ID: 33951771
Infectious Diseases, Infectious Diseases - Foodborne - Host Site Description
Connecticut Department of Public Health

Assignment Location: Hartford, US-CT
Connecticut Department of Public Health
Infectious Disease

Primary Mentor: Lynn Sosa, MD
State Epidemiologist
CT DPH

Secondary Mentor: Quyen Phan, MPH
Epidemiologist 4 / Emerging Infections Program Coordinator
CT DPH

Work Environment
Hybrid

Assignment Description

This Assignment offers hands-on experience and mentoring in the Connecticut Department of Public Health (DPH) Infectious Diseases Section. Responsibilities of the Section include implementing disease surveillance and analyzing data, conducting epidemiological studies, investigating outbreaks, responding to emerging infectious diseases, evaluating public health interventions, interacting with providers, developing and providing education for health care providers, assisting local health departments, working with regional public health programs, developing guidelines, evaluating program activities, and assisting in the development of public health policy. Our goal is to further the Fellow's professional growth and expand access to public health practitioners and leaders. The Connecticut assignment provides a variety of activities that will expand the Fellow's knowledge and skills in applied epidemiology and public health practice. This experience will help prepare the Fellow for a career with a state or local health department. The Fellow will be considered an integral member of the Infectious Diseases Section with project opportunities across infectious disease areas. The Fellow will have options from a portfolio of projects to demonstrate core competencies in applied epidemiologic methods, communication, public health practice, and program evaluation. The proposed projects emphasize prevention interventions, use of data for decision-making, evaluating programmatic outcomes, and building program capacity. These projects also provide the Fellow with opportunities to collaborate with organizations and agencies outside DPH and to attend and present at public health meetings. The Fellow will be fully integrated into the daily activities of the EEIP and will work with multiple groups within DPH to experience the full range of public health activities represented at the agency. The Fellow will engage in routine surveillance activities including database management, data cleaning, and data analysis, cluster and outbreak detection, investigation and response, program evaluation, and policy development. This will include attendance at a variety of project-based team meetings at DPH including EEIP staff meetings, bimonthly DPH's multidisciplinary Legionnaire's disease investigative team, monthly TB case review meetings, and weekly epidemiology clusters/outbreaks investigation meetings. In addition to internal meetings, the Fellow will be integrated into programmatic interactions with our partners at the state public health laboratory, our academic partner, the Yale School of Public Health, and our community-based advisory groups. The Fellow will have access to the same information and databases other staff members do to conduct their work and assist with additional activities (e.g. outbreak investigations) as they arise. The Fellow will work to analyze and prepare audience-specific presentations of data to foster partnerships and inform the clinical care community and beyond.

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

The Fellow will have access to software packages equivalent to permanent Department staff including Microsoft Office, R, SAS, SQL, SATScan, and ArcGIS. Databases currently in use within the Infectious Diseases Branch include Conduent Public Health Solutions Maven (known in CT as CTEDSS), SQL, Microsoft Access and Epi Info.

Projects

Surveillance Activity Title: Foodborne Disease Surveillance

Surveillance Activity Description:
The Connecticut Department of Public Health (CTDPH) is part of the Emerging Infections Program (EIP) Foodborne Disease Active Surveillance Network (FoodNet), a collaborative effort between the Centers for Disease Control and Prevention (CDC) and 10 EIP sites throughout the United States. In CT, the FoodNet program is a collaboration between the CTDPH and the Yale School of Public Health (YSPH). Ongoing active surveillance is conducted for eight pathogens including Campylobacter, Cyclospora, Listeria, Salmonella, Shiga toxin-producing Escherichia coli (STEC) O157 and other non-O157 STEC, Shigella, Vibrio and Yersinia. In addition, FoodNet sites conduct active surveillance for hemolytic uremic syndrome, a serious complication of STEC infection.

