

ID: 58600248

Infectious Diseases - Host Site Description

Pennsylvania Department of Health

Assignment Location: Harrisburg, US-PA
Pennsylvania Department of Health
Bureau of Epidemiology

Primary Mentor: Betsy Schroeder, DVM, PhD, MPH, DACVPM
State Public Health Veterinarian
Pennsylvania Department of Health

Secondary Mentor: Kirsten Waller, MD, MPH
Deputy State Epidemiologist
Pennsylvania Department of Health

Work Environment

Hybrid

Assignment Description

The Fellow's primary home will be the Bureau of Epidemiology with its core group of six medical epidemiologists, eight doctoral level epidemiologists, and thirteen master's level epidemiologists, as well as other professional staff, who have diverse expertise and extensive disease control experience. Additional staff have been added due to the COVID-19 pandemic response. 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.

Describe Statistical and Data Analysis Support, Such as Databases, Software, and Surveillance Systems Available to the Fellow

PA-NEDSS (web-based disease reporting and surveillance database) to be replaced in 2022 by PA-DORS (an implementation of the CDC NBS system), EpiCenter (syndromic surveillance database), PA Bureau of Laboratories laboratory database, and PA State Immunization Information System. Statistical and data analysis support is available within the IDE Division; IT support is available from the PA DOH Bureau of Information Technology and its contractors. The Fellow will have access to SAS, SAS Enterprise Guide, R, ArcGIS, REDCap, and survey tools.

Projects

Surveillance Activity Title: Review of Campylobacter Surveillance Data

Surveillance Activity Description:

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.

Surveillance Activity Objectives:

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. The enteric disease team will also

ID: 58600248

Infectious Diseases - Host Site Description

Pennsylvania Department of Health

provide support for the fellow to utilize ArcGIS to describe geographic patterns of Campylobacteriosis in the state and determine whether geographic variables such as urbanicity, percentage of agricultural land use, or sociodemographic variables are associated with increased rates of campylobacteriosis by county. The Fellow would summarize this review in a presentation and potentially a publication.

Surveillance Activity Impact:

This review would provide important insight into changing risk factors for Campylobacter infections.

Surveillance System Evaluation Title: Updated Validation of Syndromic ILI Data for ILINet Surveillance in Pennsylvania

Surveillance System Evaluation Description:

ILINet is a CDC program that has been used for years for influenza- like illness (ILI) surveillance, using a network of outpatient providers who volunteer to track and report weekly the number of visits due to ILI and the total number of visits to their practice. Pennsylvania has a network of 36 providers and student health centers that submit data to ILINet. However, ongoing challenges in recruiting and retaining providers, and inconsistent weekly reporting are barriers to receiving accurate, representative, and timely ILI surveillance data year-round. Syndromic surveillance data have been used to enhance outpatient ILI surveillance in a number of jurisdictions, including Pennsylvania. During the 2016-17 influenza season, we conducted an extensive analysis of data submitted by emergency departments across hospitals that have been part of the system for more than 5 years. Our investigation aimed to establish statistical correlations between this data and the information collected by ILINet during the same period. At present, 100% of all Pennsylvania hospitals with emergency departments (EDs), send chief complaint and other information on their ED visits to the Department of Health's (PADOH) syndromic surveillance system. PADOH uses the Epicenter platform hosted by Health Monitoring Systems (HMS) for syndromic surveillance.

Surveillance System Objectives:

- The Fellow will reevaluate syndromic data from all the hospitals that submit data to our syndromic surveillance through graphical and statistical correlation methods.
- The Fellow will use Pennsylvania ILINet data from the past 6 seasons (2017-2018 to 2022-2023, excluding 2020-2021).
- The Fellow will compare the statewide percent of visits due to ILI (influenza-like illness) to the percent of ED visits according to the state-developed ILI algorithm.
- The Fellow will use SAS or R programming skills to analyze the data following previously developed methods. The evaluation will be used to modify ILINet surveillance in PA and improve upon a previous study. The case definition of ILINet has changed recently and the fellow will use the updated case definition and compare chief complaint created syndrome to the ICD based syndrome to improve accuracy of selection.
- The Fellow will investigate potential reasons for weak correlation and try to address these causes, when possible, to improve the usability of syndromic data.
- The Fellow would summarize their findings into a presentation, a report, and potentially a publication.

Surveillance System Impact:

This project would allow PADOH to select facilities that can be recruited to strengthen the state's ILINet and improve geographical representation.

Major Project Title: Geographic Analysis of Anaplasmosis Cases

Major Project Description:

Anaplasmosis has been increasing in Pennsylvania over recent years. It is the second most common tickborne disease in Pennsylvania, following Lyme disease. The Ixodes scapularis tick transmits both Lyme disease and anaplasmosis, and

ID: 58600248

Infectious Diseases - Host Site Description

Pennsylvania Department of Health

these ticks are found in every county of Pennsylvania. In 2021, Pennsylvania reported a total of 683 cases of anaplasmosis, compared to 218 cases in 2019.

