonality, and health-care costs associated with AOE. Visits resulting in a diagnosis of chronic otitis externa or visits with a concurrent diagnosis of otitis media were excluded from all analyses.

Results:
As a conservative estimate, 2.4 million US health-care visits result in a diagnosis of AOE annually (8.1 visits/1,000 population), affecting at least one in 123 persons each year. In 2007, one in 324 emergency department visits and one in 481 ambulatory care clinic visits resulted in a diagnosis of AOE. Rates of ambulatory care visits for AOE during 2003-2007 were highest among children aged 5-9 years (18.6/1,000) and 10-14 years (15.8/1,000), however, 53% of ambulatory care AOE visits occurred among adults aged ≥20 years (5.3/1,000). Compared with other regions of the country, rates were highest in the south (9.1/1,000), and national incidence peaked during the summer months. Nonhospitalized visits for AOE cost >$477 million in direct health-care costs and at least 598,000 hours of ambulatory care clinicians' time annually, whereas annual inpatient costs were estimated at $188-622 million.

Conclusions:
Although AOE is generally a mild illness, it is a frequently diagnosed condition responsible for a substantial burden in terms of health-care dollars and clinicians' time. Cost estimates presented here could be as much as $1 billion. AOE is a potentially preventable disease associated with recreational water activities, and the burden can be reduced. Consensus prevention messages should be developed and disseminated among clinicians and the general public to reduce the national impact of AOE.

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Abstract ID: **1056808** Presentation Type: **Poster Presentation**

Title: **Dengue infections among travelers returning from Haiti - Nebraska and Georgia, 2010**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Arbovirus, Outbreaks, Vectorborne disease**

Abstract Text

Background:
Dengue, a potentially fatal illness caused by 1 of 4 dengue viruses (DENV-1-4), is a leading cause of febrile illness among travelers returning from the Caribbean. Dengue epidemiology has not been clearly defined in Haiti; travel to Haiti for postearthquake relief appears to pose a risk for disease acquisition. On 10/18/2010, the Nebraska state health department was notified of dengue-like illnesses among Nebraska and Georgia missionaries returning from short-term (7-11 days) travel to Haiti. We sought to confirm dengue diagnosis and characterize travelers' knowledge and prevention practices.

Methods:
In a retrospective cohort study, cases were defined as dengue if positive by reverse transcription-polymerase chain reaction (RT-PCR) or convalescent anti-DENV IgM. We administered a 53-item questionnaire; associations between knowledge or prevention practices and infection were examined by Fisher's exact test.

Results:
Twenty-two (79%) of 28 travelers completed questionnaires and had laboratory testing. Seven (32%) had dengue determined by RT-PCR and caused by DENV-1 infection; all had illness onset ≤7 days after returning home; 5 were hospitalized (no intensive-care admissions); 4 had hemorrhagic manifestations; and none died. Before travel, of 22 respondents, 86% sought professional healthcare advice; 50% reported knowledge about dengue; 45% knew DENV is mosquito-transmitted; and 27% knew exposure was possible in Haiti. During travel, 27% used insect repellent multiple times a day; 50% and 14% wore long pants and long-sleeved shirts at least once, respectively; and none used insecticide-treated clothing. DENV infection was not significantly associated with dengue pretravel knowledge or with prevention practices.

Conclusions:
Short-term travelers to Haiti are at risk for DENV infection. Pretravel health consultations to all DENV-endemic areas should include education regarding dengue risks and mosquito-avoidance strategies.

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Abstract ID: **1061634** Presentation Type: **Poster Presentation**

Title: **Hepatitis C infection among persons diagnosed with HIV in San Francisco, 2002-2009**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **Hepatitis, HIV/AIDS**

Abstract Text

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Abstract ID: **1062151** Presentation Type: **Poster Presentation**

Title: **Congenital rubella syndrome â€“ New Jersey, 2009**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Infectious Diseases, Neonatal, Pregnancy**

Abstract Text

Background:
Since rubella was eliminated in 2004, four cases of congenital rubella syndrome (CRS) have been reported in the United States. In June 2009, the New Jersey Department of Health and Senior Services (NJDHSS) was notified of a 6.5 month old child suspected of having CRS born to a woman with documented measles, mumps, and rubella (MMR) vaccination.

Methods:
The epidemiologic and laboratory investigation involved the local health department, NJDHSS, and CDC. A standard case investigation was conducted, including confirmatory laboratory testing. Criteria for reporting were based on the CDC/CSTE case definition.

Results:
A newborn male infant was noted to have microcephaly, a petechial rash, pulmonic stenosis, a patent ductus arteriosis, and intracranial calcifications. Clinicians considered CRS at birth; however, testing was not completed until 6.5 months of age. At that time, the infant's rubella immunoglobulin M (IgM) was 7.2 (positive: >1.0). At 12 months of age, testing at CDC confirmed the presence of rubella IgM, but rubella RNA was not detected. The mother had received MMR vaccination in 2003 as documented in medical records. Her rubella immunoglobulin G (IgG) testing at 4 months gestation was > 400 (positive > 9). The mother denied rash illness, ill contacts, or contact with international travelers in the first 4 months of pregnancy.

Conclusions:
CRS occurs very rarely in children of women with a history of immunization or documented immunity. Delays in diagnostic testing and reporting hindered the public health contact investigation in this case in NJ. Rubella elimination relies upon early case recognition and detailed contact investigation, timely isolation of affected patients, and maintenance of high levels of immunity in the population. Clinicians should remain vigilant to the possibility of rubella and CRS, and notify public health authorities immediately when CRS is suspected.

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Abstract ID: **1061551** Presentation Type: **Poster Presentation**

Title: **Farmers' markets and foodborne diseases**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Communication, Environment, Food safety**

Abstract Text

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Abstract ID: **1060633** Presentation Type: **Poster Presentation**

Title: **External validation of state-based data in the National Healthcare Safety Network (NHSN)â€“ Pilot study in Pennsylvania**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Data/Surveillance, Healthcare associated infections (HAI), Surveillance**

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Abstract ID: **1059266** Presentation Type: **Poster Presentation**

Title: **Analyzing travel history to identify locally-acquired Human Monocytic Ehrlichiosis in the Lower Hudson River Valley**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Emerging diseases, Surveillance, Vectorborne disease**

Abstract Text

Background:

In the decade following the year human monocytic ehrlichiosis (HME) became nationally notifiable (1998), reported cases in persons residing in the Lower Hudson River Valley (LHRV) increased from 53 in the first half (1998-2002) to 192 in the second half (2003-2007) (262%). This has led to concern that the geographic range of Amblyomma americanum, the Lone Star tick (LST), which transmits HME, may be increasing northward in New York State (NYS). The LHRV is comprised of the six counties north of Long Island (LI). On LI, the LST has been established for 20 years. For cases occurring in the LHRV, obtaining travel histories to an HME-endemic area, such as LI, may be important for assessing risk for HME, but this information cannot be assessed easily using current surveillance systems.

Methods:
To determine HME cases that were locally-acquired, confirmed and probable HME cases reported on LI and in the LHRV for case years 2006 and 2007 were reviewed. Physicians were contacted via written letter to facilitate retrospective completion of missing travel history information for patients residing in the LHRV. Those cases that had traveled to an HME-endemic area in the six weeks prior to disease onset were not classified as locally-acquired. Data submitted to the NYS Tick Identification Service for the years 2000-09 were also analyzed to determine the numbers of LSTs that were locally-acquired.

Results:
In 2006-07, there were 47 HME case reports from LI, and 115 HME case reports in the LHRV. Travel history was provided in case reports for 50% of the LHRV cases. For the remaining cases, of the 58 letters sent to physicians, 26 were returned with travel information. Travel information remained undetermined for 27% of cases. Of the 115 LHRV cases 70% were identified as locally-acquired. Comparing the 2000-04 and 2005-09 periods, submissions of LSTs on LI increased from 54 to 245 (354%); submissions of locally-acquired LSTs from the LHRV increased from 14 to 41 (193%).

Conclusions:
Most cases of HME in the LHRV are locally acquired, and likely result from a recent increase in vector ticks in the region. However, travel histories were not available for approximately half of all reported cases from the LHRV. Retrospective investigation was only able to identify travel histories for approximately half of these cases but was resource intensive. Surveillance of HME, an important emerging tick borne disease, would be greatly enhanced by improving collection and reporting of travel history at the time of diagnosis.

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Abstract ID: **1054983** Presentation Type: **Poster Presentation**

Title: **Evaluation of the San Francisco Disseminated Gonococcal Infection (DGI) surveillance system**

Committee: **Infectious Diseases**

Topic: **STDs**

Keywords: **CDC Guidelines, Data/Surveillance, Sexually Transmitted Diseases**

Abstract Text

Background:
DGI is a rare systemic complication of acute gonorrhea, resulting when gonococcal bacteremia produces extragenital manifestations of gonococcal infections. Patients with DGI suffer significant morbidity including arthritis, dermatitis, and systemic complications affecting the lining and/or membrane of various vital organs, and may require expensive treatment. The purpose of the San Francisco Department of Public Health (SFDPH) DGI Surveillance System is to identify the annual burden of DGI in San Francisco as well as at-risk groups; to evaluate the efficacy of gonorrhea prevention programs; and to address barriers to effective case classification, provider reporting to the SFDPH, and any other factors that influence how information on DGI is distributed. DGI surveillance is complicated by the difficulty of ascertaining DGI cases due to inconsistent provider and lab reporting. The lack of CDC surveillance definition for DGI contributes to this inconsistency. This evaluation marks a first step towards improving DGI surveillance.

Methods:
This evaluation assessed the attributes of a surveillance system as outlined by the Centers for Disease Control and Prevention (CDC) Morbidity and Mortality Weekly Report (MMWR) in 2001, and applied them to the San Francisco DGI surveillance system. The DGI surveillance system relies almost entirely on passive surveillance, obtaining information from lab reports and following up with selected providers to collect Confidential Morbidity Reports (CMRs) and other information on reported cases of gonorrhea. The DGI surveillance system was evaluated by examining the electronic citywide STD surveillance system for patient information and coding schemes for both confirmed and potentially missed cases; contacting medical providers to obtain clinical information on potentially missed cases; holding internal meetings to discuss progress and necessary steps; contacting CDC and other STD Divisions to discuss case and surveillance definitions; and examining existing literature for information on a potential case or surveillance definition, prevalence estimates, and past surveillance efforts.

Results:
After completing the evaluation of the DGI surveillance system, the following ratings were given in the nine surveillance system attributes outlined by CDC and MMWR:
1) Simplicity (Low)
2) Flexibility (High)
3) Data Quality (High)
4) Acceptability (Unknown)
5) Sensitivity (Unknown)
6) Predictive Value Positive (Unknown)
7) Representativeness (Unknown)
8) Timeliness (High)
9) Stability (High)
Ratings were made on a scale from 'low' to 'high.' Several of the attributes could not be appropriately rated due to incomplete information on DGI in the population. Most notably, the lack of population-level prevalence and incidence information made some of these attributes difficult to determine. This represents another artifact of the lack of consistent surveillance definition for DGI.

Conclusions:
This evaluation identified a number of areas for improving the DGI surveillance system. Among the many challenges of the DGI Surveillance system, the most pressing is the lack of surveillance definition for DGI, either at CDC or locally. As a result, the most urgent recommendation for revising this system is to create a surveillance definition for suspect, probable, and confirmed DGI. A clear surveillance definition should include information on hallmark symptoms, test results from extragenital culture, and treatments for suspect/possible, probable, and confirmed/proven, DGI. Once a surveillance definition is created, CMRs in San Francisco can be revised to include DGI as a separate box that providers can

mark when examining patients. Additionally, local laboratories should attempt to instate a consistent coding system to minimize ambiguity regarding case information. Furthermore, it will become easier to generate prevalence and incidence estimates once a clear surveillance definition exists. Clarifying the DGI surveillance definition and making it easier for labs and providers to be specific about the information they report to SFDPH are critical steps in improving the DGI surveillance system.

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Abstract ID: **1062616** Presentation Type: **Poster Presentation**

Title: **HIV/AIDS perinatal transmission prevention: Substance abuse among HIV infected pregnant women**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **HIV/AIDS, Infant health, Substance abuse**

Abstract Text

Background:
The Houston/Harris County rate of perinatal HIV infection was 2.6% in 1999, 1.6% in 2005 and 1.2% in 2008 among HIV exposed infants. While this represents an obvious decreasing trend proving that HIV prevention efforts in both policy and practice are improving every exposed infant's chances for being HIV negative, we must examine what prevents the perinatal transmission rate from being maximally reduced. One barrier may be the use of illicit drugs during pregnancy.

Methods:
This is a descriptive analysis of the HIV exposed infants and their mothers in Houston/Harris County, including crude and adjusted odds ratios for various exposures. Odds ratios will be calculated for positive HIV status as the outcome and substance abuse noted on a HIV positive pregnant woman's chart, a positive urine analysis for substance abuse during pregnancy, and a positive urine analysis for substance abuse during or after labor and delivery as individual exposures. Odds ratios will also be calculated for the three well-known missed opportunities for preventing perinatal transmission of HIV as outcomes (no prenatal care, no antiretroviral medication during pregnancy, and no antiretroviral medication during labor and delivery and at birth) with substance abuse noted on a HIV positive pregnant woman's chart, a positive urine analysis for substance abuse during pregnancy, and a positive urine analysis for substance abuse during or after labor and delivery as individual exposures.

Results:
Between 2005 and 2008, 18 percent of the HIV positive pregnant women in Houston had substance abuse noted in their prenatal or labor and delivery records. Of the HIV positive infants born between 2005 and 2009, 43% had mothers with a substance abuse issue. In Houston/Harris County the crude

odds ratio of having an HIV infected baby when an HIV infected woman has substance abuse noted in her chart is 3.39 (1.2, 9.4). The crude odds ratio of an HIV infected woman not having prenatal care who had substance abuse noted in her chart is 5.5 (3.0, 10.0).

Conclusions:
The use of antiretroviral drugs and the implementation of policies requiring pregnant women to test for HIV contribute to the reduction in the rate of perinatal transmission in the past 10 years. However, there is evidence that the rate of infection is not yet maximally reduced. Identifying HIV positive pregnant women with substance abuse issues during pregnancy may further reduce the rate of perinatal HIV infection in Houston/Harris County.

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Abstract ID: **1062112** Presentation Type: **Poster Presentation**

Title: **Impact of philosophical exemptions on childhood immunization rates in Arkansas: A multi-year retrospective**

Committee: **Infectious Diseases**

Topic: **Immunizations**

Keywords: **Communicable disease, Immunization, Vaccination**

Abstract Text

Background:
Arkansas previously reported an increase in total vaccine exemptions (medical, philosophical and religious) two years after legislation was implemented in 2003 that added philosophical exemptions and created a new process for vaccine exemptions. The number of medical exemptions declined and the numbers of philosophical and religious exemptions increased. By legislative requirement, the Arkansas Department of Health (ADH) has continued to monitor exemptions through the 2009-10 year.

Methods:
The rates of exemptions were calculated by school age category using raw numbers of exemptions, total estimates of the population by age level, enrollment numbers for students in public and private schools and in college enrolled students born after 1957. Exemptions were also analyzed by geographic location, grades and type of exemption, race and particular vaccine exemption requested. Vaccine preventable disease outbreaks were monitored and compared to counties exemption rates.

Results:
The number of exemptions has continued to rise each year with an average increase of 23.1% annually (range of 12-50.7). The percent of medical exemptions has declined from an average of 21.3% before the addition of philosophical exemptions to 4.8% thereafter, and the rate has remained stable in subsequent years. The greatest increase in number of exemptions by grade group is among college students, but kindergarten continues to have the highest rate per number of students enrolled (0.82%). The highest total rate of exemptions per student population (kindergarten through 12th grade)

in any county is less than 1.3%. For college students, the exemption rate is less than 5.3% of the students in any specific college. Large regions of high exemption rates were found in Northwest Arkansas. Higher rate of exemption exist in Whites vs. Black and Hispanics.
When exemption requests are categorized, most requests (79%) are for exemptions from “all vaccines”. The largest number of exemptions for a single vaccine was for MMR followed by Hepatitis B and Varicella vaccines.

Conclusions:
Since philosophical exemptions were codified in 2003 in Arkansas, the number and rates of vaccine exemptions continue to progressively increase. The increased pattern of exemption in Arkansas schools continue to be a public health concern, even though outbreaks have not yet been linked or identified in any population with high vaccine exemption rates. Public health officials must continue active monitoring of vaccination registries to maximally immunize willing and eligible children and adolescents and to intensify efforts to persuade families seeking philosophical and religious exemptions to participate in vaccination programs.

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Abstract ID: **1062555** Presentation Type: **Poster Presentation**

Title: **Dengue infection during non-epidemic and epidemic years in Puerto Rico Veterans Affairs facilities, 2006-2010**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Electronic data, Infectious Diseases, Vectorborne disease**

Abstract Text

Background:
Puerto Rico (PR) is a dengue-endemic area; however, 2007 and 2010 were recognized epidemic years with more cases than expected. Dengue causes significant morbidity and mortality and typically requires multiple healthcare visits. Dengue cases treated within VA were evaluated to better understand differences between non-epidemic (2006, 2008, 2009) and epidemic years (2007, 2010) in PR VA facilities.

Methods:
VA’s ESSENCE biosurveillance system identified outpatient and emergency department visits with dengue ICD-9 codes (061 and 065.4) from Jan. 2006-Dec. 2010 at 5 PR VA facilities. Additional inpatient cases were identified from 10/2009-12/2010 in the VA National Patient Care Database. Standardized reviews were performed for each medical record. Cases were grouped into 4 categories: lab-positive (positive PCR, IgM seroconversion or single positive IgM), lab-negative (negative acute phase PCR or IgM and negative convalescent IgM), lab-indeterminate (suspected case with negative

acute phase PCR or IgM and no convalescent sample), or suspected (presence of fever and 2 symptoms/signs including: rash, headache, eye pain, myalgia/arthralgia, hemorrhage, hemoconcentration, thrombocytopenia or physician suspected dengue). Patients treated outside VA or with alternate explanations for their symptoms, signs or labs were excluded. Data was compared between the non-epidemic and epidemic years.

Results:
A total of 304 patients were identified as having dengue based on ICD-9 codes from 2006-2010. Dengue testing was performed in 58% of identified patients. During epidemic years, there were 4.6 times as many overall cases/year compared to non-epidemic years and 6 times as many lab-positive cases/year. DENV-1 was the predominant serotype in both time periods. However, during epidemic years there was an increase in DENV-4. Median age was approximately 56 years (range 21-90) and 95% were males for both time periods. For dengue patients, there were nearly 6 times as many admissions, 5 times greater ICU admissions, and 9 times more platelet transfusions during epidemic years. No patients died from dengue during these years. There were no significant differences in frequency of reported signs, symptoms or lab values between the two groups.

Conclusions:
During the epidemic years, there was an increase in the overall number of VA dengue cases as well as lab-positive patients consistent with reported trends in PR. Hospitalizations, need for ICU-care, and platelet transfusions also increased during these years. Understanding dengue incidence patterns during non-epidemic and epidemic years can aid VA in allocating resources during epidemics. VA should focus on raising dengue awareness and improving testing rates for suspected dengue.

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Abstract ID: **1060443** Presentation Type: **Poster Presentation**

Title: **HIV- and non-HIV-related deaths among persons with AIDS in San Francisco, 1992-2007**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **Aging, Chronic communicable diseases, HIV/AIDS**

Abstract Text

Background:
Potent antiretroviral therapy has led to dramatic decreases in mortality among HIV-infected persons. This decline has been largely among HIV-related deaths with little, if any effect on non-HIV-related causes. Evidence suggests that HIV-related inflammation may increase the risk of HIV-infected persons developing chronic age-related illnesses at younger ages than the HIV-uninfected population.

Methods:
Deaths that occurred between January 1, 1992 and December 31, 2007 among persons who were

diagnosed and reported with AIDS in San Francisco were included. Local and state vital statistics and the national death index were used to identify deaths. We calculated the median age at death over four time periods for all causes, for HIV and non-HIV-related causes, and for the five most common non-HIV-related causes of death. The differences in the median ages at death were compared using the Kruskal-Wallis test. For these five non-HIV-related causes we also calculated the annual standardized mortality ratios (SMR) by dividing the number of observed deaths by the number of expected deaths using California men aged 20-79 years as the standard population

Results:
There were 6301 deaths in the time period 1992-1995 which fell to 2165 with continued declines through the period 2004-2007 during which there were 1171 deaths. The median age at death for all deaths increased from 41 years in the period 1992-1995 to 49 years for the period 2004-2007 ($p<0.0001$). The median age at death for both HIV-related and non-HIV-related deaths increased significantly ($p<0.0001$) over the four time periods although the median age at death was lower for persons who died from HIV disease than other causes (48 and 50 years in 2004-2007, respectively, $p=0.0006$). Deaths from non-AIDS cancers, cardiac and liver disease, drug overdose, and suicide were the most frequent non-HIV-related deaths. The median age at death from heart disease, non-AIDS cancers, and overdose increased between 1992 and 2007 but was stable for the other two causes. Deaths from non-AIDS cancers and heart disease occurred at higher age than deaths from liver disease, overdose, and suicide. The overall SMR was highest for liver disease (17.10) and lowest for heart disease (1.37). The SMRs decreased over time for liver disease, increased for overdose, and remained stable for the other three causes.

Conclusions:
Although the age at death has increased for HIV-infected persons, HIV disease continues to result in premature mortality. Persons dying from non-HIV-related causes of death are somewhat older than those dying from HIV disease. The younger ages at death for conditions related to substance use and mental illness highlight the need for improved treatments

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Abstract ID: **1048998** Presentation Type: **Poster Presentation**

Title: **Infection control practices in Philadelphia long-term care facilities: A comparison of 2008 and 2010 survey data**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Disease prevention, Healthcare associated infections (HAI), Infection control**

Abstract Text

Background:

Skilled Nursing Facilities (SNFs) pose a challenge for influenza control, with transmission occurring easily between elderly persons and those with underlying medical conditions. A 2010 infection control survey was developed to build upon knowledge gained from a similar 2008 influenza survey and assess differences in influenza vaccination rates and infection control methods following the 2009 H1N1 pandemic.

Methods:
The Philadelphia Department of Public Health (PDPH) distributed copies of the survey through a September 2010 mailing to all SNFs. Completed surveys were received through early December. The survey included influenza-related questions from the 2008 survey and additional questions on facility and staff characteristics, disease outbreaks, general infection control, and training. Data analysis was completed using SAS.

Results:
Completed surveys were received from 45 of the 47 (96%) SNFs in Philadelphia, of which, 35 (78%) had also participated in the 2008 survey. Seasonal influenza vaccine was offered free for staff at 43 of the 45 (96%) facilities during 2009-2010, and at 34 of the 35 (97%) facilities in 2007-2008. Residents were offered free seasonal influenza vaccine at 33 (73%) facilities in 2009-2010. The self-reported median seasonal influenza vaccination rate for residents remained high in 2009-2010, at 80% compared to 81% in 2007-2008, and the median rate increased for direct care staff to 69% from 47% ($p=0.05$). Facilities that documented vaccine declination on staff human resources records (7/45) reported higher staff ($p<0.01$) seasonal influenza vaccination rates in 2010 than those that did not. Facilities with a median resident age over 80 reported higher resident seasonal vaccination rates in 2009-2010 compared with those with younger residents ($p=0.04$). Staff seasonal vaccination rates were significantly higher in facilities licensed for greater than 30 yrs ($p=0.02$). Fifty-seven percent of administrators reported that they would like additional information or education on influenza from PDPH.

Conclusions:
In Philadelphia, seasonal influenza vaccination rates for residents of SNFs remain high following the H1N1 pandemic. Despite an increase from 2007-2008 levels, staff vaccination rates still remain below the ACIP recommendation for universal influenza vaccination for health care professionals. The increase in staff seasonal influenza vaccination rates may be attributed to the increased influenza awareness as a result of the 2009 H1N1 influenza pandemic. As employees are becoming more receptive to influenza vaccine, health departments are encouraged to continue the momentum in order to raise vaccination rates.

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Abstract ID: **1052911** Presentation Type: **Poster Presentation**

Title: **Infection control lapses associated with blood glucose monitoring in skilled nursing facilities â€“ Philadelphia, 2010**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Disease prevention, Healthcare associated infections (HAI), Infectious Diseases**

Abstract Text

Background:
The potential spread of blood borne pathogens (BBPs) through lapses in injection safety and infection control is a significant public health issue in skilled nursing facilities. Although providing injections and assisting with glucose monitoring are crucial components of direct assistance care within SNFs, often staff are inadequately trained in injection safety. In order to characterize injection safety practices within Philadelphia SNFs and develop more targeted education, an infection control survey was developed.

Methods:
In Fall 2010, the Philadelphia Department of Public Health (PDPH) distributed paper surveys to administrators at all SNFs in Philadelphia. Survey questions focused on facility and staff characteristics, disease outbreaks, glucose monitoring and diabetes care, general infection control, and training. Data were analyzed using SAS.

Results:
Ninety-six percent (45/47) of Philadelphia's SNFs returned completed surveys. Glucose monitoring questions revealed that 41% (7/17) of the facilities that use fingerstick devices share them between residents. Fingerstick devices were more likely to be used in facilities that were part of a network or chain (p=0.09) and those licensed for less than 30 years (p=0.04). Facilities with a median age over 80 were more likely to share fingerstick devices among residents compared with facilities with younger residents, although this association is not statistically significant (p=0.10). Most administrators (44/45) reported that glucometers were shared among residents, however almost all reported that they were cleaned after each use. Eighty-eight percent (40/45) of facilities replied that staff performed all glucose monitoring for residents. Free hepatitis B vaccine (HBV) and annual OSHA training were provided by 44 of the 45 facilities. Most administrators (98%) responded that infection control meetings are held monthly or quarterly and all facilities reported having a staff member responsible for infection control. Ninety-one percent of facilities are interested in additional support from PDPH. However, of the seven facilities that shared fingerstick devices, 71% did not indicate a need for additional information in the area of safe needle use.

Conclusions:
In the Philadelphia SNFs surveyed, the sharing of fingerstick devices and glucometers between residents is concerning. Although facilities have staff designated for infection control and conduct annual OSHA trainings, the risk for transmission of blood borne pathogens through improper glucose monitoring practices remains. This demonstrates a clear training need regarding infection control practices in these SNFs.

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Abstract ID: **1059127** Presentation Type: **Poster Presentation**

Title: **Description of an Island-Wide Dengue Epidemic - Puerto Rico, 2010**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Arbovirus, Emerging infections, Outbreaks**

Abstract Text

Background:
Dengue is a potentially fatal febrile illness caused by four mosquito-transmitted viruses (DENV-1-4) and is endemic in the unincorporated US territory of Puerto Rico. Over the past decade, there has been a substantial increase in the incidence and severity of dengue throughout Latin America and the Caribbean. In January, 2010, the number of suspected dengue cases reported to the Puerto Rico Department of Health/CDC passive dengue surveillance system (PDSS) exceeded the epidemic threshold. To characterize this epidemic, data from PDSS were used to describe all reported cases.

Methods:
Suspected cases were patients with serum or tissue submitted to PDSS for dengue testing. Laboratory-positive cases had either (i) an acute sample (i.e. taken ≤ 5 days post-onset of symptoms) with DENV identified via reverse transcriptase polymerase chain reaction (RT-PCR), (ii) anti-DENV IgM seroconversion in paired serum samples, or (iii) anti-DENV IgM in a single convalescent (i.e. taken ≥ 5 days post-onset of symptoms) sample. Laboratory-negative cases had no anti-DENV IgM detected in a convalescent sample, and were either RT-PCR-negative or had no acute sample submitted for testing. Indeterminate cases had an RT-PCR-negative acute sample and no convalescent sample.

Results:
From January 1 through November 15, 2010, 22,171 suspected dengue cases were reported, of which 10,393 (46.9%) were laboratory-positive, 2,136 (9.6%) were laboratory-negative and 8,703 (39.3%) were indeterminate. Among the 7,094 RT-PCR positives, DENV-1 (69.3%) and DENV-4 (23.1%) were detected more frequently than DENV-2 (7.5%) and DENV-3 (<0.1%). Of all laboratory positive cases, 38.3% were between 10- and 19-years-old. There were 31 laboratory-positive deaths reported, of which 27 (87%) were adults.

Conclusions:
The 2010 epidemic was long in duration, high in magnitude, and resulted in the most dengue-related deaths since PDSS began. For this reason and using lessons learned from a dengue epidemic in 2007, CDC implemented an initiative to train Puerto Rico clinicians in the management of dengue patients to minimize medical complications and mortality. State and territorial epidemiologists should be aware of dengue as an emerging disease among US travelers returning from Puerto Rico and other tropical areas.

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Abstract ID: **1061940** Presentation Type: **Poster Presentation**

Title: **Effective policy interventions for the prevention of Healthcare Associated Infections**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Healthcare associated infections (HAI), Policy/Policy Development, Prevention**

Abstract Text

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Abstract ID: **1061411** Presentation Type: **Poster Presentation**

Title: **Tdap vaccine effectiveness among adolescents: A case-control study in Minnesota**

Committee: **Infectious Diseases**

Topic: **Vaccine-preventable diseases**

Keywords: **Disease prevention, Immunization, Vaccination**

Abstract Text

Background:
Despite sustained high coverage with childhood pertussis vaccines, pertussis remains poorly-controlled in the U.S. In 2005/2006, two reduced dose acellular pertussis vaccines combined with tetanus and diphtheria toxoids (Tdap) were licensed based on immunologic bridging studies and recommended for use among adolescents and adults. The objective of this study is to assess the effectiveness of Tdap at preventing laboratory-confirmed pertussis among adolescents 11-17 years of age.

Methods:
Laboratory-confirmed (culture or PCR) pertussis cases in persons 11-17 years of age were identified prospectively through statewide surveillance in Minnesota between October 2007 and December 2008. Controls were selected from schools where cases occurred. After obtaining consent, demographic information, Tdap vaccination status, date of vaccination, and illness history were obtained through parental interview; persons were considered vaccinated if a Tdap vaccination record was available from a physician office, school and/or immunization registry. Case-control sets from schools were pooled for analysis based on geographic location and date of cough onset. Vaccine effectiveness (VE) estimates were calculated using conditional logistic regression, accounting for clustering.

Results:
A total of 99 cases and 187 controls from 36 schools were included in the analysis; median age for cases and controls was 15 and 14 years, respectively. According to vaccination records, 9.1% of cases and 31.6% of controls received Tdap. Overall VE against laboratory-confirmed pertussis for adolescents receiving Tdap was 72.0% (95% CI 38.0%-87.3%). VE was higher but not significantly when vaccination occurred in the previous year compared with a year or more (75.0% (95%CI 24.2%-91.8%) vs. 68.9% (95%CI 13.9%-88.8%), respectively).

Conclusions:
This evaluation of the U.S. pertussis vaccine recommendations suggests that Tdap is effective at preventing disease among adolescents 11-17 years of age. Further evaluations of Tdap program effectiveness and duration of protection will be critical to maximize both direct and indirect prevention of disease.

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Abstract ID: **1057628** Presentation Type: **Poster Presentation**

Title: **Evaluation of the Pennsylvania Outpatient Influenza-like Illness Surveillance Network (ILINet)- Data from the 2005/06 to 2009/10 influenza seasons**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Data/Surveillance, Influenza / Pandemic influenza, Influenza surveillance**

Abstract Text

Background:
The Pennsylvania Department of Health (PADOH) conducts influenza-like-illness (ILI) surveillance through a network of volunteer physician practices enrolled in the Outpatient Influenza-like Illness Surveillance Network (ILINet). One objective of ILINet is to monitor the burden of ILI as a proxy for community influenza activity. Weekly, participants submit aggregate data on patients with ILI in their practice. The objective of this study was to evaluate reporting frequency and practices for data submitted by providers to the Pennsylvania ILINet system during the 2005/06 to 2009/10 flu seasons.

Methods:
Reporting frequency was calculated for each provider using the number of weeks they submitted data and were enrolled in ILINet each flu season. A survey was sent via email, where available, or fax to all sentinel providers to assess reporting frequency, practices and attitudes towards ILINet. Each sentinel provider was contacted three times and encouraged to participate in the survey. Survey responses were collected using an online survey collection tool, or via fax.

Results:
Of 142 providers currently participating in ILINet, 99 (70%) enrolled after the 2007/08 flu season. While the absolute number of providers reporting to ILINet at least 50% of the time has increased each year,

the proportion of providers this represents has declined over the period: 2005/06 flu season: 24/28 (86%) enrolled providers reported 50% of the time; 2006/07: 33/41 (81%); 2007/08: 33/42 (79%); 2008/09: 49/125 (39%); 2009/10: 63/142 (44%). Among all providers, 28 (20%) have never reported data since enrollment.
Reponses to the provider survey were received from 34 sentinel providers (24%). Ninety-four percent (94%) of respondents stated that they submit data to ILINet “Every week.” For those who gave this response, the actual average reporting percent was 55%. Sixty-five percent (65%) of respondents reported needing “Less than 15 minutes” to collect and enter the ILINet data in a typical week. Sixty-four percent (64%) of respondents chose “Strongly/Somewhat Agree” when asked “In your opinion, tracking ILI each week is useful in guiding your clinical practice.”

Conclusions:
While total enrollment in ILINet has improved over time, the proportion of providers submitting weekly reports has declined. This suggests network expansion may have led to less engaged providers joining as sentinels. Improved outreach and feedback is needed to encourage improved reporting of ILINet data and participation in the system. Consideration of reporting quality is needed to properly interpret ILINet trends and findings.

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Abstract ID: **1046715** Presentation Type: **Poster Presentation**

Title: **Knowledge, attitudes, and practices regarding influenza among border crossers at two international land ports of entry - United States-Mexico Border, 2009â€“2010**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Border / International health, Immunization, Influenza / Pandemic influenza**

Abstract Text

Background:
In April 2009, the 2009 pandemic influenza A (H1N1)(pH1N1) virus was detected in Southern California; shortly thereafter, the United States declared a public health emergency and initiated influenza prevention campaigns. Influenza vaccination rates are unknown among U.S.-Mexico border crossing populations. Because 250 million persons enter the United States through the U.S.-Mexico land border each year, land ports of entry (POEs) provide a venue for assessing whether influenza prevention campaigns are reaching mobile populations. Our objectives were to assess border-crosser influenza awareness and adherence with public health recommendations regarding influenza at the beginning and the end of the 2009-2010 influenza season.

Methods:
We administered a cross-sectional survey to pedestrian border crossers to characterize knowledge, attitudes, and practices (KAP) regarding the pH1N1 vaccine in San Diego, CA, and El Paso, TX,

November 2009 and March/April 2010. We conducted multivariable logistic regression to determine factors associated with pH1N1 vaccination acceptance.

Results:
A total of 1,112 border-crossers were interviewed (nNov= 553, nMar/Apr= 559). Most respondents (81.6%) were born in Mexico. Most respondents (95.6%) received influenza health messages. Persons primarily learned about influenza on television (87.5%) and radio (48.4%). Only 7.4% saw messages at POEs. During November 2009, 1.8% reported having received the pH1N1 vaccine, compared to 23.3% during March/April 2010. Of 124 respondents who reported having a health condition or risk factor, 29.8% were vaccinated against pH1N1 in March/April 2010. Factors associated with pH1N1 vaccination included receiving a seasonal flu vaccine in the past (AOR = 9.2; 95% CI = 4.7-18), spending most of the time in Mexico (AOR = 2.7; 95% CI = 1.2-5.9), and having health insurance coverage (AOR = 2.3; 95% CI = 1.2- 4.4).

Conclusions:
Our survey suggests U.S.-Mexico border crossing populations did receive influenza prevention messages, mostly from mass media; a small percentage saw messages at POEs. pH1N1 vaccination coverage among this mobile Hispanic population was comparable to pH1N1 vaccination coverage among healthy adults in the United States. Ongoing surveillance of border crossers is needed to determine whether POEs might be useful sites for outreach and vaccination interventions.

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Abstract ID: **1058496** Presentation Type: **Poster Presentation**

Title: **A survey of infection control practices at New York City's adult care facilities**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Communicable disease, Healthcare associated infections (HAI), Prevention**

Abstract Text

Background:
Adult care facilities (ACFs), sometimes called assisted living facilities, are congregate residential settings that are not regulated in terms of infection control in New York State. The use of ACFs will increase as the population of US residents over 65 years of age is expected to increase from 13% in 2010 to 20% in 2030. Communal activities and population demographics of these facilities may create a conducive environment for transmission of communicable diseases. Outbreaks of hepatitis, norovirus and influenza have occurred in ACFs; improper glucometer use and sharing have been implicated in hepatitis ACF outbreaks. The goal of this study was to identify infection control barriers and unmet needs.