The goal of this project is to have the fellow assist with foodborne disease surveillance which includes case identification, case follow-up, data collection, data management, and cluster/outbreak detection and investigation. The fellow will identify potential cases reported to the DPH, follow-up on laboratory and/or provider reports to collect clinical information and classify cases using established CDC/CSTE case definitions. Follow-up with providers typically involves contact with hospital infection preventionists and/or other providers. The fellow will assist with conducting interviews with reported cases using a standardized forms to collect more specific information including illness, travel, and food histories. The fellow will also assist with cluster/outbreak detection and participate in cluster follow-up and outbreak investigations.

Surveillance Activity Objectives:
The fellow will:

- Gain in-depth knowledge of all aspects of a surveillance system, including case-ascertainment, case follow-up, data collection, data management and reporting.
- Develop skills in conducting case investigation through provider follow-up and case-patient interviews.
- Conduct cluster/outbreak detection and investigation, working as part of an interdisciplinary team which typically consists of epidemiology, laboratory, and environmental health staff. As part of outbreak investigations, the fellow may also assist with in-the-field investigation activities.
- Develop skills in working with the public health community at all levels of government, including local health departments, other state health departments, and federal public health and regulatory partners.

Surveillance Activity Impact:
The fellow will provide much-needed epidemiological support to the DPH for foodborne disease surveillance, outbreak detection and response. Supporting routine surveillance efforts will contribute to CT's ability to monitor trends and understand risk factors associated with various foodborne pathogens. The surveillance data collected and reported to CDC helps to determine, on a national level, the burden of and trends in foodborne disease infections. In addition, effective and timely surveillance and outbreak investigations can lead to implementation of appropriate control measures to prevent further spread of illness and prevent similar outbreaks from occurring again in the future.

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Surveillance System Evaluation Title: Anaplasmosis Surveillance System Evaluation

Surveillance System Evaluation Description:
Anaplasmosis is a tick-borne disease caused by the bacterium Anaplasma phagocytophilum and is the third most reported tick-borne disease in CT. CT DPH began conducting surveillance for anaplasmosis in 1995. Anaplasmosis and related laboratory findings (Anaplasmosis human granulocytic anaplasmosis (HGA) were added to the Connecticut List of Reportable Diseases, Emergency Illnesses and Health Conditions and the List of Reportable Laboratory Findings in 2009. In 2014, anaplasmosis was reportable as Anaplasma phagocytophilum by PCR only and was removed as a provider reportable disease in CT. For 2024, anaplasmosis is added back to the list for provider reporting and indirect immunofluorescence assay (IFA) IgG titer≥1:128 is added to the list of reportable laboratory findings.

A review of the surveillance is warranted given the recent changes in the new anaplasmosis surveillance case definition as well as the change in CT's surveillance methods over the years. The Fellow will have an opportunity to evaluate the usefulness, sensitivity, and flexibility of the surveillance system. The Fellow will be able to identify trends in disease occurrence, investigate risk factors and clinical outcomes of anaplasmosis. The Fellow will summarize the surveillance evaluation and describe the data findings in the Connecticut Epidemiologist for publication.

Surveillance System Objectives:
- Train Fellow to be familiar with tick-borne disease surveillance systems in Connecticut.
- Update tick-borne disease surveillance data summaries on the CT DPH website.
- Summarize surveillance evaluation and submit an abstract/publication describing the results of the surveillance evaluation.
- Find strengths and weakness in current surveillance systems and provide recommendations to improve these systems.
- Communicate evaluation findings and lessons learned with public health partners.
- Collaborate with DPH Communications Office to develop public health messaging on tick-borne diseases.

Surveillance System Impact:
- Providing recommendations for improving surveillance processes.
- An abstract/presentation describing the results of this surveillance evaluation.

Major Project Title: Assessment, Creation, and Connection: Data quality and modeling for Latent Tuberculosis Infection (LTBI) data with implications for public health use.

