

Infectious Diseases

Pennsylvania Department of Health, Division of Infectious Disease Epidemiology

Harrisburg, Pennsylvania

Assignment Description

The Fellow's primary home will be the IDE Division with its core group of eight experienced medical epidemiologists, four doctoral level epidemiologists, and twelve master's level epidemiologists, as well as other professional staff, who have diverse expertise and extensive disease control experience. Relationships exist with several Schools of Public Health and Medicine in the Commonwealth. The State Laboratory provides infectious disease testing and consultation with experienced public health microbiologists. There is substantial computer and technical support. The Division of IDE has 62 staff currently.

Day-to-Day Activities

The fellow will fully participate in the day-to-day activities conducted by IDE staff, including participating in disease investigations, and conference calls with federal, local and regional partners. Fellows can anticipate working on multiple outbreak investigations during their two years here. Additionally, the fellow will have the opportunity to attend and present at Departmental public health seminars and 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

Surveillance Activity 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.

Surveillance Evaluation Critical evaluation of CJD (Creutzfeldt-Jakob Disease) Surveillance Program in Pennsylvania

CJD is a reportable condition in the state of Pennsylvania. Despite this, health care practitioners infrequently report suspected cases of this condition to PA-NEDSS (the Pennsylvania Electronic Disease Surveillance System). The majority of suspected cases of CJD are obtained through direct submission of reports from The National Prion Disease Pathology Surveillance Center (Institute of Pathology, Case Western Reserve University). Once case information is received by the Department of Health, a minimal amount of information is provided to conduct follow-up with the provider and/or patient to confirm diagnosis.

Potential cases of CJD are initially evaluated based upon diagnostic criteria (most frequently CSF testing which includes reactivity to any of the following: a positive/ambiguous tau test, a positive/ambiguous 14-3-3 protein test, and the recently adopted reflexed use of RT-QuIC testing). Diagnosis for CJD is confirmed through brain biopsy or autopsy, more frequently the latter.

The Fellow will collect information from other states where CJD is reportable and evaluate their methodology for tracking cases of CJD. The Fellow will utilize death certificates as a gold standard to compare cause of death with reported cases of CJD in PA-NEDSS. The Fellow will design tools to more efficiently obtain accurate data from providers related to suspect cases and design a method of enhancement for this program that will more efficiently track this reportable condition. The evaluation and suggestions for improvement from the Fellow will be used to modify our current CJD surveillance processes in collaboration with DOH stakeholders.

Major Project Geographic Analysis of Lyme Disease Cases

Lyme disease is the most common vector-borne disease in the United States. In 2017, 36,429 confirmed and probable cases of Lyme disease were reported; however, the burden of disease falls disproportionately on endemic states in the Northeast and Midwest United States. In 2017, 13 states reported 95% of the cases nationally. Pennsylvania reported a total of 11,443 (70.3 per 100,000) confirmed and probable cases; this is 31% 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.

Surveillance Improving the Completeness of Varicella Reports Activity

One of the surveillance measures for the CDC vaccine preventable diseases grant is the completeness of varicella reports. Cases of varicella have been reportable in Pennsylvania since 2005, but the case reports are frequently missing vital data elements such as vaccination history and disease severity. In addition, varicella deaths are frequently misclassified, and cases of varicella are not counted if they are mistakenly closed out as cases of “varicella zoster infection”. In 2014, a SAS program was written to flag potentially misclassified or incomplete cases of varicella and generate a report to the Division of Immunizations (DOI). DOI then contacts the investigators and asks them to complete the missing data fields and reexamine and reclassify these cases as appropriate.

The Fellow will look at the PA-NEDSS data for varicella, varicella deaths, and varicella zoster virus infection. S/he will compare the accuracy of case classifications and completeness of reporting of the vaccination history and disease severity before and after the SAS report process was instituted. In addition s/he will make recommendations for ways to further improve the process.

Preparedness Role

Preparedness activities range from investigations of cases and outbreaks of CDC category A, B, and C agents (<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5042a1.htm>); novel influenza A (http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6035a6.htm?s_cid=mm6035a6_w), 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 Bureau of Public Health Preparedness and the Division of Community Epidemiology's Community 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.

Mentors

Primary	Betsy Schroeder DVM, MPH State Public Health Veterinarian
Secondary	Kirsten Waller MD, MPH Deputy State Epidemiologist