

ID: 60515039

Infectious Diseases, Wastewater Surveillance - Host Site Description

Vermont Department of Health

Assignment Location: Waterbury, US-VT
Vermont Department of Health
Laboratory Sciences and Infectious Disease

Primary Mentor: Lynn Blevins, MD, MPH
Health Surveillance Epidemiologist
Vermont Department of Health

Secondary Mentor: Laura Ann Nicolai, BA, MPH
Deputy State Epidemiologist
Vermont Department of Health

Work Environment

Hybrid

Assignment Description

The Division of Laboratory Sciences and Infectious Disease (LSID) includes three Sections: Infectious Disease, Immunization, and the Public Health Laboratory. The Fellow will primarily work within the Infectious Disease Section (ID-Epi) of LSID, but will have opportunities to contribute to projects that require collaboration with colleagues from across the Health Department. ID-Epi investigates outbreaks and reports of notifiable conditions, conducts surveillance, provides prevention and control recommendations, conducts analyses and publishes findings, and provides information regarding the health status of Vermonters. ID-Epi includes the following programs: Tuberculosis, Vaccine-Preventable diseases, COVID-19, Zoonotic diseases, Food and water-borne disease, Vector-borne disease, Healthcare-associated infections, Invasive bacterial diseases, HIV/AIDS/STIs and Hepatitis C. The Fellow will engage with and analytically support many of these program areas, depending on their interests, but will have a focus on TB, viral respiratory diseases, wastewater surveillance, and advanced molecular detection applications.

The Infectious Disease Section is also home to an Epidemic Intelligence Service Officer (EISO) who will be starting her second year at the Department in summer 2024. The State Epidemiologist and the State Public Health Veterinarian will also be available to support and work with the Fellow.

ID-Epi staff have skills in a variety of areas including epidemiologic methods, data management, program management, program evaluation, and stakeholder engagement, creating a well-rounded environment for a fellow to learn and grow within. Because our team is small, all staff "wear multiple hats" and cover multiple disease areas. This allows for opportunities to sample a variety of program areas and participate in interesting and engaging projects.

When the Fellow arrives, they will work with their mentors to create a work plan that supports Division needs, but also allows for flexibility, exploration of areas of interest, and timely achievement of fellowship competencies. The level of challenge of submitted projects can be adjusted to meet the Fellow's current skill level, as well as to create opportunities for growth.

The Fellow should anticipate variety in their day to day activities. They will be responsible for conducting literature reviews in order to determine methodologically appropriate ways to approach a given project, cleaning and managing data, writing code, analyzing data, and communicating findings (both orally and in writing). As outbreak investigations occur, the Fellow will likely be asked to contribute to the response as a member of the outbreak investigation team. The Fellow should also be willing to respond to needs and/or emergencies as they arise and to work collaboratively across the Health Department.

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

The Vermont Department of Health has a department-wide strategy for improved data use, analysis and dissemination to help transform the health of its population. Our team collaborates closely with the VDH Division of Health Statistics and the Agency of Digital Services on interoperability and systems improvements. Current projects include the onboarding of electronic case reporting to our nationally notifiable disease surveillance system (NBS). The Fellow will have access to NBS (upon completion of a background check and security training) and will be able to create and run reports for analysis. The Fellow will be able to access ESSENCE to conduct syndromic surveillance and will be able to consult with ESSENCE users across the Department for guidance on query development. The Fellow will use the NWSS DCIPHER platform for projects involving wastewater surveillance. The Fellow will have access to SAS, SPSS, or R for quantitative data analyses and PowerBI for data querying and visualization. Finally, access to ArcGIS will be provided for mapping projects.

Projects

Surveillance Activity Title: Viral Respiratory Surveillance

Surveillance Activity Description:

Each week ID-Epi produces separate COVID-19 and influenza surveillance reports to inform leadership and the public. Static reports are shared by email and posted on the Health Department website. ID-Epi, in collaboration with Division of Health Statistics colleagues, is preparing to replace these statics reports with an online dashboard that will allow for simultaneous evaluation of COVID, flu and RSV levels within Vermont.

Surveillance Activity Objectives:

The Fellow will be trained on completion of the separate COVID-19 and Influenza surveillance reports to ensure understanding of how the data are received, analyzed, and displayed. The Fellow will then conduct a survey of several state respiratory illness surveillance data dashboards to compare which data points are being presented and elements of effective data visualization to help inform decision-making for VDH's respiratory surveillance dashboard design. The review would include dashboards that use R, ArcGIS, or PowerBI since those are tools available to our team.

Surveillance Activity Impact:

Accelerating data sharing in an assessable format to inform the public can improve decision making and promote positive behaviors thereby protecting health.

Surveillance System Evaluation Title: Evaluation of Latent TB Reporting in Vermont

Surveillance System Evaluation Description:

Latent tuberculosis infection (LTBI) is a reportable condition in Vermont; healthcare providers and laboratories are required by law to notify the Health Department when LTBI is identified in a patient. The Health Department routinely investigates all reported cases of LTBI among Vermont residents to ensure active TB disease has been ruled out and to monitor the epidemiology of LTBI in Vermont.

