Submission Type	Breakout/Quick/Lightning/Poster
ID	8054
Abstract Type	Breakout
Abstract Title	Incidence of Medically-Attended Illness Due to Influenza and Other Respiratory Viruses Across Seven Surveillance Seasons from the Influenza Incidence Surveillance Project

Abstract

BACKGROUND: The Influenza Incidence Surveillance Project (IISP) is the only population-based surveillance system to systematically monitor year-round outpatient influenza-like illness (ILI) and associated respiratory viruses in the US. We present the age-specific incidence of ILI visits due to influenza and other respiratory viruses from seven surveillance seasons.
METHODS: From October 2009 to July 2016, 8 to 12 state/local public health jurisdictions participated in IISP, each recruiting approximately 5 outpatient clinics with enumerated patient populations. Clinics reported weekly ILI (reported fever with cough or sore throat) and all-cause patient visit counts and collected upper respiratory specimens from the first 10 ILI patients per week. Specimens were tested at the public health laboratories by RT-PCR for influenza, respiratory syncytial virus (RSV), rhinovirus/enterovirus (RVEV), adenovirus (ADV), human metapneumovirus (MPV), coronaviruses (COV) and parainfluenza viruses 1-3. We extrapolated the weekly number of patients positive for each virus from the tested subset and calculated incidence using the patient population as the denominator.
RESULTS: The number of participating clinics ranged by season from 39 to 74 with an average annual population of 384,211 persons and an average 459,953 outpatient visits. Incidence of ILI per 1000 population ranged from 14.2 in 2011-12 to 33.8 in 2014-15. Across all seasons, 20,844 specimens were tested for influenza; 17,677 (85%) were further tested by a respiratory panel. Incidence for each virus varied by season; the median influenza incidence was 7.0 per 1000 population (range 1.9 in 2011-12 to 11.0 in 2014-15). Non-influenza viruses with the highest median incidence per 1000 population were RVEV (4.3), RSV (1.7), COV (1.6) and ADV (1.3). Virus incidence varied by age: influenza incidence was highest each season among patients aged 5 to 17 years (median 13.5 per 1000 population), while rates of RVEV, RSV, ADV, MPV and COV were highest among children aged <5 years (median 12.6, 7.0, 5.9, 4.2 and 3.7 per 1000 population, respectively). Among patients with a viral detection, 6% to 10% were positive for >1 virus; of these patients, the most common co-detections were RVEV/ADV (16%), RVEV/RSV (12%), RVEV/MPV (6%), and RSV/ADV (5%).
CONCLUSIONS: The ILI definition is predictive of influenza and may not be optimal for detecting other respiratory viruses. Nevertheless, during seven surveillance seasons we found the highest incidence of outpatient ILI was associated with influenza, RVEV and RSV. Incidence of influenza was highest among older children as compared with other respiratory viruses. Rhinoviruses/enteroviruses were the most common viruses associated with viral co-detections.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Influenza Surveillance; Infectious Diseases
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	vqg1@cdc.gov
Presenting Author(s)	Andrea Steffens
Institution Affiliation	Centers for Disease Control and Prevention CDC

Submission Type	Breakout/Quick/Lightning/Poster
ID	7862
Abstract Type	Breakout
Abstract Title	Redefining RSV Seasonality in the United States Using Molecular Testing Reports

Abstract

BACKGROUND: Respiratory syncytial virus (RSV) immunoprophylaxis is given to high-risk infants during RSV season. Traditionally, the Centers for Disease Control and Prevention has defined RSV season in the United States by a threshold of 10% positive weekly RSV antigen tests (10%-positivity) reported to the National Respiratory and Enteric Virus Surveillance System (NREVSS). In recent years, RSV molecular testing has become more widely utilized; the extent of testing and its effect on determining seasonality are unknown.
METHODS: To describe national and regional RSV reporting trends, we assessed RSV testing and detections reported to NREVSS during July 2005 – June 2015, by viral isolation, antigen detection, and molecular testing (based on various diagnostic platforms). A convenience sample of NREVSS reporters was also interviewed to evaluate laboratory testing practices during 2009 – 2014. To characterize RSV season with molecular reports, we first assessed the traditional 10%-positivity threshold, and subsequently developed three methods based on either RSV detections or percent-positivity for use in different settings. We compared season characteristics of each approach to those derived from the traditional method.
RESULTS: Annual RSV molecular testing reports from consistent NREVSS reporters increased 200-fold during July 2005 – June 2015, and are now more frequent than reports based on antigen detection or viral isolation. Correspondingly, 62% (59/94) of interview respondents reported an increase in molecular testing during the previous 5 years, and 14% (13/94) reported discontinuing or decreasing antigen testing and viral isolation. Based on NREVSS data from consistent reporters, weekly RSV percent-positivity was consistently lower with molecular testing than with antigen detection; because of this, the 10%-positivity threshold was imprecise for characterizing RSV season with molecular tests, and the two diagnostic categories could not be meaningfully interpreted when combined. The new molecular-specific approaches typically yielded smoother curves, earlier season onsets and longer durations than the traditional method. The most consistent estimates were derived from a retrospective method (RS10) that assessed the weekly increase in normalized RSV detections; the two other approaches provided good real-time approximations to RS10. Based on RS10, national RSV seasons during July 2009 – June 2015 began between epidemiologic weeks 38 and 45, a median of 4 weeks earlier than traditionally defined.
CONCLUSIONS: RSV molecular testing is increasingly important for RSV surveillance but the traditional 10%-positivity threshold is not adequate to characterize RSV season with NREVSS data. RSV molecular diagnostics should provide a more comprehensive understanding of RSV circulation trends, potentially extending the benefits of immunoprophylaxis.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Respiratory Diseases; Surveillance; Epidemiology
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	ydk5@cdc.gov
Presenting Author(s)	Claire Midgley
Institution Affiliation	Centers for Disease Control and Prevention CDC

Submission Type	Breakout/Quick/Lightning/Poster
ID	8068
Abstract Type	Breakout

Abstract Title Respiratory Syncytial Virus-Associated Pediatric Mortalities in Florida, January 2010 –September 2015

