

**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, Influenza, 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 viral respiratory diseases and wastewater surveillance.

The Infectious Disease Section is also recruiting an Epidemic Intelligence Service Officer (EISO) who would start in summer 2026. The State Epidemiologist and the State Public Health Veterinarian will supervise the EISO, if recruitment is successful, and 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. 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 growth opportunities.

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

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Fellow should also be willing to respond to needs and/or emergencies as they arise and to work collaboratively across the Health Department.

**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 Informatics 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 1CDP 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: Wastewater Surveillance Data Quality and Interpretation by Sample Type**

*Surveillance Activity Description:*

Vermont's wastewater surveillance system reflects data from 11 wastewater treatment facilities that collect at least one 24-hour composite sample per week. In addition, some sites collect one or more grab samples each week. These sites have the advantage of a second data point each week, but grab samples are not necessarily representative of the prior 24 hours.

The Fellow will analyze the data for each site, comparing composite only vs. composite and grab samples to determine if grab samples are worth collecting. On the one hand, they could help smooth the curve by providing additional data points, but they may also introduce outlier values. The Fellow will make recommendations for sampling frequency and data interpretation.

*Surveillance Activity Objectives:*

The Fellow will analyze the data for each site, comparing composite only vs. composite and grab samples to determine if grab samples are worth collecting. On the one hand, they could help smooth the curve by providing additional data points, but they may also introduce outlier values. The Fellow will make recommendations for sampling frequency and data interpretation.

*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: COVID-19 Variant Sequencing in VT**

*Surveillance System Evaluation Description:*

Vermont has two sources of sequencing data for COVID-19: 1) whole genome sequencing from clinical specimens, and 2) sequencing from wastewater samples. Both approaches have limitations, but together provide a more complete picture

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of variant circulation in Vermont. The fellow will evaluate this two-part surveillance system using CDC guidance for the evaluation of surveillance systems and make recommendations for system improvement.

*Surveillance System Objectives:*

Currently, only clinical specimen sequencing data are shared in the weekly COVID-19 surveillance report, and will soon move to our respiratory disease dashboard. As wastewater sequencing starts up at our own laboratory, these data will also need to be incorporated into the respiratory dashboard. Since the two types of variant surveillance data are reported and interpreted differently, clear data visualization and communication will be necessary.

*Surveillance System Impact:*

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

**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.

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*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.

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

Over the last two years, the Department has held a tabletop exercise and a follow-up functional exercise to test response plans for highly pathogenic avian influenza (HPAI). Our current AEF was one of three people who designed the functional exercise. She also had a lead role in exercise implementation. An incoming Fellow could assist with future exercises, including the creation of the exercise scenario and implementation 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.