**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
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 Disease Section include Conduent Public Health Solutions Maven (known in CT as CTEDSS), SQL, Microsoft Access and Epi Info.

**Projects**

**Surveillance Activity Title: Legionellosis Surveillance**

*Surveillance Activity Description:*
Legionnaire's Disease, is a serious disease, which often presents as a lung infection, that is caused by legionella bacteria. The disease spreads when small droplets of legionella contaminated water are inhaled into the lungs. While legionella bacteria are naturally occurring in freshwater environments the bacteria become a public health concern when it spreads and grows within human made building water systems. Legionella surveillance is an important public health function because it helps to identify new cases, links between cases, and identify potential transmission sources in order to implement control measures to prevent others from becoming ill. The Connecticut Department of Public Health (DPH) has been conducting routine legionella surveillance since 1997.

The goal of this project is to have the fellow assist with legionella 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 the CDC/CSTE case definition. Follow-up with providers typically involves contact with hospital infection preventionists to gather initial illness and exposure information. The fellow will also conduct interviews with confirmed cases using a standardized form to collect more specific information including health care exposures, travel history, and other risk factors. The fellow will assist with cluster/outbreak detection and participate in outbreak investigations.

*Surveillance Activity Objectives:*
The fellow will:

- Gain in-depth knowledge of all aspects of a surveillance system, from case-ascertainment to data management and reporting.
- Develop skills in conducting case investigation through provider follow-up and case-patient interviews.
- Participate in cluster/outbreak detection and investigation, working as part of an interdisciplinary team at DPH.

*Surveillance Activity Impact:*
The fellow will provide much-needed epidemiological support to the DPH for legionellosis surveillance, outbreak detection and response. Effective and timely surveillance and outbreak investigations can lead to implementation of appropriate control measures to prevent further spread of legionellosis in health care facilities and communities.

**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 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.

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).
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.

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*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.

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**Additional Project #2 Title: Hepatitis A Surveillance System Evaluation**
**Project #2 Type: Surveillance System Evaluation**

*Project #2 Description:*
Hepatitis A infection is a highly contagious acute infection of the liver caused by the hepatitis A virus (HAV). The virus is spread primarily from person-to-person by the fecal-oral route and outbreaks have occurred among people who use drugs, people experiencing homelessness, and men who have sex with men. Foodborne transmission of HAV also occurs with recent documented multistate outbreaks linked to strawberries and blackberries. Postexposure prophylaxis can prevent additional cases if provided in time.

In CT, anti-HAV IgM positive laboratory results are reportable to both the CT DPH and local health department. HAV infection is also provider reportable. The CSTE/CDC case definition is used for case ascertainment. Classifying cases require collection of both laboratory and clinical information and is a resource-intensive effort. Analysis of 2015-2019 HAV data in CT showed that only 13% of reported anti-HAV IgM reports were classified as confirmed cases. A review of the current HAV surveillance system and follow-up procedures can help assess usefulness, sensitivity, and flexibility of the surveillance system, and lead to potential recommendations on improved processes to make the surveillance system more efficient and effective. Additionally, the Fellow will identify trends in disease occurrence, evaluate clinical outcomes and risk factors. The Fellow will summarize the surveillance system evaluation and describe CT HAV data. The Fellow will have opportunities to produce and submit abstracts, present data, and write a summary report for publication in the Connecticut Epidemiologist newsletter.

*Project #2 Objectives and Expected Deliverables:*
- Train Fellow to be familiar with Hepatitis A surveillance in CT.
- Summarize surveillance system evaluation and submit an abstract/publication describing the results of the surveillance evaluation.
- Find strengths and weakness in current HAV surveillance system and provide recommendations to improve the system.
- Summarize CT HAV surveillance data for publication in the Connecticut Epidemiologist newsletter.

*Project #2 Impact:*
This surveillance system evaluation is expected to result in recommendations on how the surveillance system can be improved. An effective HAV surveillance system results in more timely case ascertainment and better outbreak detection and investigation, leading to control measures to prevent further illness.

**Additional Project #3 Title: Tuberculosis (TB) Guidelines for Refugees and Immigrants: Evaluation of the new 2024 Overseas (Panel Physician) and Domestic (Civil Surgeon) TB Technical Instructions data with implications for public health.**
**Project #3 Type: Major Project**

*Project #3 Description:*
The United Nations High Commissioner for Refugees (UNHCR) estimates as of the end of 2022 indicate that “108.4 million people worldwide were forcibly displaced as a result of persecution, conflict, violence, human rights violations or events seriously disturbing public order”, including “35.3 million refugees, 62.5 million internally displaced persons, and 5.4 million asylum seekers” (Figures at a glance | UNHCR). These figures have increased due to continued conflict in the Ukraine and in the Middle East.

During the last three years, Connecticut has welcomed over 750 Afghans under Operation Allies Welcome, 5,200 Ukrainian Humanitarian Parolees under Uniting for Ukraine, over 1,000 refugees under the U.S. Refugee Assistance

Program, and many hundreds of other humanitarian parolees and immigrants joining family members in the state. Every one of these persons has had, or is strongly recommended to have, a TB screening test and treatment if appropriate.

The CDC promulgates Technical Instructions (TIs) for TB evaluations of entrants to the U.S. - one set for pre-immigration panel physician overseas examinations, and one set for domestic civil surgeons conducting medical exams for visa status adjusters. Both the overseas and domestic TIs were updated in 2024, with the focus of discovering and treating LTBI among these residents.

*Project #3 Objectives and Expected Deliverables:*

- Evaluate the quality of TB data in DPH's Refugee Health and LTBI databases before and after the 2024 Tis.
- Determine new processes and practices required by DPH TB and Refugee Health Programs in order to manage the TIs including new data variables and new reporting requirements.
- Work with New England regional refugee health and TB program staff to compare approaches to the Tis.
- Create educational materials for providers and local health department (LHD) nurses and staff.
- Provide report(s) summarizing the findings of the analysis of abovementioned items.
- Present the information to TB public health stakeholders including TB clinicians and LHDs.

*Project #3 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.

**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.

**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 in 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.

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

The Fellow would be included in weekly COVID-19 data review discussions and respiratory viral disease team weekly meetings and could be asked to take on analytic projects focusing on COVID-19 data. (5%)

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

The Fellow will have training opportunities to learn how to incorporate health equity into their daily work. This Fellow would have the opportunity for a cross-cutting experience at DPH by collaborating with the Office of Health Equity or with other infectious disease programs. Examples of possible activities could include helping to conduct a rapid community assessment or drafting guidance documents around health equity. Additionally, connections with TB, STD, HIV, Viral Hepatitis, and Refugee and Immigrant Health Program staff would provide the Fellow with rich opportunities to explore health equity activities, real-life field experiences, and epidemiological data.