Abstract

BACKGROUND: Respiratory syncytial virus (RSV) is a common virus which typically causes upper respiratory tract infections, though in immunocompromised individuals, the very young, and the elderly, it may lead to lower respiratory tract infections and severe illness requiring hospitalization, and which may be fatal. Palivizumab is an immunoprophylactic therapy available for children who are considered high risk for a severe infection, though it is administered according to national RSV seasonality rather than Florida's RSV seasonality. The purpose of this review was to pilot the RSV-associated pediatric mortality case report form and to describe Florida cases medically and demographically in order to determine high risk populations and immunoprophylaxis uptake among cases.
METHODS: Cases of RSV-associated pediatric mortalities in the state of Florida were identified by querying initial literal causes of death on death certificates accessible via Florida's Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE-FL). After these cases were identified, death certificates were obtained for those individuals through the Florida Department of Health (FDOH). County health department staff and infection control practitioners were asked to obtain cases' medical records, after which the investigator abstracted data from those records using a case report form (CRF) created by merging Centers for Disease Control and Prevention (CDC) and FDOH CRFs.
RESULTS: Nearly half of identified cases were under one year of age, and minorities were disproportionately represented. Most cases expired in the months October through March, with the Central Region experiencing the most overall RSV-associated pediatric mortalities. All cases with medical history reported at least one pre-existing medical condition. None of the cases' medical records indicated that they had received palivizumab immunoprophylaxis prior to presenting at the hospital.
CONCLUSIONS: The case report form piloted in this review captured all relevant information, though the age field had to be refined throughout the abstraction process. Consistent with previous studies, most cases were under one year of age and most had pre-existing conditions which likely contributed to the severity of their illness. Many of those cases would have met the criteria to receive palivizumab prophylaxis and, had it been administered according to RSV seasonality in Florida, it is possible that these cases would not have experienced mortality as a final outcome. It is important to ensure that pediatricians in communities and hospitals are aware of the benefits of administering palivizumab quickly and consistently for high risk patients, especially during RSV season.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Surveillance; Health Disparities; Respiratory Diseases
Consider for Different Presentation?	Yes

Presenting Author Email Address(es) gregory.danyluk@flhealth.gov

Presenting Author(s) Gregory M. Danyluk

Institution Affiliation Florida Department of Health
Local Public Health Agency

Submission Type	Breakout/Quick/Lightning/Poster
ID	8058
Abstract Type	Lightning
Abstract Title	Efficacy of Rapid Influenza Detection Testing in Long Term Care Facilities

Abstract

BACKGROUND: We have recently initiated a randomized control trial to assess whether rapid influenza detection test (RIDT) availability in long term care facilities (LTCFs) is associated with earlier detection of influenza and reduction in influenza-related hospitalization and death. The effectiveness of this trial is predicated on knowing the ability of RIDTs to detect influenza in LTCF populations.
METHODS: To assess the performance characteristics of the Quidel Sofia Fluorescent Immunoassay Analyzer for Influenza A+B and RSV, we set up an acute respiratory illness surveillance network in 7 LTCFs across southern Wisconsin. One site was a large facility for persons with severe developmental disability and had younger patients than most LTCFs. Nasal specimens were collected, using foam nasal swabs, from residents with acute onset (<4 days) of at least two of the following symptoms: fever, cough, sore throat, nasal congestion, runny nose. Specimens were collected from December 2015 through December 2016 and tested for influenza and RSV using Quidel Sofia FIA. Influenza RT-PCR and a multiplex PCR respiratory pathogen panel (RPP) were also performed.
RESULTS: Of the samples tested by PCR (N=60), 39 (65%) were positive for a respiratory virus. Eight different respiratory viruses were identified in the LTCF population: rhino/enterovirus (38%), RSV A (21%), influenza A (13%), coronavirus OC43 (8%), parainfluenza 1 (8%), parainfluenza 4 (5%) coronavirus NL63 (5%), and human metapneumovirus (5%). 58 paired samples were available for influenza assessment and 24 paired samples were available for RSV assessment. For influenza, the mean age (±std. dev.) was 56.9±19.8 years; median = 50 years; range [24-93 years]. The sensitivity and specificity for Sofia influenza A+B FIA were 60.0% [95% CI: 14.7-94.7] and 94.3% [84.3-98.8], respectively. For RSV, the mean age (±std. dev.) was 44.09±6.9 years; median = 45 years; range [30-55 years]. The sensitivity and specificity of Sofia FIA for RSV were 60.0% [14.7-94.7] and 94.7% [74.0-99.9], respectively.
CONCLUSIONS: Many respiratory viruses circulate within LTCF populations. Influenza and RSV—in this study—accounted for 44% of illness episodes. Together, these findings indicate that Quidel Sofia Fluorescent Immunoassay Analyzer for Influenza A+B and RSV may be an effective tool for early detection of influenza and RSV in LTCFs. Although the sensitivity is moderate at ~60%, the likelihood of picking up one of the first three cases of influenza within an institution is estimated at 93.6%. Accordingly, aggressive use of Rapid technology may allow for early outbreak detection and response.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Influenza Surveillance; Infectious Diseases
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	bmaerz@wisc.edu
Presenting Author(s)	Brad Maerz
Institution Affiliation	University of Wisconsin School of Medicine and Public Health Academic Institution

Submission Type	Breakout/Quick/Lightning/Poster
ID	7683
Abstract Type	Poster
Abstract Title	Background Levels of Non-Influenza Respiratory Viruses Circulating in Hawaii 2014–2016

Abstract

BACKGROUND: Surveillance for non-influenza respiratory pathogens is not routinely conducted in Hawaii. In 2014, Hawaii's Department of Health (HDOH) State Laboratories Division (SLD) and Disease Outbreak Control Division partnered to identify a subset of influenza-negative specimens and perform respiratory virus testing on those specimens. Our goal was to gain insight into circulating non-influenza respiratory viruses in the state and identify potential seasonal trends as well as roles in clusters and outbreaks.
METHODS: Every month, from the population of specimens submitted for influenza testing at Hawaii's major clinical laboratories that tested influenza-negative and met "priority" criteria, a subset of 20–50 specimens were randomly selected for RVP testing. Priority criteria included Influenza-like Illness (ILI) Surveillance Network provider submissions, hospitalization, pneumonia or acute respiratory distress syndrome, international travel, healthcare workers, those with pertinent comorbidities, those pregnant or six weeks post-partum, ILI cluster specimens, and those with unusual signs or symptoms. SLD utilized Luminex xTAG Respiratory Viral Panel (RVP)[1] multiplex polymerase chain reaction (PCR) for respiratory virus detection.
RESULTS: Three hundred and fifty specimens were collected in 2014, 438 in 2015, and 267 specimens in 2016. Of 1,055 specimens tested, most (759, 86%) were from hospitalized patients, while only five (<1%) were from clusters. Two hundred and eighty-seven (27%) tested positive for a respiratory pathogen: 136 (13%) rhinovirus, 40 (4%) respiratory syncytial virus (RSV), 35 (3%) human metapneumovirus (hMPV), 28 (3%) influenza, 20 (2%) parainfluenza, 19 (2%) adenovirus, and 9 (<1%) coronavirus. Rhinovirus, RSV, parainfluenza, and hMPV were detected consistently throughout the year. Coronaviruses were only detected from January to May. Most adenovirus (79%) was detected from April to September. Among parainfluenza viruses, parainfluenza 1 and 3 were detected in winter and summer, respectively. Additionally, in the 2014–2015 influenza season, one ILI cluster etiology was confirmed as a combination of RSV and parainfluenza 3.
CONCLUSIONS: RVP testing of influenza-negative ILI individuals detected non-influenza viruses in over a quarter of specimens tested. Use of priority specimens may bias towards more severe cases, but our findings suggest non-influenza viruses play a substantial role in ILI morbidity in Hawaii. More attention is needed to address the role these viruses play in respiratory infections and better describe the burden of illness and circulation patterns.