Methods:
Administrators or other similarly knowledgeable personnel at ACFs licensed or applying to be licensed in NYC were contacted for interview by telephone, fax or email using a standardized questionnaire. Questions assessed ACF characteristics, services offered and infection control practices, with a focus on use of glucometers.

Results:
Of 77 eligible ACFs in NYC, 70 (91%) ACFs participated in the survey. The range of residents at NYC ACFs was 16-395 (median, 128). ACFs provided a broad range of services such as assistance with taking medication (75%), assistance with bathing/showering (33%), nursing care such as assistance with blood glucose monitoring (90%) and vaccination services (90%). In 57 (90%) of the facilities, nursing staff were either employed by the facility or contracted through an outside agency (such as a visiting nurse service) and provided assistance with blood glucose monitoring. Five facilities reported that glucometers were sometimes shared among residents and one facility reported that fingerstick devices were sometimes shared. The majority of facilities wanted educational materials for staff (83%) and residents (77%), on topics such as influenza, respiratory illness, standard precautions, general infection control, and norovirus. ACFs had a range of sick leave policies and infection control training requirements. Eighty-nine percent of the facilities reported there was someone responsible for infection control, although the responsible person was frequently an administrator who may have lacked formal medical or nursing training.

Conclusions:
More training about blood glucose monitoring in ACFs is needed to prevent transmission of bloodborne pathogens. Public health agencies should develop relationships with ACFs to identify and fulfill unmet needs and gaps in services. NYC ACFs were varied in terms of nurse staffing, size, services offered and residents' needs; therefore, public health agencies will need to be flexible in their assistance.

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Abstract ID: **1062742** Presentation Type: **Poster Presentation**

Title: **Factors associated with successful school-based pandemic H1N1 influenza vaccination clinics--Maricopa County, Arizona, 2009-10**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Influenza / Pandemic influenza, Local Public Health Agencies, Vaccination**

Abstract Text

Background:
Vaccination of school-aged children has been shown to reduce household and community influenza transmission. 2009 pandemic H1N1 influenza (pH1N1) disproportionately affected school-age children. To efficiently vaccinate children and reduce pH1N1 transmission, Maricopa County Department of Public Health (MCDPH) partnered with mass vaccinators to conduct school-based pH1N1 influenza

vaccine clinics among Maricopa County public and charter schools from November 2, 2009 through January 21, 2010.

Methods:
Information regarding vaccinator, school type, student population, clinic location, date, and time, presence of school nurse or other health staff, and number of children receiving one pH1N1 vaccine dose was analyzed to identify factors associated with successful clinics. Successful clinics were defined as those resulting in vaccination of a proportion of a school's student population that was in the top quartile of all school-based clinics during the time period. Proportion of students receiving free or reduced cost lunch was used as a surrogate for social-economic status (SES). Categorical and continuous variables were analyzed using chi-square and Wilcoxon tests, respectively.

Results:
A total of 706 separate school-based pH1N1 vaccination clinics were conducted representing 70% of Maricopa County public and charter schools. Accurate student population data were available for 697 (99%) schools. A mean of 33% (median 31%, inter-quartile range 21-44%) of students were vaccinated in each clinic. Factors associated with successful clinics included clinic site at an elementary school vs. middle and high schools, clinic occurrence before December 12th, morning versus afternoon clinic, and clinic location at schools with a higher proportion of students receiving free or reduced cost lunch ($p<0.01$). Clinics held at middle and high schools were less successful ($p<0.01$).

Conclusions:
MCDPH partnered with mass vaccinators to rapidly vaccinate about one-third of school-aged children attending participating public schools. The most successful school-based influenza vaccination clinics were those occurring in the morning, earlier in the season, in elementary schools and in schools serving populations with lower SES. Large local public health jurisdictions lacking resources to efficiently vaccinate school-aged children against influenza might benefit from using a similar school-based, mass vaccinator-delivered vaccination strategy with an emphasis on these factors.

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Abstract ID: **1061547** Presentation Type: **Poster Presentation**

Title: **An evaluation of the acute hepatitis B case definition using provider diagnoses**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Hepatitis, Surveillance**

Abstract Text

Background:
As part of the Emerging Infections Program enhanced viral hepatitis surveillance grant, Minnesota systematically collects data on viral hepatitis cases that meet the case definition but have a provider

diagnosis other than acute viral hepatitis. The goal of gathering this information is to evaluate the acute hepatitis B case definition to minimize the number of suspect cases inappropriately classified as acute hepatitis. This evaluation used Minnesota data to examine differences between cases with a diagnosis of acute hepatitis B (HBV) that meet the case definition and those that had a different provider diagnoses yet fit the case definition.

Methods:
Study Design
The data included all reported cases of acute HBV meeting the Council of State and Territorial Epidemiologists (CSTE) case definition from 2007-2009. For the purpose of this study, cases were divided into two groups: those without an alternate diagnosis (WOAD) and those with an alternate diagnosis (AD). A case with an AD is defined as a case meeting the CSTE case definition for acute HBV but with a provider diagnosis other than acute HBV. The two groups were compared on age, sex, serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels, total bilirubin, jaundice, symptoms, and serologic markers.
Statistical Analysis
Fisher's exact test was used for binary variables to detect differences between population means given the small population sizes. The Wilcoxon-Mann-Whitney test was used for continuous variables. Data were analyzed using SAS™ v9.2 (Cary, NC).

Results:
Of the 90 cases of acute hepatitis B, 22 (24%) had an alternate diagnosis form. The most common alternate diagnosis was chronic HBV (50%) followed by alcohol or drug induced hepatitis (27%). The two groups differed significantly on age ($p=0.046$) with AD cases being older than WOAD cases. The gender distribution was not significantly different. The liver function tests were all significantly higher for the WOAD group than the AD group ($p<0.001$ for ALT, AST, and total bilirubin). Jaundice ($p=0.022$), dark urine ($p<0.001$), nausea ($p=0.045$), and vomiting ($p=0.0498$) were reported significantly more often in the WOAD group than the AD group. There was no significant difference between the two groups for malaise ($p=1.000$), anorexia ($p=0.339$), diarrhea ($p=1.000$), fatigue ($p=1.000$), or abdominal pain ($p=0.463$). The pattern of serologic markers was significantly different between the two groups ($p<0.001$).

Conclusions:
The alternate diagnosis forms provide a method of evaluating the case definition for acute hepatitis B in the absence of a definitive test for acute hepatitis B.

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Abstract ID: **1061535** Presentation Type: **Poster Presentation**

Title: **An evaluation of the acute hepatitis C case definition using provider diagnoses**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Hepatitis, Surveillance**

Abstract Text

Background:
As part of the Emerging Infections Program enhanced viral hepatitis surveillance grant, Minnesota systematically collects data on viral hepatitis cases that meet the case definition but have a provider diagnosis other than acute viral hepatitis. The goal of gathering this information is to evaluate the acute hepatitis C case definition to minimize the number of suspect cases inappropriately classified as acute hepatitis. This evaluation used Minnesota data to examine differences between cases with a diagnosis of acute hepatitis C (HCV) that meet the case definition and those that had a different provider diagnoses yet fit the case definition.

Methods:
Study Design
The data included all reported cases of acute HCV meeting the 2004 Council of State and Territorial Epidemiologists (CSTE) case definition from 2007-2009. For the purpose of this study, cases were divided into two groups: those without an alternate diagnosis (WOAD) and those with an alternate diagnosis (AD). A case with an AD is defined as a case meeting the CSTE case definition for acute HCV but with a provider diagnosis other than acute HCV. The two groups were compared on age, sex, serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels, total bilirubin, jaundice, and symptoms.
Statistical Analysis
Fisher's exact test was used for binary variables to detect differences between population means given the small population sizes. The Wilcoxon-Mann-Whitney test was used for continuous variables. Data were analyzed using SAS™ v9.2 (Cary, NC).

Results:
Of the 65 cases of acute hepatitis C, 13 (20%) had an alternate diagnosis form. The most common alternate diagnosis was chronic HCV (69%) followed by alcohol or drug induced hepatitis (15%). The two groups differed significantly on age ($p=0.004$) with AD cases being older than WOAD cases. The gender distribution was not significantly different. The liver function tests were all significantly higher for the WOAD group than the AD group. The mean ALT was 1083 in the WOAD group and 255 in the AD group ($p<0.001$). The mean AST was 776 in the WOAD group and 199 in the AD group ($p=0.001$). The mean Total bilirubin was 3.6 in the WOAD group and 10.7 in the AD group ($p=0.01$). There was no significant difference for any of the signs or symptoms examined.

Conclusions:
The alternate diagnosis forms provide a method of evaluating the case definition for acute hepatitis C in the absence of a definitive test for acute hepatitis C.

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Abstract ID: **1060222** Presentation Type: **Poster Presentation**

Title: **Sex, sports and contact transfer of vaccinia virus following introduction of ACAM2000â„¢**

Committee: **Infectious Diseases**

Topic: **Immunizations**

Keywords: **Immunization safety, Infectious Diseases, Vaccine safety**

Abstract Text

Background:
Routine vaccination against smallpox ceased in the US in 1976, however vaccination of special groups, including research laboratory personnel who could be exposed to Orthopoxviruses and some military continued. Greater military and healthcare worker coverage was reinstituted in 2002 during the US National Smallpox Vaccination Program to provide preparedness for the potential response to the use of smallpox virus as a bioterrorism agent. Since 2002, approximately 2 million military members and 44,000 civilian laboratory personnel and first responders have been vaccinated. In March of 2008 ACAM2000™ replaced Dryvax® as the vaccine against smallpox for the U.S. population. FDA pre-clinical and clinical trials demonstrated that ACAM2000™ had similar safety and efficacy as that of Dryvax®. Our analysis summarizes and describes contact transmission adverse events (AEs) associated with ACAM2000™ since its inception and provides recommendations for prevention. Contact transmission poses a special concern because the contact or contact's family members may have a medical condition that predisposes them to serious reactions.

Methods:
We reviewed all rashes and lesions reported over a 30-month time span (March 2008 to August 2009) for smallpox vaccine in the vaccine adverse event reporting system (VAERS) public website and/or CDC Poxvirus inquiries log . Case definitions for smallpox vaccine adverse reactions based on the CDC guidelines and Brighton case definitions were used to classify AE reports as possible, suspect, probable and confirmed contact transmission.

Results:
Preliminary results indicate 4 possible and 16 confirmed cases of contact transmission. Thirteen confirmed cases involved non-variola orthopox virus diagnostic testing in state-based laboratories participating in the Laboratory Response Network (8 labs in all provided testing). Of the 16 confirmed cases, 14 presumptively involved a military vaccinee and one or more civilians. Most confirmed cases involved contact originating with a sporting event (9/16) or sexual encounter (5/16). Two sporting events were associated with 6 presumed secondary contact cases and 2 tertiary. In most cases (8/11) vaccinia was not suspected on initial exam for those who sought care. Initial diagnoses included MRSA, impetigo, molluscum contagiosum and herpes.

Conclusions:
Since smallpox vaccination is not routine among civilians many physicians do not suspect vaccinia as a possible differential when patients present. We recommend continuing education for physicians, especially those near military installations, which focuses on recognition of vaccinia lesions. Solutions to preventing secondary transmission include heightened vigilance during physical-contact activities and encouraging vaccinees to discuss their vaccination with close contacts.

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Abstract ID: **1060179** Presentation Type: **Poster Presentation**

Title: **Knowledge, attitudes and practices of deer farmers following a cluster of rabies in captive deer - Pennsylvania, July 2010**

Committee: **Infectious Diseases**

Topic: **Rabies**

Keywords: **Outbreak investigations, Rabies, Zoonotic disease**

Abstract Text

Background:
Outbreaks of rabies among farm animals are rare in the USA. Raccoons are the primary reservoir of rabies in Pennsylvania with spillover primarily into skunks, domestic cats, and other species, including livestock. In July 2010, five deer from a Pennsylvania deer farm tested positive for rabies. This is the first reported cluster of rabies cases in captive farm-raised deer. We investigated this cluster of rabies in captive deer to identify additional cases, characterize any risk to the human population, and guide rabies prevention and control efforts.

Methods:
Site visits to deer farms, interviews with deer farmers, and a mail survey of Pennsylvania Deer Farmer Association (PDFA) members were performed to investigate deer farming practices, assess deer farmer knowledge, attitudes and practices regarding rabies, and to identify targets for education and control efforts.

Results:
Since 2007, 10 laboratory confirmed rabid deer from 4 Pennsylvania deer farms were identified. Additional laboratory analysis of 5 deer specimens confirmed the Mid-Atlantic Raccoon strain of rabies virus. Four people received rabies post-exposure prophylaxis due to exposure to saliva from these captive deer. No significant differences in farming practices were identified between case and control farms. All 14 interviewees reported recent contact with animal saliva on their farms usually from bottle feeding fawns and treating ill deer. The majority feed a sweet grain mix (10/14) by trough. Response rate for the mailed survey was 56% (239/426). The majority of PDFA respondents (167/206) have incomplete knowledge of rabies vectors, transmission, severity, and prevention measures. Birds and/or snakes were identified incorrectly as vectors by 45% (96/213) of respondents. Thirty-nine percent (90/231) identified death as an outcome of rabies and 78% (184/235) would seek emergency treatment if they suspected exposure; however only 26% (62/235) would wash a wound immediately. Seventy-two percent (173/239) did not know the signs of rabies in deer. While only 9 farmers currently vaccinate their deer against rabies, the majority (158/214) would be willing to vaccinate.

Conclusions:
The potential for rabies virus transmission from farmed deer to humans appears similar to other livestock industries and is dependent on local rabies epizootiology in wildlife reservoirs and industry practices. Deer farmer knowledge, attitudes and practices regarding prevention of rabies transmission could be considerably improved. Education focusing on post-bite measures, disease severity, recognition of rabies in deer, and changes in management practices such as vaccination may help minimize the risk of rabies to deer owners and their deer.

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Abstract ID: **1061709** Presentation Type: **Poster Presentation**

Title: **Hepatitis C novel surveillance of young adults in Multnomah County, 2010**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Hepatitis, Prevention, Surveillance**

Abstract Text

Background:
Over 1,700 cases of hepatitis C virus (HCV) infection are newly reported to Multnomah County Health Department (MCHD) each year. In an effort to identify acute HCV cases, risk factors for those infected within the past 10 years and to define populations needing upstream health messages and services, MCHD began interviewing young adults aged 18 to 30 years with laboratory-confirmed HCV in 2010.

Methods:
Newly identified HCV+ persons aged 18 to 30 years old are contacted by phone or in person for interview. We use the Oregon Public Health Division (OPHD) chronic HCV case form to collect demographic characteristics, risk factors, sexual history and other health-related data. Health education, resource availability and harm reduction techniques are offered to the individual following the interview. This strategy is in addition to existing surveillance data collected from health care providers who are faxed a one-page form requesting similar information.

Results:
: In 2010, 129 young adults were reported to MCHD. Of these, only two acute cases were identified. An additional five cases were suspected to be acute; four proved to be chronic and one lacked confirmatory testing or the resources to obtain additional testing.
From January to June 2010, 52 young adults were reported to MCHD. Of these 27 cases (67%) were contacted and interviewed. The provider fax surveillance form was returned on 28 (70%) cases. Data collected from the interviews proved to be more successful at collecting demographic characteristics, sexual history and multiple risk factors. Case education was provided for 100% of cases. First time lab test results were given to six cases. In contrast, the fax surveillance proved to be more successful at collecting medical information including hepatitis vaccination, test reasons and diagnosis status. Mostly single risk factors were identified on the fax surveillance while interviewing identified all cases to have multiple risk factors.

Conclusions:
New outreach strategies are needed to reach individuals to offer testing, harm reduction and education. Additional staffing and resources for testing are needed to do further investigation of young adults to identify acute cases.

Given the heavy burden of HCV, prevention strategies and methods to meet the health needs of those infected are essential. Although we did not identify many acute cases of HCV through expanded outreach to young adults, the high response rate using a fax surveillance methodology when accompanied by personal interviews has proved to be successful to characterize persons living with chronic HCV.

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Abstract ID: **1061555** Presentation Type: **Poster Presentation**

Title: **Travel-associated diseases: Trends, knowledge, attitudes, and practicesâ€“Philadelphia, PA 2010**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Communicable disease, Vectorborne disease**

Abstract Text

Background:
Travelers are at risk of acquiring infectious diseases while abroad. Infectious diseases such as amebiasis, giardiasis, and hepatitis A are commonly transmitted through food and water, while diseases such as dengue and malaria are transmitted through mosquitoes. Although preventable, the public health burden of these diseases remains significant. To characterize disease trends and identify targeted intervention areas, a cross-sectional survey of travelers and a case-series analysis of five travel-associated diseases were conducted.

Methods:
A convenience sample of individuals waiting to board an international flight at the Philadelphia International Airport from March 4-15, 2010 were asked to complete a self-administered questionnaire. Additionally, all case reports of malaria, dengue, amebiasis, giardiasis, and hepatitis A in Philadelphia residents from 2004-2009 that were reported to and investigated by the Philadelphia Department of Public Health (PDPH) were reviewed. These diseases were defined as travel-associated cases in persons who reported a history of travel to disease endemic areas during their incubation period. Descriptive analyses were performed using SAS.

Results:
Of the 246 persons approached, 201 (82%) completed the survey, 45% were male and 74% reported travel to Europe. Only 20% of the individuals reported obtaining pre-travel health advice. The sources for this advice consisted of doctors (55%), internet (31%) and travel health specialists (24%). Among the respondents, 21% could correctly identify all foods to be avoided based on their potential for spreading infectious diseases. From 2004-2009, 85/85 (100%) malaria, 10/10 (100%) dengue, 21/92 (23%) hepatitis A, 172/548 (31%) giardiasis, and 19/65 (29%) amebiasis cases reported to PDPH were found to be travel-associated. The median age of all travel-associated cases was 22 years (range 0-79); 57% were male and 24% were hospitalized for their illness. Among hepatitis A cases 100% did not

receive vaccine and 58% of malaria cases did not take prophylaxis.

Conclusions:
Despite travel health recommendations set forth by the Centers for Disease Control and Prevention and the World Health Organization, travelers are not utilizing preventive measures available to them including pre-travel health advice, vaccination, and prophylaxis. Respondents' knowledge of potential risk associated with travel and precautionary measures available appears low. To address gaps in knowledge educational efforts need to focus on the value of pre-travel health advice, potential risks associated with travel, and importance of available infection prevention measures.

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Abstract ID: **1047841** Presentation Type: **Poster Presentation**

Title: **Frequency, severity, and cost of methicillin-resistant *Staphylococcus aureus* infections among Michigan residents measured through discharge data from 2002 through 2008**

Committee: **Infectious Diseases**

Topic: **Multi-Drug Resistant Organisms (MDROs)/ Carbapenem-resistant Enterobacteriaceae (CRE)**

Keywords: **Healthcare associated infections (HAI), Hospital data, ICD**

Abstract Text

Background:
Methicillin-resistant *Staphylococcus aureus* (MRSA) are drug-resistant, cluster-forming bacteria that may colonize the skin and mucosal membranes. Once colonized, persons may remain colonized, revert to a receptive state through decolonization, or progress to infection. MRSA infections range in severity from the most common type of infection (skin and soft tissue), to more invasive and severe infections such as pneumonia or septicemia. MRSA infections are an increasing burden among Michigan's residents and healthcare facilities, yet the specific burden and healthcare costs are unknown. The objectives of this study are to evaluate the frequency, severity, and cost of MRSA infections among Michigan's hospitalized patients.

Methods:
Discharge data representing all Michigan acute care hospitals were purchased by the Michigan Department of Community Health (MDCH) from the Michigan Health and Hospital Association. All hospital discharge data from 2002 through 2008 containing the International Classification of Diseases, 9th edition (ICD-9) codes for infection with *Staphylococcus aureus* along with the ICD-9 code for resistance to the penicillin class of antibiotics were extracted. These ICD-9 codes for *Staphylococcus aureus* infections represent pneumonia, septicemia, and "other" various infections. Cases were

stratified by comorbidities using the Deyo modification of the Charleston score. Hospitalization charges were standardized to the 2008 dollar using the Consumer Price Index.

Results:
During 2002 through 2008, 70,557 patients were discharged with MRSA infection. The rate of MRSA increased annually from 412 to 1,158 cases per 100,000 discharges. Seventy percent of MRSA infections reported were “other” infections, including skin and soft tissue infections, while MRSA septicemia was reported in 14%, and MRSA pneumonia in 16% of cases. Incidence and mortality rates were substantially higher among the elderly than youth and among Blacks compared to Whites. Death occurred in 4,337 (6.1%) patients discharged with MRSA. The average total healthcare charge among patients was $48,897 and rose 10% during the study time period. Hospital costs varied by race and by type of MRSA infection; Asians experienced the largest healthcare charges and MRSA pneumonias were the most costly at an average of $83,092.

Conclusions:
Across Michigan, the burden of MRSA infections are growing substantially, and disproportionately affecting vulnerable populations. Utilizing hospital discharge data can help illuminate trends and inform intervention targets as more sensitive and specific surveillance systems evolve. Infection control and prevention efforts should be directed toward highest risk populations to reduce disease and healthcare-associated costs.

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Abstract ID: **1047814** Presentation Type: **Poster Presentation**

Title: **Frequency, severity, and cost of *Clostridium difficile* infections among Michigan residents measured through discharge data from 2002 through 2008**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Data/Surveillance, Hospital data, ICD**

Abstract Text

Background:
Clostridium difficile (C. difficile) infection (CDI) is an intestinal bacterial disease that is an increasing burden among Michigan’s residents and healthcare facilities. Yet the specific burden and healthcare costs are unknown. The objectives of this study are to evaluate the frequency, severity, and cost of CDI among Michigan’s hospitalized patients.

Methods:
Discharge data representing all Michigan acute care hospitals were purchased by the Michigan Department of Community Health (MDCH) from the Michigan Health and Hospital Association. All hospital discharge data from 2002 through 2008 containing the International Classification of Diseases, 9th edition (ICD-9) code for intestinal infection due to *Clostridium difficile* were extracted. Cases were stratified by comorbidities. Hospitalization charges were standardized to the 2008 dollar.

Results:
During 2002 through 2008, 68,686 patients were discharged with CDI. The rate of CDI increased annually from 436 to 1,096 cases per 100,000 discharges. Rates of disease were substantially higher among the elderly, females, and Blacks. Death occurred in 5,924 (8.6%) patients discharged with CDI. The average total healthcare charge among patients was $67,148 and rose 35% during the time period. Hospital costs varied by race and insurance provider; Asians and persons with Medicaid insurance accrued the highest charges.

Conclusions:
Across Michigan, the burden of CDI is growing substantially, and disproportionately affecting vulnerable populations. Surveillance utilizing hospital discharge data can help illuminate trends and inform intervention targets. Prevention and infection control efforts should be directed toward highest risk populations in order to reduce disease and healthcare-associated costs.

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Abstract ID: **1061315** Presentation Type: **Poster Presentation**

Title: **A molecular epidemiological analysis of tuberculosis in high-risk areas of Pennsylvania**

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Epidemiology, Genomics, Infectious Diseases**

Abstract Text

Background:
The Tuberculosis Genotyping Information Management System (TB-GIMS) was launched in May 2010 as a national centralized database that links specimen genotyping data to patient-level results. The system allows for a more consistent and reliable assessment of TB transmission dynamics in the U.S. In Pennsylvania, the highest risk areas have the highest proportions of all the State's culture-confirmed cases of Mycobacterium tuberculosis (TB) infections; these regions include the Southeast (SE), Northeast (NE), and Southcentral (SC) Health Districts (67%, 11%, and 9%, respectively). TB-GIMS

data are used to understand the molecular epidemiology of TB in the U.S., especially in areas with higher morbidity.

Methods:
Data elements for Pennsylvania from 2005-2010 (year to date) were extracted from TB-GIMS and linked to surveillance information from the Pennsylvania notifiable electronic surveillance system (PA-NEDSS). Analyses were limited to cases from the SE, NE, and SC Health Districts. Individuals with genotyped isolates were compared with all laboratory-confirmed TB cases. Descriptive analysis was performed on isolate and patient information for genotyped cases.

Results:
During the study period, there were 1069 culture confirmed TB cases in these districts. Of these, 640 cases (60%) had isolates genotyped and entered into TB-GIMS. Individuals with genotyped isolates were similar to all culture-confirmed cases with respect to age, race/ethnicity, sex, birth country, and reporting county. Individuals with genotyped isolates were predominantly male (58%), ≥25 years of age (89%), and foreign born (54%). Most foreign-born individuals were from Asia (29%), Micronesia (26%), or Latin America (20%) and had lived in the United States a median of 6 years. The most common genotype lineage was EuroAmerican (63%). Four hundred sixty Genotypes, i.e. isolates with the same MIRU and spoligotypes, were identified. Of these, 180 (39%) were associated with 2 or more TB cases. The most common Genotype was PCR00002 (East Asian lineage), which accounted for 5% of isolates and was responsible for PA_0003, the largest cluster in the area (n=30).

Conclusions:
This analysis provides a first investigation into the molecular epidemiology of TB in the 3 highest-risk Health Districts in Pennsylvania. Improved understanding of genotype clusters, combined with patient-level information, can enhance outbreak investigation efforts and provide better insight into TB disease transmission in the U.S. Local and state health departments will be able to develop focused approaches for TB control to prevent the spread of disease.

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Abstract ID: **1061390** Presentation Type: **Poster Presentation**

Title: **Hepatitis B Surveillance - Michigan, August 1, 2009â€“July 31, 2010**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **CDC Guidelines, Hepatitis, Surveillance**

Abstract Text

Background:
In 2008, a total of 4,033 acute, symptomatic cases of hepatitis B (HBV) were reported in the United States; overall incidence (1.3 cases/100,000 population) was the lowest ever recorded. The current HBV case definition requires clinical correlation and laboratory confirmation. In Michigan, HBV laboratory reporting triggers case investigation by the local health departments; resulting data are entered into Michigan Disease Surveillance System (MDSS), an online communicable disease reporting system. Currently, no federal or state funding or full-time personnel support adult HBV surveillance in Michigan. As part of a formal evaluation of acute HBV surveillance in Michigan, we sought to assess the level of data quality and utility of the database for providing accurate estimates of disease burden.

Methods:
The Centers for Disease Control and Prevention (CDC) recommendations, “Updated Guidelines for Evaluating Public Health Surveillance Systems,” were used to evaluate the surveillance system. All reported cases of acute HBV infections during August 1, 2009-July 31, 2010, were evaluated for data completeness and to assess accurate case classification based on the CSTE case definition for acute HBV infections.

Results:
For this 1-year period, 477 cases of acute HBV were reported to MDSS; 113 (24%) were closed as completed, confirmed cases and reported to CDC. Among these cases, 54/113 (48%) provided neither jaundice information nor serum aminotransferase levels (one of which is required for case classification). Interviews, which are required to obtain additional information necessary for correct case classification, had not been performed for 61/113 (54%) cases. Only 47/113 (42%) actually met CSTE's definition for confirmed acute HBV cases. Of 364 cases not classified as confirmed and completed, 204 (56%) were closed prematurely with insufficient data to correctly classify the case.

Conclusions:
The complex HBV case definition requires local public health personnel to perform case investigations to classify cases correctly; extensive misclassification results because of insufficient staffing at local health departments. Given the degree of misclassification, the HBV database cannot accurately provide estimates of disease burden or aid in the allocation of resources for prevention and control programs. Insufficient data quality is a threat to the validity of acute hepatitis B surveillance and should prompt reevaluation of the utility of the HBV case definition and the resources to support the system.

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Abstract ID: **1057584** Presentation Type: **Poster Presentation**

Title: **National impact of ocular toxocariasis: A first look â€“ United States, 2009â€“2010**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Infectious Diseases, Prevention, Risk factors**

Abstract Text

Background:
Ocular toxocariasis (OT) is a manifestation of a parasitic infection by Toxocara canis or Toxocara cati causing debilitating ophthalmologic disease primarily affecting children. However, there is no data available on how frequently ophthalmologists encounter patients with OT. A better understanding of the impact of OT could spur efforts to implement and evaluate prevention measures.

Methods:
In collaboration with the American Academy of Ophthalmology, an electronic survey was distributed to uveitis, retinal and pediatric ophthalmology specialists nationwide to collect epidemiological, demographic and clinical information. A confirmed OT patient was a person who had ophthalmologic visualization of a larva, positive Toxocara ELISA test result, or clinical diagnosis based on signs and symptoms of OT. OT patients diagnosed between 9/2009-9/2010 were classified as newly diagnosed while patients diagnosed prior to 9/2009 were classified as having recurrent disease.

Results:
Of 3,020 ophthalmologists invited to participate, 559 (19%) responded; 67% were pediatric ophthalmologists, 18% retinal specialists and 15% uveitis specialists. A total of 159 OT patients seen between 9/ 2009-9/2010 were reported, of these patients, 68 had newly diagnosed OT infection. Ophthalmologists practicing in 33 States, the District of Columbia, and Puerto Rico reported OT patients with New York (9%), Illinois (8%) and Texas (8%) having the highest number of patients. Demographic information was completed for 74 patients. The median patient age was 11.5 years, 40 (54%) were male, 56 (76%) were Caucasian, 13 (18%) were of Hispanic ethnicity and 35 (47%) lived in the Southern region. Pet ownership information was available for 45 patients; 31 (69%) patients had pets. The most common reported symptom was vision loss which affected 46 (85%) patients; 32 (70%) of these patients suffered permanent vision loss. Other reported symptoms included eye floaters, eye redness and photophobia which affected 22 (39%), 16 (26%) and 12 (20%) patients respectively. The most common signs found on ophthalmologic exam included subretinal granuloma in 42 (75%) patients, scotoma in 17 (50%) patients and vitritis in 25 (49%) patients. Of the 30 patients who had serum ELISA testing performed, 21(70%) had a positive result. Treatment data was reported for 41 patients; 18 (44%) were given corticosteroids, and 5 (12%) were given antihelminthic medication.

Conclusions:
OT transmission persists in the United States. Case-patients are predominately children; most reported patients suffered permanent vision loss. Research on risk factors is needed to decrease morbidity and to strengthen strategies to reduce infection rates in animals and people.

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Abstract ID: **1047971** Presentation Type: **Poster Presentation**

Title: **A system for detecting tuberculosis patients lost to follow up at the U.S.-Mexico land border, 2007-2010**

Committee: **Infectious Diseases**

Topic: **Tuberculosis**

Keywords: **Border / International health, Communicable disease, Respiratory diseases: Non-influenza**

Abstract Text

Background:
The Centers for Disease Control and Prevention (CDC) employs a public health “Do not Board/Border Lookout List (LO)” tool to prevent commercial air travel by infectious travelers at international ports of entry (POE). The CDC U.S.-Mexico Unit, together with local and state partners, has used this mechanism to detect and refer tuberculosis (TB) patients who enter the U.S. through the U.S.-Mexico land border.

Methods:
We reviewed a CDC database for land border travelers on the LO from April 2007 through July 2010. Each case was reviewed; key demographic and case management data were extracted.

Results:
Of 22 persons placed on LO during this period, eleven persons (50%) were detected at a U.S.-Mexico land POE in a median of 6 days (range: 0-218). Seven persons (32%) were detected by other means in the U.S. (2), Mexico (4) and Guatemala (1) in a median of 74 days (range: 0-202). The TB strains of 27% were multi-drug resistant. The median age was 42 years (range: 24-82), 73% were male, 82% were Hispanic, and 68% were Mexican-born. Sixteen (89%) located patients resumed treatment.

Conclusions:
The LO tool has proved useful for timely detection and referral at land POE of TB patients lost to follow-up known to cross the U.S. - Mexico border. In collaboration with states and bi-national TB programs, this tool can help improve completion of therapy rates for such mobile TB patients.

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Abstract ID: **1055290** Presentation Type: **Poster Presentation**

Title: **Impact of multidrug resistant organisms on fatality with Healthcare associated urinary tract, blood stream, and surgical site infections**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Antibiotic resistance, Epidemiology, Healthcare associated infections (HAI)**

Abstract Text

Background:
Healthcare associated infections (HAIs) are known to result in increased length of hospitalization, excess mortality and costs. Little information is available on the contribution of multidrug resistant infections (MDROs) on HAI-related mortality. Pennsylvania mandates HAI reporting from all 250 hospitals through the National Healthcare Safety Network (NHSN). We reviewed two years of reported data to assess the influence of MDROs on case fatality in urinary tract (UTI), blood stream (BSI), and surgical site (SSI) HAIs in PA.

Methods:
Data for the period July 2008 to June 2010 on UTI, BSI, and SSI from adult units were examined. HAIs with an identified pathogen and at least three calendar days of hospitalization were included. Missing data on death status (<1%) was treated as 'non-fatal'. Cases were stratified by whether they were device-associated for BSI and UTI or implant-associated for SSI.

Results:
There were 10,727 UTIs (8.1% due to MDRO), 4,906 BSIs (32.4% MDRO) and 7,182 SSIs with implant information (41.5% MDRO) reported during the period. The relative proportion of deaths between patients infected with an MDRO patients and patients infected with a non-MDRO varied across the three infection types regardless of whether devices and implants were present. Age distribution was similar in both groups. Relative risks (95% confidence interval) for case fatality due to MDRO were 1.61 (1.19-2.16) and 6.13 (3.16-11.9) for UTIs with and without urinary catheters; 1.35 (1.15-1.58) and 0.99 (0.80-1.22) for BSIs with and without central lines; and 0.86 (0.48-1.53) and 1.06 (0.71-1.59) for SSIs with or without implants.

Conclusions:
A higher HAI case-fatality risk was seen with MDRO associated with UTI with or without urinary catheter and those associated with central line BSI when compared to these infection types not related to an MDRO. The risk was not significantly different for non-catheter associated BSI and SSI from MDRO versus non-MDRO.
Information on death status should be actively sought and verified for HAIs. Further analysis is needed to assess additional risk factors and possible confounders associated with HAI mortality, whether the deaths can be attributed to the HAI versus underlying illness, and to evaluate the association of antimicrobial prescribing usage with MDRO status.

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Abstract ID: **1060201** Presentation Type: **Poster Presentation**

Title: **Acute care hospital risk stratification using hierarchical cluster analysis**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Epidemiologic methods, Healthcare associated infections (HAI), Nosocomial infections**

Abstract Text

Background:
To accurately compare hospitals' ventilator associated pneumonia (VAP) infection rates hospitals must be grouped according to their case-mix complexity and acuity. National Healthcare Safety Network (NSHN) does not provide sufficient risk stratification for VAP reporting. An optimal combination of characteristics has not previously been defined. The objective of this project was to develop a risk stratification model to group acute care hospitals for fair comparison of healthcare associated infection rates.

Methods:
Dendrograms were constructed using hierarchical cluster analysis. Sturges' rule was used to define the desired number of strata.

Results:
Characteristics included in the final model were Emergency Medical Service (EMS) Program trauma service level, EMS rehabilitation service level, graduate and undergraduate medical teaching status, and long-term acute-care hospital (LTAC) designation . Other variables rejected were either confounded indicators of case-mix complexity or caused the models to flatten resulting in much poorer stratification.

Conclusions:
Acceptance of the final model was based on logical groupings of hospitals as confirmed by our advisory committee (stakeholders including infection control professionals and infectious disease physicians, the hospital association and others familiar with characteristics of hospitals throughout our state). There is possibility for refinement of this model by further exploration of graduate specialty teaching program impact on case-mix (e.g., family practice vs. surgical specialties). The goal is to stratify hospitals according to differences in the challenge they face in preventing VAP due to differences in their case-mix. Stratifying by ICU type alone does not recognize inherent case-mix differences between a level I trauma facility versus a critical access hospital. To strengthen our model's generalizability, it will be necessary to confirm whether it works as well in other states.

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Abstract ID: **1060568** Presentation Type: **Poster Presentation**

Title: **Post-discharge surgical site infection surveillance in Washington acute care hospitals**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Healthcare associated infections (HAI), Nosocomial infections, Surveillance**

Abstract Text

Background:
Many surgical site infections (SSI) manifest after a patient's hospital discharge. Without post-discharge surveillance any reported SSI rate is likely to be an underestimate. There are numerous single system or site studies on post discharge SSI surveillance methods. However, little is known about the practices currently in place. There are no established guidelines for best practices in post-discharge SSI surveillance. This survey describes and assesses the various methods of post discharge SSI surveillance used in acute care hospitals in Washington.

Methods:
A survey instrument was adapted from one used in a previous study in the UK by Petherick, et al. and emailed to infection control departments in acute care facilities required to report surgical site infections in Washington State. Information collected included: methods for surveillance, both passive and active; electronic data sources used; definitions used for reporting; and the systems' impact on number of SSI events detected. Descriptive statistics were used to generate frequencies.