Major Project Description:
Although tuberculosis (TB) disease incidence nationally and in Connecticut continues to decline over time, persons with latent TB infection (LTBI) must remain a high priority in order to prevent the spread of TB disease. Access to and generation of complete and relevant data for LTBI evaluation, diagnosis, and treatment are key to creation of local interventions, case management strategies, and public health policies in Connecticut.

Over the last 5 years, evaluations were conducted about selected aspects of LTBI management in Connecticut. First, for refugees and immigrants with overseas classifications of B1 or B2 TB, the evaluation included data tracking, initiation and completion of treatment, and a survey of local health department (LHD) barriers to providing comprehensive LTBI services. Second, for persons identified as close contacts to TB cases (contact investigation, or CI), the process evaluation included data analyses and gaps within the current LTBI database and recommendations for improvement, as well as a survey of LHD knowledge of and implementation of CI activities.

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This Major Project would further build on this recently completed work to:

1. Determine the quality and completeness of existing LTBI data;
2. Determine specific variables and components of a new LTBI database within the MAVEN model (CTEDSS); and
3. Work with staff from the TB, Informatics, and Refugee Health Programs to help create a relevant LTBI database model which is responsive to LHD, State, CDC, and Office of Refugee Resettlement reporting needs.

Major Project Objectives:

- Analyze existing data on LTBI treatment initiation and completion among all persons for whom the DPH TB Program provided treatment (variables of interest include demographics, known TB contacts).
- Review earlier draft LTBI database model for relevant and obsolete variables and provide input on a new surveillance and reporting system which connects TB disease, Refugee Health, and LTBI data.
- Provide report(s) summarizing the findings of the analysis of the LTBI database and data within.
- Present the information to TB public health stakeholders including TB clinicians and LHDs.

Major Project Impact:
This project will be critical to ensure the DPH TB Program's capacity for accurate TB, LTBI, and Refugee Health surveillance, and for more responsive and timely public health reporting to internal and external stakeholders.

Additional Project #1 Title: Assessing the burden of unreported respiratory diseases on health care-seeking behaviors
Project #1 Type: Major Project

Project #1 Description:
The Connecticut Department of Public Health (DPH) conducts integrated respiratory viral disease surveillance with a focus on COVID-19, influenza, and respiratory syncytial virus (RSV). For these three primary pathogens, multiple data sources are used to monitor seasonal trends and assess severe outcomes including: positive laboratory results, emergency department syndromic surveillance, inpatient hospitalization, and vital records death certificates. Other respiratory viral diseases that contribute to seasonal illnesses include: adenovirus, human metapneumovirus, rhinovirus, enterovirus, and parainfluenza viruses. The burden of these illnesses is not well understood due to the lack of surveillance systems focused on other specific pathogens, however, these viruses can be clinically diagnosed, particularly by hospital and clinical laboratories that use multi-target diagnostic PCR panels.

DPH maintains a syndromic surveillance system, EpiCenter, that captures data from 39 emergency departments and 51 urgent care centers. Visits are characterized into syndromes of public health importance based on near real-time pre- and post-diagnostic visit data (e.g. chief complaint, ICD-10 diagnosis codes) and can also be used to approximate disease severity (e.g. length of stay, discharge disposition). Data from EpiCenter are currently used to monitor all-cause respiratory visits and visits with a discharge diagnosis for COVID-19, influenza, or RSV. DPH seeks to expand use of this system to characterize other visits associated with respiratory illness.

Project #1 Objectives and Expected Deliverables:

- Develop syndrome definitions for other common causes of respiratory viral illness (e.g. adenovirus, human metapneumovirus, rhinovirus, enterovirus, and parainfluenza viruses);
- Evaluate the quality of EpiCenter data as a source of surveillance data for respiratory viral illnesses;
- Describe seasonal trends, demographic trends, and disease severity for respiratory viral diseases using syndromic surveillance data;
- Develop recommendations for integrating expanded syndromic surveillance analyses into respiratory viral disease surveillance activities;
- Provide report(s) summarizing the findings of the analysis of abovementioned items.