[1]Luminex Corporation, Austin, TX. Luminex RVP detects: adenovirus, human metapneumovirus, influenza A (Matrix/H1/H3), influenza B, RSV A, RSV B, rhinovirus, coronavirus 229E, coronavirus HKU1, coronavirus NL63, coronavirus OC43, parainfluenza 1-4, and bocavirus.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Epi / Lab Capacity (ELC); Infectious Diseases
Consider for Different Presentation?	No

Presenting Author Email Address(es)	david.johnston@doh.hawaii.gov
Presenting Author(s)	David I. Johnston
Institution Affiliation	Hawaii State Department of Health State Public Health Agency

Submission Type Breakout/Quick/Lightning/Poster

ID 8597

Abstract Type Poster

Abstract Title CSTE Assessment of Influenza Data Sources and Surveillance Systems in the US: Perceived Usefulness and Timeliness of Influenza Surveillance Systems

Abstract

BACKGROUND: In June 2016, the Council of State and Territorial Epidemiologists distributed an assessment to document how influenza-related information is collected, analyzed, interpreted, and disseminated in the United States. Specifically, the assessment contained targeted questions to determine what influenza-related events are reportable; what systems and methods are used to acquire this information; how this information is used in decision-making; how this information is generally disseminated to various stakeholders; and respondents' general satisfaction with how these approaches are meeting the jurisdiction's needs.
METHODS: The assessment was sent to Influenza Surveillance Coordinators and State Epidemiologists in state, territorial, and select large urban health departments and was completed by 51 jurisdictions. This analysis focuses on a subset of questions related to perceived timeliness and usefulness of influenza surveillance systems.
RESULTS: The assessment asked respondents to indicate which surveillance systems are used to collect influenza and ILI data within their jurisdiction. The results revealed that 51 (100%) respondents use ILINet, 51 (100%) of respondents receive data from case/outbreak investigations, 50 (98%) respondents receive reports from public health laboratories, 48 (94%) respondents receive reports from non-public health laboratories, 48 (94%) respondents receive influenza-associated mortality data, and 44 (86%) respondents utilize syndromic surveillance. Although the assessment results indicated that ILINet and case/outbreak investigations are the most widely used sources of influenza-related data, only 33 (65%) of respondents using ILINet reported that the data received through ILINet is timely enough, with most jurisdictions receiving data between 2 and 7 days after data collection (34, 67%). Only 28 (55%) of respondents receiving data through case/outbreak investigations reported this data was timely enough with 31 (61%) of respondents receiving this data between 2 and 7 days after data collection. When asked to report perceived usefulness for general influenza-associated situational awareness, 46 (92%) of respondents receiving laboratory reports from public health laboratories and 39 (81%) of respondents receiving data from non-public health laboratories reported the system to be very useful. Forty-one (82%) of respondents receiving reports from public health laboratories reported the system to be timely enough and 32 (67%) respondents receiving reports from non-public health laboratories reported the system to be timely enough.
CONCLUSIONS: Health departments employ a variety of surveillance systems to collect information related to influenza and ILI-related events within their jurisdictions. Although many of the same systems are used, the perceived utility varies greatly by state. Collecting this information and sharing best practices can improve influenza surveillance throughout the US.

Submission Complete? Yes

Committee Infectious Disease

Topic Influenza & Other Respiratory Diseases

Keywords Surveillance; Epidemiologic Methods; Influenza Surveillance

Consider for Different Presentation? Yes

Presenting Author Email Address(es) mschroeder@cste.org

Presenting Author(s) Monica Schroeder

Institution Affiliation Council of State and Territorial Epidemiologists
Non-profit

Submission Type	Breakout/Quick/Lightning/Poster
ID	8661
Abstract Type	Poster
Abstract Title	Historical Comparison of Three Data Sources for Influenza-like-Illness and Detection of Onset of Influenza-like-Illness Activity, 2011 to 2016

Abstract

BACKGROUND: The authors use two steps to determine onset and duration of Influenza-Like-Illness (ILI) activity in the City of Houston (COH) from 2011-2016. *Step 1* uses Univariate time series of three data sources to perform descriptive comparison and *Step 2* uses Serfling regression model.
METHODS: *Step 1:* Compares data from Flu Near You (FNY), billing data from Athena Network, and hospital EC visits from the Houston syndromic surveillance system. The weekly ILI percent for each data source is analyzed with descriptive methods. The results are presented in tabular format and univariate time series. *Step2:* Uses Serfling regression to analyze hospital EC visits for ILI for the COH. Serfling regression modeling was performed with the R package A method for Defining Influenza Epidemic Onset Version 0.1.0 by Al Ozonoff and Elaine Nsoesie. This step provides a baseline and threshold based on epidemic level and non-epidemic levels of historical ILI activity.
RESULTS: *Step 1:* The weekly percent for ILI shows overall similarities between when each data source peaks within the influenza season. There was a lot of variability in the FNY data most likely caused by fluctuations in response rates. The peaks for the past influenza season ranged from the tenth to twelfth week. All sources agree that the 2015-2016 influenza season was much milder and later than the past years. Overall, from the preliminary analysis, peaks generally occur around the same time. The magnitudes differ widely by data source and required secondary axis to plot some of the data sources. *Step 2:* Based on the historical review of 5 influenza seasons, weeks were classified as epidemic level or not epidemic level. Results indicate epidemic level activity occurred in November for all influenza seasons with the exception of 2015-2016 season which had epidemic levels in April. The average duration was 7 weeks with a range of 1 to 10 weeks. The epidemic level of ILI proportion ranged from 2.3% to 6.5%.
CONCLUSIONS: The authors describe two steps to describe ILI activity in terms of peak, duration, onset, and epidemic level. Step 1 is a descriptive analysis which allows comparison of multiple data sources. This approach makes it possible to confirm the levels and peaks of influenza activity based on ILI. Step 2 uses R epidemics package to determine baseline ILI, threshold, onset of epidemic level and duration of epidemic.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Informatics; Influenza Surveillance; Epidemiologic Methods
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	eunice.santos@houstontx.gov
Presenting Author(s)	Eunice R. Santos
Institution Affiliation	Houston Health Department Local Public Health Agency