Results:
The survey was emailed to infection control professionals at the 73 acute care hospitals in Washington State with SSI reporting requirements. Eighty-eight percent (65) responded; of those, 95.4% (62) performed one or more types of post discharge SSI surveillance. The most common method was monitoring readmissions at the facility, which was performed by 95% (59) of the hospitals. The least common methods were patient returned postcard or questionnaire, 8.1% (5), and monitoring post-operative antimicrobial prescriptions, 6.5% (4). Ninety-four percent (58) of the hospitals reported using some form of electronic data in their surveillance program and 98% (61) reported using NHSN criteria to define post-discharge SSI. Eighty-two percent (51) of hospitals found cases of post-discharge infection not otherwise detected. No hospitals had formally evaluated the cost of this activity.

Conclusions:
Based on survey results the majority of post-discharge SSI surveillance programs in Washington are detecting infections that occur after surgical patients are released. The number of facilities failing to monitor readmissions at other facilities was surprising. Further investigation is needed as to why some easily used, inexpensive methods are not being incorporated into these programs. The data from this survey will be used to help hospitals in Washington to identify methods that can be employed to increase yield of post discharge case detection.

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Abstract ID: **1052460** Presentation Type: **Poster Presentation**

Title: **Fatal poisonings due to multiple substances, Ohio, 2000 - 2008**

Committee: **Injury Control and Prevention**

Topic: **Unintentional drug poisoning deaths**

Keywords: **E code, Substance abuse, Unintentional/intentional poisoning**

Abstract Text

Background:
From 2000 to 2008, the number of Ohio poisoning deaths increased by 173% (from 702 to 1913, respectively). Approximately 73% of these poisoning deaths were classified as unintentional and involving drugs/medications. For each of the study years, more than 80% of poisonings were associated with at least two different drugs. We sought to describe use patterns among these presumably, for the most part, recreational drug users.

Methods:
We identified ICD10-defined poisoning cases from the Ohio Department of Health Vital Statistics Office 2000-08 death records. Narcotic and psychodysleptic codes T40.0 - T51.9 were examined to distinguish specific drug involvement to enable characterization of fatal poisonings associated with multiple drug use.

Results:
For the nine year period, there were 11,431 poisoning deaths in Ohio. Cocaine was involved in 1910 of these deaths; opioids were noted in 4385; benzodiazepines, 975 and; ethanol, 981. Cocaine and opioids were implicated in 802 deaths; benzodiazepines and opioids were found in 752 and benzodiazepines, opioids and cocaine poisoning were noted on 116 death certificates. There were 10 persons who died from poisoning with all four of these drugs in their body. However, for the study period, we also found nearly 3000 death certificates that reported no specific drug poisoning information, i.e. with only ICD10 code T50.9 - other and unspecified drugs documented.

Conclusions:
More than 24% (n=2798) of drug deaths in Ohio for this period involved at least two of our drugs of interest: cocaine, opioids, ethanol, and benzodiazepines. As disquieting as this toll is, it may represent only half of the actual total attributable to these substances; approximately 26% of poisoning-related death certificates are lacking in information on the specific type of drugs involved. Improvements in identifying all fatality associated drugs on death certificates would provide a better understanding of poisonings, particularly those attributable to multiple substances.

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Abstract ID: **1060635** Presentation Type: **Poster Presentation**

Title: **Blood alcohol testing among motor vehicle crash fatalities in Fulton County, Georgia, 1990-2007 ***

Committee: **Injury Control and Prevention**

Topic: **Injuries resulting from motor vehicle or other transportation modes (ATV, bike, etc.)**

Keywords: **Alcohol Use, Motor vehicles, Surveillance**

Abstract Text

Background:
Alcohol-related motor vehicle crashes resulted in 11,773 deaths and accounted for 32% of all crash fatalities in the United States in 2008. The cost of alcohol-related motor vehicle crashes is estimated to be $51 billion per year. We conducted a retrospective cross-sectional study to determine alcohol involvement in motor vehicle crash fatalities in Fulton County, Georgia. Our objectives were to obtain decedent characteristics, calculate ante- and postmortem blood alcohol testing prevalence, and assess the validity of postmortem blood alcohol testing among motor vehicle crash fatalities.

Methods:
Motor vehicle crash fatality data were obtained from the Fulton County Medical Examiner's Office for 1990-2007. Antemortem blood alcohol test results were collected from hospitals for decedents that survived long enough to enter the healthcare environment. Descriptive analyses were conducted to determine decedent characteristics, road user type, and to calculate the prevalence of ante- and postmortem blood alcohol testing among motor vehicle crash fatalities. A McNemar's test was used to assess the validity of postmortem blood alcohol testing. Analyses were conducted using SAS 9.1.

Results:
Of 1,007 motor vehicle crash fatalities during 1990-2007, 69% were male, 51% were drivers, 64% were taken to the main county hospital, and 48% survived more than six hours. Nineteen percent of decedents had antemortem blood alcohol testing, 69% had postmortem alcohol testing, and 11% had both ante- and postmortem blood alcohol testing. Forty percent of antemortem and 18% of postmortem tests indicated alcohol-impairment with a whole blood alcohol level ≥ 0.08 g/dL. There were too few motor vehicle crash fatalities (N = 33) with both ante- and postmortem blood alcohol test results to reliably assess the validity of postmortem blood alcohol testing.

Conclusions:
Among Fulton County motor vehicle crash fatalities, the prevalence of antemortem blood alcohol testing was much lower than the prevalence in a national sample of trauma patients. Barriers to routine alcohol testing in trauma centers should be further explored, as this may be useful for improving surveillance of alcohol-related crash fatalities and identifying surviving problem drinkers for treatment.

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Abstract ID: **1061585** Presentation Type: **Poster Presentation**

Title: **White Middle-Age and Older Males at Highest Risk for Suicide**

Committee: **Injury Control and Prevention**

Topic: **Age and ethnic disparities related to injuries**

Keywords: **Aging, Male health, Suicide**

Abstract Text

Background:
Suicides in the Commonwealth of Virginia have been steadily increasing over the years. Suicides typically exceed homicides two-to-one yet do not receive the same media or public health attention as homicides. While all races, ages, and genders are impacted, the vast majority of suicide victims are males, with the greatest level of risk seen in older and middle-age White males. Despite this clear increase in risk for middle-age and older White males, there are no targeted prevention funding for this population in Virginia.

Methods:
The Virginia Office of the Chief Medical Examiner (OCME) has jurisdiction over all suicides where death occurs in Virginia. These data were extracted from OCME cases using the Virginia Violent Death Reporting System (VVDRS). The VVDRS is the operation and reporting system of the National Violent Death Reporting System (NVDRS) within Virginia, and uses the same methodology, definitions, coding schema, and software application. The NVDRS is a project currently operating in 18 states, and is funded by the Centers for Disease Control and Prevention (CDC).

Results:
Over the study period of 2003-2008, there were 5,149 suicides of Virginia residents that fell under the jurisdiction of both the OCME and the purview of the VVDRS. Over 75% of these cases were male and two-thirds or 66% were White males, though White males comprised just 37% of Virginia's population. The 35-64 year old White male group was responsible for 36% of all suicides yet comprised only 15% of the Commonwealth's population.
The overall suicide rate (per 100,000) for Virginia males is 17.7 and is 20.4 for White males. Looking at the 35-64 year White male group the rate is 26.1 and is 37.9 for the 65+ age group. These rates are 2.1 and 3.1 times higher than that of 10-24 year old White males, respectively. Black males, the group with the next highest number of suicides, have much lower rates for these age groups.
In general, males have lower percentages of reported mental health problems (47% versus 71%) and history of suicide attempts (16% versus 33%) than their female counterparts. Examining only males, White males have higher percentages of mental health, physical health and alcohol problems than non-Whites.

Conclusions:
Suicides are completed by all races, genders and ages above 10 years old in Virginia, but by sheer numbers White males who are middle-age and older have the largest numbers of suicides and the highest rates of any gender-race grouping. In our society, it is unpopular to characterize White males as disadvantaged or as "high-risk", but suicide numbers reveal that 3,418 White males over six years chose to end their lives. Data show that every 6.6 out of 10 suicides are committed by White males. While Virginia's 35-64 year old White male population is 15% of the overall population, they account for 36% of all suicides. Funding in Virginia is focused on suicide prevention in youth, and while prevention needs to continue there, the human cost of neglecting the main risk group of middle to older age White males is counted in the thousands.

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Abstract ID: **1019153** Presentation Type: **Poster Presentation**

Title: **Asbestosis: Summary of the condition and review of hospitalization data in Louisiana, 1999-2009**

Committee: **Occupational Health**

Topic: **Occupational lung diseases**

Keywords: **Asbestos, Occupational Health, Occupational lung diseases**

Abstract Text

Background:
Asbestosis is a debilitating, chronic lung disease with no known treatment that most commonly occurs among workers in certain occupational settings. As a condition highly associated with occupational exposure, its incidence has been affected by changes in industry standards; in particular, the ban on new uses of asbestos, both production and use of asbestos fibers put in place during the past 20 to 30 years, have significantly reduced occupational exposures. Despite these restrictions, asbestos products can currently be found in the construction, automotive, railroad, textile and shipbuilding industries due to its favorable chemical properties, particularly in Louisiana. Various health outcomes are associated with asbestos exposure including asbestosis, pleural plaques and effusions, carcinomas, and mesothelioma. The objective of this paper is to understand the impact of asbestosis in Louisiana and to encourage physicians to obtain a comprehensive occupational and environmental history for identifying people at risk from previous exposures.

Methods:
A retrospective review of asbestosis hospitalizations using Louisiana Hospital Inpatient Discharge Data (LAHIDD) from 1999-2009 was conducted. Records were selected if they had an ICD-9 diagnostic code of 501 (asbestosis) as either a primary or secondary diagnosis and were at least 16 years of age. Repeat admissions and patients who were not residents of Louisiana were excluded. Annual, age standardized rates were calculated by dividing the total number of identified asbestosis hospitalizations by Louisiana's population age 16 years and older for the same calendar year and standardized using the U.S. 2000 population. Population data were obtained from the U.S. Census Bureau of Population Estimates of the years 2000-2009 and the Current Population Survey for year 1999. SAS 9.1 software was used to perform linear regression to determine trends of age-standardized rates of asbestosis hospitalizations, ANOVA and independent T-test were used to compare sex, age, race and geographical differences. A $p<0.05$ for a two sided hypothesis testing was considered statistically significant.

Results:
Results indicate that rates of asbestosis hospitalizations have remained high, but steady over the 11-year period with approximately 295 cases per year. Louisiana's rate is two times higher than the US rate ($p<0.0001$). White males had consistently higher rates of hospitalizations than blacks and females($t=9.2$ $p<0.00001$, $t= 23.5$ $p<0.00001$), respectively. Adults aged 75-84 years had the highest rates of asbestosis hospitalizations (62.5 residents per 100,000 residents) compared to all age groups while adults aged 35-44 years had the lowest rate (0.15 hospitalizations per 100,000 residents) and cases are clustered geographically.

Conclusions:
Historic asbestos uses in Louisiana, such as ship-building , may have resulted in an increase asbestos exposure to Louisiana residents in comparison with other states as reflected in Louisiana's significantly elevated rate. Although it is expected that hospitalization rates increase with age, the racial and geographical differences are surprising. It is expected that the hospitalization rate will remain high due to asbestosis long latency period and relatively recent ban on new uses. However, current risk of exposure is still a concern due to many asbestos containing products still being used which does not fall underneath the ban. Improved reporting of patients' occupational history by healthcare providers will allow public health officials to identify and monitor high risk occupations and exposures associated with asbestosis.

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Abstract ID: **1055917** Presentation Type: **Poster Presentation**

Title: **Mycobacterium avium complex respiratory disease from aerosolized water exposure in spa workers in New Mexico ***

Committee: **Occupational Health**

Topic: **Local/Regional occupational health issues**

Keywords: **Collaboration, Occupational lung diseases, Waterborne disease**

Abstract Text

Background:
Two cases of lab-confirmed Mycobacterium avium complex (MAC) infection were reported to the New Mexico Department of Health. The two cases worked for the same employer, a spa with several outdoor tubs. Because of the suspected work-related nature of the illnesses, the cases were reported to the New Mexico Occupational Health Surveillance Program (NMOHSP), Epidemiology and Response Division (ERD) in February, 2010. The symptoms, exposures, and presence of MAC in the two workers were indicative of hot tub lung, a hypersensitivity pneumonitis (HP) - like granulomatous lung disease with non-tuberculous mycobacteria (NTM), that can occur from exposure to water aerosols from hot tubs and spas, therapy pools, showers, and indoor swimming pools.

Methods:
The NMOHSP contacted both the state OSHA and the NM Environment Department (NMED) Swimming Pool Program to collaborate on the investigation. The NMOHSP then 1) obtained medical records on the two MAC-positive patients 2) conducted in-person and telephone interviews with current and former employees to determine if there were further cases, and 3) conducted an observational investigation of the spa. From job tasks described by the participants, workers were categorized into three exposure level categories. A one-way analysis of variance (ANOVA) comparing the mean number of symptoms by exposure category was performed to assess if there was a significant difference among the three categories. In addition, water and biofilm swab samples were analyzed for MAC, then compared to sputum cultures from the two reported cases.

Results:
The ANOVA comparing the mean number of symptoms by exposure category resulted in a p-value of 0.008, with mean symptoms increasing with exposure. All current workers with water exposure were interviewed and no other confirmed cases were found. Pulsed-field gel electrophoresis (PFGE) of the tested patient isolates revealed diverse band patterns. Two environmental isolates, one from a cartridge filter in the cleaning process and another from a cold-water tub, were closely related to one of the patients.

Conclusions:
The cases of MAC in the two workers were found to be associated with spray cleaning of dirty spa cartridge filters. Extensive collaboration with NMED Pools Program, NM-OSHA, internal DOH, CDC Environmental Microbiology Lab and NIOSH resulted in primary work practice recommendations, prevention recommendations, as well as lessons learned about interagency communication in response to occupational health issues.

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Abstract ID: **1047255** Presentation Type: **Poster Presentation**

Title: **Evaluation: Vermont Adult Blood Lead Epidemiology and Surveillance (ABLES) Program**

Committee: **Occupational Health**

Topic: **Lead exposure surveillance (ABLES)**

Keywords: **Environmental Health, Evaluation, Lead**

Abstract Text

Background:
The ABLES Program involves state-based surveillance of laboratory-reported adult blood lead levels. The Vermont ABLES Program began surveillance in January 2007. Elevated blood lead levels (BLLs) can cause adverse acute and chronic health effects, including neurologic, gastrointestinal, renal, cardiovascular and reproductive effects. The program objective is to build state capacity to initiate, expand, or improve adult blood lead surveillance in order to accurately measure trends in adult BLLs and effectively intervene to prevent lead over-exposures. The main aims of this evaluation are to identify strengths and limitations of the Vermont ABLES program and to recommend potential improvements.

Methods:
Evaluation followed the CDC 2001 Updated Guidelines for Evaluating Public Health Surveillance Systems, including analysis of descriptive statistics.

Results:
The 2009 prevalence rate of elevated adult BLLs (≥25µg/dL) in Vermont was 9.47 per 100,000, which is slightly higher than the CDC's most recently published national average rate of 7.4 per 100,000 for

2007. Main strengths of the ABLES program include providing referrals to the Occupational Safety and Health Administration (OSHA) for consultation and enforcement, and a custom Microsoft Access database. Main limitations identified are: potential under-detection of Vermonters who are over-exposed to lead but have no symptoms, are self-employed, or are exposed through hobbies; and inadequate funding and resources to develop and disseminate educational materials and outreach, investigate exposure sites, and provide technical assistance and long-term case follow-up with affected Vermonters, their physicians, and employers.

Conclusions:
The VT ABLES program can improve detection and case management through education and outreach to the general public, cases, physicians and employers.

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Abstract ID: **1061986** Presentation Type: **Poster Presentation**

Title: **Teacher perceptions of the classroom environment and their health and performance: Results from a survey of teachers in New York State (NYS) Public Schools, 2009**

Committee: **Occupational Health**

Topic: **Examining occupational injuries and illnesses using state or national surveys**

Keywords: **Epidemiology, Occupational exposure, School health**

Abstract Text

Background:
School teachers spend a considerable amount of time inside school buildings. Previous research suggests links between school conditions and teacher health and productivity, but few studies have looked comprehensively at teacher outcomes in relation to specific classroom conditions. The NYS Department of Health recently conducted a survey of teachers in non-New York City public schools. The purpose of the survey was to learn how teachers perceive classroom environmental conditions and how these conditions may impact teacher health and performance.

Methods:
Project staff and collaborators conducted a random statewide telephone survey of teachers to assess the following classroom attributes: indoor air quality (IAQ), housekeeping, climate, lighting and acoustics. Teachers were also asked questions about their health symptoms, how symptoms and classroom conditions affected them, and their home environment.

Results:
Among the 501 teachers responding, the most commonly reported classroom IAQ problems were dust (59%), dust reservoirs (42%) and odors from art supplies (32%). About 66% reported food eaten daily in classroom and 30% reported inadequate storage Over two fifths each reported the classroom being

too dry, cold or hot and 78% reported not being able to control the temperature via a thermostat. Among those with classroom windows, 90% reported that they could control glare, and that the lighting intensity was appropriate. Over 50% reported excessive noise and the most common source was from nearby classrooms or hallways (32%). Leading health symptoms included sinus problems (22%) and allergies/congestion (21%). Most symptoms tended to worsen during the day or week, and improve when away from school. Many classroom characteristics relating to IAQ, housekeeping, climate, lighting and acoustics were significantly associated with the increased likelihood of health symptoms after controlling for demographics and home environmental conditions. The strongest associations for having any symptom were classroom dryness, dust and inability to control temperature with a thermostat. For having any allergic symptom, the strongest associations were dryness, dust and classroom pets. Not being able to control glare was most strongly associated with having at least one lighting-related symptom and excessive noise from nearby classrooms and hallways was most strongly associated with having at least one acoustics-related symptom.

Conclusions:
Poor classroom indoor air quality, housekeeping, climate, lighting and acoustics were associated with health symptoms among this sample of teachers in NYS schools. These results are consistent with existing research and highlight the importance of healthy and functional indoor environments in the educational arena.

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Abstract ID: **1058214** Presentation Type: **Poster Presentation**

Title: **Injuries to hired crop workers in the United States ***

Committee: **Occupational Health**

Topic: **Occupational health disparities**

Keywords: **Agricultural work safety, Migrant Farm Workers, Occupational injury and death**

Abstract Text

Background:
Little empirical data are available examining the injury experience of hired crop workers in the United States (US). This study analyzed work-related injury data collected on these workers from the National Agricultural Workers Survey (NAWS).

Methods:
Data were collected through the NAWS for the federal fiscal years 1999, 2002, 2003 and 2004. These data provided descriptive injury characteristics and rate estimates from a sample of 13,604 crop farm

workers. SAS survey software was used to conduct the analyses to account for the complex NAWS sampling design

Results:
The worker-based injury rate was 2.6 injuries per 100 workers. When accounting for the number of weeks of farm work, the injury rate was 4.3 injuries per 100 full-time equivalents (FTEs). Injury rates per 100 FTEs did not vary significantly by age of the crop worker. The majority of the injuries occurred to male (84%) and Mexico-born (72%) workers. Settled farm workers accounted for the most injuries reported in the NAWS (60%), while shuttle migrants (those who travel more than 75 miles to find work, but do not migrate further once they have found work) had the highest injury rate at 7.2 injuries/100 FTEs. Workers reporting one or more health condition and workers reporting one or more musculoskeletal complaint had significantly higher injury rates compared to those with no health conditions or musculoskeletal complaints, respectively. Common injury events were overexertion from lifting (20%), being struck by hand held objects (13%), and falls to a lower level (10%). Injuries due to falls to a lower level accounted for the highest average number of restricted workdays (45 days).

Conclusions:
The use of hand tools, falls, and lifting overexertion injuries were identified as significant causes of injury among hired crop workers. Increased injury risk was also seen for crop workers with existing health or musculoskeletal complaints. FTE-based injury rates differed significantly from worker population-based rates and were more meaningful in assessing injury risks for hired crop workers. These results are useful for targeting injury prevention efforts and future research needs for this unique worker population.

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Abstract ID: **1062562** Presentation Type: **Poster Presentation**

Title: **Current Population Survey (CPS)'s utility for occupational health surveillance**

Committee: **Occupational Health**

Topic: **Other occupational health issues (i.e. underreporting)**

Keywords: **Occupational Health, Occupational Surveillance**

Abstract Text

Background:
The CPS has been the primary source of labor force statistics for the United States since 1947. The Census Bureau and Bureau of Labor Statistics jointly conduct the CPS as a population-based, in-person survey of ~57,000 households, representative of the U.S. civilian non-institutionalized population. Monthly, a core set of survey questions is administered to each household including variables on economic well-being, employment, multiple job-holders, absences, employment status (full-time, part-time), and wages. The strengths of the CPS include these labor force data, as well as

demographic data. Supplemental questions on selected topics are administered intermittently. Because the survey is repeated 8 times, CPS interviewers build a relationship with households and obtain a high response rate (94%). Previous and current supplements include: contingent and alternative work arrangements, computer and internet use, and displaced workers. As part of this project, we will be exploring the feasibility of including a supplement on Occupational Safety and Health.

Methods:
January 2008 CPS Public use data, including a Displaced Worker, Employee Tenure, and Occupational Mobility supplement were downloaded from the National Bureau of Economic Research(NBER). SAS was used to compute frequencies for basic monthly CPS variables, as well as supplement variables including number of workers displaced, job-changers and mobile workers, stratified by industry sector. Data are currently unweighted to explore whether sufficient numbers exist for more extensive analysis.

Results:
The January CPS included 151,937 total records with 134,163 interviews. This included 106,549 civilians age 15 or older and 62,569 employed individuals. As expected the largest number of respondents' primary job was in the Services sector with approximately 32,733 interviews followed by wholesale and retail trade with 10,122 and 8,561 individuals in the healthcare and social assistance sector. 88,894 individuals met the requirements to complete the Displaced Worker supplement and 57,444 to complete the Employee Tenure and Occupational Mobility Supplement.

Conclusions:
Data on economic well-being during the current recession and economic recovery is very important as is utilizing all data that are available to understand American workers' experience. The CPS is a rich source of information on workers and their job experiences and economic well-being is important to health. The CPS as a National population-based survey merits further exploration, especially for looking at population differences by race and ethnicity and work organization factors that may not be captured in nonpopulation-based surveys.

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Abstract ID: **1055415** Presentation Type: **Poster Presentation**

Title: **Using real-time Poison Control Center data for occupational injury sentinel event surveillance in Connecticut**

Committee: **Occupational Health**

Topic: **Successes, lessons learned, and challenges in occupational health surveillance**

Keywords: **Chemical and biological exposures, Occupational Surveillance, Workplace safety**

Abstract Text

Background:
The Connecticut Poison Control Center (CPCC) operates a 24-hour call center to provide information

about chemical exposures and toxicology. In September 2010, the Connecticut Department of Public Health's Occupational Health Program (DPH) began accessing case-based information from CPCC on a real-time basis to identify workplace injuries related to chemical exposures.

Methods:
The CPCC call center receives calls from medical professionals and the general public regarding potential toxicity secondary to unintentional or intentional chemical exposures. These calls are received by specially trained call center staff, who provide information to callers and enter information about each call into a database. DPH staff are able to access information in this database remotely and in real-time to extract information on cases that are either generated from a workplace or about an exposure that occurred in a workplace and/or to a worker. DPH staff have identified a number of chemical exposure types that are indicative of sentinel events of interest and require investigation.

Results:
In the last quarter of 2010, DPH identified 127 work-related calls received by CPCC. Of those, 11 represented sentinel event cases of interest that have led to investigations. These investigations have included such events as a hydrogen sulfide exposure in an asphalt road crew, pool maintenance workers exposed to chlorine gas, and workers exposed to cyanide at a manufacturing facility.

Conclusions:
The ability to utilize CPCC call center data for real-time case-based occupational injury surveillance has added a significant component to CT DPH's overall occupational illness and injury surveillance system, and specifically a methodology that has been notably absent in the past. We anticipate that our ability to more effectively and efficiently use CPCC data for real-time work-related sentinel event surveillance will continue to improve in the future, as it is utilized more frequently.

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Abstract ID: **1061451** Presentation Type: **Poster Presentation**

Title: **Employment of middle school students: Findings from the Massachusetts Youth Health Survey, 2009**

Committee: **Occupational Health**

Topic: **Examining occupational injuries and illnesses using state or national surveys**

Keywords: **Adolescent health, Occupational Surveillance, Special populations**

Abstract Text

Background:
Each year thousands of teenagers in the United States work. To date, most research on youth employment has focused on older teens (16-18 years old). Some studies of younger teens and pre-teens indicate younger youth are also working. Little information about where these younger children are working is available.

Methods:
The Massachusetts Youth Health Survey (MYHS) is conducted every other year in a random sample of middle and high schools and classrooms within those schools throughout the Commonwealth in conjunction with the Youth Risk Behavior Survey. Responses are weighted (i.e., adjusted for non-response and distribution of students by grade, sex and race/ethnicity) in order to be representative of all Massachusetts students. In 2009, questions about work for pay other than babysitting or yard work during the last year and the type of "place most recently worked at" were included in the MYHS. To describe type of work, students selected from a pick list that included the option "other, please specify". Middle school student responses to these two questions were analyzed. Narrative text responses describing type of work were reviewed to better characterize where middle school students report working, and to evaluate the students' understanding of the initial question and the performance of the pick list.

Results:
Data were collected from 2,859 middle school students from grades 6 through 8 in 69 schools. The overall response rate was 56%. Eighteen percent of students responded that they had been employed for pay in the past year. 460 students responded to the question about the type of place that they most recently worked. Of these, the most common responses were: other (52%), recreation or entertainment (12%), landscaping company (10%), restaurant (9%), and construction site (7%).
Additional analysis of 422 surveys with written text describing work found the most common response was paper route (15%), followed by sports-related (9%), for a neighbor (9%), shoveling (7%), and dog walking (6%). Eleven percent listed babysitting, yard work, or for a family member. Additional results will be presented by age, gender, race and ethnicity.

Conclusions:
Despite Massachusetts child labor laws prohibiting work (with few exceptions) by anyone under age 14, many middle school students are working, some in high risk industries. Outreach about child labor laws and health and safety for students and parents should begin before high school. Further refinement of employment questions and the pick list, as well as cognitive testing with middle school students is needed.

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Abstract ID: **1061991** Presentation Type: **Poster Presentation**

Title: **Implementing a pesticide poisoning surveillance system in Nebraska**

Committee: **Occupational Health**

Topic: **Acute pesticide poisoning surveillance**

Keywords: **Occupational Health, Pesticides, Surveillance**

Abstract Text

Background:

In 2010, the Nebraska Department of Health and Human Services initiated a pesticide poisoning (PP) surveillance program. This report summarizes existing PP data and initial surveillance approaches. There is a particular public health need for PP surveillance in Nebraska as available data indicates that the state has one of the top four highest PP rates in the country from 2000-2009.

Methods:
Existing data on PP in Nebraska includes hospital discharge data (HDD) and poison control center (PCC) data. PCC cases were obtained from the National Institute for Occupational Safety and Health (NIOSH) and were restricted to acute, work-related exposures that occurred from 2000-2009 among Nebraskans 16 years of age and older to these pesticide classes: disinfectants, fungicides, fumigants, herbicides, insecticides, repellents, and rodenticides. The rate of acute work-related PP was calculated and compared to the national rate.
PP cases in the HDD were obtained from the Nebraska Hospital Association from 2000-2009 and were identified based on an e-code of E861.4 or E863.0-E863.9; patients of any age were included. Descriptive analysis was conducted on the following variables: date of poisoning, pesticide class, gender, age, and zip code.

Results:
PCC data identified 81, 60, 58, 72, 51, 42, 46, 45, 37, and 46 occupational PP cases in Nebraska from 2000-2009, respectively. The annual rate of occupational PPs per 100,000 employed Nebraskans for the 10 year period was: 9.03, 6.67, 6.27, 7.68, 5.35, 4.43, 4.88, 4.72, 3.83, and 4.91, respectively. These rates were 2-4 times greater than the corresponding national rates (2.09, 1.84, 1.85, 1.82, 1.78, 1.83, 1.77, 1.68, 1.50, and 1.46, for 2000-2009, respectively).
HDD identified 173 hospitalizations and emergency department visits for PP in Nebraska from 2000-2009. Patients ranged in age from 0 to 90 (mean=24.0); 85 patients were female (49.1%) and 88 were male (50.9%). The number of poisonings based on the pesticide class were: rodenticides (n=49, 28.3%), other and unspecified insecticides (n=48, 27.7%), disinfectants (n=43, 24.9%), organophosphates (n=12, 6.3%), herbicides (n=10, 5.8%), organochlorines (n=7, 4.0%), fungicides (n=2, 1.2%), organochlorine and organophosphate (n=1, 0.5%), and mixtures of insecticides (n=1, 0.6%).

Conclusions:
Current surveillance data for PP in Nebraska exist, however their usefulness is limited because PCC data is not population-based and HDD lacks information on occupational exposures. The Nebraska PP surveillance program is identifying best surveillance practices expand upon the current data and institute a model PP surveillance and prevention program.

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Abstract ID: **1062364** Presentation Type: **Poster Presentation**

Title: **Maven on-the-go: Using an electronic disease surveillance system for a tuberculosis field investigation**

Committee: **Surveillance/Informatics**

Topic: **Electronic disease surveillance systems (EDSS, NEDSS, etc.)**

Keywords: **Electronic data, Occupational exposure, Risk Assessment**

Abstract Text

Background:
The Bureau of Epidemiology at The Houston Department of Health and Human Services (HDHHS) currently uses Maven® from Consilience Software. Maven is a tool for public health surveillance, disease out-break management, and reporting. The Bureau has completely configured Maven into a person-centered database. In July 2010, a local clinic notified the Bureau of possible tuberculosis exposure to individuals. Investigators used Maven to conduct interviews and collect data with real-time entry while in the field.

Methods:
A semi-structured interview programmed into Maven captured demographic, clinical, and administrative data. The team of investigators received “just in time” training for Maven before deployment into the field. Investigators entered responses from individuals with possible exposure into the Maven question package while in the field. As field operations concluded, a biostatistician analyzed the data using SAS JMP v8.02. The report was available as field staff returned to the central offices.

Results:
The team collected data from 48 individuals with possible tuberculosis exposure. Results of the investigation showed no association between disease and exposure. Suggestions included the implementation of safety measures to prevent future TB exposures in an occupational setting. Maven proved to be very versatile and allowed the team to adapt data collection to varying schedules and individual availability.

Conclusions:
The deployment of Maven for this incident allowed for real-time data entry and edit checks, as well as a quick turn around time for the distribution of reports. The findings suggest an electronic surveillance system is instrumental to the success of obtaining quality information efficiently.

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Abstract ID: **1058670** Presentation Type: **Poster Presentation**

Title: **Finding the needle in the haystack: Effective use of a syndromic surveillance system for active case-finding during investigation of a cluster of sodium azide poisoning cases ***

Committee: **Surveillance/Informatics**

Topic: **Effective interactions between epidemiology and informatics**

Keywords: **Electronic case reporting, Epidemiologic methods, Outbreak investigations**

Abstract Text

Background:
Although the focus of syndromic surveillance systems (SSS) has been early detection of outbreaks, the capture of real-time pre-diagnostic chief complaint data, and rapid accessibility of such health information may also serve other valuable functions during the course of outbreak investigations. Use of SSS for additional active case finding during the course of an outbreak has not been well described. In 2010, Health Department investigation of a point-source cluster of poisoning cases with unusual neurological manifestations provided an opportunity to explore the utility of SSS data for additional case-finding during an investigation.

Methods:
The outbreak investigation was initiated after four cases of acute illnesses with specific significant neurological symptoms were reported from unrelated patrons of a restaurant establishment. Based on initial clinical information, epidemiologic investigation and case-control study, a point-source food item was implicated and a toxicologic agent was considered as the likely etiology for the cluster. In order to quickly find additional potential cases and assess the extent to which other persons may have been affected, the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) database was mined to search for patients who may have presented to any of 18 area Emergency Departments (ED) with similar chief complaints within the designated timeframe.

Results:
A possible case was defined as any patient presenting to an area ED within the known temporal window of exposure, with chief complaints of either altered mental status (AMS), syncope, dizziness, tingling in the extremities, or low blood pressure (LBP). From the 1,827 total ED visits recorded in ESSENCE for that date, 81 possible cases were identified as presenting with at least one of the following chief complaints using this definition: AMS (38), dizziness (16), syncope (9), tingling (7), LBP (11). ED records for these patients were requested, and cases were excluded from further investigation if alternate diagnoses were well-documented on chart review. Of 29 cases which were subsequently selected for further investigation and interview, one additional new case belonging to this cluster was identified and confirmed.

Conclusions:
Syndromic Surveillance System data provided an expedient, accessible, and effective means for additional case-finding during the course of this outbreak investigation. Utilization of SSS databases may be a valuable adjunctive epidemiologic tool alongside traditional epidemiologic techniques in select circumstances.

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Abstract ID: **1058652** Presentation Type: **Poster Presentation**

Title: **Is school surveillance worth the work? Correlation of a web-based school influenza surveillance program with hospital syndromic surveillance and laboratory data**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Electronic data, Influenza surveillance, Surveillance**

Abstract Text

Background:
The establishment of a web-based school influenza surveillance program in Dallas County public schools in the fall of 2008 enabled real-time tracking of school absenteeism attributed to influenza-like illness (ILI). However, the accuracy of data obtained from school surveillance programs is not well known. We assessed the correlation of reported ILI rates in schools with those of emergency department (ED) visits for chief complaints of influenza (CCI) and laboratory-confirmed (LC) influenza during the 2008-2010 influenza seasons in Dallas County, Texas.

Methods:
Daily rates of total student absences and absences due to ILI were reported by nurses from 510 public schools through a web-based program. The daily percentages of ED visits by patients with CCI were captured from 18 area hospitals through the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE). Percentages of LC influenza were reported from 15 hospital laboratories. Rates of school-reported ILI, ED visits for CCI, and LC influenza were graphed over time and correlations were calculated using SAS 9.2.

Results:
School ILI rates correlated significantly with ED visits for CCI and LC influenza throughout the fall wave of the 2009 H1N1 pandemic ($r>0.83$, $p<0.04$). During periods of seasonal influenza activity from 2007-2009, trends between ED visits for CCI and LC influenza have been highly correlated ($r>0.85$ $p<0.03$). Immediately following the emergence of 2009 H1N1 (April-June), however, neither school ILI rates nor percentages of LC influenza correlated with percentage of ED visits for CCI ($r=-0.06$, $p>0.28$).

Conclusions:
School ILI rates, ED visits for CCI, and LC influenza correlated tightly during the 2009 fall period of H1N1 influenza activity. Although ED visits for CCI surged during the spring of 2009, this trend was not supported by either school ILI rates or LC influenza. Such findings indicate the value of school-based surveillance as an adjunctive tool in (verifying) assessing true influenza morbidity in a community.

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Abstract ID: **1061321** Presentation Type: **Poster Presentation**

Title: **Innovative methods in environmental scans for the user-centered redesign of**

BioSense

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Collaboration, Data/Surveillance, Surveillance**

Abstract Text

Background:
In 2003, the Centers for Disease Control and Prevention (CDC) launched the BioSense Program[1] as a nationwide integrated system of public health surveillance for the early detection and assessment of potential bioterrorism-related illness. The scope was broadened over subsequent years to address the changing needs of the public health community. CDC is currently redesigning the Program to enhance public health surveillance capabilities while retaining the original purpose of early event detection. This vision is consistent with the 2006 Pandemic and All-Hazards Preparedness Act and 2007 Homeland Security Presidential Directive-21, which call for regional and nationwide public health situation awareness, through an interoperable network of systems, built on existing state and local situation awareness capability.
The key feature of the BioSense Redesign is its user-centered approach. All phases of the project include engagement with state and local users and collaboration with public health professional organizations (Association of State and Territorial Health Officers, Council of State and Territorial Epidemiologists, National Association of City and County Health Officials, and International Society for Disease Surveillance [ISDS]). The environmental scan of the redesign project employs both traditional methods of investigation and innovative interaction with stakeholders.

Methods:
Efforts first focused on cataloging the data previously collected by collaborating organizations. Data gathered from ISDS Distribute Project[2] site profiles were used to create an initial Coverage Map[3] to provide a visually integrated jurisdiction-by-jurisdiction picture of the syndromic systems currently used in the United States. In addition, select data fields were abstracted to further characterize the surveillance activities in these locations. The map was then augmented with jurisdiction-specific information on contributing BioSense facilities (including Veteran's Administration hospitals, U.S. Department of Defense healthcare facilities, private hospitals, hospital systems, national laboratories, and national pharmacies). After the Coverage Map was launched, we began to identify stakeholders to serve as editors for the information posted in their jurisdiction. Further population of the map is then achieved using a crowd-sourcing[4] approach

Results:
The Coverage Map allows for the creation of tabulated and visual results, including number and types of jurisdictions conducting syndromic surveillance including those reporting to BioSense, number of emergency departments reporting, type of medical facility reporting, surveillance systems used, and calculated estimates of emergency department and population coverage. As of January 2011, 39 jurisdictions using syndromic surveillance systems were represented on the map.