The Health Department Tuberculosis Program plans to evaluate LTBI reporting in Vermont to better understand why individuals are being tested for TB infection and the subsequent care cascade following a positive test result (e.g., appropriate rule out of active TB disease and initiation of LTBI treatment).

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Surveillance System Objectives:

The Fellow will conduct a review of 2023 LTBI reports to identify characteristics of persons being tested for TB infection in Vermont (e.g., birth outside of the U.S., race, ethnicity, age, etc.) and key variables on treatment initiation and completion to identify gaps in reporting and to inform provider education and outreach to priority populations.

Surveillance System Impact:

Understanding barriers in LTBI care will help inform TB prevention strategies and education/outreach efforts to providers in Vermont. Knowing where to target provider education and outreach is especially important since LTBI treatment can be managed by a primary care provider within the patient's medical home, but many providers choose to refer their LTBI patients to ID physicians which creates an additional obstacle for the patient.

Major Project Title: Electronic Case Reporting Validation and Evaluation

Major Project Description:

Electronic case reporting (eCR) provides timely and more complete data than manual reporting and decreases the burden on both healthcare facilities and public health staff as it securely transfers patient and clinical information. ID-Epi has onboarded COVID-19 and MPOX electronic case reporting and is planning to onboard additional conditions in the coming months. As new conditions are added, validation of the messages is needed to ensure timely implementation.

Major Project Objectives:

Monitoring of electronic case reports within NBS and comparison of these ECRs to electronic laboratory reports to identify any gaps in reporting.

Major Project Impact:

Electronic Case Reporting provides timely and complete data to support outbreak management and the monitoring of disease trends. It securely transfers patient and clinical information from healthcare to public health for disease tracking, case management, and contact tracing. Further, it eliminates the burden of manual reporting on healthcare providers.

Additional Project #1 Title: Infection Control Assessments in Senior Living Communities

Project #1 Type: Major Project

Project #1 Description:

The Fellow would work with our Healthcare Associated Infections team to coordinate efforts of staff in Local Health Offices to conduct Infection Control Assessment and Response (ICAR) surveys in long term care facilities across the State. The Fellow would become familiar with the CDC designed ICAR surveys, identify facilities where ICARs should be conducted, and work with facilities and Local Health staff to schedule and conduct ICAR site visits. Outreach activities would also include sharing information about CDC's Decision Tool for Investigating Group A Streptococcus Outbreaks within Long-Term Care Facilities.

Project #1 Objectives and Expected Deliverables:

Compilation of comprehensive survey to identify facilities in need of ICARS and distribution of information about Group A Strep toolkit.

Project #1 Impact:

ICAR tools are used to systematically assess a healthcare facility's infection prevention practices and guide quality improvement activities by addressing identified gaps.

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

A measles tabletop exercise is being planned for the fall of 2024. The Fellow can assist with creation of the exercise scenario and exercise plan, briefing slides, situation manual, evaluation materials and feedback form. The Fellow will be able to attend the exercise and either participate or observe in an evaluator role. Time allocation may be flexible but could include 5-7 hours per week over a 6 week period. The Fellow will also be encouraged to participate in real time incidents as they arise, including any activations of the Health Operations Center.

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

The Fellow will have experience participating in an outbreak investigation including knowledge and understanding of appropriate public health recommendations, collection and analysis of data, provision of recommendations, summarizing of findings through a written outbreak investigation report, and presentation to Health Department peers. Depending on timing, the Fellow will be encouraged to submit an abstract and, if accepted, present their findings at a regional or national conference.

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

COVID-19 activities could include any of the following:

- Evaluation of wastewater data as an indicator for COVID-19 activity (other pathogens could also be reviewed).
- Evaluation of COVID-19 variant surveillance (surveillance system evaluation).
- Retrospective review of school outbreaks - Use sequencing data to determine the number of virus introductions in school outbreaks, and if possible, transmission patterns.
- Review of repeat infection cases using sequencing information.

Time allocation depends on the project(s) chosen. There are no required day-to-day activities. Response activities would be limited to review of surveillance streams and response to outbreaks, as would be the case for other pathogens.

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

VDH's Office of Health Equity and Integration (OHEI) along with the Division of Laboratory Sciences and Infectious Disease JEDI (Justice, Equity, Diversity and Inclusion) Committee provides resources and hosts monthly meetings on topics such as medical harm, racism, classism, and ableism in order to promote cultural competency and interactions that are respectful of and responsive to the health beliefs, practices, and cultural and linguistic needs of all Vermonters. The Fellow will be able to attend monthly meeting, participate in learning opportunities and utilize health equity resources. The Fellow will also be encouraged to consult with OHEI staff or JEDI Committee members on projects, outreach and communications efforts.