Submission Type	Breakout/Quick/Lightning/Poster
ID	7550
Abstract Type	Poster
Abstract Title	Indiana Department of Corrections H1N1 Outbreak

Abstract

BACKGROUND: In January of 2016, an outbreak of methicillin-ressistant *Staphylococcus aureus* (MRSA) and influenza A H1N1pdm09 occurred at Putnamville Correctional Facility resulting in fifty ill and one death. Onset of illness was 1/16-2/7 with forty-five inmates, two officers, and three family members – eighteen inmates were hospitalized. The Indiana State Department of Health (ISDH) was alerted on 1/23 of two patients with respiratory illnesses progressing rapidly.
METHODS: Hospitalization criteria included: fever, acidosis, and leucopenia, which were derived from the two index patients. Other inmates with flu-like illness were monitored at the correctional facility. Rapid strep, urine, nasopharyngeal (NP) swabs, and blood samples were used to determine diagnosis.
RESULTS: A total of twelve individuals (24%) had laboratory-confirmed evidence of influenza A infection. The ISDH Laboratory confirmed influenza A H1N1pdm09 from seven individuals and influenza A/unsubtypable in two individuals (which were later confirmed as influenza A H1N1pdm09 by the CDC) by polymerase chain reaction (PCR). Multi-pathogen testing at the CDC identified influenza A in two additional individuals, and pathology testing confirmed influenza A H1N1pdm09 in the deceased index case. Testing at the CDC also confirmed influenza co-infections with *Streptococcus pneumoniae* (n=1) and *Staphylococcus aureus* (n=4). Two of the four cases with *Staphylococcus aureus* were previously confirmed to have sputum or Bronchoalveolar lavage (BAL) cultures positive for MRSA by Regional Hospital. The ages of ill persons ranged from 6 to 64. The outbreak ended on 2/12.
CONCLUSIONS: The illness was detected and identified within seventy-two hours of initial notice. Earlier notification after initial symptom onset of situation to local and state health departments would have prompted a faster response to mitigate the outbreak. Only 12% of ill inmates received the flu vaccine when it was initially offered in October 2015. Greater vaccination coverage in high-risk settings could have been contributory to decreased influenza transmission.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Epidemiology; Influenza / Pandemic Influenza; Vaccine-Preventable Diseases
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	Lwenning@isdh.in.gov
Presenting Author(s)	Lindsay Wenning
Institution Affiliation	Indiana State Department of Health State Public Health Agency

Submission Type Breakout/Quick/Lightning/Poster

ID 7989

Abstract Type Quick

Abstract Title A Cluster of Legionnaires' Disease Cases over a 5-Year Period Associated with a Plastics Manufacturing Facility

Abstract

BACKGROUND: Legionnaires' disease is associated with manmade water sources such as cooling towers, spas, and decorative fountains. Interviewing cases thoroughly may identify likely infection sources. In mid-November 2016, an interview with a Legionnaires' disease case's proxy revealed that the case worked at a plastics manufacturing facility. Review of surveillance data revealed 2 prior reported cases, with onsets in 2014 and 2011, had also been employed at the same facility. An investigation was begun including additional case finding and review of the manufacturing plant and processes.
METHODS: The facility identified a fourth case with onset 9 days prior to the 2011 case in a Wisconsin resident; Wisconsin local public health interviewed the case but interstate notification with Minnesota did not occur. The facility was contacted and an onsite health hazard evaluation with NIOSH staff scheduled.
RESULTS: The 4 cases were all male, age range 47 – 63 years. All had been hospitalized, all survived, and all were positive by *Legionella* urine antigen test. All were smokers. All worked as machine operators in the facility which produces thermoplastic pellets. Production necessitates cooling of the plastic as it is being made, generally by water including misters. Multiple water mists and aerosols were identified throughout the plant. The facility installed a water recycling system in 2011 reducing their annual community water intake from 275 to 2 million gallons. Recirculated water is filtered, cooled (to 50-55 degrees F.), and bromine added per system operator's decision to control bacterial growth. Water is added to the system to make up for loss due to evaporation.
CONCLUSIONS: Intensive interviewing and constant comparison of case exposures revealed a cluster of cases over a 5-year period associated with a single manufacturing facility. No single exposure, but multiple likely exposure sources, were identified. Industrial product production using water for cooling poses a generally unrecognized *Legionella* risk to workers. A water management plan in such facilities will likely reduce the risk.

Submission Complete? Yes

Committee Infectious Disease

Topic Influenza & Other Respiratory Diseases

Keywords Surveillance; Occupational Exposure; Respiratory Diseases

Consider for Different Presentation? Yes

Presenting Author Email Address(es) richard.danila@state.mn.us

Presenting Author(s) Richard N Danila

Institution Affiliation Minnesota Department of Health
State Public Health Agency

Submission Type	Breakout/Quick/Lightning/Poster
ID	7508
Abstract Type	Quick
Abstract Title	Community Outbreak of Legionnaires' Disease Associated with a Cooling Tower