Conclusions:
Creating a national picture of the current state of syndromic surveillance through a crowdsourced, interactive tool is an important facet of the BioSense Redesign and should be useful for monitoring syndromic surveillance practice over time. The user-centered approach reflected in the Coverage Map engages stakeholders and allows for a transparent exchange of information.

References

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[2] http://isdsDistribute.org
[3] http://BioSenseRedesign.org
[4] Crowdsourcing is a neologistic compound of "crowd" and "outsourcing" to describe a distributed problem-solving and production model. Tasks traditionally performed by and employee or contractor

are taken to a group of people or community (a crowd), through an "open call" to seek their contributions. (Retrieved December 29, 2010, from http://en.wikipedia.org/wiki/Crowdsourcing)

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Abstract ID: **1062256** Presentation Type: **Poster Presentation**

Title: **The utility of discharge disposition in emergency department electronic health records for influenza surveillance**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Data/Surveillance, Electronic data, Influenza surveillance**

Abstract Text

Background:
Outbreak management/investigation of all community outbreaks of influenza is problematic and should be based on severity. New York State (NYS) has an electronic emergency department (ED) syndromic surveillance system (EDSURV) tracking ED visits with chief complaint (CC) of fever as a proxy of influenza like illness (ILI). In order to monitor severity, the system has been enhanced to capture whether patients are admitted to the hospital.
Objective: To determine the timeliness and accuracy of discharge disposition data and to determine if tracking admissions from the ED added value for influenza surveillance. We also compared clinical characteristics of those fever patients who were admitted versus discharged to determine if some clinical characteristics were associated with higher admission rates.

Methods:
Design: Retrospective cohort.
Setting: Two NYS hospital EDs in electronic medical record system (EMR) from January 1, 2008 to December 31, 2009.
Population: All ED visits that met EDSURV CC fever syndrome filter.
Protocol: to chart review of randomly selected 300 records that were admitted to hospitals and 300 records that were discharged. We also determined clinical characteristics that were statistically different and present in > 50% of charts. For all the visits, we developed a time series plot of fever visits and fever admissions comparing the weekly influenza culture positive counts in the areas.

Results:
Of the 75,564 ED visits, 8,316 (11%) met the EDSURV CC fever syndrome definition, and of these 1,199 (14%) were admitted. Chart review confirmed that the disposition data entered at the time of discharge from the ED is 100% present and was correct in 98% with the chart. There were two clinical characteristics that were present in > 50% of the charts and were statistically different between admitted and discharged patients: Cough was more frequent in discharged patients than admitted (85% vs. 70%, p=0.001) and more admitted patients came from nursing home than discharged (18%

vs. 2%, p=0.0001). The time series plots showed peaks during the influenza season for ED fever visits but not for fever admissions.

Conclusions:
ED disposition data was available in the EMR at the time of ED discharge and was accurate. We found that admissions to the hospital with a CC of fever did not demonstrate peaks during the influenza season and may have limited usefulness in influenza monitoring. Mention of a nursing home resident was associated with a higher percentage of admissions.

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Abstract ID: **1061502** Presentation Type: **Poster Presentation**

Title: **Evaluation of the Behavioral Risk Factor Surveillance System (BRFSS) Asthma Call-back Survey, 2005â€“2009**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Asthma, Environmental Health, Surveillance**

Abstract Text

Background:
Asthma is a serious, chronic illness that affects approximately 20 million persons (including 6.2 million children) and costs society $41 billion (2007) annually in the US. Asthma is not a reportable condition, so essential data regarding the public health burden of asthma is obtained indirectly via national cross-sectional surveys, hospital discharge records, and insurance medical claims. The Adult and Child Asthma Call-back Surveys (ACSs) provide a detailed assessment of asthma-related quality-of-life.

Methods:
The ACS was assessed using the 2004 MMWR's Updated Guidelines for Evaluating Public Health Surveillance Systems. To gain a better understanding of the value and limitations of ACS data by end-users, I performed a convenience sample survey of states that use the BRFSS Core. I evaluated the ACS across the following Guidelines categories: Usefulness, Simplicity, Flexibility, Stability, Acceptability, Data Quality, Representativeness, Timeliness, and Sensitivity.

Results:
All 50 states, District of Columbia, Puerto Rico (PR), Guam, and the Virgin Islands participate in the BRFSS Core; 35 states, DC, and PR participate in the ACS (in 2009). The convenience sample survey yielded 6 of 8 responses for those that participate in the ACS and 3 of 7 responses for those that do not. Pertinent results are represented here. Usefulness: Surveyed states that use the ACS found it

useful for assessing risk factors for asthma management (6/6); providing information to help improve clinical, behavioral, social, or environmental asthma control practices (6/6); providing assessments of asthma morbidity (4/6); and permitting evaluations on the effect of asthma control programs (3/6). Simplicity: Complex (complicated survey design). Flexibility: Limited; the states can only petition to add/subtract/edit questions. Data Quality: Strong; states found the data to be reliable and easy to manage, analyze, and interpret. Acceptability: Variable; CDC-provided funding is the primary factor driving participation. Representativeness: Variable; funding-dependent, low for children in most participating states. Timeliness: Strong; ACS database is returned to the states in a timely fashion after data collection is completed.

Conclusions:
Stability, data quality, and acceptance are the strongest attributes of the ACS given sufficient funding. Limitations arise from lack of funding, sample size, and cost especially for those states not using ACS. Several states have inadequate resources to analyze the data while other states need to aggregate data over several years to get a sufficient sample size for analysis.

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Abstract ID: **1048720** Presentation Type: **Poster Presentation**

Title: **Facilitating influenza surveillance capabilities using an electronic health record system**

Committee: **Surveillance/Informatics**

Topic: **Electronic disease surveillance systems (EDSS, NEDSS, etc.)**

Keywords: **Data/Surveillance, Influenza surveillance**

Abstract Text

Background:
Electronic health record (EHR) systems provide a complete record of patient encounters and are an integral part of clinical workflows for EHR-enabled practices. This pilot project provides an example of improved capabilities using EHRs for determining the weekly incidence of influenza like illness (ILI), acute respiratory illness (ARI), and laboratory confirmed influenza among persons seeking medical care for acute respiratory infection. The coordination of laboratory testing and determining denominators for practice population coverage allows for a more definitive estimation of outpatient visit rates for influenza.

Methods:
Five EHR-enabled primary care providers within New York City agreed to participate in this study and were provided with training and a study protocol specific to the project. EHR-based data capture forms specific to this project were developed to facilitate data collection. For example, if a patient met the symptom criteria for ARI, a nasopharyngeal sample was collected for rapid influenza diagnostic testing. However, if the patient also met the symptom criteria for ILI, an additional sample was collected for PCR testing to confirm whether the ILI was a result of influenza and if so, which subtype it was (A,B). De-identified surveillance data was transmitted electronically (via automated secured FTP

transmission) to the New York City Department of Health and Mental Hygiene (NYC DOHMH), which was only accessed with permission. The data was then compiled using a statistical software for reporting.

Results:
Overall, the use of an EHR system for influenza surveillance has provided a significant improvement over manual methods in terms of effectively coordinating efforts of providers, laboratory, and project managers, while reducing time and manpower. The primary issues encountered included human error at the provider end, and was related to practice workflow and level of staff experience in dealing with the project workflow. These issues were resolved by additional training and systematic troubleshooting by NYC DOHMH staff.

Conclusions:
The establishment of disease surveillance networks has become an important objective in pandemic preparedness. This pilot project provides a model as to how EHR systems can facilitate the integration of disease surveillance efforts into routine primary care, while minimizing the burden on providers. In addition, it enables providers to gain experience in disease surveillance, which supports the overall objectives of improved public health. Despite this, the key to realizing improvements with respect to surveillance is the proper integration of the EHR system and proper staff training.

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Abstract ID: **1059474** Presentation Type: **Poster Presentation**

Title: **Development of a web-based environmental disease surveillance program in Iowa**

Committee: **Surveillance/Informatics**

Topic: **Electronic disease surveillance systems (EDSS, NEDSS, etc.)**

Keywords: **Environmental Health, Surveillance**

Abstract Text

Background:
The Iowa Administrative Code 641-Chapter 1 outlines diseases and conditions that are required to be reported to the Iowa Department of Public Health (IDPH). In the past there was not a process or system in place to track and analyze reports for many of the environmental diseases. Therefore there

was no accurate statewide data available on environmental diseases, poisonings prevalence or incidence.
In June of 2008, IDPH conducted a self-assessment of the department's ability to meet the state criteria for public health accreditation. The need for a web-based surveillance system for environmental diseases was identified in three different areas of the evaluation, including Protect Against Environmental Hazards, Prevent Epidemics and the Spread of Disease, and Communication and Information Technology .

Methods:
In January of 2010, the Environmental Health Division at IDPH developed an environmental disease team to create a web-based surveillance system for reportable environmental diseases. The team conducted a force field analysis for utilizing the existing Iowa Disease Surveillance System (IDSS) for environmental disease surveillance and prioritized diseases for inclusion in the new system. The team developed a timeline for building and launching the system and a protocol for conducting surveillance.

Results:
The environmental disease team identified many benefits of utilizing IDSS for environmental disease surveillance, including its cost effectiveness, familiarity to Iowa disease reporters and laboratories, sustainability and flexibility for adding additional diseases. Five reportable environmental poisoning and conditions were added to IDSS; Arsenic, Cadmium, Mercury and Carbon Monoxide Poisoning and Methemoglobinemia. A flow chart of the process of building the surveillance system and a visual comparison of the past and current organization will be presented at the CSTE conference. Inclusion of environmental diseases in IDSS has resulted in increased reporting and improved knowledge of risk factors for these poisonings and conditions.

Conclusions:
Building the web-based surveillance system formalized the surveillance process, allows for data analysis, and has helped to identify additional surveillance needs, including further developing case definitions and including additional environmental diseases. Future actions include educating healthcare and environmental health partners on the reporting requirements and the need for a data dissemination plan.

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Abstract ID: **1059217** Presentation Type: **Poster Presentation**

Title: **Evaluation of the Centers for Disease Control and Prevention's Electronic Disease Notification system in Illinois**

Committee: **Surveillance/Informatics**

Topic: **Electronic disease surveillance systems (EDSS, NEDSS, etc.)**

Keywords: **Evaluation, Migrant health, Surveillance**

Abstract Text

Background:

In 2008, 59% of tuberculosis (TB) cases reported in the United States occurred in foreign-born persons. Before entering the United States, all applicants for permanent residency and refugees are required by law to undergo a medical evaluation that includes TB screening. All refugees and those immigrants with inactive or latent TB conditions are strongly encouraged to be evaluated by US health departments after arrival. The Centers for Disease Control and Prevention's (CDC) Electronic Disease Notification (EDN) system is designed for migrant tracking and to notify receiving state and local jurisdictions of arriving immigrants and refugees with identified TB conditions. EDN has a module designed to capture data from domestic follow-up medical evaluations, but no systematic evaluation of its use has been performed. We conducted this surveillance system evaluation to determine if the module is meeting its objective in Illinois.

Methods:
We evaluated EDN's follow-up module by using CDC's "2001 Updated Guidelines for Evaluating Public Health Surveillance Systems." All Illinois-bound immigrants and refugees with TB conditions arriving during October 1, 2008 - September 30, 2010, were included. We reviewed EDN data available as of October 15, 2010, to assess completeness, which was based on variables selected by Illinois health department co-investigators. Investigators reviewed medical records and entered previously unrecorded data into EDN. We compared pre- and post- collection data in EDN to evaluate the follow-up module's sensitivity and representativeness. We also conducted interviews with stakeholders to assess the module's acceptability.

Results:
During the evaluation period, 1,807 immigrants and refugees with TB conditions arrived in Illinois. The proportion of complete follow-up evaluation records increased from 24% to 94% following medical record review and data entry. Sensitivity of follow-up module data was determined to be 25%, as compared to post-collection data. Follow-up data in EDN were not representative of follow-up evaluation efforts; only 36% of migrants who underwent follow-up evaluations were captured in EDN. Stakeholder acceptability, as measured by participation rate, was low overall at 25%, although record completion rates varied by county from 0% to 100%. Most stakeholders indicated they did not participate regularly.

Conclusions:
This evaluation demonstrated that use of EDN's follow-up module is low in Illinois and does not accurately portray follow-up evaluation efforts. Changes to EDN are under way to increase its effectiveness as a TB surveillance system. As these changes occur, additional guidance, training, and resources for health departments may improve use of this module.

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Abstract ID: **1060055** Presentation Type: **Poster Presentation**

Title: **Assessing the completeness of surveillance for Guillain-BarrÃ© syndrome during the influenza A(H1N1) 2009 vaccination campaign: New York State Emerging**

Infections Program

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Influenza / Pandemic influenza, Surveillance, Vaccine safety**

Abstract Text

Background:
In 2009, CDC recruited Emerging Infections Programs (EIP) to conduct real-time surveillance for Guillain-Barré syndrome (GBS) cases hospitalized during the 2009-2010 influenza season to quickly identify potential associations between the 2009 influenza A (H1N1) vaccine and GBS. Inherent delays in hospital reporting prompted the New York State (NYS) EIP to utilize alternative surveillance methods to improve timeliness and completeness of reporting. Throughout the reporting season, the NYSEIP compared completeness of physician-based reporting with the more traditional surveillance methods using hospital discharge data.

Methods:
Surveillance was conducted statewide, excluding New York City residents. A Clinical Network (CN) of over 2,500 neurology practices was established in the NYS catchment area of ~11 million residents. The CN was requested to report all GBS cases in NYS residents hospitalized from October 2009 through May 2010. Active surveillance was conducted in 150 hospitals/neurology services through bi-weekly phone calls/emails to encourage timely reporting of all suspect cases. Contracted nursing staff were utilized for medical chart reviews using the Brighton Collaboration Case (BCC) Criteria for GBS. All confirmed/probable cases were interviewed to obtain vaccination history.
Using ICD-9 code 357.0 for GBS, hospital discharge data from the Statewide Planning and Research Cooperative System (SPARCS) were utilized to identify unreported cases and evaluate completeness of the CN surveillance system.

Results:
Among NYS residents with admission between October 1, 2009 and May 31, 2010, 111 suspect cases were reported through the CN; 91 (82%) met confirmed/probable case definition. By comparison, after de-duplication and data cleaning, 210 SPARCS reports were identified of which 130 (62%) met confirmed/probable case definition. In total, 140 confirmed/probable cases were identified: 81 by both systems (58%), 10 (7%) by the CN only, and 49 (32%) by SPARCS only. Over two-thirds of cases not captured by the CN were hospitalized either very early or late in the season. The CN had a median reporting time of 12 days (range 0 - 127) compared to 131 days (range 58 - 196) for SPARCS.

Conclusions:
While the CN failed to identify one-third of GBS cases during the study period, it was a more timely surveillance system compared to SPARCS. Cases missed by the CN may have been due to early logistical problems, reporter fatigue, and confusion about the need to report non-vaccinated cases. The support from the medical community to conduct this surveillance effort was reflected in the quick responses from physicians previously unaccustomed to reporting to the state.

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Abstract ID: **1055718** Presentation Type: **Poster Presentation**

Title: **Utilization of electronic laboratory results in real-world public health surveillance ***

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Electronic laboratory reporting (ELR), Surveillance**

Abstract Text

Background:
Electronic laboratory results (ELRs), are becoming increasingly more common as inputs to public health surveillance. The expectation is that receipt of electronic laboratory results should result in more complete and timely case reporting and more accurate data. ELRs are received by the Florida Department of Health (FDOH) on a daily basis. Results which meet the threshold for public health reporting are then included in the state's reportable disease surveillance system (Merlin) where they are immediately available to public health investigators. Results from laboratories not participating in ELR are entered by hand by public health staff.

Methods:
Cases of reportable diseases with attached laboratory results entered into Merlin between 2005 and 2010 were extracted, excluding chronic hepatitis B and C and lead poisoning. Cases and laboratory results were then analyzed for the presence or absence of electronic laboratory results as compared to hand-entered results. The two categories of laboratory results were then compared within each reporting year for timeliness, data element completeness, and changes in reporting volume over time (results pending).

Results:
In 2005, Merlin received approximately 3,000 ELRs from the state's public health lab, FDOH's only ELR partner at the time. The number of records sent and consumed did not change much until 2007 when a large commercial reference laboratory was integrated into the ELR process. The number of ELRs consumed in Merlin rose to over 11,000 by 2010, representing eight laboratories. The proportion of laboratory results that are received electronically as well as the number of reported cases with ELRs has also increased. In 2005, 18% of laboratory results associated with reported cases were ELRs. That proportion rose to 50% in 2010. In 2005, 17% of reported cases in Merlin had at least one ELR record associated with the case; that proportion rose to 46% in 2010. There are still some hand-entered laboratory results (N=229) from laboratory systems which are also sending their results electronically.

Conclusions:
As of the end of 2010, FDOH is receiving ELRs from laboratory systems which represent approximately 60% of the state's estimated reportable disease testing volume. This is close to the real-world observed proportion of reported cases with associated ELRs, which was 50% in 2010. Possible duplicate electronic and manual entry of results requires further investigation.

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Abstract ID: **1059089** Presentation Type: **Poster Presentation**

Title: **Evaluation of the Virginia Pregnancy Risk Assessment Monitoring System, 2007-2010**

Committee: **Surveillance/Informatics**

Topic: **Surveillance Indicators**

Keywords: **Evaluation, Infant health, Surveillance**

Abstract Text

Background:
The Virginia Pregnancy Risk Assessment Monitoring System (Va PRAMS) is an ongoing, population-based surveillance system implemented in 2007 to identify and monitor trends in selected maternal behaviors during the preconception, pregnancy, and postpartum periods. The system supplements birth certificate data with survey data collected from women by mail or telephone within 2-6 months postpartum. The goal of Va PRAMS is to reduce low birth weight and infant mortality by using this data to inform program and policy decision-making. Va PRAMS has been consistently challenged by low survey response rates with successful completions by 57% and 53% of sampled women in 2007 and 2008, respectively.

Methods:
A comprehensive evaluation of Va PRAMS began in September 2010 to assess system attributes and develop recommendations for improving survey completion rates. Information was gathered from internal and external stakeholders through surveys, focus groups, and semi-structured interviews. Additionally, 2007-2010 operational data obtained from WebCATI, 2007-2008 PRAMS survey data, and vital records data were analyzed and interpreted.

Results:
Preliminary results suggest challenges in adhering to the PRAMS protocol for timing and frequency of telephone interviews, and appropriateness of the incentive for the target population.

Conclusions:
Initial recommendations are to vary time of day for phone interviews, maximize number of call attempts, and change the incentive to achieve optimal response rates. Evaluation findings will be used to perform experiments designed to test the impact of operational changes in the upcoming PRAMS year.

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Abstract ID: **1058399** Presentation Type: **Poster Presentation**

Title: **Improving the logic for hepatitis case reporting found in the 2010 CSTE Position Statements**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Communicable disease, Electronic laboratory reporting (ELR), Hepatitis**

Abstract Text

Background:
Prompt public health reporting of viral hepatitis is crucial for disease control. Manual review of case reporting criteria within the 2010 CSTE Position Statements for viral hepatitis revealed logical inconsistencies that could result in duplicate reporting. We aimed to systematically review the logic to identify problems, particularly when one set of logic resolves 'true' for more than one position statement.

Methods:
We reviewed the narrative criteria for case identification (section VI-A) for CSTE Position Statements related to viral hepatitis (A, chronic B, acute B, past and present C, and acute C). Narrative criteria were compared to the tabular logic in section VI-B. SQL-like pseudocode was used to model logical expressions for reporting criteria. A Boolean truth table generator was used to create potential logic sets. We analyzed overlap among logic sets that would trigger reports (ie, cause duplicate reports) and identified irrelevant logic sets that may overcomplicate the detection logic (given the presence of simpler logic to identify the same case).

Results:
Narrative descriptions of criteria were confusing and not easily converted to machine logic. Tabular representations were somewhat easier to interpret but still contained errors and unintuitive semi-conjunctive-disjunctive logic. Pseudocode for modeling criteria resulted in a more natural and less error prone alternative representation for determining whether a case should be reported.
The tabular hepatitis A logic revealed problems: 1) a report would be generated based on clinical symptoms alone, which is not consistent with current practice, and 2) the simple 'sufficient' reporting criteria (HAV IgM +) obviates the need for the more complicated logic included.
The tabular hepatitis B and C logic also revealed 'sufficient' logic that obviates more complex logic, as well as logic that will result in duplicate reporting. For example, we included 13 symptoms and 3 laboratory results to generate a truth table for hepatitis C. The table yielded 8192 combinations, of which 3584 (44%) overlapped with both acute and 'past and present' hepatitis C reports. Similarly, among the 4096 combinations for hepatitis B, 3584 (87%) overlapped between acute and chronic hepatitis B.

Conclusions:
The tabular logic was insufficient to discriminate reportable events and may be overly complicated given the presence of simpler logic to trigger reports. We recommend a) using pseudocode to represent logic and generate boolean logic truth tables that explicitly describe the criteria; and b) similar review of other Position Statements.

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Abstract ID: **1060526** Presentation Type: **Poster Presentation**

Title: **Examining the impact of a change in reporting on national surveillance of Shiga toxin-producing Escherichia coli serogroups in two surveillance systems: 1996 through 2008**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Enteric infectious diseases, Foodborne disease, Surveillance**

Abstract Text

Background:
Information about Shiga toxin-producing Escherichia coli (STEC) serogroups is important epidemiologically in monitoring patterns in incidence. Severe illness is most strongly associated with STEC O157. Non-O157 STEC, a diverse group that varies in virulence, comprises over 50 other serogroups. Developments in laboratory assays for the detection of Shiga toxins has led to increased reporting of non-O157 STEC. Variation in both virulence and reporting by serogroup highlight the importance of capturing serogroup data through national surveillance systems. All STEC infections are nationally notifiable and data are collected through two main national surveillance systems: the case-based National Notifiable Disease Surveillance System (NNDSS), and laboratory-based Public Health Laboratory Information System (PHLIS). The way serogroup data is reported to PHLIS has remained stable over time. NNDSS re-categorized reporting for STEC to a singular event code in 2006, eliminating unique event codes used previously for O157, non-O157, and non-serogrouped STEC infections. We examined the impact of these reporting changes in NNDSS.

Methods:
We evaluated reporting of all culture-confirmed STEC infections in NNDSS and PHLIS before and after the introduction of the singular STEC event code in NNDSS in 2006, comparing data from 1996-2005 to 2006-2008. The number of reports and states reporting to each system were analyzed and further stratified by serogroup category: STEC O157 and non-O157 STEC.

Results:
Pre reporting change: 1996-2005. The pattern of all culture-confirmed STEC infections was similar for PHLIS and NNDSS, with an annual average of 24% more reports in NNDSS. There was little difference in the number of states reporting O157 STEC to each system; however, an annual average of 10 states reported non-O157 STEC to PHLIS compared with 27 states reporting to NNDSS. Post reporting change: 2006-2008. The gap in the number of STEC reports between the two systems expanded; on average, NNDSS had 55% more STEC reports than PHLIS. Comparison of reporting to systems by serogroup could not be conducted due to the elimination of serogroup information in NNDSS.

Conclusions:
Although more states report to NNDSS, PHLIS is the only national surveillance system that provides STEC serogroup information. Therefore, to best monitor national STEC trends, we recommend that states report to both systems so that serogroup information from culture confirmed cases is captured. However a more integrated surveillance system should be a goal. Furthermore, to improve surveillance data for STEC, we recommend that NNDSS implement unique event codes for STEC serogroups.

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Abstract ID: **1060117** Presentation Type: **Poster Presentation**

Title: **Use of the Community Assessment for Public Health Emergency Response (CASPER) in North Carolina, 2003 to 2010**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Challenges and Opportunities, Community health assessment, Local epidemiology**

Abstract Text

Background:
Community Assessment for Public Health Emergency Response (CASPER) refers to a set of tools and methods designed by the Centers for Disease Control and Prevention (CDC) to collect rapid, reliable, and accurate community-based public health information at low cost. Originally developed for disaster response, CASPER was previously referred to as a rapid needs assessment. North Carolina (NC) public health has used CASPER since 2003 to collect local population-based public health information during both emergencies and routine public health practice.

Methods:
In May 2010, we surveyed preparedness coordinators at local health departments in NC using an online questionnaire to determine the most common applications of CASPER, perceived value, and intentions for future use. The survey results were analyzed using Excel and SAS.

Results:
Fifty-two (61%) of 85 LHDs representing 65 of the 100 counties in NC responded to the survey. CASPER has been used 46 times by 28 LHDs during the study period (2003 - 2010); most commonly for community health assessments (CHA; 20 times) and exercises (11 times). Thirty-one of 52 (67%) LHDs indicated they were likely to use CASPER in the future; most commonly for CHAs (28 of 31, 90%), post-disaster response (27 of 31, 87%), and special topic surveys (21 of 31, 68%). However, 70% of LHDs reported a lack of or outdated equipment (e.g., handheld computers, GIS software), and 65% reported a deficiency in trained staff. Among the LHDs with prior knowledge of CASPER, more reported that they were likely to use CASPER in the future (25 of 31, 81%) than not (6 of 31, 19%), suggesting that LHDs with knowledge of CASPER perceive it to be a valuable tool.

Conclusions:
Our findings demonstrate experience and opportunity to use CASPER for community based data collection needs outside of a disaster setting, such as for CHAs, environmental health, and other targeted research projects with clearly defined objectives. The continuing interest in using CASPER by LHDs with knowledge of the process indicates that CASPER is a tool valued by these LHDs. However, technology and training needs are continued barriers. New technologies, e.g., SMART phones, might help overcome these barriers.

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Abstract ID: **1056331** Presentation Type: **Poster Presentation**

Title: **Development of a socioeconomic index to measure disparities in adults with diabetes, Puerto Rico, 2009**

Committee: **Surveillance/Informatics**

Topic: **Surveillance Indicators**

Keywords: **Diabetes, Epidemiology, Social inequalities**

Abstract Text

Background:
Socioeconomic status is one of the social determinants of health. The Behavioral Risk Factor Surveillance System (BRFSS) collects data on three major socioeconomic indicators: education level, annual household income, and employment status. The use of only one socioeconomic indicator as a predictor of socioeconomic position may not reflect the reality of the Puerto Rican population. The study aims to describe the socioeconomic profile of adults with diabetes in Puerto Rico (PR), to develop a socioeconomic index (SEI), and to determine if there is a difference between adults with diabetes and those without it in terms of their socioeconomic status.

Methods:
Data gathered from the 2009 PR BRFSS were analyzed to describe the socioeconomic characteristics of adults with diabetes. The SEI, generated by integrating the three socioeconomic indicators, comprised three categories: low, middle, and high levels. Descriptive statistics and Pearson's Chi-square test were used in the analysis.

Results:
In 2009, the prevalence of diabetes in adults in PR was 12.9%. Almost 60% of the adults with diabetes belonged to low socioeconomic level. In contrast, the majority of the adults without diabetes (62.1%) were in middle or high socioeconomic levels. The percentage of adults with diabetes and those without it differ significantly in terms of socioeconomic status (low: 59.9% vs 37.9%; middle: 26.3% vs 38.8%; high: 13.8% vs 23.3%) ($p < 0.001$).

Conclusions:
The study provides additional evidence of the inverse association between socioeconomic status and diabetes. Further research is needed to identify why risk factors implicated in diabetes are more prevalent in underprivileged areas.

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Abstract ID: **1056330** Presentation Type: **Poster Presentation**

Title: **Epidemiological and preventive care profile of adults with diabetes in Puerto Rico: A practical use of the BRFSS optional diabetes module, 2009**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Diabetes, Epidemiology, Surveillance**

Abstract Text

Background:
The optional diabetes module of the Behavioral Risk Factor Surveillance System (BRFSS) was first made available to Puerto Rico (PR) in 1999. The diabetes module collects information on preventive care, self-management, and diabetes education.

Methods:
Data gathered from the 2009 PR BRFSS were analyzed to construct an epidemiological and preventive care profile of adults with diabetes in PR. Data were weighted to obtain estimates representative of the total adult population in PR.

Results:
The prevalence of self-reported diabetes in PR was 12.9%. Most subjects with diabetes were age ≥ 45 years (85.1%), women (54.5%), were diagnosed at age ≥ 35 (83.5%), were covered by health insurance (96.0%), and belonged to a low socioeconomic level (59.9%). Among all adults with diabetes, 30.2% were using insulin, 46.4% practiced self-monitoring blood glucose, and 81.4% examined their feet at least once a day. In the last year, 89.1% visited a health care provider for diabetes care, 78.2% had the hemoglobin A one C (HbA1C) checked, 49.0% had their feet examined at least once by a health care provider, and 60.4% received a dilated eye examination. Only 34.8% of the adults with diabetes took a course or class in how to self-manage diabetes.

Conclusions:
PR BRFSS diabetes module provides the evidence-base data required by the public health system to evaluate preventive care in diabetes and to trace strategies focused in reducing the burden associated with diabetes and diabetes-related complications.

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Abstract ID: **1060387** Presentation Type: **Poster Presentation**

Title: **A Framework for modeling data elements used for public health case reporting ***

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Electronic case reporting, Health information exchange, Standards**

Abstract Text

Background:
When healthcare providers encounter a patient with a reportable disease (e.g., hepatitis A), public health authorities request selected information in the public health case report (PHCR). The CSTE Position Statements for reportable conditions include a section where the author specifies the requested information in an unstructured format, leading to unintended ambiguity and unnecessary variation in the data requested from an electronic health record. CDC/CSTE Case Report Standardization Workgroup (CRSWg) identified a need for standardization of the data elements across CSTE Position Statements. We aimed to evaluate the data elements requested in the 2010 CSTE Position Statements and propose a framework for ongoing development and maintenance of data elements requested in PHCRs.

Methods:
We analyzed data elements (section VI-C) found within 10 CSTE 2010 Position Statements for reportable conditions. We grouped data elements based upon their typical location within EHR modules. Then, we identified different data elements indicating the same concept across different Position Statements. We took the data element terms specified and modeled the information into question and answer lists using vocabulary standards. Data elements were matched to LOINC codes for questions and other coding systems (e.g., SNOMED-CT) for answers. We will compare results of this analysis with sections identified in HL7 structured documents and the CDA Implementation Guide for Public Health Case Reporting.

Results:
For the 10 Position Statements, there were 107 unique data elements specified. Most data elements can be mapped using the proposed framework, reducing the number of concepts requested and better matching expectations of EHR data. For example, upon review of data elements for history of exposure for procedures in the five Hepatitis position statements, we harmonized fifteen unique data elements into one question and six concepts within one answer list. We modeled data to account for the time frame of interest for each disease without requiring a new LOINC code for each disease specific data element. We obtained similar results for risk factors and other data elements. We will request that the Clinical LOINC committee review our models; updated recommendations will be presented at CSTE.

Conclusions:

The framework will help epidemiologists to create, review, and revise case report content for PHCRs and implementers to map CSTE data elements to EHR data elements. Coding helps eliminate unclear semantics, clarifying reporting requirements. Mapping each data element to a standard vocabulary facilitates data exchange, public health decision support, and case notification.

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Abstract ID: **1061886** Presentation Type: **Poster Presentation**

Title: **Using sentinel surveillance system to monitor seasonal and novel H1N1 influenza infection in Houston, Texas: Outcome analysis of 2008-2009 flu season**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Epidemiology, Infectious Diseases, Influenza surveillance**

Abstract Text

Background:
The advent of the novel H1N1 virus prompted Houston Department of Health and Human services (HDHHS) to use the existing sentinel surveillance system to effectively monitor the situation of novel H1N1 in the Houston area. The objective of this study was to evaluate the demographic characteristics and common symptoms associated with confirmed cases of seasonal influenza and Novel H1N1 reported to HDHHS between October 2008 and October 2009.

Methods:
A total of 30 providers were randomly selected using the probability proportional to size (PPS) sampling technique to participate in a sentinel surveillance system. The system was used to effectively monitor both seasonal and novel H1N1 in the Houston metropolitan area. These providers collected and submitted a total of 1,122 specimens for testing at HDHHS laboratory from patients with Influenza-like illness (ILI) symptoms who visited their clinics during the period October 2008 and October 2009. These data formed the basis of the current study. Data obtained were subjected to both descriptive and inferential statistical analyses using SAS version 9.1.3 software.

Results:
Overall a total of 1,122 ILI cases were reported to HDHHS by sentinel providers and tested by HDHHS laboratory. Of this number 296 (67.5%) specimens tested positive for influenza A; 140 (32.0%) for influenza B, and 2(0.46%) for influenza A/B. Two hundred and fifty-nine (59%) were confirmed cases of seasonal influenza and 179 (41%) were novel H1N1 subtype. The median ages for seasonal influenza and novel H1N1 virus were 7 and 8 years, with majority of the cases reported among children of age 5-9 years. Fever was the most common symptom reported among patients with seasonal flu and novel

H1N1, followed by cough. Twenty-three percent (23%) of patients who were vaccinated against seasonal flu prior to the epidemic were infected with novel H1N1 virus.

Conclusions:
The sentinel surveillance system provided timely data on the circulating ILI that assisted in making decisions regarding response activities for both seasonal and novel H1N1 influenza.

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Abstract ID: **1054828** Presentation Type: **Poster Presentation**

Title: **Improving surveillance data quality: Influenza Incidence Surveillance Project**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Data collection, Influenza surveillance, Surveillance**

Abstract Text

Background:
Maintaining high quality surveillance data is challenging. For the past two years, the Florida Department of Health (FDOH) has participated in the national Influenza Incidence Surveillance Project (IISP) coordinated by the Council of State and Territorial Epidemiologists and Centers for Disease Control and Prevention. This project monitors influenza incidence in selected outpatient clinics and urgent care centers. IISP sites collect respiratory specimens, and accompanying patient demographic information, for weekly data submission to FDOH. During the 2009-2010 influenza season, major gaps in the quality of data submitted by participating physicians were documented even though the data was readily available to participating sites. For example, race and sex were reported as unknown for 13.9% of specimens, and ethnicity for 30% of specimens.

Methods:
To increase data quality submission by sites for year two of the project (2010-2011), a full-time

employee was hired to coordinate the project. At the start of the 2010-2011 season, provider site-specific refresher trainings were held focusing on protocol changes and data collection and submission requirements. Each week, provider submitted data is reviewed; aggregate and cumulative patient data are compared weekly to identify any missing or incorrect data. Discrepancies are identified and resolved within days of entry and weekly reports are sent to participating sites. Enhancements were also made to the web-based data collection system.

Results:
Since implementation of these strategies in year two, the percentage of patient records submitted with unknown sex has been reduced to zero, records with unknown race have decreased to less then one percent and records with unknown ethnicity have decreased to 1.35%. Site contact varies weekly depending on number of specimens submitted but takes anywhere from 2-6 hours per week for all five participating sites.

Conclusions:
Providing reporting specific instructions to participating sites did not result in sites submitting high quality data. Active follow up which includes contacting the physicians weekly is the most important step to achieving high quality data submission. Resources required to maintain this level of follow-up are not insignificant, but have decreased with time. Data quality issues continue even with weekly follow-up indicating close monitoring of data submission is an on-going project need. Successful strategies and lessons learned for improving surveillance data quality from IISP can be applied broadly to other surveillance systems.

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Abstract ID: **1059534** Presentation Type: **Poster Presentation**

Title: **An evaluation of a facsimile-based system for monitoring influenza and pneumonia deaths in Pennsylvania, during the 2009-2010 novel H1N1 influenza pandemic**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Data/Surveillance, Infectious Diseases, Influenza / Pandemic influenza**

Abstract Text

Background:
Mortality tracking is an important modality for defining the severity of seasonal influenza, and is especially critical during a pandemic. Influenza mortality surveillance is traditionally done using the 122 Cities Mortality Reporting System (national MRS), which includes six Pennsylvania cities. To address inherent delays, we implemented an alternative death reporting system in Pennsylvania shortly after the onset of the 2009-2010 H1N1 influenza pandemic.

Methods:
The new facsimile-based system involved reporting of deaths by a registrar or Division of Vital Records Public Office in ten sentinel sites around the state, including the six Pennsylvania cities that participate

in the national MRS. Sentinel sites had a total population of about 3.3 million persons in 2009 or 26.3 of the State's population. Registrars were requested to immediately send copies of death certificates that had listed pneumonia or influenza (P&I) as the underlying or contributing cause of death. Each registrar was compensated, and when necessary, provided with a facsimile machine. The traditional reporting to the national MRS was maintained.

