

Infectious Diseases

Assignment Description:

This position will be located in the Bureau of Epidemiology's Division of Infectious Disease Epidemiology (IDE), Investigations section. This section is responsible for a broad range of disease surveillance and control activities in Pennsylvania. The Fellow will work with IDE's Investigation, Surveillance and Preparedness Sections. Responsibilities of these sections related to infectious disease prevention and control include: interactions with six DOH regional offices and 10 County or Municipal Health Departments, outbreak and case investigations, surveillance of >50 infectious diseases excluding HIV/AIDS, tuberculosis, and sexually transmitted diseases, data analysis, preparation of reports and educational materials for professionals and the public, assisting in the development of public health policy and regulations.

The Pennsylvania Department of Health conducts at least seventy formal disease outbreak investigations each year. The Department also works closely with CDC including via EpiAids. CSTE Fellows have continuous opportunities to provide public health consultation and to investigate disease outbreaks. The Department provides a unique opportunity to participate in the ongoing design and implementation of a cutting-edge electronic disease surveillance system. Pennsylvania also has a robust electronic syndromic surveillance system that captures real-time emergency department admissions data. Interaction is also possible with Vaccine-Preventable Diseases, HIV/AIDS, STD, TB, Maternal Child Health, vital statistics, and chronic disease prevention and control programs.

Day-to-Day Activities:

The fellow will fully participate in the day-to-day activities conducted by IDE staff, including participating in disease investigations; conference calls with federal, local and regional partners. Additionally, the fellow will have the opportunity to attend and present at monthly Journal Clubs and all-day Department Quarterly Epidemiology meetings attended by 50-100 field and state epidemiology staff. The Fellow will also be encouraged to attend and present at local, regional and national conferences.

Potential Projects:

TITLE OF PROJECT: Geographic Analysis of Lyme disease Cases

Lyme disease is the most common vector-borne disease in the United States. In 2010, 30,158 confirmed and probable cases of Lyme disease were reported making it the fifth most reported infectious disease in the United States; however, the burden of disease falls disproportionately on endemic states in the Northeast and Midwest United States. In 2010, 13 states reported 95% of the cases nationally.

Pennsylvania reported a total of 3,805 (30 per 100,000) confirmed and probable cases; this is 13% of the national total and the most cases reported cases by any state.

Reported cases of Lyme disease in Pennsylvania are entered into PA-NEDSS and are automatically geocoded by place of residence of the patient. To date, these data have only been used to assign cases to local jurisdictions (county or municipality) for case follow up. In the past, these data were shared with the Environmental Protection Agency as part of a study of ecological risk factors for Lyme disease, but they have not been used to determine local area risks for Lyme disease in Pennsylvania. Risks of Lyme disease at the sub-county level have never been assessed.

The Fellow would analyze geographic patterns of Lyme disease in Pennsylvania from 2003 to the most recent data year (currently 2010) to assist in assessing the risk of Lyme disease within jurisdictions and

recommend targeted prevention activities. GIS software training and support are readily available through the PA DOH and other partners.

Title of Project: Review of Campylobacter Surveillance Data

Pennsylvania reports over 1500 cases of Campylobacteriosis each year, most of which are not associated with any recognized outbreak. Time constraints of epidemiologists and public health nurses have thus far precluded a thorough review of investigations conducted by Pennsylvania related to Campylobacter infections outside the context of an outbreak. Given the lack of molecular data to provide additional guidance on Campylobacter clusters, a review of reported exposures from Campylobacter investigations would provide important insight as to the changing risk factors.

The Fellow would review existing surveillance and investigation data and conduct analyses to describe the patterns of exposure among reported Campylobacteriosis cases. Additionally, data could be stratified by various demographic categories to better understand characteristics of risk factors across populations.

Title of Project: Evaluation of Chronic Hepatitis C in Pennsylvania Correctional Facilities.

Chronic hepatitis C infection is the leading cause of advanced liver cirrhosis and liver cancer in the United States. The infection is most prevalent among persons 45 to 60 years of age, but limited data from three states, including Pennsylvania, suggest an emerging trend of chronic infection in adolescents and young adults. This has profound consequences for the control of this disease and has implications for long-term treatment of infected individuals. Because of the high volume of chronic hepatitis C reporting and a shortage of resources and staff, data on race /ethnicity, and risk factors are not collected. The Pennsylvania Department of Corrections (DOC) has been screening inmates for hepatitis c infection upon admission to the state prison system since 2002. The results of this testing indicate that Pennsylvania correctional facilities are experiencing a similar increase in hepatitis C among young adults. Correctional facilities are the single largest reservoir of chronic hepatitis C in Pennsylvania. The risk factor data they collect is incomplete and in paper charts. The DOC is developing an electronic medical record, which will be implanted in 2012, but it is not expected to collect detailed risk factor data. Collection of demographic, and risk factor data will further our understanding of the epidemic and help in designing preventive interventions.

The fellow will design a study to collect data on demographics, risk factors, and unmet needs among newly diagnosed inmates with hepatitis c infection. The process will include writing a proposal for the Department of Health Institutional Review Board's approval, designing the questionnaire and data base, collection of data from the correctional facilities, data analysis, and writing a final report which will include suggestions for an intervention plan. This project will be a model for the DOC to implement in the future, and the questionnaire might be used as an assessment tool incorporated in the electronic medical records. This will enhance monitoring the epidemic in the correctional facilities

TITLE OF PROJECT: Evaluation of the Accuracy of Pertussis Case Classification

The CDC case definition for pertussis is complex and, despite multiple educational efforts, frequently misunderstood by public health investigators in Pennsylvania. Cases called "confirmed" or "probable" by the initial public health field investigator frequently do not meet the CDC criteria for these classifications.

In an attempt to address this problem, a SAS program was written to flag potentially misclassified pertussis cases and generate a weekly report to the Division of Immunizations (DOI). DOI then contacts

the investigators and asks them to reexamine and reclassify these cases as appropriate. This procedure has been in place for several years, but pertussis cases continue to be misclassified and questions from the field investigators continue.

The Fellow will assess the appropriateness of pertussis case classifications upon initial entry into PA-NEDSS, at the time the cases are “closed out,” and at the end of the data year (after final adjudication by the PA DOH Central Office staff) to determine the extent of misclassification and suggest additional procedures and training to reduce these errors.

Preparedness Role:

Preparedness activities range from investigations of cases and outbreaks of CDC category A, B, and C agents, and preparedness and response for all hazards -- for public health emergencies not limited to bioterrorism and infectious disease outbreaks. Flooding is the most common disaster in Pennsylvania. Preparedness and response for other public health emergencies are within the purview of other offices of the PA DOH and other Pennsylvania state agencies. Numerous opportunities will arise for training provided by partner agencies and stakeholders, including human and animal health agencies, regional preparedness task forces, emergency medical services, emergency management, law enforcement (FBI), U.S. Department of Homeland Security, and the National Guard.

The fellow will have the opportunity to work closely with the Office of Public Health Preparedness and the IDE Planning and Preparedness section throughout the course of their fellowship. Opportunities for participation in regional preparedness conferences as well as training exercises and workgroup meetings are frequently available.

Assignment Location:	Harrisburg, PA
Primary Mentor:	Perrienne Lurie, MD, MPH Public Health Physician Pennsylvania Department of Health
Secondary Mentor:	Andre Weltman, MD, MSc Public Health Physician Pennsylvania Department of Health