Abstract

BACKGROUND: Minnesota Department of Health (MDH) epidemiologists interview all Legionnaires' disease (LD) cases/proxies about potential exposures; approximately 50 cases were reported annually in recent years. On 9/7/16, MDH noted 4 recent cases either lived or worked within a 1.7 mile area in the city of Hopkins, but no single common exposure was evident. Past surveillance data revealed no LD cases had reported living or working in Hopkins over the prior 4 years.
METHODS: On 9/9 MDH launched an investigation and alerted health care providers and the public. Outbreak cases met the CSTE case definition for confirmed LD, had symptom onset since 8/1, and lived, worked, or spent time in Hopkins within 10 days before onset. MDH and Hennepin County evaluated potential sources of aerosolized water. Samples from cases and from 14 cooling towers (CTs) within 1 mile of the geographic mean center of cases were tested by PCR, *Legionella* culture and serotyping, pulsed-field gel electrophoresis (PFGE), and whole genome sequencing (WGS).
RESULTS: A total of 24 cases (onset dates from 8/4 to 9/22) were identified. Fourteen (58%) lived in Hopkins, 7 (29%) worked in Hopkins, and 3 (13%) visited Hopkins. Median age was 59 years (range, 29-97), 17 (71%) were male, 18 (75%) were hospitalized, 6 (25%) required mechanical ventilation, and 1 (4%) died. All cases were laboratory-confirmed by urine antigen; 4 cases had *Legionella pneumophila* serogroup 1 (Lp1) isolated from respiratory specimens. All case isolates were indistinguishable by PFGE and WGS. The lack of a single common exposure location among cases suggested potential aerosolization from a CT. CTs are not regulated in Minnesota and there was no centralized information on CT locations. Of 14 CTs tested, one at an industrial plant in Hopkins yielded Lp1 isolates indistinguishable from case isolates by PFGE and WGS. The plant had two CTs with automated biocide delivery based on demand. The implicated CT operated during periods of elevated demand, and biocide was injected less consistently in that CT.
CONCLUSIONS: A community outbreak of LD was associated with an industrial CT using an automated biocide delivery system; low periodic demand for the CT may have contributed to intermittent biocide, stagnation, and *Legionella* amplification. CT identification was challenging. Molecular comparison of case and environmental *Legionella* isolates by PFGE and WGS was critical to identifying the source.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Respiratory Diseases; Waterborne Disease; Infectious Diseases
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	ellen.laine@state.mn.us
Presenting Author(s)	Ellen Laine
Institution Affiliation	Minnesota Department of Health State Public Health Agency

Submission Type	Breakout/Quick/Lightning/Poster
ID	8486
Abstract Type	Quick
Abstract Title	Estimating Influenza-like Illness Visits Rates through Enhanced Surveillance for Acute Respiratory Infection

Abstract

BACKGROUND: National influenza surveillance in the outpatient setting consists of clinician-reported influenza-like illness (ILI) and influenza testing results from a variety of clinical laboratories; these reports are neither directly linked nor population-based. Further, influenza disease burden estimation requires a more sensitive case definition than ILI to avoid missing cases. We piloted an enhanced surveillance system designed to determine the incidence of medically-attended acute respiratory illness (ARI) and associated laboratory-confirmed influenza, while maintaining the ability to estimate ILI for national surveillance reporting.
METHODS: The Acute Respiratory Infection Epidemiology and Surveillance program (ARIES) was conducted in 21 clinics in 5 geographically diverse sites representing a population of 166,758 persons. Clinics reported weekly counts of all-cause, ARI visits (≥2 respiratory symptoms), and ILI visits (fever with cough or sore throat). From the first 10 ARI patients presenting each week, symptom information and an upper respiratory specimen was collected for influenza RT-PCR testing. To estimate the number of ILI visits, we used the reported symptoms from patients tested for influenza to determine the percent meeting ILI criteria, and then multiplied by the ARI visit count. Visits associated with influenza were extrapolated from the percent of test-positive patients. Incidence calculations used the clinics' patient population size as the denominator.
RESULTS: From October through December 2016, 5.9% of 51,626 outpatient visits were for ARI and the 3-month cumulative incidence of ARI was 2490 per 100,000 population (95% confidence interval [CI] 2410-2564 per 100,000). Of 361 ARI patients (average 6.4 per week [range 1 – 28]), 63% met ILI criteria; influenza was detected in 3.0% of ARI and 3.5% of ILI patients. Counted and estimated ILI accounted for 1.1% and 2.9% of visits, respectively; weekly proportions were weakly correlated (Pearson 0.7, $p < 0.05$). The estimated cumulative incidence of influenza-associated ARI visits was 56 per 100,000 population (95% CI 33-85 per 100,000). Point estimates for the influenza-associated ILI visit incidence differed between counted and estimated ILI (13 per 100,000 [95% CI 7-21 per 100,000] and 37 per 100,000 [95% CI 18-58 per 100,000], respectively), though confidence intervals overlapped slightly.
CONCLUSIONS: Enhanced surveillance established through ARIES enabled incidence estimation for influenza-associated clinical visits, with the ARI being more sensitive than ILI. Estimated weekly ILI percent correlated with the counted ILI percent, but influenza-associated ILI incidence differed during the initial weeks of surveillance when specimen volume and influenza detection was low.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Respiratory Diseases; Influenza Surveillance
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	ahl4@cdc.gov
Presenting Author(s)	Ashley Fowlkes
Institution Affiliation	Centers for Disease Control and Prevention CDC

Submission Type	Breakout/Quick/Lightning/Poster
ID	8555
Abstract Type	Quick
Abstract Title	Evaluation of Influenza Surveillance in North Dakota

Abstract

BACKGROUND: The NDDoH receives mandatory reports of laboratory confirmed cases of influenza every year, but does not receive information on clinically diagnosed cases. The purpose of this evaluation was to better understand how well influenza reporting reflects the true burden of influenza in North Dakota.
METHODS: ICD-9 and ICD-10 codes for influenza were provided to a select healthcare facility (HFA) to aid them in the data request. Data from HFA for the same time period was extracted from MAVEN, North Dakota's reportable disease database. Additionally, the Biosense 2.0 influenza-like illness (ILI) syndrome data for this facility was also gathered.
RESULTS: The total number of cases of influenza submitted by HFA were 440 (EMR requested line list). Seven hundred and 16 laboratory identified cases were submitted to MAVEN from this facility and 519 ILI visits were recorded in Biosense. Across all three data sets, females were more likely to visit a healthcare facility than males. Age distribution was similar across all three data sets and total cases reported each week showed the same trend. Emergency department visits made up 41.6% of all influenza encounters followed by office visits (40.7%). Additionally, emergency departments were most often used among those younger than 5 years and older than 55 years. Two percent of influenza cases reported by Healthcare Facility A included chief complaints or secondary diagnosises containing symptoms characteristic of a GI illness, not influenza. Additionally, 25% of ICD coded influenza cases in Biosense had chief complaints indicating a GI illnesses.
CONCLUSIONS: The original hypothesis assumed more cases would be identified via clinical diagnosis; however, this was not seen. Instead, more cases were found using the MAVEN data set. MAVEN reporting showed that 700 people were diagnosed with flu, but, the line list provided identified only 400 people. This indicates that not even those with a positive laboratory result were all being ICD coded as having influenza. Additionally, GI illness was important to include because patients often report "stomach flu" or clinicians refer to GI illness as a "flu-like". Both HFA and Biosense data were affected by this type of terminology, indicating that non-laboratory data is likely to contain some GI interference. The analysis of this project suggests that using data pulled from electronic medical records based on ICD coding alone may not be as accurate as originally anticipated. It also illustrates the importance of collecting chief complaints in addition to diagnostic codes.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Evaluation; Influenza Surveillance; Surveillance
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	tkmiller@nd.gov
Presenting Author(s)	Tracy Miller
Institution Affiliation	North Dakota Department of Public Health State Public Health Agency