Results:
During May 2009-November 2010, sentinel sites reported 45,053deaths of which 2,697(6.0%) listed P& I. Among the P& I deaths, 1,098 (40.7%) were received within 2 days after death and 2070 (76.8%) within 4 days. In contrast, most reports through the national MRS system were received 7-14 days after death. Because of improved timeliness, this system detected peak of P&1 deaths in 2010 a week before national MRS. The total cost of the system was $14,771. Registrars readily accepted facsimile machines and found them more reliable than the Web, especially in rural areas where Internet connectivity is limited.

Conclusions:
This facsimile-based reporting system is a source of timely mortality data including deaths due to influenza and pneumonia. Use of readily available technology and a small incentive may increase timeliness of reporting surveillance data.

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Abstract ID: **1059479** Presentation Type: **Poster Presentation**

Title: **Use of the Web by state and territorial health departments to disseminate practical information during the 2009-2010 influenza pandemic**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Emerging infections, Surveillance, World Wide Web**

Abstract Text

Background:
Although the use of the Web is common in the United States, its use by public health departments to disseminate practical information during pandemics is relatively new. To assess the use of the Web to provide practical information including specific guidelines, we conducted a Web-based study during the 2009-2010 H1N1 influenza pandemic.

Methods:
During May 2009, we collected Web-based information about the H1N1 pandemic in each of the 57 jurisdictions that submit data on nationally notifiable diseases to the Centers for Disease Control and Prevention. On each jurisdiction's Web site, we searched for practical information including links to H1N1 information on the home page, a summary of reported cases of H1N1 in the jurisdiction, guidelines on submissions of specimens to state public health laboratories, and availability of telephone numbers. We also searched for presence of public health guidance regarding H1N1 in

specific settings, for example, hospitals and childcare centers.

Results:
We found that 90% of the jurisdictions' Web sites had links to H1N1 on the home page, 74% displayed a summary of current cases reported in the jurisdiction, and 67% included guidelines on submission of H1N1 specimens; 42% provided telephone numbers for clarifications. Forty-nine percent included guidance regarding H1N1 for schools, 40% had guidance for childcare centers, and 35% had guidance for hospitals.

Conclusions:
State and territorial health departments have taken advantage of the Web to provide information about evolving public health threats. The limited presence (<50%) of some important categories of local information about the H1N1 Pandemic on health departments Web sites' suggests a need for improvements. An approach that includes assessment of user needs, increased communication among data providers, Web content designers and subject matter experts could enhance the value of the Web as a source of practical public health guidance during disease emergencies.

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Abstract ID: **1062339** Presentation Type: **Poster Presentation**

Title: **Electronic Laboratory Reporting: Quality assurance simulation and its role in implementing the NEDSS Base System in Kentucky**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Electronic laboratory reporting (ELR), NEDSS/PHIN, Surveillance**

Abstract Text

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Abstract ID: **1062148** Presentation Type: **Poster Presentation**

Title: **E-code data quality: Where we are and what we could do**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Data collection, E code, Hospital data**

Abstract Text

Background:
Injury hospital discharge data (E-code data) is a primary information source for injury surveillance. It is expected that each record in E-code data will have one E-code reported in the E-code field and a P-code (place of occurrence code: E849) reported in one of the diagnosis fields (DIAG2-DIAG25). To ensure the completeness and accuracy of E-code data, Nebraska Department of Health and Human Services works with Nebraska Hospital Association to routinely assess the quality of E-code data.

Methods:
The E-code data quality assessment reporting card is developed for each hospital and feedbacked to them for data quality improvement. The 2008 Nberaska Ecode data was analyzed by three levels: state, local health department (LHD) district, and hospital, and by three patient types (inpatient, ER outpatient, and non-ER outpatient). Each hospital's result was compared to their LHD district and state average level. Follow up meetings with the medical record personnel were held to discuss the findings, problems and solutions.
Each record contained 66 variables, of which, 24 variables were required to be complete regardless of patient types, 4 variables were required to be complete for inpatients, and blanks were acceptable for 19 variables. Values of each variable were classified into "valid", "invalid" and "missing" according to UB-04 Manual.

Results:
The 2008 E-code data included 263,660 records. 262,895 records from 87 acute care hospitals in 19 LHD districts were compromised of 40,969 inpatients (15.58%), 132,082 ER outpatients (50.24%) and 89,844 Non-ER outpatients (34.17%). For all patient records, among the 24 variables assessed, 11 variables had 100% valid values, 11 variables had invalid values, and 10 variables had missing values. Of the 262,895 records, 181,333 records (68.98%) had an N-code (ICD-9-CM code values within the 800 to 999 range) in the primary diagnosis field; 244,052 records (92.83%) had E-code in E-code field; 171,647 records (65.29%) had N-code in the primary diagnosis and E-code in E-code field; 13,425 records (5.11%) had "place of occurrence" code in diagnosis fields 2-25.

Conclusions:
The 2008 E-code data quality for the state level appeared to be good. The data quality varied across different hospitals and LHD districts. The reporting card is helpful for each hospital to improve their data quality.

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Abstract ID: **1062845** Presentation Type: **Poster Presentation**

Title: **Assessment of laboratory reporting sensitivity using ELR in Utah ***

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Assessments, Electronic laboratory reporting (ELR), Surveillance**

Abstract Text

Background:
Utah's NEDSS-compliant system was released in 2009. Since then,we have been developing the capacity to import electronic lab reporting (ELR) messages into UT-NEDSS. Currently we receive both electronic and traditional (faxed/emailed) reports for laboratory-reportable conditions from three labs. Sensitivity and specificity of notifiable condition reports drive the efficiency of public health surveillance. Reporting non-required tests will waste public health resources to remove them from the system. Conversely, incomplete detection will lead to under-reporting. We are using received ELR reports as a "proxy" for determining a laboratory's detection algorithm. By identifying 'holes' in reporting, we may provide feedback to laboratories that will assist them with refining their detection logic.

Methods:
We reviewed incoming reports from 1/1/2010 - 12/15/2010 related to over 2800 reports stored in UT-NEDSS. Among the 77 reportable diseases in Utah, we focused on 55 laboratory-reportable diseases that are relevant for ELR. Disease assignments for the ELR messages were determined by linking the LOINC codes in the ELR message with codes in published CSTE Position Statement technical implementation guides. We performed an automatic record match by patient name and specimen collection date. We manually reviewed and verified any mismatches. We compared the reports received by traditional methods with those created from ELR messages, and evaluated the detection logic and sensitivity of the ELR reporting. We describe the discrepancies between the number of cases reported by the traditional vs. ELR method below.

Results:
Lab A reported 42 different conditions by either method: 17 of these conditions were never reported by ELR, 8 conditions were reported with ELR messages only 20% of the time. Similarly, Lab B reported 26 different conditions by either method: 10 of these conditions were never reported by ELR, 9 conditions were reported with ELR messages only 20% of the time. Finally, Lab C reported only 19 conditions by either method: 9 of these conditions were never reported by ELR, 4 conditions were reported with ELR messages only 20% of the time.

Conclusions:
Our finding may indicate inaccurate and incomplete detection algorithms at the laboratories. Our study demonstrates the importance of auditing ELR messages and assisting laboratories to improve their detection logic. As there are many different laboratory tests that can be performed for a single notifiable condition, laboratories might not include all possible laboratory tests in their detection logic. Another major need is to help laboratories know what tests map to a notifiable condition. Through this study, we will provide feedback and create meaningful dialogue about detection logic with many laboratories.

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Abstract ID: **1059057** Presentation Type: **Poster Presentation**

Title: **Evaluation of the New York City HIV/AIDS Surveillance Registry through HIV program data matching**

Committee: **Surveillance/Informatics**

Topic: **Other surveillance/informatics**

Keywords: **HIV/AIDS, Surveillance**

Abstract Text

Background:
Over 108,000 persons with reported HIV/AIDS are presumed to be living in New York City (NYC). The NYC HIV/AIDS Surveillance Registry (HARS) is a population-based registry of AIDS cases since 1981 and HIV since 2000 reported to the NYC Department of Health and Mental Hygiene. HIV/AIDS program data is routinely matched to HARS to improve program data completeness and de-duplicate records. Data matches may supplement surveillance by identifying previously unreported cases and by contributing to the completeness of key variables such as address and social security number. In 2010, housing program data which included names and identifiers of clients receiving assistance were matched with HARS. The results of this match informed our evaluation of HARS, with a focus on case ascertainment and data completeness.

Methods:
Using CDC guidelines for evaluating public health surveillance systems, we reviewed NYC HARS attributes. Housing program data reported as of July 2010 were matched with HARS as of July 2010 using a 36 key matching algorithm. Aggregate HARS match results were obtained from HIV Epidemiology and Field Surveillance Program staff. Data reported reflects initial field investigation results as of December 2010. Key staff were interviewed to determine reasons for non-matches.

Results:
In 2010, 35,074 cases were compared to HARS, of which 34,414 were matched and 660 were potential unmatched cases. After initial investigations, of potential non matches, twenty-seven percent appeared to be new cases and twenty-three percent, previously reported cases. Seven percent of unmatched cases were missing medical information, three percent were from another jurisdiction and forty percent are still under investigation. Reasons a diagnosed NYC case receiving services may not be included in the registry include: name changes, migration to the city after HIV/AIDS diagnosis and not receiving lab tests, and data entry errors. Additionally, HIV negative persons can be misclassified in program data when receiving services as relatives to HIV-positive clients.

Conclusions:
Investigations of non-matching cases are useful for identifying new cases and can improve the completeness of surveillance data. This evaluation highlights instances where HARS missed diagnosed cases living in NYC and receiving HIV services. The routine matching of program and surveillance data should be pursued to maximize surveillance sensitivity, simplify case investigations, and allocate public health resources efficiently. Future steps include further verification of unmatched case status, additional matches of HIV program data and investigation of subsequent unmatched cases, and exploration of program data contribution to surveillance variable completeness.

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Abstract ID: **1062578** Presentation Type: **Poster Presentation**

Title: **Results from a pilot test of performance indicators for surveillance and epidemiological investigations for state and local health departments**

Committee: **Surveillance/Informatics**

Topic: **Surveillance Indicators**

Keywords: **Emergency preparedness, Performance measurement, Surveillance**

Abstract Text

Background:
In 2009 the Centers for Disease Control and Prevention (CDC) collaborated with several partner organizations to develop novel indicators to assess state (SHD) and local health department (LHD) performance related to infectious disease surveillance and epidemiological investigations. Two indicators, or performance measures, focused on timeliness of disease reporting by healthcare providers and labs, and timeliness of initiation of control measures by a health department, for six reportable diseases. Three additional performance measures focused on the completeness of epidemiological investigations and reports, as well as epidemiology program improvement within a health department. These measures were designed for use in CDC's Public Health Emergency Preparedness (PHEP) Cooperative Agreement.

Methods:
CDC recently completed a four month pilot test to assess the relevance, feasibility and utility of these performance measures. CDC collaborated with eight SHDs, selected through a convenience sampling strategy, who in turn recruited 58 LHDs, to provide data for the pilot. CDC provided guidance, technical assistance, and data collection tools to assist participants in collecting, aggregating and submitting data. All eight states and, on average, 48 LHDs (range 45-52) submitted data across all measures tested. CDC analyzed performance measure data and feedback from pilot sites to determine if the measures should be implemented (with or without modifications) or dropped. Feedback results are reported here.

Results:
An average of 92% of states and 85% of LHDs reported both surveillance measures to be moderately, very or extremely relevant, feasible and useful. Eighty-eight percent of pilot states and nearly 90% of LHDs recommended these measures be implemented. On average, over 80% of states and 88% of LHDs found two of the epidemiological investigation measures - related to completeness of investigations and reports - to be moderately, very or extremely relevant, feasible and useful. Eighty-eight percent of pilot states and 91% of LHDs recommended these measures be implemented. A third epidemiological investigation performance measure, related to internal corrective actions for program improvement, was viewed less favorably, with only 50% of states and 83% of LHDs recommending it move forward.

Conclusions:
Nearly all of the performance measures were well-received, and found to be useful for program

improvement, appropriate and feasibly implemented by a large majority of participating SHDs and LHDs. While findings cannot be generalized and have not yet been validated, they are suggestive that these performance measures will add value and contribute to epidemiology and surveillance program improvement at the state and local level.

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Abstract ID: **1024955** Presentation Type: **Poster Presentation**

Title: **Using surveillance indicators for vaccine-preventable diseases (VPDs): National Notifiable Diseases Surveillance System (NNDSS), 2000-2009**

Committee: **Surveillance/Informatics**

Topic: **Surveillance Indicators**

Keywords: **Indicators, NNDSS, Surveillance**

Abstract Text

Background:
The National Notifiable Diseases Surveillance System (NNDSS) supports assessment of epidemiologic trends and programmatic impact. NNDSS data are used by states/jurisdictions and are transmitted to CDC through the National Electronic Telecommunications System for Surveillance (NETSS) or the National Electronic Disease Surveillance System (NEDSS).
Variations in VPD reporting and notification may be due to disease/condition characteristics (e.g., symptoms, incidence, severity), availability of laboratory diagnostics, patient and provider awareness, jurisdiction attributes (e.g., laws, regulations), disease transmission setting, and capacity for electronic data transmission. Surveillance indicators can assess infrastructure, practices/procedures, thoroughness and appropriateness of case investigation, laboratory performance, and completeness of case reporting.

Methods:
Analyses used NNDSS data from MMWR (2000-2009). Specific indicators included overall completeness of epidemiologically important information, timeliness of reporting and notification, appropriateness and completeness of laboratory testing, completeness of vaccination history, and importation status.

Results:
Final national data suggest that annually, for H. influenzae, the percent of cases <5 years with serotype testing was 40-63% (range by year) and with complete vaccine history was 15-22%. For measles, overall completeness of data was 56-87%, importation status was known for 18-73% of cases, and laboratory testing was done at CDC for 21-70% of cases. For pertussis, 17-51% of children <7 years

had complete vaccine history. For rubella, pregnancy status was known for 33-84% of cases and importation status was known for 0-44% of cases. For mumps, overall data completeness was 40-60%.

Conclusions:
Surveillance indicators, monitored through electronic national passive surveillance data, can assess the quality of national surveillance data and identify components of surveillance that need improvement.

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Abstract ID: **1062518** Presentation Type: **Poster Presentation**

Title: **An evaluation of Wisconsin's Birth Defects Registry: The effects of current legislation**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Birth defects, Public health law, Surveillance**

Abstract Text

Background:
The Wisconsin Birth Defects Registry (WBDR) began passive statewide data collection in 2004, whereby pediatric specialty clinics and physicians are required to submit case reports for 87 conditions, up to 2 years after birth. The registry is faced with a unique set of challenges related to hospital reporting and parental consent, many imposed by current legislation. A systematic evaluation of the WBDR is described.

Methods:
The Center for Disease Control and Prevention's recommended guidelines for evaluation of a surveillance system were used to examine the WBDR's usefulness, simplicity, flexibility, data quality, acceptability, representativeness, timeliness, and stability. Registry data extracted via the web-based WBDR report module, and comparison data from the Wisconsin Newborn Screening Program and Vital Records, were analyzed using SAS 9.1. Meetings and key informant interviews with program staff were held to elicit information about system operations. Quantitative and qualitative measures of each attribute were evaluated, and the strengths and weaknesses articulated.

Results:
As of December 2010, the WBDR included approximately 3,600 cases. Data quality, system acceptability, and stability were identified as primary weaknesses of the WBDR. Barriers to data quality include a legislative mandate for active parental consent (overall consent rate: 22.5%), which inhibits the collection of identifiers and, therefore, case validation and deduplication efforts. Of registry reports with medical record numbers (35%), 15% were found in duplicate. Limited system acceptability is evidenced by the variable timeliness (range: 0 days - 6.5 years after birth; mean: 17.9 months, standard deviation: 18 months) and completeness of case reporting. For example, among 2003-2007 births, the number of hypothyroidism and cystic fibrosis reports in the WBDR ranged from 13-113% of

the number reported by newborn screening, depending on birth year. System stability is reduced by limited resources to support data management staff and the lack of system documentation. In light of these challenges, several successful strategies have been implemented to circumvent barriers. These include focused outreach efforts to encourage hospital reporting (who are not required by law), the availability of multiple reporting mechanisms (e.g. both web-based data entry and single file upload), and hospital-based improvements to the consent process, which have led to a consent rate of 96% at the fourth largest reporting body.

Conclusions:
This evaluation will help to inform WBDR improvement efforts and sustain effective practices. Collaborative efforts with partners to modify current legislation are in progress. Future analyses will utilize hospital discharge data and examine rate of referral to services.

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Abstract ID: **1058719** Presentation Type: **Poster Presentation**

Title: **Evaluation of State Reportable Conditions Assessment (SRCA) System: Development of an empirically grounded information systems success theory based instrument**

Committee: **Surveillance/Informatics**

Topic: **Other surveillance/informatics**

Keywords: **Evaluation, Information systems**

Abstract Text

Background:
The State Reportable Conditions Assessment (SRCA) is a joint collaborative process between the Council of State and Territorial Epidemiologists (CSTE) and Centers for Disease Control & Prevention (CDC),which is designed to help the state epidemiologists to annually submit the reportable conditions in their respective jurisdictions. There is a need for evaluation of methodologies in the field of public health informatics to ensure technology tools meet their objectives and inspire further development.We advocate using suitable theoretical models as a framework to guide evaluation to systematically disentangle issues and gain evaluation insights.

Methods:
We performed a literature review of various system success theory options and selected the Delone and McLean (D&M) Information Systems Success Model (Modified 2003), for this evaluation as we felt this model addressed the various quality criterion of interest to SRCA as well as their interrelationships.Two professionals performed qualitative analysis and coding of two years worth of SRCA feedback and emails indicated that the D&M model dimensions were suited to the SRCA context and revealed SRCA-specific attributes for each dimension to be considered in developing an instrument. The evaluation instrument design was an iterative process consisting of modifications based on extensive review of literature for validated survey items and subsequent cross-validation by a

section of SRCA stakeholders and power users.

Results:
The final version of the SRCA evaluation instrument addresses specific evaluation issues and multiple quality-criteria using an information systems success model as a theoretical underpinning to provide evaluation insights, particularly regarding relationships among various quality criterion and their effects.

Conclusions:
The developed tool can be used to solicit users' feedback regarding various quality dimensions of this important public health tool, driven by the D&M model. The feedback obtained will be used to help inform the future iterations of SRCA tool.

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Abstract ID: **1060064** Presentation Type: **Poster Presentation**

Title: **Laboratory detection as first indicator of influenza season - West Virginia, 2010**

Committee: **Surveillance/Informatics**

Topic: **Other surveillance/informatics**

Keywords: **Indicators, Influenza surveillance**

Abstract Text

Background:
Annually, 5-20% of the United States population is infected with influenza. Early detection of influenza activity is essential for an effective public health response to decrease morbidity and mortality. The West Virginia Influenza Surveillance System receives data from four sources: local health departments (LHDs), sentinel providers, hospital laboratories, and the state's office of laboratory services. We assessed ways to improve influenza detection.

Methods:
Existing influenza surveillance data from 2002-09 was used to describe influenza detection patterns and determine the earliest indicator of influenza activity in the state. Questionnaires addressing data quality and acceptability of current surveillance practices were distributed to stakeholders, including hospital laboratories with capability to detect influenza virus by culture, polymerase chain reaction, and immunofluorescence.

Results:
During 6 (75%) of the past 8 influenza seasons, laboratory detection of influenza preceded the influenza-like illness (ILI) increase over baseline by 2-18 weeks (median: 8 weeks). ILI never exceeded baseline during the 2008-09 season. During the 2009 H1N1 pandemic, influenza infections were first detected through state laboratory isolates at Morbidity and Mortality Weekly Report (MMWR) week 20.

Ongoing activity was documented through laboratory reports and outbreak investigations until MMWR week 38, when ILI exceeded baseline. Among survey responders, 36/38 (95%) of LHDs and 16/33 (48%) of sentinel providers used the CDC ILI case definition. Hospital laboratories reported weekly, but 3/5 (60%) of laboratories expressed interest in daily automated electronic laboratory reporting (ELR).

Conclusions:
ILI reporting was useful for situational awareness; however, laboratory surveillance was the earliest indicator of influenza activity in West Virginia. ELR could improve early influenza detection and be endorsed by hospital laboratories.

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Abstract ID: **1062509** Presentation Type: **Poster Presentation**

Title: **Novel approach to data collection during statewide flooding emergency**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Emergency preparedness, Injury, Surveillance**

Abstract Text

Background:
With near record accumulations of snow and wet conditions in the fall and winter of 2008, the risk for local and regional flooding in North Dakota was eminent. This threat prompted the North Dakota Department of Health to open their Emergency Operations Center (EOC). Tasked with providing infrastructure and supplies to North Dakota medical facilities and information on the health and mental state of North Dakotans, the EOC assigned the North Dakota Department of Health-Division of Disease Control the task of performing surveillance for injuries and illnesses sustained during the flood preparation effort, the flood itself and its cleanup efforts.

Methods:
Without time to develop a robust surveillance tool, the North Dakota Department of Health-Division of Disease Control had to be innovative in using existing methods of communication and data transmission to accurately and quickly receive information for timely situational awareness. The North Dakota Department of Health-Division of Disease Control came up with a method of gathering data from an existing data stream without placing increased burden on the facility itself to provide detail on patients seen with events related to flooding. Of the 41 North Dakota Emergency Departments (ED), eight were existing providers of the state syndromic surveillance data system. This meant that data pertaining to patient-level chief complaint data was being pulled from ED registration data daily and sent within 24 hours of patient visit to the state syndromic database. We instructed ED admissions personnel to ask any patient seeking care at the ED about whether their chief complaint was due to an

event relating to flood waters, flood preparation or flood cleanup. Patients not able to give their own chief complaint were assessed by the physician to categorize as flood-related or not.

Results:
The North Dakota Department of Health was able to capture 143 flood-related events that were sub grouped by state epidemiologists into specific categories. The majority of events (80) were related to muscoskeletal strain and pain, 6 lacerations, 5 carbon monoxide poisonings and the remainder in various other categories(MVA accidents, anxiety, falls, etc.).

Conclusions:
The North Dakota Department of Health was able to quickly ascertain information about the state of citizens dealing with flood preparation and other flood-related events using existing data streams. This data was used to inform decision-makers about the health and welfare of North Dakota citizens during a statewide emergency.

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Abstract ID: **1062761** Presentation Type: **Poster Presentation**

Title: **A Bayesian System for detecting and characterizing outbreak diseases that present to emergency departments**

Committee: **Surveillance/Informatics**

Topic: **Other surveillance/informatics**

Keywords: **Influenza surveillance, Outbreak investigations, Surveillance**

Abstract Text

Background:
The recent 2009 H1N1 outbreak has underscored the benefits that could follow from having automated systems that can detect disease outbreaks and estimate their incidence and characteristics, allowing public-health officials to respond appropriately. We developed one of such systems for monitoring outbreak diseases that present to eight Emergency Departments (EDs) in Allegheny County (AC), Pennsylvania. A preliminary version of this approach was used by epidemiologists in AC to monitor the 2009 H1N1 influenza outbreak there.

Methods:
Our Outbreak Detection and characterization System (ODS) works with a probabilistic Case Detection System (CDS) developed by other researchers in our laboratory. CDS first uses natural language processing to extract information from a given patient's dictated ED report. Using that as evidence, it applies a Bayesian network model to generate a probability distribution over the outbreak diseases that the patient might have. ODS uses CDS's output to estimate the number of cases of each outbreak disease presenting to EDs on a given day. Specifically, CDS passes ODS daily likelihoods of each ED patient's clinical evidence given each of the modeled diseases. ODS then derives posterior probabilities over a set of outbreak diseases by combining such likelihoods with population disease prior probabilities over the set of outbreak diseases. ODS operates in a timely fashion (usually within

24 hours of presentation to the ED) and also estimates the age and spatial location of disease cases. CDS and ODS currently model influenza and shigellosis; this set of outbreak diseases will soon be expanded. We evaluated ODS using data from monitored EDs during May 8, 2009 through December 31, 2009.

Results:
We found that the daily influenza incidence at monitored EDs, as estimated by ODS, peaked at 111 cases on October 21st. During the week of October 18-24 there were an estimated 688 ED influenza cases, with the youngest age group (0-19 years old) accounting for a higher fraction (35%) of the cases than older age groups. This age pattern is qualitatively consistent with national age patterns of H1N1 during 2009. In contrast, the week of July 19-25 had the lowest estimated weekly incidence of influenza cases (~163) between May 8th and October 24th; during that week the fraction of estimated cases in the youngest group was only 12%.

Conclusions:
These results suggest that ODS may be useful for assisting public-health epidemiologists in detecting and characterizing disease outbreaks. We are currently extending the ODS disease models and analysis algorithms.

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Abstract ID: **1057531** Presentation Type: **Poster Presentation**

Title: **A comparison of active versus passive varicella disease surveillance in Philadelphia, 2005â€“2009**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Infectious Diseases, Surveillance**

Abstract Text

Background:
Using active surveillance in West Philadelphia (WP), the Philadelphia Department of Public Health (PDPH) has documented substantial reductions in varicella-related morbidity since vaccine licensure. However, active surveillance is expensive and difficult to maintain. In order to provide nationwide population-based disease estimates, the Council of State and Territorial Epidemiologists recommended that states adopt passive varicella surveillance. However, the difference in case counts and reporting completeness between passive and active varicella surveillance remains unknown. As such, we sought to compare detection of varicella cases from a passive surveillance system to an active system.

Methods:
Over 300 sites, including hospitals, schools, public health clinics, childcare facilities, and primary care practitioners, take part in WP active surveillance. PDPH mandates that each site report the presence or

absence of varicella twice a month, and performs extensive investigations to confirm diagnosis and establish epidemiological links, as well as to obtain information regarding history of vaccination against varicella-zoster virus (VZV), presence of complications, and description of illness. In the remainder of Philadelphia, sites passively report varicella cases, and abbreviated investigations are conducted. To identify additional cases that may not have been reported during routine surveillance, PDPH staff obtain monthly billing data from citywide health-care systems and utilize data from syndromic surveillance of emergency departments in Philadelphia. This analysis compared varicella incidence, case-status determinations (confirmed, probable, or excluded), and completeness of investigation information for reports received through active or passive surveillance during 2005 to 2009. Reporting completeness was assessed using capture-recapture analysis of 2-18 year old cases reported by two primary site types, schools/daycare centers and healthcare providers (HCP).

Results:
In this period, PDPH received 4,068 varicella case reports (3,136 via passive surveillance and 932 through active surveillance). Most passive surveillance reports were classified as probable cases (23% confirmed, 52% probable, 25% excluded); whereas, nearly all the active surveillance reports were either confirmed or excluded (45% confirmed, 4% probable, 51% excluded). Passive surveillance had significantly higher varicella incidence for 5-18 year olds than active surveillance areas (6 versus 4 cases/1,000 persons, $p<0.01$). For reports from schools/daycares and HCPs, reporting completeness was higher in active than passive surveillance sites (66% versus 40%).

Conclusions:
Active surveillance for varicella results in more improved case classification and more accurate estimates of disease incidence. However, additional considerations can be given to the follow up performed for passively reported cases to improve their classification.

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Abstract ID: **1058446** Presentation Type: **Poster Presentation**

Title: **Evaluation of tuberculosis surveillance systems utilized in Washington State for migrant populations ***

Committee: **Surveillance/Informatics**

Topic: **Electronic disease surveillance systems (EDSS, NEDSS, etc.)**

Keywords: **Data/Surveillance, Evaluation, Immigration**

Abstract Text

Background:
Foreign-born (FB) persons account for over half of all tuberculosis (TB) cases in Washington State. From 2008 to 2009, a 12.3% increase in TB cases was reported; 78% (256 cases) were among FB

persons. Health surveillance systems in Washington State monitor TB classifications in migrants to ensure they receive timely health care.
We evaluated the CDC Electronic Disease Notification system (EDN), which notifies states of migrants' arrivals to the U.S., as a notification and surveillance system for Washington State. We also evaluated the Washington TB database and processing of migrants with TB classifications.

Methods:
Evaluation was based on CDC Guidelines for Evaluating Public Health Surveillance Systems. Data on a migrant cohort that arrived in Washington State in FY 2010 were extracted from EDN and the Washington TB database to evaluate timeliness and data quality. To evaluate timeliness, cohort data from EDN were compared with a FY 2005 cohort when the previous Information of Migration Population (IMP) system was used.
Stakeholders at Washington State Department of Health (DOH) were surveyed to assess their perceptions of each system's usefulness, simplicity, acceptability, and stability.

Results:
Median time between migrant's arrival and state notification by EDN (10 days, N=928) was not significantly shorter than when IMP was used (11 days, N=333) ($z=1.19$, $p=0.24$). Median time between notification and TB follow-up was 27 days with EDN (N=747). Median time from arrival to follow-up was 40 days, significantly higher than the recommended 30 days ($t=15.69$, $p=<0.0001$).
Completeness of data in the FY 2010 cohort did not differ significantly between variables common to both systems ($t=1.67$, $p=0.16$). Follow-up data regarding treatment were <21% complete in EDN and not recorded in the Washington TB database.
Five stakeholders were surveyed with 100% response rate. Stakeholders felt both surveillance systems are useful; 75% wanted additional capacity for data analysis in EDN. Stakeholders felt EDN's limited accessibility in Washington State hindered its usefulness and access should be extended to local health departments and TB clinics. All stakeholders agreed that data entry into both systems is important and should be completed daily.

Conclusions:
Additional effort is needed to decrease time between migrant arrival and TB follow-up to the recommended 30 days. Adding analytic capability to EDN might eliminate the need to maintain the Washington TB database. Increased accessibility of EDN to local health departments and TB clinics may improve entry of TB follow-up data in EDN and allow local DOH employees access to migrant information.

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Abstract ID: **1054971** Presentation Type: **Poster Presentation**

Title: **Evaluation of the enhanced Salmonella surveillance system in New York City**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Epidemiology capacity, Foodborne disease, Surveillance**

Abstract Text

Background:
The New York City Department of Health and Mental Hygiene (NYC DOHMH) receives approximately 1,300 reports of salmonellosis annually. In 2009 DOHMH received OutbreakNet Sentinel Site funds to enhance Salmonella surveillance. We evaluated pre- and post-enhanced surveillance to measure changes in data completeness and timeliness.

Methods:
Prior to enhanced Salmonella surveillance, DOHMH only interviewed salmonellosis cases that were associated with clusters or high-risk settings (i.e. daycare participant or employee, foodhandler, or healthcare worker). To enhance surveillance, six student interns were hired to interview all salmonellosis cases using a hypothesis generating questionnaire. Confirmed cases of salmonellosis diagnosed from September 1, 2008 to August 31, 2009 (pre-enhanced surveillance) were compared with cases diagnosed from September 1, 2009 to August 31, 2010 (enhanced surveillance). Epidemiological, clinical, and interview data were analyzed. The evaluation focused on timeliness and completeness of salmonellosis case reports during pre- and enhanced surveillance periods.

Results:
DOHMH received 1,284 reports of salmonellosis diagnosed from September 1, 2008 to August 31, 2009 compared to 1,294 reports from September 1, 2009 to August 31, 2010. Enhanced surveillance resulted in a higher proportion of interviewed cases (82%) compared to cases interviewed during pre-enhanced surveillance (7%). The time from diagnosis to interview date was shorter during enhanced (median=11 days) compared to pre-enhanced surveillance (median=30 days). Demographic and clinical information was significantly more complete during enhanced versus pre-enhanced surveillance (88% versus 43%, p-value < 0.0001 and 72% versus 1%, p-value < 0.0001, respectively). Significantly more case-patients answered all food exposure questions during enhanced versus pre-enhanced surveillance (41% versus 25%, p-value = 0.004). More case-patients in high risk settings were identified during enhanced surveillance (3% versus 0.3%). A significantly higher proportion of cases identified as being part of a local or multi-state cluster were interviewed during enhanced versus pre-enhanced surveillance (87% versus 51%, p-value < 0.0001). Interviews were completed soon after diagnosis during enhanced (median=9 days) versus pre-enhanced surveillance (median=33 days).

Conclusions:
Both the timeliness and completeness of Salmonella case investigations improved after implementation of enhanced surveillance, which is essential for outbreak investigations. More high risk cases were identified when a greater proportion of cases were interviewed. A higher proportion of and more timely interviews were performed during enhanced surveillance for cases who were part of a cluster. Future goals of enhanced surveillance are to expand laboratory molecular typing capacity for all Salmonella

serotypes in an effort to improve salmonellosis cluster detection.

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Abstract ID: **1060049** Presentation Type: **Poster Presentation**

Title: **Comparability of electronic and manual influenza-like illness (ILI) surveillance methods**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Data/Surveillance, Influenza surveillance, Surveillance**

Abstract Text

Background:
To complement and enhance existing surveillance capacity in Nebraska, including CDC's Influenza-like Illness Surveillance Network (ILINet), the Nebraska Department of Health and Human Services Division of Public Health (NDHHS) and the Douglas County Health Department (DCHD) developed an emergency department (ED) syndromic surveillance system along with an automated physician-clinic-based ILI surveillance program. ILINet requires participants to submit data on a weekly basis to CDC by manually tabulating the number of total visits and parsing out the ILI cases by age. Both NDHHS and DCHD have developed automated processes to collect information from electronic health records similar to that captured manually by ILINet. Douglas County sentinel providers have reported 186 weeks out of 202 (92%) since the 2004-05 influenza season which provides the standard comparable data needed to validate the automated data collection process.

Methods:
A de-identified real-time data extract is provided to public health on a nightly basis from three ED's and 12 University of Nebraska Medical Center (UNMC) physician clinics all located in Douglas County. The data from the physician clinics are extracted according to the specific ILI case definition (presence of fever plus cough or sore throat) which is obtained by the implementation of a specific triage question accessing ILI from every patient. Select data variables from all ED visits are reported to DHHS and are then processed to identify ILI using chief complaint and ICD9 codes. The electronic and manual systems were compared to determine correlation and usefulness of both electronic systems. To measure the degree of association between the systems, the Pearson correlation coefficient statistic was utilized.

Results:
The 2009-10 influenza season had a high degree of correlation between the electronic and manual data systems as follows: ED syndromic surveillance system vs. ILINet, 0.814; UNMC outpatient physician clinics vs. ILINet, 0.78. During the 2010-11 influenza season, forthcoming data will also be analyzed using similar methods to be included in the final report.

Conclusions:
Electronic methods to conduct ILI surveillance are positively correlated with the manual method used to collect ILI data on a weekly basis. Automating the data collection process is less time consuming for the participating facility and decreases the amount of time that a possible ILI outbreak in a community is reported to public health.

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Abstract ID: **1055198** Presentation Type: **Poster Presentation**

Title: **Protecting healthcare workers from an airborne respiratory event: Implementing a sentinel surveillance system to monitor PPE usage in the United States healthcare system**

Committee: **Surveillance/Informatics**

Topic: **Novel surveillance methods**

Keywords: **Health care, Occupational safety, Occupational Surveillance**

Abstract Text

Background:
Vanderbilt's Faculty and Staff Health and Wellness Department is collaborating with the National Institute for Occupational Safety and Health (NIOSH) to study the implementation of a sentinel surveillance system for ongoing and continuous monitoring of Personal Protective Equipment (PPE) usage by U.S. healthcare workers. The goal is to identify, describe and evaluate the surveillance systems currently in place at Vanderbilt's medical center that are used to protect healthcare workers from airborne infectious disease. This data can be used by NIOSH to build a national sentinel surveillance system of PPE used by U.S. healthcare workers, allowing them to 1) track activities, resources and outcomes related to PPE usage in an airborne respiratory event, 2) answer research questions of efficacy, comfort and safety for different kinds of masks used by healthcare workers and 3) advise hospitals, researchers and government agencies with research supported recommendations related to PPE practices.

Methods:
The Vanderbilt University Medical Center is documenting the interplay and interactions of the many safety policies, practices, departments, programs and surveillance systems that work together to ensure healthcare worker safety from airborne infectious disease. The goal is to describe the process needed to monitor the operational components during a sentinel event. Example data sets have been collected from the surveillance systems currently in place, and data collection points have been identified as most useful to a national surveillance program. Vanderbilt is developing a best practices document to enable hospitals to prepare for a pandemic airborne disease event, natural or man-made.

Results:
The project is in the second year of a three year term. The project is utilizing existing and new systems

at Vanderbilt to collect data from identified and identifiable data-points by active and passive surveillance methods, and will share data in a standardized way. This presentation discusses the data including key fields regarding PPE training, fitting, utilization, resources, exposures, and outcomes and facilitating the development of recommended best practices for the collection and maintenance of such data.