- Present the information to public health stakeholders including respiratory viral disease surveillance staff, DPH leadership, and local health departments.

Project #1 Impact:
This project will be critical to ensure the DPH Respiratory Viral Disease Surveillance Program is conducting integrated surveillance beyond the 3 current pathogens that are being monitored to improve disease reporting and to develop further recommendations for public messaging, disease mitigation, and plan future surveillance activities.

Additional Project #2 Title: Syphilis Surveillance Evaluation
Project #2 Type: Surveillance System Evaluation

Project #2 Description:
Syphilis is a sexually transmitted disease (STD) caused by the bacterium Treponema pallidum. Syphilis cases have been increasing since their nadir in the years 2000-2001, primarily affected men who have sex with men. During the COVID-19 pandemic, syphilis cases continued to increase with increasing rates among women of childbearing age with concomitant increases in congenital syphilis. Follow up of early syphilis cases where people are infectious are a priority for the Connecticut STD Control Program.

The goal of this project is to have the fellow conduct an evaluation of syphilis laboratory surveillance to understand the strengths and weaknesses of surveillance, understand the impact of adding negative TP-PA and FTA-ABS results to surveillance processes and make recommendations for improvements. The fellow will become familiar with all of the steps in laboratory reporting for syphilis and be able to go in depth into the management of syphilis data in the Connecticut Electronic Disease Surveillance System. They will also be able to shadow Disease Intervention Specialists who are responsible for interviewing case-patients with syphilis to ensure treatment and conduct partner notification.

Project #2 Objectives and Expected Deliverables:
- Gain in-depth knowledge of all aspects of a surveillance system, from case-ascertainment to data management and reporting
- Develop skills in understanding case investigation through provider follow-up and case-patient interviews conducted by Disease Intervention Specialists
- Develop an article on syphilis trends and the impact of changes to laboratory surveillance for the Connecticut Epidemiologist newsletter.
- Prepare and abstract on the surveillance evaluation for the CSTE annual conference.

Project #2 Impact:
The fellow will provide an important evaluation of a syphilis laboratory surveillance and provide feedback on the impact of recent changes to syphilis laboratory reporting. This evaluation is critical to ensuring infectious syphilis cases are identified in a timely manner to ensure appropriate treatment and stop further transmission.

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

Possible activities might include working with bioterrorism/emerging pathogen response protocols, and planning for continuity of program operations in an emergency. Fellows may participate in a tabletop exercises, hot-wash/after action meetings, or other field exercises regularly planned through the agency's Office of Emergency Preparedness. We expect a Fellow would have the opportunity to work on current H5N1 response activities.

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

The Fellow will immediately join the foodborne disease outbreak response team and be incorporated into weekly meetings and discussions about clusters and outbreak investigations. The Fellow will be part of the team of epidemiologists who take turns taking the lead on cluster/outbreak investigations. Approximately 60 foodborne clusters are identified annually in CT through various mechanisms such as review of surveillance data, whole genome sequencing, geo-spatial temporal analyses (e.g. SaTScan), and private citizen reports or consumer complaints. Cluster/outbreak investigation activities may include conducting interviews with cases/controls, creating surveys, analyzing data, summarizing findings, participating in meetings with investigation partners (local health departments, State Laboratory, Food Protection Program), and conducting field work. The Fellow will also join national outbreak investigation calls with CDC and other states in the event of a multi-state outbreak. The Fellow will gain a better understanding of different aspects of an outbreak investigation, develop communication skills and strategies through collaborative work with public health partners, and have opportunities to summarize and present outbreak investigation findings. The Fellow will also be exposed to and expected to assist in other outbreak investigation activities (e.g. respiratory, health-care associated infections) as needed. Estimated 20-25% of the Fellow's time will be spent on infectious disease cluster/outbreak response activities.