Submission Type	Breakout/Quick/Lightning/Poster
ID	8096
Abstract Type	Quick

Abstract Title
Influenza Education Among Youth in Agriculture, a Successful Collaboration in Michigan

Abstract

BACKGROUND: BACKGROUND: In 2014, CSTE and CDC announced a Project Development Grant for Influenza Education among Youth in Agriculture. The funding supports pilot projects designed to educate youth participating in agricultural organizations about zoonotic diseases with public health impact. As of 2016, the Michigan Department of Health and Human Services (MDHHS) was funded for two grant cycles. MDHHS collaborated with the Michigan State University Extension (MSUE), which educates youth, through Michigan 4-H. Michigan 4-H offers a variety of programs to help youth ages 5-19 learn critical life skills. It is the largest youth development organization in the state, providing programs designed to provide experiential learning opportunities. There are over 180,000 youth engaged in 58,000+ animal science experiences through Michigan 4-H.
METHODS: METHODS: MDHHS and MSUE have developed six lesson plan units, including supplies, for Michigan 4-H. Topics include "Basics of Biosecurity", "Diseases That Animals and Human Share: The Words You Need to Know", "What is a Pathogen?", "Influenza-Mutation Nation", "One Health-Health for One, One Health for All", "Careers-Bridging Human and Animal Health". Several print resources were developed and distributed, including a Michigan version of the 4-H "Friends" magazine edition "Be a Zoonotic Disease Detective", a "Be Healthy Around Animals" poster, a "Biosecurity 1-2-3" poster, and a MSUE/MDHHS One Health display banner. MDHHS provided sessions on influenza to adult 4-H leaders at their annual meeting and hosted a session during 4-H Exploration Days titled "Be a Disease Detective". Finally, MSUE hosted interactive presentations about Zoonotic Disease Prevention and distributed Pathogen Prevention Packets to 4-H groups throughout the state in the summer of 2016.
RESULTS: RESULTS: Six curriculum units (including supplies) – 4,000 units; Friends Magazine: 57,000; Be Healthy Around Animals posters (two versions): 300; Biosecurity 1-2-3 poster: 100; One Health display banners: 14, one for each 4-H region; Zoonotic Disease Prevention presentations: 36 events in 14 regions; Pathogen Prevention Kits: 2,000 units; MDHHS Influenza education units: 50 adult 4-H leaders, 33 4-H youth
CONCLUSIONS: CONCLUSIONS: In Michigan, this funding has facilitated a fruitful collaboration between public health and MSUE that has resulted in improved education and awareness about zoonotic diseases among youth in agriculture, potentially reaching over 180,000 youth. These relationships were also instrumental in the State's response to an outbreak of H3N2 influenza in swine and people at agricultural fairs in the summer of 2016. Through these established relationships, public health was able to more quickly distribute information about influenza to 4-H adult leaders and youth exhibiting swine.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Influenza / Pandemic Influenza; One Health; Collaboration
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	signsk@michigan.gov
Presenting Author(s)	Kim Signs
Institution Affiliation	Michigan Department of Health and Human Services State Public Health Agency

Submission Type	Breakout/Quick/Lightning/Poster
ID	8076
Abstract Type	Quick

Abstract Title
Legionnaires' Disease Incidence Trends in New York City, 2007–2015

Abstract

BACKGROUND: Legionnaires' disease (LD) incidence has increased nationwide and in New York City (NYC); during 2002–2009, incidence increased 230% in NYC. We examined trends in LD incidence in NYC during 2007–2015, overall and stratified by demographic subgroup.
METHODS: Confirmed LD cases diagnosed during 2007–2015 were obtained from NYC Department of Health and Mental Hygiene (DOHMH) surveillance data. "Definite" hospital-associated cases and 133 cases associated with an outbreak in 2015 in the South Bronx were excluded. Annual incidence rates were calculated using yearly intercensal population estimates and age-adjusted to the US 2000 standard population. Joinpoint regression was used to assess trends in age-adjusted incidence rates overall and stratified by sex, borough, and census tract-based poverty level, defined as the percent of residents with incomes below the federal poverty level (FPL), per the American Community Survey 2006-2010, 2007-2011, 2009-2013, and 2010–2014, categorized as low poverty (<10% below FPL), medium (10–<20% below FPL), high (20–<30% below FPL), and very high poverty (≥30% below FPL). The average annual percent change (AAPC) was calculated to characterize trends, with a maximum of 2 allowable "joinpoints" or instances of statistically significant change in trend.
RESULTS: During 2007–2015, 1,824 LD cases were diagnosed in NYC. Age-adjusted LD incidence per 100,000 citywide increased significantly over the study period, from 2.1 to 3.4 (AAPC=4.9%, 95% confidence interval [CI]: 2.9%–7.0%). In stratified analyses, the AAPC in LD incidence among women was twice that among men: 7.2% for women (95% CI: 3.6%–11.1%), and 3.6% for men (95% CI: 1.0%–6.3%). The AAPC in LD incidence significantly increased by 4.0% in Brooklyn (95% CI: 1.5%–6.5%), 7.3% in Queens (95% CI: 4.6%–10.0%), and 14.5% in Staten Island (95% CI: 5.4%–24.4%). The AAPC in incidence also significantly increased in low, medium, and very high poverty areas by 6.3% (95% CI: 2.6%–10.2%), 7.4% (95% CI: 1.1%–14.0%), and 9.5% (95% CI: 7.4%–11.7%), respectively. No joinpoints (significant changes in trend) were identified for the overall and stratified analyses.
CONCLUSIONS: Significant increasing trends in LD incidence were observed during 2007–2015 in NYC, with the greatest relative increases in Staten Island, areas of very high poverty, and among women. Future analyses should examine how changes in testing, exposure sources, and access to care might have contributed to these trends.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Infectious Diseases; Surveillance; Water
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	cbush1@health.nyc.gov
Presenting Author(s)	CaSaundra H Bush
Institution Affiliation	New York City Department of Health and Mental Hygiene Local Public Health Agency