Conclusions:
Descriptions of existing systems in use by medical centers across the country, along with VUMC data will be used to demonstrate a standard dataset for export to a national surveillance system. Such a dataset will provide useful information to the CDC in an evolving infectious disease situation, allowing the CDC to provide clear and useful PPE guidance to healthcare facilities in real time.

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Abstract ID: **1059434** Presentation Type: **Poster Presentation**

Title: **Supporting yellow fever vaccine programs in state health departments: CDC's web-based yellow fever vaccine course and registry**

Committee:

Topic: **Infectious Diseases**

Keywords: **Arbovirus, Vaccination, Workforce development**

Abstract Text

Key Objectives:
To host an interactive discussion with representatives from state and territorial health departments (STHD) about their yellow fever (YF) vaccine programs. Key issues to present and discuss are the results of data analysis from CDC's YF registry and how these might guide future outreach to STHD, ways in which CDC can improve support for STHD YF vaccine programs, and methods for and value of STHD's incorporating CDC's new web-based YF vaccine course into their registration processes for YF vaccine providers.

Brief Summary:
STHD are responsible for designating nonfederal YF vaccine clinics and providers (YF stamp owners) in their jurisdictions, yet CDC has ultimate oversight of the quality and safety of YF vaccination practices in the United States. CDC has recently completed two projects to support STHD YF vaccine programs.
CDC maintains a web-based registry into which STHD enter information for YF clinics and stamp owners. With the goal of improving future outreach to states, we examined the number, profession, and geographic distribution of stamp owners and clinics. We analyzed data entered in the YF registry from March 2004 to August 19, 2010, using SPSS 18 and Microsoft Excel 2007. Of 5118 stamp owners in the US, 414 (8%) hold more than one stamp, including 20 who hold stamps in more than one state. Most are physicians (90%); pharmacists (4%), nurse practitioners (1.5%), physician assistants (0.7%),

and registered nurses (0.7%) also hold YF stamps. The 5490 YF clinics are in all 50 states, 3 territories (Guam, Puerto Rico, US Virgin Islands), and the District of Colombia. California has the most clinics (n=863; 15.7%); Guam has the fewest (n=1).
CDC recently created a web-based YF vaccine course, entitled Yellow Fever: Information for Health-care Professionals Advising Travelers. The goal is to support STHD in establishing a baseline competency among YF vaccine providers by addressing previously demonstrated knowledge gaps within this group. The course uses an interactive, multimedia format to present YF disease epidemiology, YF vaccine safety and best practices, vaccine recommendations, International Certificate of Vaccination and Prophylaxis, and medical waivers. Prior to release, it was pilot tested with 40 health care professionals. The course is free and offers continuing education credit. Since the course was launched on September 30, 2010, 271 professionals from 39 US states and 9 countries have completed it for credit, including physicians, nurses, pharmacists, and heath educators.

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Abstract ID: **1061553** Presentation Type: **Roundtable Presentation**

Title: **Overview of new methods of Behavioral Risk Factor Surveillance System (BRFSS)**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Emerging CD/MCH/OrH surveillance: new systems, methods, or use**

Keywords: **Behavioral research, Epidemiologic methods, Surveillance**

Abstract Text

Key Objectives:
1. Analyze the challenges that BRFSS survey has in recent years
2. Introduce multi-mode design for the BRFSS survey
3. Discuss new weighting methods to improve the quality of BRFSS data

Brief Summary:
As a landline RDD telephone survey, BRFSS has several specific challenges: First, households with cell-phone-only coverage and without residential telephones are not included. Second, the survey response rates have been declining over the past several years, making it increasingly difficult to collect survey data using a landline RDD telephone methodology. Third, the data are based on self-reports, which can be subject to recall bias.
To meet challenges of Random-Digit-Dialing (RDD) surveys and to ensure data quality and validity, BRFSS is integrating a multi-mode design into a random-digit-dialing landline telephone survey and updating weighting methods to enhance validity. The survey of adults with cell phones-only is conducted in parallel with ongoing, monthly landline BRFSS data collection. A mail follow-up survey is designed and implemented to increase response rate and to assess non-response bias. A physical health measurements pilot study is to assess the feasibility of introducing actual physical

measurements for a subsample of adults in each state in order to adjust key self-report risk factor and health condition estimates and thereby improve the accuracy and usefulness of BRFSS data. A new weighting procedure known as raking is being introduced to improve adjustment for non-coverage and non-responses and to incorporate cell phone survey data into the landline survey data.
The purpose of this roundtable discussion is to analyze the challenges that BRFSS survey has in recent years, and to provide an overview of the new modes of data collection and the new weighting methodology.

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Abstract ID: **1062537** Presentation Type: **Roundtable Presentation**

Title: **Development of chronic disease indicators for an integrated chronic disease surveillance system in Colorado**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Indicators: development, evaluation, and use for CD/MCH/OrH epidemiology**

Keywords: **Chronic diseases, Indicators, Surveillance**

Abstract Text

Key Objectives:
1) Present an overview of chronic disease integration efforts in Colorado.
2) Describe the process to create an integrated list of chronic disease and risk factor indicators and integrated surveillance plan.
3) Provide a forum to discuss efforts to develop indicators and the lessons learned in the process, including comparing and contrasting with national efforts.

Brief Summary:
In 2008, Colorado was selected as one of four states to participate in CDC's chronic disease integration demonstration project. Colorado's integration effort has resulted in a single, integrated work plan to replace the categorical work plans of nine different chronic disease and risk factors programs. To support these integration efforts, an integrated chronic disease surveillance system was created. A team of epidemiologists created a list of criteria and guiding principles for indicators to be included in the surveillance system based on CDC guidelines. The team then worked with program managers to develop the indicators list and corresponding surveillance plan and data tracking system. By breaking down silos and streamlining efforts, this compilation of chronic disease indicators will aid in the planning, implementation, and evaluation of public health practice by providing a holistic view of chronic disease burden across multiple diseases and risk factors. This session will describe the process, including lessons learned, and will be followed by a discussion of other efforts to develop indicators.

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Abstract ID: **1060360** Presentation Type: **Roundtable Presentation**

Title: **National Mentorship Program in applied chronic disease epidemiology**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Building epidemiology capacity for CD/MCH/OrH (e.g., mentorship, training, models from states)**

Keywords: **Challenges and Opportunities, Chronic diseases, Workforce development**

Abstract Text

Key Objectives:
1. Highlight the urgency of developing chronic disease epidemiology capacity at the state level,
2. Discuss and critique the NACCD Mentorship Program

Brief Summary:
The challenge of recruiting and retaining qualified chronic disease epidemiologists continues to plague state-funded programs. All too often, a newly hired epidemiologist, after receiving a brief orientation, is expected to become fully integrated and function as a chronic disease epidemiologist. This dynamic creates a cycle of inefficiency and insufficient state level capacity coupled with program frustration. It can also sometimes result in disillusionment on the part of the epidemiologist, thus deterring growth. The NACDD started the Mentorship Program in July 2010 by recruiting mentors and mentees from state health departments and universities. Each mentee selected a well-defined project. Seven pairs of mentor-mentee were matched in August. The mentorship projects have been implemented since September 2010. Mentors communicate with mentees through audio-video conference calls, emails and in-person meeting.

Among various strategies used, the CDC-NACDD's mentorship program is a promising practice that enables senior chronic disease epidemiologists at state health departments and academic centers to assist newly hired epidemiologists as they work on major projects deemed as a priority.
The purpose of this round table discussion is to highlight the urgency of developing chronic disease epidemiology capacity at the state level and to share the available strategies that have the potential of addressing this need. The seven paired mentor-mentee participants in this program will be attending this round table discussion to share their unscripted experience, lessons learned, and recommendations. The opportunity allows the participants to discuss their experience, consider alternative approaches, identify strategies for sustainability and provide recommendations.

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Abstract ID: **1012667** Presentation Type: **Roundtable Presentation**

Title: **Substance abuse epidemiology**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Substance abuse**

Abstract Text

Key Objectives:
To provide an annual update of activities of the substance abuse epidemiology subcommittees.
To help determine priorites for CSTE substance abuse epidemiology activity for the upcoming year.

Brief Summary:
The purpose of the substance abuse epidemiolgy roundtable is to provide the annual update onthe activities of CSTE substance abuse epidemiology subcommittees. In addition, the roundtable will help determine priorities for CSTE epidemiology activity for the upcoming year.

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Abstract ID: **1012609** Presentation Type: **Roundtable Presentation**

Title: **Tribal Epidemiology**

Committee: **Cross Cutting**

Topic: **Tribal epidemiology**

Keywords: **Tribal epidemiology**

Abstract Text

Key Objectives:
Provide annual update on CSTE tribal epidemiology activities.
Determine CSTE tribal epidemiology priorities for the upcoming year

Brief Summary:
The tribal epidemiology roundtable is an annual update of CSTE tribal epidemiology activities. It also used to help determine CSTE tribal epidemiology priorities for the upcoming year.

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Abstract ID: **1057528** Presentation Type: **Roundtable Presentation**

Title: **Legislative Update**

Committee: **Cross Cutting**

Topic: **Healthcare reform and epidemiology**

Keywords: **Policy/Policy Development**

Abstract Text

Key Objectives:
This session will give attendees an overview of CSTE's legislative activities.

Brief Summary:
Marcia Mabee, CSTE's legislative liaison, will give an update of CSTE's legislative activities and a policy update to CSTE members.

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Abstract ID: **1061418** Presentation Type: **Roundtable Presentation**

Title: **What would a National Biomonitoring System look like?**

Committee: **Environmental Health**

Topic: **Biomonitoring**

Keywords: **Biomonitoring, Environmental exposures, Environmental Health**

Abstract Text

Key Objectives:
This presentation will focus on the benefits a National Biomonitoring System offers over current biomonitoring programs. Discussion will also answer some of the questions about infrastructure, resources, and next steps in creating the National Biomonitoring System. Participants will also learn about the APHL National Biomonitoring System guidance document and how laboratories and epidemiologists can work together to accomplish biomonitoring projects.

Brief Summary:
Chemicals have improved the efficiency and quality of our lives, yet their presence in consumer products and the environment is raising concerns among public health professionals, policymakers and the public. Bisphenol-A, dioxins, brominated flame retardants and many more chemicals appear in the media, scientific journals and state legislation due to potentially harmful health effects, especially in children. While we know these chemicals are toxic at high levels, we have less information about effects related to ongoing exposures at lower levels. The Association of Public Health Laboratories (APHL) believes biomonitoring is the best way to estimate exposure to these and many more chemicals.
Biomonitoring studies are the gold standard to measure chemical exposures in people. While CDC and other federal agencies conduct biomonitoring studies, these national-level studies only provide population-based estimates. In order for states to be able to examine data at community and individual levels, they need the capability and capacity to conduct biomonitoring studies. This will allow States to respond to community and political concerns regarding chemical exposures and will establish background levels for emergency response events such as an oil spill, chemical plant explosion, train derailment and more.
In order to establish capacity and capability at the state level, APHL developed the Five-Year Plan for Building a National Biomonitoring Network of Public Health Laboratories. This plan calls for the establishment of a network of public health laboratories able to provide accurate human exposure data that will inform public health decisions through biomonitoring.
In keeping with the National Biomonitoring Plan, APHL's Biomonitoring Subcommittee developed a guidance document for laboratories interested in creating or expanding biomonitoring programs. Subcommittee members, who include laboratorians and epidemiologists from across the country, provided their expertise to write and edit each section of the guidance.

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Abstract ID: **1062499** Presentation Type: **Roundtable Presentation**

Title: **Disaster epidemiology discussion**

Committee: **Environmental Health**

Topic: **Disaster epidemiology: best practices, long term studies, and lessons learned**

Keywords: **Disasters, Emergency preparedness, Epidemiology**

Abstract Text

Key Objectives:
1. Inform participants about the CSTE Disaster Epidemiology Subcommittee, its mission and accomplishments thus far;
2. Present the CSTE Disaster Epidemiology Subcommittee's current focus spreading information about the operational objectives of epidemiology during public health agency planning, response, and recovery phases of any all-hazard emergency;
3. Discuss successes and barriers to integrating epidemiologists from across disciplines within the state public health agency; and
4. Discuss lessons learned and next steps based on the May 2011 CSTE Disaster Epidemiology Subcommittee conference in Atlanta, GA.

Brief Summary:
The CSTE Disaster Epidemiology Subcommittee is in its second year of existance under the Environmental Epidemiology Committee. Our members represent the various epidemiologic disciplines including acute and communicable, environmental, occupational, chronic, injury, and behavioral public health. An overriding objective of the committee is to convene these disciplines to improve the timeliness and effectiveness of public health response following natural disasters and other emergencies. The Disaster Epidemiology subcommittee is moving forward with our efforts to develop a unified and collaborative response to public health disaster emergencies at the local, state, regional, and national levels. The goal of a coordinated response during a disaster is to provide timely and actionable information to inform public health and emergency management decision-making, especially regarding the human impacts from the incident. Surveillance and tracking efforts can provide useful information through all phases of the emergency. We seek input from as many states as possible to better understand the successes and barriers faced in building epidemiology as an active contributor in all-hazard response environment. During this Round table will also review what was learned from the May 2011 National Disaster Epidemiology Workshop in Atlanta to the larger CSTE audience.

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Abstract ID: **1061507** Presentation Type: **Roundtable Presentation**

Title: **National Alliance for Radiation Readiness (NARR)**

Committee: **Environmental Health**

Topic: **Preparedness and environmental epidemiology**

Keywords: **Collaboration, Disasters, Radiation**

Abstract Text

Key Objectives:
Participants will:
1. Understand the evolution and purpose of the National Alliance for Radiation Readiness
2. Understand the current state of radiological preparedness as evidenced by the results of the 2010 CSTE self-assement of state-level radiation emergency preparedness and response capabilities
3. Recognize opportunities to contribute to, and benefit from the activities of the National Alliance for Radiation Readiness
4. Articulate radiological preparedness needs in the field and identify potential products and services to meet those needs

Brief Summary:
The National Alliance for Radiation Readiness (NARR) is a coalition of public health, health care and emergency management organizations seeking to build radiological preparedness, response and recovery capacity and capabilities by supporting the sharing of resources and tools, identification and dissemination of useful practices, and definition of and education on the roles and responsibilities of different entities in radiological emergencies. The NARR also seeks to serve as the collective “voice of health” in radiological preparedness through participation in national dialogues; provision of thoughtful feedback on documents, policies, and guidelines; and convening of partners to raise awareness of and resolve issues associated with radiation and nuclear public health preparedness. The session will discuss recent efforts of the NARR, the need for such a coalition as evidenced by the results of a 2010 CSTE self-assessment of state public health capacity and capability to respond to a major radiation emergency event. Iterative discussions among partner organizations on ways to improve cooperation and collaboration in radiological preparedness and response will be summarized. The session will also introduce participants to the suite of resources currently being developed by the NARR, including a disaster epidemiology tracking tool, a population monitoring toolkit, a model radiological preparedness plan, and an online clearinghouse to disseminate these and other practical tools. Participants will be encouraged to discuss their perspectives on gaps and needs in radiological planning and response and how the NARR can support the development of tools, share best or promising practices and how best to have an impact on relevant policies to close those gaps. Funded by the Center for Disease Control and Prevention National Center for Environmental Health-Radiation Studies Branch, the NARR Steering Committee is made up of representatives of the American Medical Association, the Association of Public Health Laboratories, the Association of State and Territorial Health Officials, the Conference of Radiation Control Program Directors, the Council of State and Territorial Epidemiologists, the National Association of County and City Health Officials, and the National Emergency Management Association.

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Abstract ID: **1062480** Presentation Type: **Roundtable Presentation**

Title: **Unsafe injections, substandard healthcare and the duty to warn**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) prevention and control**

Keywords: **Communicable disease, Healthcare associated infections (HAI), Hepatitis**

Abstract Text

Key Objectives:
* Explore public health agencies' roles in evaluating deficient healthcare practices in the context of case or outbreak investigations and reports from facilities or State Survey Agencies
* Share best practices for managing a large scale patient notification under circumstances in which the lead role is assumed by (a) a hospital or other responsible institution or (b) a state or local health department

Brief Summary:
CDC conducted a review of patient notification events that occurred in the United States from 1999 through 2010 in which patients were advised to get tested for bloodborne pathogens because of exposure in a healthcare setting. The review showed that notification events occurred more frequently, and their magnitude has increased, in recent years. The review highlighted the need for increased oversight and greater attention to basic infection control as well as the need to identify best practices for conducting patient notifications and managing positive test results.
Health Departments are confronted with a variety of issues when they have to make the decision whether patients should be notified of possible exposure to bloodborne pathogens. Based on the experience of health departments, common challenges in notifications include:
- Roles and responsibilities in case investigations and breach situations, including public health's duty to investigate
- Who should notify and conduct testing, as the process is resource-intensive in terms of staff time and cost
- Management of patients with positive test results
- Communication issues, including determination of patients' expectations and preferences (e.g., regarding disclosures without recommendation for testing) and appropriate timeline for disclosure
- Role of law enforcement (e.g., when narcotics diversion is suspected)
- Working within the state's legal framework and HIPAA requirements
- Duty to ensure notification of hard to reach patients
- Role of medical board or other regulatory agencies
- Switching from an investigative role to enforcement role (e.g., when egregious practices are identified)
- Secondary effects on health department-medical community relations
- Decision making on how far back in time the notification should extend (e.g., if no "start date" can be identified for the unsafe injection practices)
This roundtable will allow for health departments to share successes in patient notification events and common or unique challenges to notification. The roundtable will assist CDC in developing a template for best practices for patient notifications due to unsafe injection practices, particularly in outpatient settings where the burden of notification, messaging, and communication may fall disproportionately to state and local health departments.

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Abstract ID: **1062685** Presentation Type: **Roundtable Presentation**

Title: **Uses of foodborne disease outbreak data in the development of food safety policy**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Food safety, Foodborne disease, Outbreak investigations**

Abstract Text

Key Objectives:
Data collected during the investigation of foodborne disease outbreaks and reported to the Centers for Disease Control and Prevention (CDC) provides important information that is critical to inform the development of food safety guidance, policies and regulations. This round table discussion will feature representatives from the U.S. Department of Health and Human Services CDC and Food and Drug Administration (FDA) and the U.S. Department of Agriculture Food Safety and Inspection Service (FSIS) who will present background and examples of how foodborne disease outbreak data is used to inform food safety policy. Specific discussion points will include:
1. How reported information on pathogens and food vehicles is used to estimate the burden of foodborne illnesses attributable to specific food commodities;
2. What types of data obtained from outbreak investigations has led to short- and long-term prevention strategies in U.S. food safety policy or guidance;
3. How foodborne disease outbreak data has been used by non-governmental organizations, such as the Trust for America's Health and Center for Science in the Public Interest.

Brief Summary:
In 2010, CSTE adopted Position Statement 10-ID-13 which added foodborne disease outbreaks to the list of nationally notifiable conditions and events. However, local, state, tribal and territorial public health departments have detected and investigated foodborne disease outbreaks for decades, both independently and in partnership with federal agencies, and have voluntarily reported these to the CDC since 1973. Unlike other surveillance systems, foodborne disease outbreak surveillance systems are not restricted to specific pathogens and are among the few systems that collect both exposure and illness data. Consequently, epidemiologic data from foodborne disease outbreaks is a rich source of information to inform food safety policy. This roundtable discussion will provide an overview of data collection and use, as well as specific examples of how reported epidemiologic data informed regulatory agencies and non-governmental organizations developing food safety regulation, recommendation and guidance.

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Abstract ID: **1056477** Presentation Type: **Roundtable Presentation**

Title: **Recent progress in norovirus outbreak surveillance**

Committee: **Infectious Diseases**

Topic: **Viral gastroenteritis**

Keywords: **Enteric infectious diseases, NORS (National Outbreak Reporting System), Outbreaks**

Abstract Text

Key Objectives:
Describe recent trends in norovirus outbreaks in the United States including the predominant route of transmission, setting, seasonality, and impact of a new GII.4 variant. Present a pilot project to enhance norovirus outbreak reporting from hospitals and other healthcare facilities. Evaluate the recently implemented National Outbreak Reporting System (NORS) for surveillance of norovirus and other enteric disease outbreaks resulting from person-to-person transmission.

Brief Summary:
Noroviruses are the leading cause of epidemic gastroenteritis, responsible for approximately 50% of all gastroenteritis outbreaks worldwide. Prior to 2009, surveillance for norovirus outbreaks in the United States was limited to foodborne and waterborne outbreaks through two separate reporting systems. In the absence of comprehensive national surveillance for norovirus outbreaks, CDC requested information from state health departments on norovirus outbreaks to assess a perceived increase in activity concurrent with the emergence of a new viral variant. Monthly totals of reported outbreaks that occurred from January 2007 through April 2010 were provided by 30 states. Compared with outbreaks during the two preceding winter norovirus seasons (November-April), the 2009-2010 season was similar in magnitude, suggesting that the new variant did not cause an increase in activity. Additionally, 79% of norovirus outbreaks involved primarily person-to-person transmission and 65% occurred in long-term care facilities.
While the burden of norovirus outbreaks in long-term care facilities is significant, the incidence of these outbreaks in other healthcare settings such as acute-care and community hospitals remains unclear. To improve reporting of healthcare-associated outbreaks of norovirus and identify these events in acute-care facilities, CDC initiated a pilot project in collaboration with three state health departments. By enhancing the partnerships and resources shared between states and healthcare facilities, and mapping out a process for outbreak detection, confirmation, and reporting, it is anticipated that norovirus outbreak reporting will improve in these pilot sites, leading to the development of a surveillance platform that can be used widely.
In the future, trends in norovirus outbreaks may be directly assessed using data from the National Outbreak Reporting System (NORS). Developed in response to a CSTE position statement to expand foodborne and waterborne outbreak reporting, NORS provides the first national surveillance system for reporting of enteric disease outbreaks resulting primarily from person-to-person transmission (NORS-P2P). A year after its launch in February 2009, CDC conducted a comprehensive evaluation of NORS-P2P to assess its utility and functionality. Numerous areas for improvement were identified, including gaps in data completeness, under-reporting, and user acceptance issues.

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Abstract ID: **1060580** Presentation Type: **Roundtable Presentation**

Title: **Providing data for decision making: Improving viral hepatitis surveillance**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Hepatitis, Surveillance**

Abstract Text

Key Objectives:
1) To update state and local epidemiologists about ongoing and proposed activities within the CDC, Division of Viral Hepatitis/Surveillance Team (DVH/ST) that impact state and local viral hepatitis surveillance.
2) To receive feedback from state and local epidemiologists on activities and proposed activities within DVH/ST.
3) To receive updates from state and local epidemiologists about viral hepatitis surveillance at the state and local levels.

Brief Summary:
Members of the DVH/ST will provide updates about surveillance related activities that were initiated over the past year, including, a pilot evaluation of 9 state viral hepatitis surveillance programs as the precursor to a comprehensive evaluation of all state hepatitis surveillance programs; notification of a Funding Opportunity Announcement to support viral hepatitis surveillance; development of the Department of Health and Human Services' strategic plan for improving viral hepatitis surveillance; and status of plans to update procedures currently used to estimate new viral hepatitis infections and the number of persons living with chronic hepatitis B and C.

State and local epidemiologists who attend this round table will be encouraged to share their experiences, including best practices for conducting follow-up, ensuring completeness of laboratory reports, and removing duplicate cases from the data set. State and locals also will be encouraged to describe barriers to conducting viral hepatitis surveillance, propose solutions to overcoming these barriers, and indicate how DVH/ST can facilitate viral hepatitis surveillance at the state and local levels. Finally, partners will be asked for feedback about activities presented by DVH/ST during this session. Information shared by state and local viral hepatitis surveillance programs will be used to guide current and future activities of DVH/ST.
The DVH has initiated activities to improve viral hepatitis surveillance, as recommended in the January 2010 Institute of Medicine's (IOM) report on "Hepatitis and Liver Cancer". Sharing best practices and maintaining good communication among partners is essential to meeting recommendations provided in the IOM report. To provide the most reliable and valid viral hepatitis data for public health decision-making, viral hepatitis surveillance must be improved at the local, state, and national levels. Only through collaboration among all levels can we improve and develop a strong surveillance system.

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Abstract ID: **1061519** Presentation Type: **Roundtable Presentation**

Title: **Acute hepatitis C surveillance - feasibility and best practices**

Committee: **Infectious Diseases**

Topic: **Hepatitis: Chronic and Viral**

Keywords: **Epidemiology capacity, Surveillance, Viral hepatitis**

Abstract Text

Key Objectives:
1) To enumerate barriers and solutions to identifying acute hepatitis C cases
2) To improve the case definition to better identify acute viral hepatitis C cases

Brief Summary:
Treatment of persons in the acute phase of hepatitis C infection is effective in preventing chronic infection, but identifying hepatitis C during acute infection is complicated because no laboratory marker of acute infection currently exists in the United States. European countries use a definition that does not distinguish acute from chronic.
The current CSTE/CDC surveillance case definition requires clinical signs and symptoms as well as documentation of negative tests for hepatitis A and B. However, negative tests are often not reported to health departments.
During this roundtable discussion, CDC will share measures from experience with enhanced hepatitis surveillance sites documenting each component of the current definition. One of the best practices used in enhanced surveillance sites is follow-up of cases aged <30 years.
Participants will share their strategies for conducting surveillance and discuss whether the current case definition meets their needs for data and action. Experienced sites may contribute evidence and suggestions for improving the surveillance case definition.

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Abstract ID: **1065627** Presentation Type: **Roundtable Presentation**

Title: **Infectious Disease Steering Committee**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Infectious Diseases**

Abstract Text

Key Objectives:
This roundtable will discuss issues of importance related to infectious disease.

Brief Summary:
CSTE members and conference attendees can attend this roundtable discussion to learn about the current infectious disease steering committee activities and to discuss priorities for the coming year.

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Abstract ID: **1062001** Presentation Type: **Roundtable Presentation**

Title: **Adopting and assessing use of a common ILI syndrome for monitoring and estimating impact from influenza across multiple sites in the Distribute Project**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Data/Surveillance, Epidemiology, Influenza surveillance**

Abstract Text

Key Objectives:
Discussion Points
Emergent themes from the development of Distribute
1) Standardization: Can a common electronic syndromic definition for influenza-like illness (ILI) be conceptually agreed upon and implemented across a heterogeneous surveillance network?
2) Generalizability: Can a network model system for ILI trend monitoring be generalized to a model for provisional estimation of impact?
3) Usefulness: Do efforts towards standardization and estimation of impact provide useful information for public health practice and policy decisions at the state and local levels?

Brief Summary:
The Distribute project began in 2006 as a distributed, syndromic surveillance pilot that networked state and local health departments to share aggregate emergency department (ED) influenza-like illness (ILI) syndrome data. Many electronic surveillance systems in state and local jurisdictions have developed during the past decade along separate, and often divergent paths. Originally created for individual level and cluster case-finding, electronic syndromic surveillance systems have been refocused in many jurisdictions to monitor population level surrogate measures of influenza related morbidity. Preliminary work in the Distribute project found that local systems have often applied influenza related syndrome definitions specific for their regions; these definitions were sometimes trusted and understood better than standardized ones because they allowed for regional variations in idiom and coding, and were tailored by health departments for their own surveillance needs. Originally, in Distribute, sites were

asked to send whatever syndrome definition they found most useful for monitoring ILI at the population level. Sites using multiple definitions were asked to send their broader, higher count syndrome. In 2008, sites were asked to send both a broad febrile, respiratory or ILI syndrome, and a narrow ILI syndrome, closer to the traditional, clinical surveillance definition of ILI (ie, as indication of influenza, fever with cough, or fever with sore throat). In 2010, an ILI-standardization pilot began in Distribute to assess the interest, capability and usefulness of implementing a common ILI definition concept across multiple sites in the project. Efforts were also begun to assess the ability and usefulness of provisional estimation of seasonal influenza related excess visits. Select Distribute health department sites have participated in the Distribute Research and Evaluation Collaborative working group where these themes were identified and defined. This roundtable session will provide opportunity for presentation and discussion about the Distribute model, themes and lessons learned from ILI standardization, estimation of impact and evaluation of perceived usefulness by local, state and federal surveillance practitioners.

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- Don Olson, MPH, International Society for Disease Surveillance
- Blaine Reeder, PhD, University of Washington
- Distribute Research and Evaluation Working Group

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Abstract ID: **1059560** Presentation Type: **Roundtable Presentation**

Title: **Influenza Virologic Surveillance - How much is enough**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Epi / Lab capacity, Infectious Diseases, Influenza surveillance**

Abstract Text

Key Objectives:
Introduce APHL-CDC influenza virologic surveillance right-size initiative,
Gain understanding of influenza virologic surveillance purposes at national, state and local level,
Seek input to guide influenza virologic surveillance strategies.

Brief Summary:
APHL and CDC's Influenza Division have launched an initiative to define the "right-size" for influenza virologic surveillance to support key state, national and global needs and disease prevention efforts. Laboratory testing volumes will be considered to support annual prevalence and strain monitoring at local, state and national levels, assure detection of an emergent strain with pandemic potential, monitor anti-viral resistance and inform vaccine strain selection.
This session will provide an opportunity to obtain input from epidemiologists and influenza surveillance coordinators to guide the project activities and outcomes.

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Abstract ID: **1060061** Presentation Type: **Roundtable Presentation**

Title: **Evidence-based environmental strategies reduce underage drinking and accidental death and injury among youth**

Committee: **Injury Control and Prevention**

Topic: **Data impact on policy making and communicating data for policy change**

Keywords: **Adolescent health, Alcohol Use, Behavior based safety**

Abstract Text

Key Objectives:
1) Define and Describe Environmental Strategies that are found to be effective reducing alcohol related death and injury among youth
2) Examine the relationship of policy and enforcement to public health outcomes and available services to support this work.
3) Share an interactive database tool for visual representation and mapping of underage drinking and injury/violence data

Brief Summary:
According to the Center for Disease Control and Prevention (CDC-P) accidents and unintentional injuries are the leading cause of death for youth 15 to 24, followed by homicide and suicide. Alcohol abuse is implicated in all three causes of death with alcohol consumption being a factor in 26% to 41% deaths from motor vehicle crashes. Alcohol is used by more young people in the United States than tobacco or illicit drugs with 24% percent of high school students admitting to episodic and binge drinking in 2009 in the U.S. Youth Risk Behavior Survey. Additional research shows that short term effects of alcohol use has been linked to unintentional injuries, physical fights, academic and occupational problems and illegal behavior.
Long term alcohol misuse (positively correlated with early onset of alcohol use) is associated with liver disease, cancer, cardiovascular disease, and neurologic damages as well as psychiatric problems such as depression, anxiety and antisocial personality disorder. Use of alcohol by underage youth has a high societal as well as individual cost that demands a comprehensive public health response.
This presentation will define “Environmental Strategies” and discuss the collective meta-research into specific environmental strategies that can be implemented by communities and states to reduce youth access to alcohol and strengthen alcohol policies and their enforcement to limit access.
These approaches, reviewed and prioritized in the PIRE/OJJDP document “Strategies Overview to Reducing Underage Drinking” vary in the strength of evidence supporting their use. Such timely topics of debate as alcohol tax increases and limiting number of alcohol outlets show strong evidence of efficacy in saving young lives. This is timely as many States discuss privatizing their State Alcohol Sales thus reducing alcohol sales control.
The presenters will share examples of state and local Success Stories in which communities achieved positive gains through the implementation of evidence based environmental strategies including: compliance checks, social host policies, managing festivals and community events, graduated licensing and Zero tolerance policies, strengthen college policies, using GIS mapping to identify problem areas, and state tax policies. The importance of interdisciplinary coalitions with the input of visual epidemiological data is discussed and Dr Sandeep Kasat will share PIRE's free interactive database tool for easy representation of data as applied to youth alcohol issues.

In addition the presentation will highlight the research and technical assistance services available to the public Underage Drinking Enforcement Training Center (UDETC) at Pacific Institute of Research and Evaluation.

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Abstract ID: **1065710** Presentation Type: **Roundtable Presentation**

Title: **Environmental/Occupational/Injury Steering Committee**

Committee: **Injury Control and Prevention**

Topic: **Other injury**

Keywords: **Environmental Health, Injury, Occupational Health**

Abstract Text

Background:
CSTE is comprised of 6 steering committees. The Environmental/Occupational/Injury Steering Committee combines activities from environmental health, occupational health, and injury surveillance and control.

Methods:
Steering Committee lead person, Martha Stanbury will lead the session and invite Subcommittee lead contact persons to present their activities and accomplishments over the past one year.

Results:
The goal of this presentation is to discuss environmental health, occupational health, and injury surveillance activities from 2010-2011.

Conclusions:
Opportunities for collaboration will be discussed.

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Abstract ID: **1053453** Presentation Type: **Roundtable Presentation**

Title: **Measuring occupational surveillance program impact using the CDC's Evaluation Framework**

Committee: **Occupational Health**

Topic: **Evaluating results of occupational health surveillance programs**

Keywords: **Evaluation, Occupational Surveillance**

Abstract Text

Key Objectives:
Participants will learn how to develop an evaluation plan based on the Centers for Disease Control and Prevention's (CDC) Framework for Program Evaluation in Public Health (http://www.cdc.gov/mmwr/pdf/rr/rr4811.pdf).
Participants will learn how to incorporate their evaluation plan into occupational surveillance programs to better evaluate their functionality, resources, outcomes and impact.

Brief Summary:
A safe and healthy workplace for all workers is a public health goal that occupational safety and health professionals strive to achieve. As with all public health goals, an important first step is to conduct high-quality surveillance. Many state and federal health agencies have developed occupational safety and health surveillance programs aimed at collecting baseline data, monitoring trends, responding to occupational health threats, and prioritizing occupational health and safety issues and concerns.
With an increased emphasis on the quality and accountability of public health programs, it is essential that occupational health and safety surveillance programs demonstrate their program's functionality, effectiveness and impact through comprehensive program evaluation. Many programs may not be adequately evaluated because useful program evaluation is often considered to be a resource/time intensive process that is completely independent of the program itself. To assist with ensuring programs can be effectively evaluated, the CDC has developed a systematic set of program evaluation steps, the Framework for Program Evaluation in Public Health, that can be used as a practical guide to easily and systematically incorporate evaluation into public health programs. The framework can be applied to occupational safety and health surveillance programs as a driving force for demonstrating program functionality, impacts and outcomes; enhancing quality of services and data; effectively identifying priority areas; and informing leadership and management of important occupational safety and health priorities, issues and trends.
This roundtable will demonstrate how CDC's Framework for Program Evaluation in Public Health can be incorporated into routine occupational health and safety surveillance program operations.

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Abstract ID: **1060632** Presentation Type: **Roundtable Presentation**

Title: **OSHA’s emerging issues surveillance and response system**

Committee: **Occupational Health**

Topic: **Emerging issues and public health responses (e.g., nanotechnology, underreporting, assessing health inequalities)**

Keywords: **Emerging health issues, Occupational Health, Surveillance**

Abstract Text

Key Objectives:
The roundtable will provide attendees with an overview of the Occupational Safety and Health Administration's (OSHA) emerging issues system. OSHA’s goal for this project is to establish a proactive system for identifying, monitoring and responding to the potential hazards associated with emerging technologies and changing industry patterns. The roundtable will provide for discussion and feedback on the system’s four major components: identification, analysis, response and evaluation. Unique response methods including the use of social media and information sharing will be discussed. Participants will be encouraged to offer suggestions for improvement and collaborations with the current system.

Brief Summary:
An important activity in OSHA’s mission to ensure safe and healthful working conditions for working men and women is to anticipate and respond to emerging issues in occupational health. An emerging safety and health issue is one that is new or evolving and the risks are unknown, unrecognized, increasing, or changing. Potential workplace health and safety hazards can originate in new and changing technologies and industries, working populations, workplace processes, and materials. OSHA is developing an Emerging Issues Surveillance and Response System under the coordination of its Office of Science and Technology Assessment. This system will allow for the identification of potential emerging issues, analysis of the impact and scope of these issues and development of unique, non-regulatory actions to reduce the safety and health risk to the working population. An evaluation component is incorporated to provide a continual feedback loop on the effectiveness of this system and to suggest improvements to the system.

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Abstract ID: **1057522** Presentation Type: **Roundtable Presentation**

Title: **Integrating industry and occupation into health and exposure surveillance: Industry and occupation coding**

Committee: **Surveillance/Informatics**

Topic: **Other surveillance/informatics**

Keywords: **Coding, Occupational Surveillance, Workplace safety**

Abstract Text

Key Objectives:
To illustrate the value and methods of including workplace information in health records, public health surveillance systems and other data collection mechanisms which may be used to assess the health of the population.

Brief Summary:
In the United States, workers spend more than half their waking hours in the workplace. Over the past fifty or so years, many studies have shown the relationship between workplace exposures and the health of workers. Furthermore, the workplace is a key source of health insurance and the economic status of an individual or family; thus work plays a significant role in the ability to access and pay for health care. Incorporation of industry and occupation into health surveys and exposure surveillance can help us explore the association between work and disease, and better position us to provide more meaningful prevention strategies to our public health stakeholders.