Reported cases of anaplasmosis 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, but they have not been used to determine local area risks for anaplasmosis in Pennsylvania. Risks of anaplasmosis at the sub-county level have never been assessed.

Major Project Objectives:

The Fellow would analyze geographic patterns of anaplasmosis in Pennsylvania from 2003 to the most recent data year. GIS software training and support are readily available through PADOH and other partners. The Fellow would summarize their findings into a presentation, a report, and potentially a publication.

Major Project Impact:

This project will assist in assessing the risk of anaplasmosis within jurisdictions and recommend targeted prevention activities

Additional Project #1 Title: Improving the Completeness of Varicella Reports

Project #1 Type: Surveillance Activity

Project #1 Description:

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.

Project #1 Objectives and Expected Deliverables:

The Fellow will look at the PA-NEDSS data for varicella, varicella deaths, and varicella zoster virus infection. They 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, they will make recommendations for ways to further improve the process. The Fellow would summarize their findings into a presentation, a report, and potentially a publication.

Project #1 Impact:

This project will provide important information on the degree of completeness in reporting for varicella that will allow PADOH to meet CDC grant criteria, which allows for more targeted intervention and educational opportunities.

Additional Project #2 Title: Data visualization and reporting of wastewater genomic data

Project #2 Type: Major Project

Project #2 Description:

The Pennsylvania Wastewater Surveillance System (PaWSS) has begun transitioning all laboratory analyses for measuring SARS-CoV-2 in wastewater from a commercial laboratory partner to our state laboratory, the Bureau of Laboratories (BOL). As part of this transition, BOL will begin conducting whole genome sequencing of wastewater

ID: 58600248

Infectious Diseases - Host Site Description

Pennsylvania Department of Health

samples. A bioinformatician at BOL will begin conducting analyses of genomic data and will provide epidemiologists with the relative abundance of key SARS-CoV-2 variants of interest measured in wastewater samples. As these data are produced, there is a need for the PaWSS team to share results through data visualizations with both internal partners and the public.

Project #2 Objectives and Expected Deliverables:

To assist the PaWSS team with identifying best practices for visualizing these data, the fellow will do a review of wastewater genomic data visualizations shared by CDC, other states, universities, or other organizations. This will include identifying plots, data summary tables, or other methods that could be used to share these data with varying level of detail. The fellow will then share results with the PaWSS team and receive feedback on which visualizations are the most useful. The fellow will then work with the PaWSS team to identify the most appropriate software to generate these visualizations and will develop methods to generate visualizations on a regular basis.

Project #2 Impact:

Periodic evaluations of these visualizations will continue to ensure the PaWSS team is utilizing best practices when sharing these data.

Please Describe the Fellow's Anticipated Role in Preparedness and Response Efforts – Include Activities and Time Allocation (Required Competency of Fellowship)

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.

Please Describe the Fellow's Anticipated Role in Cluster and Outbreak Investigations – Include Activities and Time Allocation (Required Competency of Fellowship)

PADOH conducts at least seventy disease outbreak investigations each year. The Department also works closely with CDC. CSTE Fellows have continuous opportunities to provide public health consultation and to investigate disease outbreaks. The mentors for this Fellow are heavily involved in enteric outbreaks and zoonotic outbreaks, both of which lend themselves to investigation opportunities for Fellows. The plan is for the Fellow to become progressively more involved in outbreak investigations over the course of the Fellowship, from participating in an outbreak investigation under someone else's lead all the way up to leading an investigation themselves. Outbreak investigation needs can be vary depending on the year or the circumstances, but there has historically been a good balance between working on core competencies like a major project and responding to emergent situations like outbreaks.

ID: 58600248

Infectious Diseases - Host Site Description

Pennsylvania Department of Health

Please Describe the Fellow's Anticipated Role in the COVID-19 Response – Include Activities and Time Allocation

While the COVID-19 response levels have varied depending on the virus's changing epidemiology, it is anticipated that the Fellow will be more involved in projects utilizing COVID-19 data rather than being involved in the day to day pandemic response. One of the proposed projects for the Fellow involves utilizing SARS-CoV-2 wastewater surveillance, for example. If the Fellow has an interest in other aspects of the COVID-19 response or different COVID-19 datasets, those aspects could certainly be explored.

Please Describe Opportunities for Fellows to Work in Health Equity as well as Incorporating Diversity, Equity, and Inclusion into their Work

Health equity and diversity, equity, and inclusion (DEI) continue to be areas of focus for PADOH across subject matters. The Fellow will be a member of the vectorborne team, who has recently started developing materials and programs for people who primarily work outdoors and low literacy/Limited English Proficiency populations. Additionally, PADOH has relationships with Keystone Health, a Federally Qualified Healthcare Center, that provides healthcare for many of the seasonal labor farm workers. Previous Fellows have had the opportunity to investigate outbreaks and participate in providing outreach and education in this population. There are also continued opportunities for Fellows to take trainings on topics that include person-first language, developing materials for a low literacy audience, and others.