Submission Type	Breakout/Quick/Lightning/Poster
ID	8269
Abstract Type	Quick

Abstract Title
Middle East Respiratory Syndrome Patient Under Investigation Surveillance – United States 2013-2016

Abstract

BACKGROUND: Identifying and testing patients who meet criteria for Middle East Respiratory Syndrome (MERS) patients under investigation (PUIs) is critical to ensure rapid case detection. Since January 2013, CDC has deployed MERS Coronavirus (MERS-CoV) real-time PCR assays to 47 states. CDC requires reporting of MERS PUI test results in accordance with FDA Emergency Use Authorization requirements. We describe the PUIs reported since 2013.
METHODS: We evaluated all available PUI reports using descriptive statistics and calculated descriptive statistics on data quality.
RESULTS: 889 MERS PUIs including 2 MERS-CoV positive cases (May 2014) were reported during January 1, 2013–November 16, 2016 across 47 states and the District of Columbia. PUI reports declined in 2016, from 232 during January 1-October 31 2015 to 114 during January 1-October 31 2016. Among PUIs, 794 (89%) had traveled to countries in or near the Arabian Peninsula (or South Korea during the South Korea outbreak) in the 14 days before symptom onset. The most commonly reported countries visited by PUIs include Saudi Arabia (389 PUIs [44%]), United Arab Emirates (154 PUIs [17%]), and Jordan (174 PUIs [8%]). Cough (82%), fever (81%), and shortness of breath (49%) were the most common symptoms reported. Hospitalization was reported for 584 (66%) PUIs; of those hospitalized 196 (34%) were admitted to the ICU, and 13 (2%) died. Median age of PUIs was 50 years (range, 2 months–95 years) and 553 (62%) were male. The most commonly reported non-MERS-CoV positive laboratory results were rhinovirus and/or enterovirus (8%), and influenza A (7%). However clinical data (3%–40% missing) and laboratory results for other respiratory pathogens (31%–55% missing or pending) were often unavailable.
CONCLUSIONS: MERS PUI surveillance facilitated rapid reporting of 2 MERS-CoV cases, and PUIs continue to be tested and reported. MERS PUI reports declined during 2016, consistent with the global decrease in reported MERS cases. Continued MERS PUI surveillance is essential for rapid identification of MERS-CoV cases, and continued monitoring of test use, but data quality could be improved.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Emerging Infections; Infectious Diseases
Consider for Different Presentation?	Yes

Presenting Author Email Address(es) lxo9@cdc.gov

Presenting Author(s) Marie E Killerby

Institution Affiliation Centers for Disease Control and Prevention
EIS/CEFO

Submission Type	Breakout/Quick/Lightning/Poster
ID	8226
Abstract Type	Quick
Abstract Title	Trends in Legionellosis from Three Counties in Michigan, 2011—2016

Abstract

BACKGROUND: Legionnaires' disease (LD) is a potentially severe lower respiratory tract infection typically affecting adults aged ≥50 years who often have co-morbid medical conditions. In Michigan and nationwide, LD has been identified as a significant sporadic and epidemic disease affecting adults. The objective of this study was to describe epidemiological patterns of LD in three counties of Michigan.

METHODS: We used the Michigan Disease Surveillance System to extract information on reported LD cases from 2011-2016 in in three contiguous counties (Genesee, Oakland, and Wayne). Cases were tabulated by year, county and age group. The U.S. Census Bureau population data by county were obtained to compute incidence rates for years 2011--2016. Ninety-five percent confidence intervals (CI) for incidence rates were calculated using the Wilson score method (IBM SPSS, Armonk, New York).

RESULTS: From 2011-2016, we identified a total of 536 cases. From 2011--2013, annual LD incidence rates in Genesee county were 1.42/100,000 (95% CI: (0.65-3.10)), 0.72/100,000 (95% CI: 0.24-2.11), and 0.24/100,000 (95% CI: 0.04-1.36), respectively. In contrast, annual incidence rates in Oakland county from 2011--2013 were higher at 2.06/100,000 (95% CI: 1.40-3.05), 2.21/100,000 (95% CI: 1.52-3.22), and 2.92/100,000 (95% CI: 2.11-4.04), respectively. LD incidence rates in Wayne County (2011: 2.33/100,000; 95% CI: 1.73-3.15), 2012: 1.06/100,000, 95% CI: 0.68-1.66, and 2013: 2.37/100,000; 95% CI: 1.75-3.20) were higher but not significantly different from those found in Genesee and Oakland counties. In 2014 and 2015, the incidence rates of LD in Genesee County (9.93/100,000 [95% CI (7.32-13.47)] and 7.30/100,000 [95% CI (5.12-10.42)], respectively) were significantly higher than incidence rates in Oakland (1.37/100,000; 95% CI: 0.86-2.20 and 1.61/100,000; 95% CI: 1.04-2.49, respectively) and Wayne counties (1.64/100,000; 95% CI: 1.14-2.36) and 1.36/100,000; 95% CI: 0.92-2.03), respectively). In 2016, the LD incidence rate in Genesee county declined to 4.14/100,000 [95% CI (2.17-6.11)] but increased in Oakland (2.82/100,000; 95% CI: 2.03-3.92) and Wayne counties (2.91/100,000; 95% CI: 2.21-3.81), respectively.

CONCLUSIONS: LD continues to be an important reportable disease in Michigan that affects a diverse population. The incidence rate of LD in Genesee County rose to unprecedented levels in 2014 and 2015 but declined 43% from 2015 to 2016. Although 2016 LD incidence rates in Oakland and Wayne counties are slightly lower compared with Genesee County, total case numbers in all three counties suggest the need for renewed attention on preventive strategies to reduce the burden of LD.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Infectious Diseases; Respiratory Diseases; Surveillance
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	paul.kilgore@wayne.edu
Presenting Author(s)	Paul Kilgore
Institution Affiliation	Wayne State University Academic Institution

Submission Type	Roundtable
ID	8199
Abstract Type	Roundtable
Abstract Title	Collaborations to Support RSV Surveillance and Assess RSV-Associated Morbidity and Mortality: Laying the Groundwork for Vaccine Introduction in the United States and Updates from CDC

Abstract

Key Objectives:

- Discuss CDC's current activities to assess RSV burden and RSV-associated morbidity and mortality
- Discuss experiences with RSV surveillance from state, territorial, and local public health perspectives
- Identify and discuss epidemiologic evidence gaps prior to potential vaccine introduction in the United States
- Conduct strategic planning for future collaborations between CDC and CSTE related to RSV