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4) Karla Armenti, ScD, Principle Investigator, New Hampshire Occupational Health Surveillance Program, NH Division of Public Health Services

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Abstract ID: **1055755** Presentation Type: **Roundtable Presentation**

Title: **Using public health students to track disease**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Surveillance**

Abstract Text

Key Objectives:
Use of students to enhance public health surveillance

Brief Summary:
Public health students may not get training in applied public health. Many public health tasks are relatively simple and students can be easily trained to do them. Since 2004, NYC Department of Health and Mental Hygiene (DOHMH) has trained over 400 student volunteers to act as surge capacity in the event of outbreaks. Several such students have gone on to obtain jobs with DOHMH. As a result of this experience, we were interested in funding students to work with us more often to address current gaps in surveillance capacity. In 2009, DOHMH received OutbreakNet Sentinel Site funds to enhance Salmonella surveillance by training students from local schools of public health to provide resources to conduct more complete surveillance activities for high-volume and less severe diseases.

Prior to receiving the Outbreak Net grant, DOHMH only interviewed salmonellosis cases that were associated with clusters or high-risk situations. Six student interns were hired for 20 hours a week to interview all salmonellosis cases using a hypothesis generating questionnaire and data enter the results. To better reach patients and work within space constraints, students worked afternoons, evenings and weekends requiring some extra supervision by DOHMH staff. For languages the students did not speak, interpretation services were used for translation. As students did not have dedicated desks, cell phones and a central voicemail were provided for making calls. Students also assisted with outbreak investigation, developing databases, and conducting data analyses.
In the first year, students completed nearly 1000 interviews in 10 languages although additional staff from a temp agency was needed to complete data entry. As a result of DOHMH rules requiring supervision of students, DOHMH staff were required to stay after hours and provide supervision. Students also assisted on phone calls during more than 20 outbreak investigations and with other tasks around the office, as needed. One student applied for and was offered a job at DOHMH.
Student interns can offer inexpensive labor for large interview projects for which health departments may not have the resources to complete; the arrangement offers experience in applied public health for students and results in a pool of experienced candidates for jobs at the health department. More partnerships between health departments and academic programs could be beneficial to both students and public health agencies.

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Abstract ID: **1062438** Presentation Type: **Roundtable Presentation**

Title: **Syndromic surveillance requirements and Meaningful Use**

Committee: **Surveillance/Informatics**

Topic: **Surveillance implications of Health and Health IT Policy (HITECH, MU, Health care reform)**

Keywords: **Federal Policy, Information systems, Surveillance**

Abstract Text

Key Objectives:
1) Compare and contrast core business processes, model use cases and workflows for syndromic surveillance, including the communication and use of clinical data among health data providers and public health authorities
2) Identify health data content and messaging formats to support public health syndromic surveillance
3) Discuss future implications of the ISDS recommendation to health information management and public health in the context of Meaningful Use

Brief Summary:
Syndromic surveillance is one of three public health Meaningful Use criteria for Stage 1 electronic

health record (EHR) technology implementation. This session will review the ISDS Meaningful Use Workgroup final recommendation of core EHR requirements and the business process model for public health syndromic surveillance (PHSS).
The Health Information Technology for Economic and Clinical Health (HITECH) Act (2009) authorized the establishment of programs to improve health care quality, safety, and efficiency through the promotion of health information technology (HIT), including electronic health records and private and secure electronic health information exchange. Syndromic surveillance is one of three public health Meaningful Use criteria for Stage 1 EHR technology implementation. There was an absence of standards to support EHR certification for PHSS. In 2010, the Centers for Disease Control and Prevention's BioSense Program supported the International Society for Disease Surveillance (ISDS) to develop recommendations for a requirement that supports the core business objectives of PHSS practice using a business process analysis approach. The ISDS Meaningful Use Workgroup composed of state and local PHSS experts used a community consensus-driven process to develop the recommendations. Workgroup members represented key public health stakeholder organizations (e.g., Council of State and Territorial Epidemiologists, Association of State and Territorial Health Officials, National Association of County and City Health Officials). Input from all Meaningful use stakeholders on a provisional recommendation document was collected during an open comment period which then informed ISDS's final recommendation.
The final ISDS recommendation details three core syndromic surveillance business processes and the core data elements. The recommended standards: 1) define the core objectives of current syndromic surveillance practice; 2) describe the model core workflows, inputs and outputs; and 3) provide an understanding of how an EHR can add value and efficiently interface with a public health authority.
The majority of commentators endorsed the ISDS recommendations. Core data elements were considered to be essential in supporting the objectives of PHSS. Several critical issues were not addressed by the ISDS recommendations, including: 1) surveillance practice and technical standards for primary and inpatient care health data as defined in Stage 1 Meaningful Use; 2) incorporating health information exchanges and facilitating the development of scalable EHR solutions; 3) a coordinated, harmonized approach for public health "electronic surveillance"; and 4) incorporation of federal PHSS business processes and requirements.

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Abstract ID: **1062287** Presentation Type: **Roundtable Presentation**

Title: **Perspectives: Early experiences of state public health departments responding to the reportable laboratory result objective of Meaningful Use Stage 1**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Electronic laboratory reporting (ELR), Informatics, Surveillance**

Abstract Text

Key Objectives:
1)Educate attendees on the experiences of two State Health Departments engaged with hospitals in

response to the reportable laboratory result objective of Meaningful Use Stage 1
2)Provide attendees an overview of the framework utilized by a State Health Department to organize and engage hospitals for the reportable laboratory result objective of Meaningful Use Stage 1
3)Provide attendees an opportunity to share their experiences in responding to the reportable laboratory result objective of Meaningful Use Stage 1 through the context of the presented framework

Brief Summary:
This Round Table seeks to move past discussions on policy, certification, attestation and conformance and provide attendees with the insights, challenges, successes and failures that only come from executing the steps to achieve the reportable laboratory result objective of Meaningful Use Stage 1. Led by the NEDSS Coordinators of the Texas Department of State Health Services (TX DSHS) and Tennessee Department of Health (TDOH), this Roundtable will first provide an overview of the work currently underway in Texas and Tennessee with hospital systems to transmit reportable laboratory results that are actionable for public health investigation. From data sharing agreements and transportation methods, to field by field inspection of HL7 messages and terminology standardization, the Roundtable will then provide attendees an overview of a framework put to use by the TX DSHS in response to the need for a repeatable process for engaging hospitals throughout Texas. Revolving around the four phases of Engage, Connect, Validate and Operate, the ELR framework can be utilized by State Health Departments as a guide for successfully navigating the Stage 1 objective for reportable laboratory results. Lastly, the Round table leaders will facilitate attendee participation by soliciting experiences on each the four parts of the presented framework. Ultimately, this Roundtable seeks to provide a forum for presenters and attendees to share experiences using a structured framework.

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Abstract ID: **1062265** Presentation Type: **Roundtable Presentation**

Title: **Public health meaningful use objectives**

Committee: **Surveillance/Informatics**

Topic: **Surveillance implications of Health and Health IT Policy (HITECH, MU, Health care reform)**

Keywords: **Electronic data, Electronic laboratory reporting (ELR), Health information exchange**

Abstract Text

Abstract Text
Omitted from display per the Author's request

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Abstract ID: **1065800** Presentation Type: **Roundtable Presentation**

Title: **Surveillance/Informatics Steering Committee Roundtable: National surveillance progresses, priorities and challenges**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Informatics, Surveillance**

Abstract Text

Key Objectives:
Discussion of surveillance and informatics priorities and remaining challenges to be addressed by the Steering Committee

Brief Summary:
This roundtable will allow the Surveillance/Informatics Steering Committee and subcommittees a forum for further discussion on CSTE activities and priorities for the upcoming year

Speaker:

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Abstract ID: **1091335** Presentation Type: **Roundtable Presentation**

Title: **Pertussis panel presentation**

Committee:

Topic:

Keywords:

Abstract Text

Speaker:

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Abstract ID: **1085786** Presentation Type: **Roundtable Presentation**

Title: **Safe States Alliance improves poison surveillance through its Seventh Injury Surveillance Workgroup (ISW7) on poisoning (Katherine Harmon will present in place of Scott Proescholdbell)**

Committee:

Topic:

Keywords:

Abstract Text

Description:
Continued discussion from breakout session.

Speaker:

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Abstract ID: **1089247** Presentation Type: **Roundtable Presentation**

Title: **Injury prevention, surveillance, and transportation planning: Identifying indicators of healthy community design**

Committee:

Topic:

Keywords:

Abstract Text

Description:
During this roundtable discussion, participants will discuss surveillance indicators that can be useful in making links between transportation planning, community design, and injury-related outcomes. Participants will also discuss how existing data systems can be adapted to support Smart Growth efforts.

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Abstract ID: **1083483** Presentation Type: **Roundtable Presentation**

Title: **Using Epidemiology to Address Health Disparities**

Committee:

Topic:

Keywords:

Abstract Text

Description:

Key Discussion Points:
To update CSTE members on activities and plans of the CSTE Health Disparities Subcommittee
To describe the CDC first assessment report on health disparities released in January 2011
To propose a simplified methodologic approach to using geocoded public health disease data combined with census tract socioeconomic data to analyze for select health disparities
To gather comments for future directions for CDC and CSTE to collaborate in the area of health disparities at the local, state, and federal levels.

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Abstract ID: **1079272** Presentation Type: **Discussion Room Presentation**

Title: **Chronic Disease/MCH/Oral Health Committee Update**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Other chronic disease, maternal & child health, or oral health epidemiology**

Keywords: **Chronic diseases**

Abstract Text

Key Objectives:
To update on the activities of the CSTE Chronic Disease, Maternal and Child Health, and Oral Health Steering Committee.

Brief Summary:
A discussion and update on the activities of the CSTE Chronic Disease, Maternal and Child Health, and Oral Health Steering Committee.

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Abstract ID: **1058500** Presentation Type: **Discussion Room Presentation**

Title: **Creating legal datasets for public health law research**

Committee: **Cross Cutting**

Topic: **Assessing the impact of public health laws and policies**

Keywords: **Law, Public health law, Research**

Abstract Text

Key Objectives:
To introduce the concept of legal datasets and demonstrate their utility in public health law research;
To briefly explore challenges in the construction of legal data including variable creation and coding; and
To illustrate the creation and use of legal datasets in two projects examining, respectively, healthcare worker influenza immunization laws and laws regulating the use of mobile telecommunication devices while operating motor vehicles.

Brief Summary:
Public health law research (PHLR) is the scientific study of the relation of law and legal practices to population health. It is a broad field whose breadth reflects the diverse and numerous types and bodies of law that influence population health and the many and varied mechanisms that mediate those relationships. The range of research encompassed within PHLR extends from evaluations of laws aimed at specific health goals such as those requiring seatbelts to studies that assess the health-effects of non-health-related laws like those exploring the relationship between zoning laws and obesity. PHLR is also a deep field comprised of researchers from numerous disciplines who employ different approaches in their empirical analyses. The National Program Office for Public Health Law Research (NPO), a Robert Wood Johnson Foundation funded effort, supports PHLR by funding research, improving research methods, and making the evidence-base for public health law more accessible to policy-makers, the media, and the public.
The creation of legal data is a perquisite for many types of public health law research. There are challenges to distilling a body of law into a form that can be used as the basis for causal inferences about health outcomes. Because most empirical analysis requires amounts - or quantifiable data - that can be compared against each other and over time, traditional methods of legal interpretation and synthesis are typically insufficient. Instead, laws must be measured in a way in which their features are reflected in numerical form consistent with scientific principles of validity and reliability. In this discussion group, the Senior Legal Fellow for the NPO and the Principal Investigator for an NPO-funded project will discuss their experiences creating and using legal data. They will respectively draw upon projects assessing the effect of laws regulating the use of mobile communication devices by motor vehicle drivers and laws requiring influenza immunization for healthcare workers.

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Abstract ID: **1061499** Presentation Type: **Discussion Room Presentation**

Title: **Innovative approaches to developing local indicators of substance abuse**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Data sharing, Geographic Information Systems, Substance abuse**

Abstract Text

Key Objectives:
This roundtable will highlight the work the Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Prevention, Data Analysis Coordination and Consolidation Center (DACCC). The DACCC recently consulted with leading researchers and prevention practitioners to assess the current state of local indicators. Additionally, the DACCC linked PMP data with substance abuse prevention epidemiologists at the state and local level. The roundtable will highlight this research as well as provide perspectives on national efforts to support the development of local data indicators of substance use and abuse.
Topics to be discussed include innovative approaches to local data indicators, using PMP data to develop local indicators and profiles, recommendations for linking PMPs with prevention practitioners, and the role of local indicators in the allocation of substance abuse prevention resources.

Brief Summary:
Epidemiological workgroups must continually assess new and emerging patterns of substance use and abuse. Guided by the Office of National Drug Control Policy's National Drug Control Strategy (NDCS), epidemiological workgroups are now focused on developing more local indicators of drug abuse. Establishing local indicators helps communities improve their capacity to assess their respective local drug problems, identify the most appropriate evidence-based approaches to addressing their particular problems, and sustain successful approaches. Such categories of indicators include risk and protective factors, drug related mortality and morbidity, drug use incidence and prevalence, and drug-use consequences such as school drop-out rates, drug-endangered children rates, and drugged driving rates.

Existing federal data systems do provide some support in helping communities assess their local drug problems, but are generally not adequate when it comes to providing a comprehensive snapshot of the drug problem. While many of these systems can be disaggregated, they generally are of limited value in supporting community level decision making. Innovative approaches are necessary to give community stakeholders the information they need to allocate prevention resources.
One innovative approach to developing local indicators is the use of Prescription Monitoring Program (PMP) data. As prescription drug abuse is on the rise in many communities, state and community level epidemiological workgroups can harness the data collected by PMPS to develop local indicators of substance use and abuse. PMPs have been established in over 40 states and PMP data is often more timely than other available indicators of prescription drug abuse such as coroner reports and hospital admission data.

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Abstract ID: **1060088** Presentation Type: **Discussion Room Presentation**

Title: **Demonstrating comprehensive and interactive tool for monitoring national and state substance abuse /behavioral health indicator trends**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Epidemiology, Substance abuse, Surveillance**

Abstract Text

Key Objectives:
Present outcomes based prevention logic model applied by all states for substance abuse prevention
Provide an overview of Behavioral Health Information System (BHIS), an ongoing and comprehensive national substance abuse surveillance database
Demonstrate tools, graphs and other interactive features available from the website
Discuss future goals and seek feedback from the users

Brief Summary:
There are number of national surveys (BRFSS, NSDUH, etc.) and archival surveillance systems (FARS, CDC wonder, etc.) that provide data in an interactive manner for users; however, to our knowledge, there is no single database that provides a comprehensive set of key substance abuse constructs and indicators that that cut across these data sources and attempts to provide a comprehensive set of indicators. SAMHSA's State Epidemiological Data System (SEDS) was created in 2004 to provide such list of substance abuse outcomes (consequences and consumption patterns) to all states, jurisdictions and tribes for use in their prevention planning. The Behavioral Health Information System (BHIS) is a unique interactive tool that attempts to further enhance SEDS by making the data interactive (on the fly graphics, tables), comprehensive (state level and special population data) and real-time (updated frequently; users don't need epidemiological capacity to generate indicators, graphs, etc.).
This session is aimed at demonstrating BHIS, discuss enhancement and future goals and seek feedback from participants and users (especially CSTE substance abuse subcommittee).

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Abstract ID: **1061800** Presentation Type: **Discussion Room Presentation**

Title: **Defining an indicator for hospitalizations for alcohol and other drug use**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Hospital data, Indicators, Substance abuse**

Abstract Text

Key Objectives:

The speaker will review the purpose of developing an indicator on hospitalizations for alcohol and other drug use, identify the members of the hospitalizations indicator workgroup, provide a status report, and present the indicator in its current form. The objectives of this roundtable are to:
1) elicit input from attendees on unresolved issues essential to the completion of the indicator definition
2) identify issues that should be addressed that the workgroup has not considered
3) obtain approval of the indicator definition (presuming the above objectives can be reconciled during the session)

Brief Summary:
During the past decade there have been substantial and consistent increases in morbidity and mortality rates due to the use of alcohol and other drugs (AOD). Currently, there is no standardized definition of an AOD-related hospitalization. Following the precedent set by others in chronic disease, injury, occupational health and environmental health to develop health indicators, a workgroup was formed within the CSTE Substance Abuse Epidemiology Subcommittee to develop an indicator for hospitalizations for AOD use. The justification for developing this indicator is that it will: a) provide a measure of an important public health issue; b) be based on data to which most states have access; c) be fairly simple to calculate. Indicators can be used as the basis for surveillance and, assuming the underlying data sources are comparable among states and the nation, they can be used for state-to-state or state-national comparisons.
At the roundtable session, attendees will be presented with a proposed definition of an AOD hospitalization. The definition will include a set of ICD9CM codes as well as inclusion and exclusion criteria. Their comments will be taken into consideration as the definition is finalized. Subsequently the workgroup will develop step-by-step instructions for generating the indicator. Once work is completed on this indicator, the workgroup will identify, define and develop step-by-step instructions for AOD hospitalization sub-indicators (e.g., alcohol-related hospitalizations).

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Abstract ID: **1062299** Presentation Type: **Discussion Room Presentation**

Title: **MMWR: Building bridges with state and territorial health departments**

Committee: **Cross Cutting**

Topic: **Epidemiology capacity**

Keywords: **Epi / Lab capacity, Epidemiology, Risk communication**

Abstract Text

Key Objectives:
-Introduce the two new medical editors of the MMWR
-Facilitate communication between CSTE members and MMWR
-Discuss new initiatives at MMWR
-Solicit new ideas and feedback to increase MMWR value
-Answer questions from CSTE members

Brief Summary:
The MMWR is the voice of the Centers for Disease Control and Prevention (CDC) on key issues in public health. Published continuously since 1961, MMWR is celebrating its 50th anniversary this year. State and Territorial epidemiologists are essential CDC partners and have made major contributions to and practical use of the scientific information published in MMWR since its beginning. The purpose of this meeting is to introduce the new Editors of the MMWR to CSTE members, facilitate communication between them, discuss new initiatives at MMWR, solicit new ideas and feedback from CSTE members on ways to increase MMWR influence and work effectively together, and answer questions on any of these topics.

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Abstract ID: **1053996** Presentation Type: **Discussion Room Presentation**

Title: **Unregulated Drinking Water Initiative (UDWI) for environmental surveillance and public health**

Committee: **Environmental Health**

Topic: **Other Emerging Environmental Epidemiology Issues**

Keywords: **Community health, Water, Waterborne disease**

Abstract Text

Key Objectives:
The key objectives for this roundtable discussion are to: 1). Allow states currently funded through the UDWI to share progress and lessons learned through their activities to locate, describe, and access data on unregulated drinking water systems (UDWS) in their state and 2). Engage states who are interested in determining how they can best participate in and benefit from the UDWI.

Brief Summary:
A significant percentage (13 percent) of the US population relies on drinking water sources (primarily private wells) not regulated by the U.S. Environmental Protection Agency's Safe Drinking Water Act. We know relatively little comprehensively about the characteristics of these drinking water sources and the related potential public health issues that may require attention and resources. The National Center for Environmental Health, Centers for Disease Control and Prevention has created the UDWI to address this deficiency. Activities supported by the UDWI include using information to assess the current states of non-federally regulated drinking water sources, sharing information among public health practitioners, and identifying potential courses of action to address public health concerns and to ensure the safety of these water systems.
While relatively little is currently known about private wells collectively, there is some information about the quality of the groundwater that serves these wells. State environmental management and resource agencies (DEPs, DNRs, etc) and the USGS have documented general groundwater quality throughout much of the nation. Uncertainty in potential hazards and pollutants comes from differences in well construction, land uses, and localized geologic conditions. Characterization of many of these hazards

has been done and will be utilized to the extent feasible in the evolution of this UDWI.
Public health practitioners recognize that addressing health concerns in private wells is a fundamentally different activity from dealing with public water systems (given coverage under the Safe Drinking Water Act for these latter wells). The UDWI requires that public health practitioners begin to develop detailed information, consider behavioral and social strategies in distributing information and raising awareness, and institutional approaches to foster action.

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Abstract ID: **1054584** Presentation Type: **Discussion Room Presentation**

Title: **Building upon the Poison Center and Public Health Collaborations Community of Practice: Use of data from Poison Centers for hazardous exposure and illness surveillance**

Committee: **Environmental Health**

Topic: **Other Emerging Environmental Epidemiology Issues**

Keywords: **Collaboration, Environmental Health, Unintentional/intentional poisoning**

Abstract Text

Key Objectives:
- To provide an overview of activities and accomplishments of the community of practice since the kickoff meeting in June 2010
- To identify other state and local PH officials and regional PCs who are interested in participating in the community of practice
- To facilitate discussion for changes to improve the current community of practice
- To identify future topics of interest for the community of practice presentations and topics for discussion on www.phConnect.com

Brief Summary:
The Council of State and Territorial Epidemiologists (CSTE) identified the National Poison Data System (NPDS), managed by the American Association of Poison Control Centers (AAPCC) and the CDC Health Studies Branch, as an important national public health (PH) surveillance system. CSTE members are interested in building a community of practice to share experiences, identify best practices, and facilitate relationships among federal, state and local PH departments and regional Poison Centers (PCs). A kick-off roundtable discussion was held at the CSTE Conference in June, 2010 and was attended by approximately 50 participants from federal, state, local public health agencies, AAPCC, and regional PCs.
Due to outstanding attendance and enthusiasm from the CSTE community of practice kick-off discussion, this roundtable discussion aims to build upon the last session by discussing possible changes to improve the current community of practice and to further encourage involvement from PH departments and regional PCs. The accomplishments are listed to date:
- The first webinar was held on August, 2010, and CDC presented “Use of the National Poison Data System for National Public Health Chemical Exposure and Illness Surveillance”. The webinar had approximately 125 participants.

- The second webinar was held on October, 2010, and NYC DHMH presented “Camphor-Related Seizures - A Bronx Tale: One Case Study of NYC’s PCC Surveillance”. The webinar had approximately 85 participants.
- A web-based community of practice forum on www.phConnect.org was established to enable posting of documents and exchange of information across jurisdictions. Currently, over 50 members are enrolled on the community of practice forum.

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Abstract ID: **1058366** Presentation Type: **Discussion Room Presentation**

Title: **Recreational water illness prevention: The purpose and status of the Model Aquatic Health Code project**

Committee: **Environmental Health**

Topic: **Air and water quality related to environmental epidemiology**

Keywords: **Disease prevention, Environmental Health, Waterborne disease**

Abstract Text

Key Objectives:
To discuss the purpose, status, and implications for CSTE of the Model Aquatic Health Code project, which is an effort to improve treated aquatic environments for healthy swimming and reduce risk of recreational water illness and injury

Brief Summary:
Recreational water illness (RWI) reporting has increased substantially in the United States over the past several decades. During 2005-2006, a total of 78 waterborne disease outbreaks associated with recreational water occurred in 31 states causing illness in 4,412 persons. This represents an increase from 62 outbreaks reported in 2003-2004, and is the largest number of outbreaks in a 2-year period since reporting began in 1978. Illness was primarily gastroenteritis (61.5% of outbreaks) with *Cryptosporidium* being the most common causal agent (64.6% of gastroenteritis outbreaks). The upsurge in RWI outbreaks emphasizes the importance of proper design, maintenance, and operation of swimming pools, water parks, and interactive fountains to promote healthy aquatic activities.
In the absence of uniform national guidelines or a designated federal enforcement agency, state and local jurisdictions have developed their own environmental health regulations for recreational water venues leading to widely disparate standards and enforcement. In 2004, CSTE recommended that the Centers for Disease Control and Prevention (CDC) sponsor development of a national strategic plan to address the prevention and control of RWIs. This strategic plan proposed creation of a Model Aquatic Health Code (MAHC) to serve as a voluntary, national guideline for state and local agencies when crafting or revising regulations for recreational water venues. With an initial grant from the National Swimming Pool Foundation, CDC has been working with a multidisciplinary group of public health professionals, industry representatives, academicians, and aquatic interest groups to develop data-driven, knowledge-based guidelines. The MAHC is modular in design, with sections on recreational water venue design and construction, operation and maintenance, and policies and management which will undergo regular review and revision on a continuous basis to keep pace with emerging

technology and best practices. To date, modules have been released regarding operator training and response to contamination incidents; other modules are scheduled for release in 2011. To reduce future outbreaks, disease, and injury, CSTE will need to play a continual role in the MAHC revision process (just as for the food code), providing the latest epidemiologic, environmental, and laboratory data to ensure that the MAHC remains data driven in the future to protect the swimming public and reduce RWIs.

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Abstract ID: **1061500** Presentation Type: **Discussion Room Presentation**

Title: **Development and implementation of a national harmful algal bloom exposure and illness surveillance system**

Committee: **Environmental Health**

Topic: **Other Emerging Environmental Epidemiology Issues**

Keywords: **Environmental Health hazards, Surveillance, Toxins**

Abstract Text

Key Objectives:
Attendees will be able to (1) describe the hazard posed by harmful algal blooms in marine and freshwater environments;
(2) characterize the key features of HABISS as an environmental public health surveillance system; and (3) list and evaluate various approaches taken by state health agencies to obtain case information about algal bloom and toxin exposure events

Brief Summary:
The extent of human illness caused by environmental exposure to algal toxins in drinking and recreational waters is unknown. There are no U.S. federal regulations, and no official guidance has been developed by U.S. EPA specifying allowable concentrations of algal toxins in surface waters and drinking water. In response to the need to support public health decisions related to algal bloom exposure, CDC's National Center for Environmental Health has developed the Harmful Algal Bloom-related Illness Surveillance System (HABISS), a unique surveillance system that includes the collection of data on both human and animal health events related to algal bloom and toxin exposure, as well as environmental data about harmful algal blooms. To support data collection, NCEH has established cooperative agreements with participating state health agencies; these agreements have furthered efforts to identify water bodies associated with particularly acute HAB hazards and have helped provide data to anchor outreach, prevention and control efforts. Since data collection began in 2009, over 200 reports of human illnesses, 80 reports of animal illnesses, and summaries of several hundred HABs have been added. Technical assistance has been provided to non-participating states to utilize this resource to respond to HAB-related events, and several states have developed comprehensive HAB response and outreach plans.
The development and implementation of HABISS has provided a new national surveillance infrastructure for algal bloom surveillance. This infrastructure has led to increased data quality and quantity within state agencies, and has led to highly-coordinated interagency response activities in participating states. As data continue to be collected, analyzed and disseminated, it is hoped and expected that new insights into factors governing the occurrence, severity and control of harmful algal

blooms will be identified.
A roundtable discussion of HABISS and tools for response activities will allow attendees to gain information about resources that state public health partners will need to respond quickly and efficiently if and when a HAB occurs. The discussion will include HAB experience and response plans from current grantees and others states, and CDC's development of easily accessible information and tools to utilize in HAB-related events.

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Abstract ID: **1062309** Presentation Type: **Discussion Room Presentation**

Title: **Dengue in the United States: Identification of an under-recognized problem**

Committee: **Infectious Diseases**

Topic: **Vectorborne**

Keywords: **Arbovirus, Data/Surveillance, NEDSS/PHIN**

Abstract Text

Key Objectives:
Dengue in now a reportable disease in the United States where it occurs among persons who live in areas where it is endemic (e.g., Puerto Rico, Virgin Islands, US-affiliated Pacific Islands), travelers returning from endemic areas worldwide, and during a limited number of outbreaks. Dengue is the most common cause of febrile illness in travelers returning from South/Central Asia, South America, and the Caribbean. However, disease recognition is hampered by a lack of awareness among travelers and health care professionals, and the lack of readily available diagnostic testing. These factors appear to lead to delays in recognition, diagnosis and prompt treatment of dengue cases, and result in underreporting of dengue to ArboNet and NEDSS. In addition, the mosquito vectors for dengue virus transmission are widely distributed throughout the United States, which raises the potential for outbreaks due to autochthonous transmission.
Roundtable leaders will review dengue epidemiology and disease outcomes, changes in diagnostic approaches and disease reporting. Roundtable participants will relate experiences and suggestions for how to improve dengue recognition, diagnosis and reporting.

Brief Summary:
Dengue is a disease that will continue to increase in importance to US residents. Awareness, diagnosis and reporting of dengue by clinicians and health departments can be improved. Conclusions drawn from this Roundtable will allow CDC Dengue Branch to better assist health departments with disease recognition, diagnosis and reporting.

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Abstract ID: **1012670** Presentation Type: **Discussion Room Presentation**

Title: **Non-therapeutic antibiotic use in animal agriculture: The intersection of politics, public health and microbiology**

Committee: **Infectious Diseases**

Topic: **Infectious disease: General**

Keywords: **Animals and Public Health, Antibiotic resistance, Environmental exposures**

Abstract Text

Key Objectives:
At the end of this roundtable, attendees should be able to:
1. Briefly describe the history of over the counter and prescription use of antibiotics in modern agriculture.
2. List four approved purposes for which antibiotics are given to food animals.
3. Describe at least three regulatory or legislative actions to address the issue of antibiotic resistance.

Brief Summary:
All uses of antibiotics contribute to drug resistance, and research clearly shows that resistant bacteria from food animals contribute to the problem. Antibiotics are available over the counter and are routinely and deliberately given at subtherapeutic levels to many healthy food animals in the U.S. to increase production, decrease the time from birth to slaughter, and to mask poor management practices. Non-therapeutic and subtherapeutic use of these drugs in food animals creates a large reservoir for the emergence of bacterial resistance to antibiotics. The World Health Organization recommends veterinary oversight of antibiotics in food animals and a national surveillance system to monitor antibiotic use and resistance, but that has not been instituted in the U.S. despite several proposed legislative and regulatory solutions. This roundtable will discuss the history and results of U.S. inaction, recent attempts to monitor and mitigate through laws and policies, and the beneficial impact that passage of laws on the restricted use of antibiotics in food animal production on public health

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Abstract ID: **1054714** Presentation Type: **Discussion Room Presentation**

Title: **Tdap Education and Administration Program for postpartum mothers**

Committee: **Infectious Diseases**

Topic: **Immunizations**

Keywords: **Immunization, Policy/Policy Development, Vaccination**

Abstract Text

Key Objectives:
Decrease pertussis incidence among infants; Increase Tdap vaccination rates among postpartum mothers prior to hospital dischage; Increase Tdap vaccination knowledge and rates among parents, adolescents, and other close contacts of infants

Brief Summary:
Tdap vaccination is a high priority among public health agencies and should be a high priority in healthcare facilities, especially for new parents. A Tdap Education and Administration Program in healthcare facilities would prevent pertussis among new parents and thus protect vulnerable infants. With leadership from the public health department, an educational program was developed and policy was changed at the local hospital to educate and offer Tdap vaccine to all postpartum mothers. Each mother also takes home a Tdap brochure designed for new parents that describes pertussis, sources of infection, Tdap vaccine, who needs the vaccine and where other family members can get vaccinated. This intervention caused the Tdap vaccination rate of postpartum mothers to increase from 0% to 35% in the first year. Conference participants will be able to take home sample standing orders, a sample fact sheet developed for policy makers, and parent brochures.

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Abstract ID: **1062350** Presentation Type: **Discussion Room Presentation**

Title: **Canaries in the coal mine: Who speaks for the consumer and food safety**

Committee: **Infectious Diseases**

Topic: **Foodborne disease**

Keywords: **Food safety, Foodborne disease, Law**

Abstract Text

Background:
Consumers place great trust in our food supply. Since foodborne pathogens are generally odorless and tasteless, consumers cannot fully evaluate the quality of the food they purchase. Thus, they serve as “canaries in the coal mine,” a reference to early mining practices of using canaries to detect build up of dangerous gases. A dead canary meant immediate danger to miners just as an ill consumer signals unsafe food and immediate danger to other consumers. Yet, the complexities of our modern day food supply impede detection of system failures that contribute to foodborne illness. The result is that the source of most food related illnesses is never recognized and the party at fault is not held accountable. The lack of marketplace accountability for foodborne illness means that manufacturers and distributors have little incentive to incur costs to prevent foodborne illness. Adding insult to injury, in most instances it is the consumer who pays for a manufacturer’s decision not to invest in food safety. Must the

consumer be relegated to canary status with little control over his fate?
In a sense, foodborne illness litigation serves as consumer advocacy for food safety. Foodborne illness litigation is based on strict liability laws which put the costs of injuries resulting from defective products on manufacturers. If the facts of the case clearly show injuries due to consumption of contaminated food, foodborne illness related lawsuits are easy to prove. Economically speaking, a product liability lawsuit is a mechanism to shift the costs of damages caused by the sale and profit of unsafe food from the consumer to the manufacturer. Lawsuits and the publicity that surrounds them can affect the behavior of firms that make or distribute unsafe food products. Furthermore, process and product innovation more often occurs after illness occurs.
In this presentation the speaker, William Marler, noted foodborne illness attorney, will discuss the law behind foodborne illness litigation and provide examples of how litigation has contributed towards improved industry practices to promote food safety.

Methods:
N/A

Results:
N/A

Conclusions:
N/A

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Abstract ID: **1062529** Presentation Type: **Discussion Room Presentation**

Title: **Changes to the National Healthcare Safety Network (NHSN) to improve HAI prevention efforts of state health departments**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Healthcare associated infections (HAI), Surveillance**

Abstract Text

Key Objectives:
1. Describe changes to the stated purposes and confidentiality provisions of the Centers for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN) that enable new access to healthcare-associated infection (HAI) and prevention practice adherence data for use by state public health agencies for HAI surveillance and prevention.

Brief Summary:
In September 2009, the CDC's Division of Healthcare Quality Promotion used funds authorized by the American Recovery and Reinvestment Act to provide new support to 49 states, the District of Columbia, and Puerto Rico for HAI prevention programs These new investments underscored the important role of state, territorial, and local health departments in national HAI prevention efforts and highlighted CDC's commitment to strong public health partnerships. The ARRA-funded support for HAI

programs also placed a new premium on expanding access to HAI data reported to NHSN at a time when NHSN's stated purposes and confidentiality provisions reflected its origins as a purely voluntary, and confidential reporting system. The Recovery Act HAI program, coupled with mandatory HAI reporting requirements in an increasing number of states and a new federal HAI reporting requirement connected to Medicare, prompted a focused review of NHSN's purposes and confidentiality provisions. The results are updated versions of NHSN's stated purposes and confidentiality assurance, both of which are included in the new NHSN Agreement to Participate and Consent form completed by healthcare facilities already enrolled or new to the system. The updated NHSN purposes enable CDC to share quality measurement data with the Center for Medicare and Medicaid Services (CMS) that are required by CMS as part of its Inpatient Quality Reporting program, inform state health departments which healthcare facilities in their jurisdictions participate in NHSN, and, at the request of state agencies, provide adverse event and prevention practice adherence data for surveillance or prevention, regardless of whether those data are mandated by the state. To implement the new data access provisions for states, CDC has worked with the Council of State and Territorial Epidemiologists (CSTE), the Association of State and Territorial Health Officers (ASTHO), and other organizations to develop a template version of a data use agreement. CDC also has worked with CSTE and ASTHO to develop a policy toolkit for states for HAI prevention. These actions are intended to help states strengthen their capacity for HAI surveillance, prevention, and policymaking, with the overall objective of reducing the burden of HAIs throughout the United States.

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Abstract ID: **1061449** Presentation Type: **Discussion Room Presentation**

Title: **Planned improvements to the National Healthcare Safety Network and user suggestions for future revisions**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Healthcare associated infections (HAI), Surveillance**

Abstract Text

Key Objectives:
1. Present major NHSN updates, changes, and improvements that have been recently deployed or that are coming soon to the system
2. Discuss user suggestions for potential future revisions and the potential impact these changes could have on data collection, entry, analysis, and reports.

Brief Summary:
There have been a number of updates and improvements made to the CDC's National Healthcare Safety Network (NHSN) over the past year. These changes have been implemented for the purposes of improving speed and stability of the system, flexibility and simplicity of data entry for users, and completeness and accuracy of the entered data. Some of the major enhancements to the NHSN Patient Safety Component include: addition of new servers, multiple application architecture upgrades, migration to SAMS and away from digital certificates, controlled execution and removal of forced dataset generation, CDA for LabID Event and Antimicrobial Use reporting, template control over Confer

Rights moved to Groups, restructuring and streamlining of report forms, alerts for zero events and missing denominators, revision of custom fields, and expansion of output and export analysis options. Together these updates serve to improve the user interaction and experience with NHSN and the quality of the data that are analyzed and reported out of the system. During this session users will be asked to offer suggestions and input for future revisions to the NHSN system. The potential impact of these proposed recommendations to users, stakeholders, and the system will be discussed as a group. The intent is to make this an informative and interactive NHSN presentation and discussion.