Brief Summary:

Respiratory syncytial virus (RSV) is the most common cause of lower respiratory tract infections in children younger than 1 year of age in the United States and is being increasingly recognized as a significant cause of respiratory illness in older adults. With more than 50 vaccine products and other therapeutics in development, it is important to document disease burden through surveillance in all age groups and to assess RSV-associated morbidity and mortality prior to potential vaccine introduction. With support from local and state partners, CDC activities include: 1) the expansion of active, population-based surveillance through the New Vaccine Surveillance Network (NVSN) to determine the etiology and burden of acute viral respiratory diseases among children in inpatient and emergency department settings; 2) monitoring RSV seasonality in the US through the National Respiratory and Enteric Virus Surveillance System (NREVSS), a laboratory-based system; 3) investigating and validating RSV-coded deaths of children <5 year of age since 2014; 4) active, prospective surveillance among hospitalized adults through the US Hospitalized Adult Influenza Vaccine Effectiveness Network (HAIVEN) and at a Veteran's Affairs hospital; 5) population-based surveillance for laboratory-confirmed RSV among hospitalized adults through the Influenza Surveillance Network (FluSurv-NET) 6) surveys focused on laboratory practices related to RSV detection and assessing the knowledge, attitudes, and practices of clinicians with regard to diagnosing RSV; and 7) conducting pilot studies to assess viral etiology of respiratory infections among residents in adult long-term care and pediatric chronic care facilities. Discussion will mainly focus on laboratory and disease surveillance, documenting disease burden, and proposed next steps for more accurately assessing pediatric mortality.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Surveillance; Infectious Diseases; Epidemiology
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	bhx1@cdc.gov; gik8@cdc.gov
Presenting Author(s)	Susan Gerber; Mila M. Prill
Institution Affiliation	Centers for Disease Control and Prevention CDC

Submission Type	Roundtable
ID	7472
Abstract Type	Roundtable

Abstract Title Introducing CDC's Legionnaires' Disease Outbreak Investigation Toolkit: Resources to Enhance Response Capacity Among Epidemiologists

Abstract

Key Objectives:

• Introduce new Centers for Disease Control and Prevention (CDC) resources aimed at building state and local epidemiologic capacity to identify and control outbreaks of Legionnaires' disease.

• Provide a forum for state and local epidemiologists to suggest feedback on the toolkit contents and discuss remaining gaps in existing resources.

• Discuss mechanisms for evaluating toolkit contents on an ongoing basis.

Brief Summary:

Legionnaires' disease is acquired by transmission of *Legionella* from environmental sources, and most recognized outbreaks are associated with complex building water systems that are not adequately managed. Although matching of case and environmental isolates using specialized typing techniques can definitively identify the source, epidemiological evidence is essential for the correct interpretation of laboratory results in the context of an outbreak and can point to a potential source in many situations, even if isolates are not available. Depending on the setting, controlling an outbreak often necessitates engagement with environmental health specialists, building owners and managers, engineers, consultants, contractors and other professionals. Furthermore, expectations around outbreak response have evolved since the advent of primary prevention guidance. An effective response often culminates in the implementation of a building-specific water management program. These programs identify preventive maintenance strategies that can interrupt the amplification, aerosolization, and transmission of *Legionella* , thereby reducing incidence of disease. Communicating risk to affected populations, the community, and additional stakeholders is also a challenge. Epidemiologists are often required to lead or coordinate these multidisciplinary activities, with varying degrees of experience and training. CDC is creating a suite of online tools aimed at building capacity among epidemiologists. This project is in direct response to requests from state and local epidemiologists for more guidance and recommendations around Legionnaires' disease investigation and response activities. The new tools, downloadable from the CDC *Legionella* website, will include: • Setting-specific template line lists • Template notification letters targeting various audiences • Chart abstraction forms • Extended case interview forms

CDC is also developing a checklist of questions epidemiologists can ask during investigations to better understand the nuanced environmental factors contributing to *Legionella* growth and transmission. We believe these tools will enable epidemiologists to investigate outbreaks more rapidly and implement control measures to protect at-risk populations. We would like to solicit input and feedback from state and local epidemiologists on the available tools, identify remaining gaps in outbreak response resources, and consider ways to address these gaps at the local, state and federal levels.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Waterborne Disease; Outbreaks; Epidemiology Capacity
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	lyd7@cdc.gov
Presenting Author(s)	Jessica C. Smith
Institution Affiliation	Centers for Disease Control and Prevention CDC

Submission Type	Roundtable
ID	8437
Abstract Type	Roundtable
Abstract Title	Surveillance and Monitoring of Non-Influenza Viral Respiratory Disease: Leveraging Influenza Surveillance Systems

Abstract

Key Objectives:

• Describe the benefits of non-influenza viral respiratory disease surveillance and the current surrounding challenges

• Describe and discuss innovative approaches and best practices in leveraging influenza surveillance systems for monitoring other viral respiratory disease

Brief Summary:

Public health departments utilize a variety of data sources to collect information related to influenza and influenza-associated illness. Common sources of these data include clinical reporting, laboratory testing in public health and commercial laboratories, syndromic surveillance, and mortality surveillance. Surveillance for other viral respiratory diseases is often less established, although advancement in molecular diagnostic techniques have now made it possible to identify a wider range of respiratory pathogens. Building upon current infrastructure for influenza surveillance provides public health with a unique opportunity to identify or monitor other circulating and emerging viral respiratory diseases of concern, even in resource constrained environments. During this roundtable session, public health partners will provide examples of how influenza surveillance systems have been leveraged to meet data needs for recent emerging viral respiratory threats (i.e. MERS, EV-D68) and establish surveillance in anticipation of new vaccine development (i.e. RSV). Information shared by state and local health departments from within influenza surveillance programs or other programs with similar experience will be compiled and distributed by the CSTE Influenza and Viral Respiratory Diseases Subcommittee to inform members of best practices for programs considering surveillance for non-influenza respiratory viruses.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Influenza & Other Respiratory Diseases
Keywords	Influenza Surveillance; Surveillance; Respiratory Diseases
Consider for Different Presentation?	Yes

Presenting Author Email Address(es)	Christine.Hahn@dhw.idaho.gov; lisa.mchugh@doh.state.nj.us
Presenting Author(s)	Christine Hahn; Lisa McHugh
Institution Affiliation	Idaho Division of Public Health State Public Health Agency