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Abstract ID: **1062620** Presentation Type: **Discussion Room Presentation**

Title: **Public health use and distribution of antivirals - Lessons learned and next steps**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Influenza / Pandemic influenza, Local Public Health Agencies, Preparedness**

Abstract Text

Key Objectives:
1) Increase awareness of local health department challenges, opportunities, and lessons learned around antivirals during H1N1 influenza
2) Identify at least three major themes from local health department experiences with antivirals during H1N1 influenza
3) Identify at least three roles for local health departments around antiviral use and distribution
4) Discuss the potential for influenza and antiviral surveillance to inform antiviral distribution and dispensing strategies

Brief Summary:
In 2010, the National Association of County and City Health Officials (NACCHO) convened a focus group and subsequent think tank to: 1) discuss local health department challenges, opportunities, and lessons learned around antivirals during H1N1 influenza; 2) develop a shared vision for the optimal roles and expectations of local health departments in guiding and managing influenza antivirals; and 3) identify key components and strategies for local health departments to guide the public health use of antivirals during influenza. Focus group and think tank participants, who represented state and local health departments, academia, and the Centers for Disease Control and Prevention, were selected based on their experience, interest, and engagement in managing influenza antivirals. Products from the focus group and think tank include two reports that highlight 1) major themes from local health department experiences with antivirals during H1N1 influenza; 2) local health department roles and needs around antiviral use and distribution; and 3) actions NACCHO and other public health partners can take to strengthen the role of local health departments in guiding and managing antiviral use and distribution. This session will share findings from the focus group and think tank report. Session participants will validate upon the current knowledge, experiences, and perspectives around management of influenza antivirals. Session participants will also expand upon the focus group and

think tank discussions to consider how surveillance of influenza and antiviral availability can help to inform antiviral distribution and dispensing strategies.

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Abstract ID: **1077391** Presentation Type: **Discussion Room Presentation**

Title: **Integrated Security and Confidentiality Guidelines for HIV, STD, Viral Hepatitis, and TB Surveillance Programs: Challenges and Strategies for Success**

Committee: **Infectious Diseases**

Topic: **HIV**

Keywords: **Infectious Diseases, Surveillance**

Abstract Text

Key Objectives:
Security and Confidentiality Guidelines for HIV, Viral Hepatitis, Sexually Transmitted Disease, and Tuberculosis Surveillance Programs outline minimum standards to standardize security and confidentiality policies across CDC's National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP) programs. Adoption of these standards will require modification of current policies for some programs and adoption of new standards for others. This roundtable will include a brief overview of the guidelines and discussion of obstacles as well as keys to successful implementation..

Brief Summary:
Standard security and confidentiality guidelines for HIV, viral hepatitis, STD, and TB surveillance will help enhance the quality of surveillance data across programs, facilitate sharing of data for public health action, establish data use for prevention programs and, possibly, improve our understanding of these diseases. Current policies and standards for securing and managing surveillance data in HIV, viral hepatitis, STD, and TB programs vary, and the lack of standardization has often been cited as a critical barrier to sharing data across programs directly or indirectly funded by NCHHSTP. Discussion will include a brief overview of NCHHSTP Security and Confidentiality Guidelines followed by open discussion of key issues regarding implementation of integrated security and confidentiality policies and procedures in state and local programs. Key discussion questions include 1) Where should programs begin and how should they go about making changes in policies or adopting these guidelines? 2) What challenges have programs encountered implementing standard policies, particularly in STD, Viral Hepatitis, and TB programs? What are some of the program-specific issues? 3) What successful strategies have programs used to adopt and promote the existing standards? 4) What additional guidance and resources are needed to adequately implement the standards? 5) How would these standards facilitate successful data sharing and use?

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Abstract ID: **1060367** Presentation Type: **Discussion Room Presentation**

Title: **Future of the Section 317 immunization program**

Committee: **Infectious Diseases**

Topic: **Immunizations**

Keywords: **Federal Policy, Health insurance, Immunization**

Abstract Text

Key Objectives:
Discuss the impact of legislative, budgetary, and other policy changes on the Section 317 program, and how the program is evolving to address these challenges

Brief Summary:
The Section 317 immunization program provides 64 grantees with infrastructure grants and federally purchased vaccines. The program has evolved over its 45 year history to fill critical gaps in access to vaccination services, with its most recent emphasis on expanding access to underinsured children and adolescents not eligible for vaccine through the Vaccines for Children (VFC) program. With passage of the 2010 Affordable Care Act (ACA), access to immunization services through public and private insurance is expected to increase as the provisions of the ACA are implemented and the problem of underinsurance for immunization services should be reduced over time. At the same time, reductions in Federal spending are anticipated. Therefore, it is a critical time for immunization programs to identify public health activities that are essential and must continue, regardless of whether vaccines are purchased through public or private funding. We now have a limited window of opportunity to define the public health role of Section 317-financed immunization programs in the context of the ACA.
- Insurance coverage is expected to be extended to more people and the problem of underinsurance for immunization services should be reduced over time. Immunization programs need to plan for targeting Section 317-purchased vaccine to address the priority gaps that remain in access to critical immunization services.
- In some areas, health departments have served as immunization providers to well-insured individuals, and insurance has not been billed for these services; given the expansion of immunization benefits expected under the ACA, immunization programs that continue to provide services to these populations must be prepared to bill for services. With funding from the 2009 American Recovery and Reinvestment Act, 14 immunization grantees are developing plans for billing by health departments.
- It takes more than vaccine to fully vaccinate a population. A comprehensive immunization program requires a robust infrastructure at the federal, state, and local levels, and rests on a strong foundation of science—from establishing and implementing vaccine policy to monitoring the effectiveness, impact,

coverage, and safety of routinely-recommended vaccines. With the anticipated expansion in access to immunization services, it is critical that these public health functions be maintained and strengthened to ensure maximum impact of the nation's immunization policies, programs, and investments.

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Abstract ID: **1060258** Presentation Type: **Discussion Room Presentation**

Title: **Planning for analysis of the 2010 occupational health supplement to the National Health Interview Survey (NHIS)**

Committee: **Occupational Health**

Topic: **Examining occupational injuries and illnesses using state or national surveys**

Keywords: **Occupational Surveillance**

Abstract Text

Key Objectives:
Describe the National Health Interview Survey (NHIS). Describe the content of the 2010 NHIS occupational health supplement (OHS). Describe the analyses that we plan to perform using the 2010 NHIS-OHS. Discuss other analyses that could be performed using the 2010 NHIS-OHS

Brief Summary:
This session will provide an opportunity to discuss opportunities for analysis of soon-to-be-released data from the 2010 National Health Interview Survey occupational health supplement (NHIS-OHS).

The NHIS is a cross-sectional in-person household survey conducted annually by the National Center for Health Statistics (NCHS) to monitor the health of the United States population through the collection and analysis of data on a broad range of health topics. The sampling plan follows a multistage area probability design that permits the representative sampling of households. NHIS data are collected annually from approximately 35,000 to 40,000 households. Basic industry and occupation information is collected from a sample adult from each household who also answers detailed health questions.
In 1988, NIOSH funded an occupational health supplement (OHS) which collected data on occupational exposures, hearing loss, asthma, dermatitis, and musculoskeletal disorders. Results were published in many peer-reviewed papers in the 1990's. A second NHIS-OHS was conducted in 2010 to collect data on general occupational exposures, psychosocial exposures, work organization characteristics, and work-relatedness of common health conditions (i.e., dermatitis, carpal tunnel syndrome and occupational asthma, conditions that are not well documented by traditional occupational health surveillance systems). Questionnaire development began in 2006, final questions were submitted to NCHS in 2009, and data collection began in January of 2010. The data will be publicly available in June, 2011.
The new NHIS-OHS includes similar questions to the 1988 supplement about dermatitis, carpal tunnel syndrome and occupational asthma so that we can examine changes in the frequency of these highly prevalent conditions across industry sectors. Questions on other topics (e.g., psychosocial exposures) have been adapted from other validated survey instruments, where possible. Data from the OHS can

be combined with data from the core NHIS questionnaire for analysis of relationships between occupational exposures and other common health conditions and interactions between occupational and nonoccupational factors (e.g., tobacco use, physical activity).
NIOSH investigators will be developing communication products to disseminate the key findings from the survey, and we also hope to collaborate with partners on many different analyses to maximize the impact of this project. Our ultimate goal is that evidence-based interventions by stakeholders will reduce work-related diseases and injuries. In addition, the results of this surveillance project will inform future hypothesis-driven research.

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Abstract ID: **1059507** Presentation Type: **Discussion Room Presentation**

Title: **Developing automated communicable disease reporting: Two pragmatic technological solutions**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Electronic case reporting**

Abstract Text

Key Objectives:
Decribe implementaion of automated disease reporting at two Minnesota healthcare facilities.

Brief Summary:
Responsibility for communicable disease reporting in Minnesota is generally assigned to infection preventionists (IPs), especially in large healthcare institutions with the greatest reporting burden. Because of this disease reporting burden, the Minnesota Department of Health (MDH) sought to use technology to find efficiencies in disease reporting. In 2009, MDH partnered with healthcare facilities to develop automated disease reporting (ADR) systems. Methods: Two healthcare facilities and MDH jointly developed ADR systems. MDH awarded Facility A a one-time $83,500 grant to develop ADR using their existing electronic health record (EHR) and laboratory information system (LIS). The objective was to automate the identification of reportable diseases, extract demographic and limited clinical information from the EHR, and send an electronic case report to MDH. Facility A was required to share their experience, process, and coding with MDH and other institutions. A multi-disciplinary team was formed including information technology (IT), LIS, microbiology, and IP staff from Facility A, and IT and epidemiology staff from MDH. Facility B contracted with a data mining vendor, so that the vendor would develop a standardized query that identified reportable diseases and extracted demographic and limited clinical information into a case report for ADR. MDH and facility B epidemiology, IP, and IT staff assisted defining report requirements; secure data transmission, and translation and mapping into the PHIN-compliant Minnesota Electronic Disease Surveillance System (MEDSS).
Results: Facility A identified 681 “tags” of laboratory test/result combinations identifying reportable conditions. Once tagged, case reports are automatically completed using data from the patient’s EHR. Reports are generated and transmitted daily electronically to MDH via a secure data transmission. IPs are able to view and update reports sent to MDH in MEDSS. IPs at Facility B run a report twice weekly

and a line list of reportable disease cases is created and sent electronically to MDH via PHIN-MS. Conclusion: ADR was successfully implemented at two healthcare facilities by a multidisciplinary and multi-institutional team approach using different processes within 9 months of initiating the project. ADR development and implementation can be replicated by other healthcare facilities using either process as it best fits the facility's IT infrastructure. ADR has resulted in more complete and timely reporting of communicable diseases and has decreased the time IPs necessary for disease reporting.

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Abstract ID: **1062161** Presentation Type: **Discussion Room Presentation**

Title: **Partnering to enhance electronic data exchange between hospital information systems and the National Healthcare Safety Network for healthcare-associated infections reporting**

Committee: **Surveillance/Informatics**

Topic: **Effective interactions between epidemiology and informatics**

Keywords: **Data/Surveillance, Health information exchange, Healthcare associated infections (HAI)**

Abstract Text

Background:
Healthcare-associated infections (HAI) cause an estimated 1.7 million infections annually in the United States. In 2009, New Hampshire (NH) required hospitals to report HAI using the National Healthcare Safety Network (NHSN). NHSN HAI reporting requires hospital staff time for data collection and entry, with limited capability for data upload. In 2007, NHSN conducted a pilot project to use standards-based messages for more automated reporting of HAI using existing hospital information systems. NHSN expanded this work in 2008 by releasing clinical document architecture (CDA) implementation guidelines for HAI reporting.

Methods:
In 2010, NH HAI Program initiated a project to assess hospitals for standards-based electronic data reporting readiness and to provide $10,000 to six hospitals to implement the NHSN CDA implementation guide to reduce HAI reporting burden. The project consisted of three phases including survey creation and assessment, hospital selection and funding, and technical assistance to hospitals during implementation. To ensure project success and leverage existing hospital infection prevention and information technology (IT) relationships, the project was co-managed by the HAI Program and a State IT project manager with assistance from a vendor.

Results:

Twenty-five (96%) of 26 hospitals responded to the survey. In addition to gathering hospital-specific information on hospital vendors, IT resources, and NHSN reporting practices, 20 (80%) of 25 responding hospitals indicated interest in funding to enhance NHSN reporting to NHSN. Six hospitals were selected for funding based on hospital interest in project, electronic health record system integration, and hospital vendor system. Selected hospitals submitted a scope of work stating intended use of funds in addition to signing a memorandum of understanding. Five hospitals intended to build reporting interfaces using hospital IT staff and one hospital intended to hire a vendor. Five hospitals targeted enabling surgical site infections reporting and one hospital targeted central line insertion practices as these measures are most burdensome for data entry. All six hospitals were provided $10,000 and are expected to transmit data to NHSN via newly developed mechanisms by December 2011.

Conclusions:
NH HAI Program partnered with State IT staff and hospital infection prevention and IT staff to enhance electronic data reporting to NHSN, reducing data entry burden and building off new initiatives to share electronic healthcare data. In addition to reporting efficiencies for HAI, newly developed capacities will be leveraged to support other healthcare data sharing efforts such as establishing electronic laboratory reporting between hospitals and NH's reportable disease surveillance application.

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Abstract ID: **1057347** Presentation Type: **Discussion Room Presentation**

Title: **Revised messaging and data provisioning strategy for the National Notifiable Diseases Surveillance System**

Committee: **Surveillance/Informatics**

Topic: **Electronic reporting: Including ELR, electronic case reporting, etc.**

Keywords: **Electronic data, NEDSS/PHIN, NNDSS**

Abstract Text

Key Objectives:
Key points of the presentations:
Messaging Strategy:
1-Discuss the original Messaging Strategy, which was based upon core and disease-specific Message Mapping Guides (MMGs). 2-Discuss the current Messaging Strategy approach, which is based upon turning off the NETSS data file transmission and replacing it with the Generic version 2 MMG and disease-specific MMGs. The Generic version 2 MMG will include the core variables included in the Generic version 1 MMG and the PHIN standard for NETSS disease-specific variables. 3-Discuss priorities for disease-specific MMGs, technical assistance, processes/procedures to support the transition, and challenges in implementation.
Data Provisioning Strategy:
1-Discuss the current Data Provisioning Strategy and challenges in implementation. 2-Discuss proposed changes in data provisioning strategy and how it affects state, local, and territorial public

health partners. 3-Discuss the alerting process for electronic notifications of immediately nationally notifiable conditions received by CDC.

Brief Summary:
Over the past year, CDC's Public Health Surveillance Program Office has convened a panel of internal technical and programmatic staff to review the current status of the transition of the National Notifiable Diseases Surveillance System (NNDSS) from National Electronic Telecommunications System for Surveillance (NETSS) legacy format to National Electronic Disease Surveillance System (NEDSS) format using Public Health Information Network (PHIN) standards. A new Messaging and Data Provisioning Strategy has arisen from the internal CDC assessment of the original transition plan to enable more efficient and scalable progress toward the transition. The purpose of this session is to communicate the changes CDC will be implementing for the Messaging and Data Provisioning Strategy for case notifications sent to the NNDSS and implications for public health reporting entities. There will be two presentations during this session, followed by an open discussion.

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Abstract ID: **1057368** Presentation Type: **Discussion Room Presentation**

Title: **Reporting Syndromic Surveillance (SS): Informatics challenges and solutions**

Committee: **Surveillance/Informatics**

Topic: **Syndromic surveillance and situational awareness (incl. Biosense)**

Keywords: **Health information exchange, Health information systems, Surveillance**

Abstract Text

Background:
TECH ACT Meaningful Use regulations include reporting Syndromic Surveillance (SS) as a public health objective. The International Society for Disease Surveillance (ISDS) and CDC Public Health Surveillance Program Office (PHSPO) has taken a leadership role in development of Provisional Recommendations for Core Business Processes and EHR Requirements for SS.
This paper outlines the technical approach that was taken by the CDC Public Health Informatics and Technology Program Office (PHITPO) for development of the Public Health Information Network (PHIN) Messaging Guide (MG) for SS.

Methods:
The ISDS constrained the development of the PHIN SS MG by defining 1) the scope of the data exchange, 2) the data sources, 3) surveillance goals for SS, 4) core SS data elements, and 5) messaging and vocabulary standards. Specifically, HL7 messaging formats for data in emergency department (ED) and urgent care (UC) patient visits captured by health information system and sent to public health authorities were analyzed. The widely implemented HL7 Standard versions 2.3.1 and 2.5.1 were used as standards for data exchange.

Results:
Analysis of the SS business approach for data transaction led the development team to implement the following approaches: 1) establishment of a governance process for updates to and maintenance of the messaging guide, 2) processes for state and local health surveillance systems to add optional data elements, 3) implementation of messaging structures that allow adding additional data elements in the future, 4) use of standard vocabulary, and 5) ongoing communication with groups external to the CDC as well as internal partners for documentation and resolution of concerns and issues.
Upon careful review of the required SS core data elements from ISDS, standard HL7 Admission Discharge Transfer (ADT) messages were chosen to satisfy the data exchange requirement while PHIN Vocabulary Access and Distribution System (VADS) was tasked to build and maintain the SS set of value sets, known as a “View”.

Conclusions:
Standardized SS reporting SS is a new area of public health informatics, and is aided by a comprehensive, business oriented combination of approaches.

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Abstract ID: **1062072** Presentation Type: **Discussion Room Presentation**

Title: **Development of CDC Surveillance Resource Portal**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Surveillance**

Abstract Text

Key Objectives:
Introduce CSTE members to the CDC Surveillance Resource Portal that is being developed and engage CSTE members in discussion about state and local surveillance resource needs that could be included in a future version of the portal

Brief Summary:
The CDC Public Health Surveillance Program Office is developing an internet site that will be designed to make it easier for public health surveillance practitioners to find answers to common surveillance questions. Initial information will include links to existing guidance on surveillance practices, including analysis methods and evaluation of surveillance systems. Documents on data sharing and legal and regulatory issues, such as HIPAA will also be included. Development of the portal will be in collaboration with the CSTE Surveillance Practice and Implementation Subcommittee and will be vetted with other CSTE members. During this round table CSTE members will be able to recommend

what would be helpful to include in the portal.

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Abstract ID: **1061722** Presentation Type: **Discussion Room Presentation**

Title: **Beyond bioterrorism: Integrating electronic surveillance throughout public health**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Electronic data, Injury surveillance, Surveillance**

Abstract Text

Key Objectives:
To illustrate ways that electronic surveillance of emergency department chief complaints can be utilized for public health concerns beyond the established domains of detecting bioterrorism events and outbreaks of infectious diseases.

Brief Summary:
For the past decade, there has been growing interest in active surveillance of electronic data to detect events that are relevant to public health. Funding for these activities was initially provided under the auspices of homeland security, and consequently the focus was placed on detecting deliberate infectious disease outbreaks. This was extended to include monitoring the natural spread of infectious diseases and to detecting unintentionally manufactured events such as foodborne outbreaks. Since infectious diseases represent only one facet of public health and bioterrorism an extremely rare possibility, it is time to expand the role of electronic surveillance to make it relevant to the entire spectrum of public health concerns.
A primary data source for surveillance is emergency department chief complaints. By extending the work done for infectious diseases using this data, we have developed classifiers for many other relevant public health categories. These include falls and other common accidents; major traumas such as motor vehicle accidents; intentional acts of violence and incidents involving illegal drugs, which are of concern to public health and law enforcement; animal bites and other reportable incidents; and seasonal, noninfectious concerns such as heatstroke or exposure. We will discuss specific examples of the role that surveillance can and has played in these areas.
Additional data sources also contribute to a more complete picture of public health. Chief complaints cover many types and causes of illness, but the cost of that generality can be a lack of specificity. Supplementing chief complaint data can help distinguish between infectious disease events and environmental health events. We will discuss how poison control calls and air and water quality measurements can serve as potential indicators of environmental effects on health.
Active surveillance has focused on statistically unlikely spikes. Expansion of surveillance beyond infectious disease necessitates asking additional questions of the data. Surveillance data can be used for monitoring trends that appear as long-term changes rather than short-term spikes. It can be used for answering questions about healthcare usage patterns that are independent of specific conditions or illnesses. And even when the changes of interest can be predicted in advance, surveillance can assess the magnitude of the change. Examples of these scenarios will be presented.

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Abstract ID: **1092641** Presentation Type: **Discussion Room Presentation**

Title: **Building Chronic Disease Epidemiology Capacity**

Committee:

Topic:

Keywords:

Abstract Text

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Abstract ID: **1084812** Presentation Type: **Discussion Room Presentation**

Title: **AI/AN influenza case control study**

Committee:

Topic:

Keywords:

Abstract Text

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Abstract ID: **1083465** Presentation Type: **Discussion Room Presentation**

Title: **MCH CDC/CSTE Applied Epidemiology Fellows and CDC MCH Epidemiology Program meeting - by invitation only**

Committee:

Topic:

Keywords:

Abstract Text

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Abstract ID: **1090451** Presentation Type: **Discussion Room Presentation**

Title: **Challenges associated with in-depth analyses of occupational health indicators**

Committee:

Topic:

Keywords:

Abstract Text

Description:
The “How To” guide for calculating occupational health indicators lists additional analyses that could be performed. However, in many cases, calculating rates for subgroups is difficult. For example, the source of denominator data used to calculate the statewide rate for indicators involving workers’ compensations claims lists coverage for the entire state, not for subgroups. This session will identify indicators for which this is a problem and brainstorm for solutions.

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Abstract ID: **1083048** Presentation Type: **Discussion Room Presentation**

Title: **CDC/CSTE Applied Epidemiology Program Mentor breakfast for current and previous mentors of a fellow - By invitation only**

Committee:

Topic:

Keywords:

Abstract Text

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Abstract ID: **1121206** Presentation Type: **Discussion Room Presentation**

Title: **The Food Safety Modernization Act: Implications for state health departments**

Committee:

Topic:

Keywords:

Abstract Text

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Abstract ID: **1055726** Presentation Type: **Software Demonstration**

Title: **GIS Exchange: A website for chronic disease geographic information systems**

Committee: **Chronic Disease/Maternal and Child Health/Oral Health**

Topic: **Building epidemiology capacity for CD/MCH/OrH (e.g., mentorship, training, models from states)**

Keywords: **Chronic diseases, Geographic Information Systems, Training**

Abstract Text

Key Objectives:
Familiarize attendees with the Chronic Disease GIS Exchange, solicit feedback, and encourage the submission of maps to the website.

Brief Summary:
The Chronic Disease GIS Exchange is a new and exciting website for showcasing maps of heart disease, stroke, and other chronic diseases (e.g., cancer, diabetes, and asthma), learning GIS techniques, and accessing a wide range of GIS-related resources. www.cdc.gov/dhdsp/maps/gisx. The site was developed by the Centers for Disease Control and Prevention in collaboration with Duke University and the National Association of Chronic Disease Directors and provides a community forum for sharing maps and GIS-related information. Public health administrators in state and local health departments, community leaders, GIS analysts, program evaluators, epidemiologists, and other public health professionals will find interesting and useful information on this site and will be able to share their maps with the GIS community. The GIS Exchange encourages the use of GIS to document the burden of heart disease, stroke and other chronic diseases; inform and guide policy and program decisions; build and strengthen partnerships; and facilitate collaboration among health department programs, especially within chronic disease units. Through this website we hope to both document and

encourage the use of GIS in the epidemiology, surveillance, and evaluation of heart disease, stroke, and other chronic diseases.

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Abstract ID: **1061802** Presentation Type: **Software Demonstration**

Title: **Substance abuse risk factor monitoring system: Developing a web-based assessment tool to direct statewide prevention efforts**

Committee: **Cross Cutting**

Topic: **Substance abuse epidemiology**

Keywords: **Assessments, Substance abuse, Surveillance**

Abstract Text

Abstract Text
Omitted from display per the Author's request

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Abstract ID: **1055905** Presentation Type: **Software Demonstration**

Title: **A searchable spatial database for Pennsylvania Health Assessment Program documents and integration with the Environmental Public Health Tracking Program**

Committee: **Environmental Health**

Topic: **Practical application of health impact assessments**

Keywords: **Environmental exposures, Environmental Health hazards, Geographic Information Systems**

Abstract Text

Key Objectives:
To enable a DOH investigator, petitioner, or the public to access related information spread across a multitude of documents to address concerns related to toxic hazards and generate new information concerning the public health consequences of environmental contamination.

Brief Summary:
With 280 sites, Pennsylvania ranks second in the nation in Environmental Protection Agency (EPA) designated toxic waste sites including 95 current and 2 proposed on the National Priority List (NPL, Superfund). The Pennsylvania Health Assessment Program (HAP) produces a variety of documents on its investigations. The content of each document is searchable but searches are confined only to that report. Searches across all documents for common keywords, locations, time periods, and other parameters cannot be performed. We describe the design of a system to search multiple documents using common variables that include a spatial component.
A template is being designed to search HAP's 129 current documents by time periods, locations, chemicals, actions, effects, and other details, singly or as a combination to enable abstraction of information common to all documents. The searchable fields include: location (latitude, longitude); petitioner type; NPL or non-NPL site; air, water or soil contamination; date of initial complaint; requester type (agency or individual petitioner); key chemicals/classes of chemicals/heavy metals of concern; tests done at site; site(s) currently undergoing remediation activities by the EPA; sites with water contamination issues; sites with quality of life (e.g. odor or sound). The template can also be modified to query for additional factors. This project leverages the spatial data infrastructure of the PA Environmental Public Health Tracking Program (EPHT).
The template is currently under development but will result in efficient, contextual retrieval of information that increases the power of interpretation and correlation with spatial, temporal, and other environmental and demographic factors. The database can also be compared with other datasets (e.g. a cancer registry) with similar parameters to generate hypotheses, new knowledge, and situational awareness.

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Abstract ID: **1060485** Presentation Type: **Software Demonstration**

Title: **Demonstration of CDC's new interactive website and software providing cumulative monthly influenza vaccination estimates--state, region and US**

Committee: **Infectious Diseases**

Topic: **Influenza/pandemic influenza/H1N1**

Keywords: **Influenza / Pandemic influenza, Outcome Measures, Vaccination**

Abstract Text

Key Objectives:
To introduce and demonstrate the new interactive CDC website and software for state-specific influenza vaccination coverage estimates and provide hands-on training to state epidemiologists and related stakeholders.

Brief Summary:
CDC launched a new website in Fall 2010 providing national, regional and state estimates of current and past influenza vaccination coverage,

http://www.cdc.gov/flu/professionals/vaccination/vaccinecoverage.htm. This new site provides state epidemiologists and immunization program managers updates of state, regional and national influenza vaccination coverage estimates during and after the influenza season. For 2010-11, we utilize Behavioral Risk Factor Surveillance System (BRFSS) and National Immunization Survey (NIS) data to obtain estimates of cumulative coverage by month throughout the season. Other survey and claims vaccination data are also summarized and updated periodically. We use InstantAtlas software to present data summaries in interactive maps, tables, bar charts, and line graphs. Options allow users to customize screen views, change legend categories and colors, and create a variety of reports and slides tailored to state program needs. The website also provides final coverage estimates of 2009-10 influenza seasonal, monovalent 2009 H1N1 and combined coverage. Periodic posting of the latest within-season and timely post-season estimates on this interactive website allows timely straightforward access to multiple practical and useful visual summaries at the national, regional, and state levels, and promotes better understanding of influenza vaccination during the season. This website allows efficient and effective dissemination of influenza vaccination coverage to state and other stakeholders including local public health and government officials, medical professionals, news reporters, the general public.

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Abstract ID: **1060625** Presentation Type: **Software Demonstration**

Title: **The National Healthcare Safety Network: A surveillance tool for safer healthcare**

Committee: **Infectious Diseases**

Topic: **Healthcare-associated infections (HAI) surveillance/NHSN**

Keywords: **Healthcare associated infections (HAI), Surveillance**

Abstract Text

Key Objectives:
To demonstrate NHSN's data sharing and analysis functionalities for group users, including state health departments

Brief Summary:
CDC's National Healthcare Safety Network (NHSN) is a secure, internet-based surveillance system used by over 4,000 healthcare facilities to report data on healthcare-associated adverse events and their risk factors. Facilities use NHSN's Patient Safety Component to report healthcare-associated infections (HAIs) and HAI-related process and outcome measures. Facilities can track healthcare worker influenza vaccination status and exposure to blood and body fluids using the Healthcare Personnel Safety Component. The Hemovigilance Module, the first module in NHSN's Biovigilance Component, is used to track adverse events related to blood transfusion.
22 states and the District of Columbia require facilities to report HAI data using NHSN to meet a legislative mandate, and facilities from across the country report central line-associated bloodstream infection events to NHSN to meet requirements for participation in the Centers for Medicare and

Medicaid Services' Hospital Inpatient Quality Reporting Program. State health departments and other entities (Medicare quality improvement organizations, state hospital associations, hospital systems, etc) are able to use NHSN's group function to view and analyze healthcare-associated event data from facilities in their jurisdictions that agree to share data with them.
NHSN staff will provide an overview of the NHSN reporting application, focusing on features and changes that are relevant to group users of the system, especially state health departments. The new NHSN Demo, which groups can reserve and use for trainings with local facilities, will be used. The first part of the demonstration will focus on changes to the data sharing process between facilities and groups and useful features in NHSN's built-in analysis tool. For the last 30 minutes of the demonstration, an introduction to the Hemovigilance Module of the Biovigilance Component will be provided.

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Abstract ID: **1055455** Presentation Type: **Software Demonstration**

Title: **New web-based tools for occupational surveillance data**

Committee: **Occupational Health**

Topic: **Innovative methods for presenting occupational and environmental health hazards and surveillance data to workers and the general public**

Keywords: **Data/Surveillance, Informatics, Occupational Surveillance**

Abstract Text

Key Objectives:
To demonstrate newly implemented web-based information dissemination and interactive data query tools produced by the National Institute for Occupational Safety and Health for occupational surveillance.

Brief Summary:
One of the key goals of the National Institute for Occupational Safety and Health (NIOSH) Surveillance program is to enhance the use of surveillance information at the federal and state levels for the prevention of occupational injuries, illnesses, and hazards.
Over the last year NIOSH has implemented several new web-based applications on the internet in support of this goal. This presentation will demonstrate several new data query tools, web sites, and information dissemination applications to help state-based programs find, use, and/or contribute to the body of occupational surveillance information available on-line. Some of the applications that will be demonstrated include: State-based Occupational Health Surveillance Clearinghouse, Interactive Map of the US Fire Fighter Fatalities, Work-related Lung Disease Surveillance System, and the NIOSH Data and Statistics Gateway information portal.

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Abstract ID: **1054173** Presentation Type: **Software Demonstration**

Title: **I-Suite: A tool for injury and illness tracking at all hazard incidents and events**

Committee: **Occupational Health**

Topic: **Epidemiology and surveillance of workers involved in emergency response: Public Health roles and tools**

Keywords: **Data/Surveillance, Disasters, Occupational Health**

Abstract Text

Key Objectives:
1. Raise awareness of public health officials about injury and illness tracking among deployed resources through the electronic I-Suite system.
2. Demonstrate the injury and illness reporting module in I-Suite.
3. Solicit suggestions for improvements to I-Suite that would facilitate detection and investigation of events of public health significance among incident resources.

Brief Summary:
The I-Suite database application was developed for incident tracking of natural disasters. I-Suite is largely a resource and planning tool, but in 2007 a module was added to facilitate tracking and reporting of illnesses and injuries among human resources at an incident. Public health officials charged with investigating reportable conditions among wildland firefighters and other incident responders are largely unaware of I-Suite and its potential for contributing to public health investigations. Suggestions for improving the utility of I-Suite's injury and illness module to better address public health needs will inform the next, web-based iteration of this module.

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Abstract ID: **1062835** Presentation Type: **Software Demonstration**

Title: **PATRN: A web-based system for the integration, analysis, visualization, and sharing of data from food-borne pathogens**

Committee: **Surveillance/Informatics**

Topic: **Other surveillance/informatics**

Keywords: **Data sharing, Informatics, Information databases**

Abstract Text

Key Objectives:
1. To demonstrate how www.patrn.net can help aggregate data from a variety of assays relevant to food-borne pathogen surveillance.
2. To showcase the three-tier data privacy structure (Public, Private, and Shared) and how it can be leveraged to analyze assay results for pathogen identification.
3. To illustrate the data collection effort on food-borne pathogens and how it serves as a virtual isolate repository.

Brief Summary:
The Pathogen Annotated Tracking Resource Network (PATRN) system is an FDA-sponsored application that enables integration, analysis, sharing, and visualization of data from food-borne pathogens obtained from currently used and presently being developed assays. Types of assay results stored are markers derived from large scale sequencing efforts, such as SNPs; 2) profile IDs, such as those derived from Vitek, Vidas instruments and PFGE assays; 3) conventional assay results, such as from PCR, phenotypic assays, MLVA, MLST, etc.; and 4) strain-specific data, including food source and isolate location. PATRN is a unique, web-based resource in the Public Health/Food Safety community that can be leveraged to integrate heterogeneous assay results from outbreak isolates, be used to compare historical data with current outbreak data, to visualize patterns, and can do all of these actions securely for regulatory purposes, necessary during investigation (outbreak and surveillance) and research activities. The goal for PATRN is to have it become an indispensable resource and tool involved in the present food safety efforts from FDA's CFSAN and to constitute the mainstay of an integrated food safety system, a goal put forth by the President's Food Safety Working group. The continued development of PATRN will augment the Center's emergency response activities and will position the Center as the world's leader in food borne disease response.

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Abstract ID: **1048655** Presentation Type: **Software Demonstration**

Title: **2011 State Reportable Conditions Assessment (SRCA): New user interface**

Committee: **Surveillance/Informatics**

Topic: **General surveillance topicsÂ**

Keywords: **Chronic communicable diseases, Infectious Diseases, Surveillance**

Abstract Text

Key Objectives:
Introduce CSTE members to the enhanced 2011 SRCA, provide advanced training, answer questions by data users

Brief Summary:
This software demonstration will introduce CSTE members to the newly configured annual assessment that will feature enhancements and will enable states to submit information customized to their jurisdiction. The 2011 SRCA is scheduled to launch in July 2011 and the preview at this meeting is key in addressing member's questions and providing advanced training on the tool itself.

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Abstract ID: **1126955** Presentation Type: **Invited Speaker**

Title: **Panel Presentation - Donald S. Burke, David Jernigan, Denise Koo and Stephanie Zaza**

Committee:

Topic:

Keywords:

Abstract Text

Speaker:

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Abstract ID: **1085093** Presentation Type: **Single Speaker Presentation**

Title: **Hot Topics in Occupational Lung Disease (OLD)**

Committee:

Topic:

Keywords:

Abstract Text

Description:
Participants will discuss cases or case clusters of occupational lung disease (e.g. work-related asthma (WRA), silicosis, asbestosis) associated with recent or emerging issues. Participants will consider approaches to respond to emerging hazards and other diverse surveillance, program, and integration topics.

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Abstract ID: **1126948** Presentation Type: **Invited Speaker**

Title: **Panel Presentation - Thomas R. Frieden, Farzad Mostashari and Kana Enomoto**

Committee:

Topic:

Keywords:

Abstract Text

Speaker:

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Abstract ID: **1126950** Presentation Type: **Invited Speaker**

Title: **Panel Presentation - Marcelle Layton, James M. Galloway and Charles W. Hoge**

Committee:

Topic:

Keywords:

Abstract Text

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Abstract ID: **1089250** Presentation Type: **Single Speaker Presentation**

Title: **Work-related motor vehicle crash fatalities, Oklahoma, 2007-2008**

Committee:

Topic:

Keywords:

Abstract Text

Description:
During 2007-2008, there were 85 work-related MVC fatalities in Oklahoma. In 2007, there were 33 crashes , resulting in 36 deaths. Ninety-four percent of decedents were male; the median age of decedents was 42 (range: 18-66 years). The mortality rate for black workers was three times that of white workers (4.78 and 1.59 per 100,000 workers, respectively), and more than 50% higher than that of Native American workers (3.21 per 100,000 workers). The most common occupation was truck/delivery driver (69%). Seventy-five percent of decedents were drivers, 14% were passengers, and 11% were pedestrians. All pedestrians were road construction/maintenance workers on public roadways. Three-fourths of workers were not wearing a seat belt at the time of injury. The leading contributing factors to crashes were: unsafe or excessive speed for traffic/road conditions; improper overtaking, following too closely, failing to stop; inattention/sleepiness; and avoiding objects/debris in the roadway. Data analysis for 2008 is nearly complete.

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Abstract ID: **1126943** Presentation Type: **Invited Speaker**

Title: **Welcome and Greetings**

Committee:

Topic:

Keywords:

Abstract Text

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