ID: 59721256
Infectious Diseases, Wastewater Surveillance - Host Site Description
New Jersey Department of Health

Assignment Location: Trenton, US-NJ
New Jersey Department of Health
Communicable Disease Service

Primary Mentor: Nagla Bayoumi, DrPH, MPH
Epidemiologist / Research Scientist
New Jersey Department of Health, Division of Epidemiology, Environmental and Occupational Health

Secondary Mentor: Kathleen Ross, MPH
Epidemiologist / Research Scientist
New Jersey Department of Health, Division of Epidemiology, Environmental and Occupational Health

Work Environment
Hybrid

Assignment Description

The fellow will work with the NJDOH Communicable Disease Service (CDS) and would be an integral part of the Epidemiology Coordination team, which is one team within the Infectious and Zoonotic Disease Program (IZDP) area. As described above, CDS consists of four program areas and, although the fellow will be working primarily within the IZDP program area, there will be ample opportunities to collaborate with staff from other program areas, such as with staff from the Infection Control Hospital & Environmental Epidemiology (ICHEE) unit.

Main responsibilities of the Epidemiology Coordination team include monitoring the incidence and prevalence of COVID-19, non-influenza respiratory illnesses (e.g., Respiratory Syncytial Virus, Rhinovirus), and other infectious diseases, including invasive group A Streptococcal infections. Monitoring disease incidence and prevalence is done using various surveillance tools, including wastewater testing data. The Epidemiology Coordination team is responsible for developing recommendations regarding the control of infectious disease activity, and for communicating these recommendations to appropriate health care providers, public officials, and policymakers. The Epidemiology Coordination team assists in the development of policy regarding the control of infectious diseases in concert with appropriate policymaking officials and conducts research within available resources to expand the knowledge base of infectious disease epidemiology. The Epidemiology Coordination team is also responsible for management of the NJDOH Wastewater Surveillance Program. The team coordinates: outreach and onboarding of wastewater treatment plants, testing of wastewater samples with the state lab, data submission to CDC per established timeframes, analysis of wastewater data, and sharing of findings with stakeholders.

The fellow's anticipated day-to-day activities would include:
- Monitoring COVID-19, RSV, and other non-influenza respiratory disease activity using various metrics and surveillance tools, including wastewater test result data.
- Analyzing and interpreting clinical case data and wastewater surveillance data.
- Aiding in the development of recommendations for the mitigation of infectious disease activity.
- Keeping abreast of changes and updates to recommendations for infection prevention and control from the federal level.
- Communicating recommendations and changes in guidance to local health departments and other stakeholders.
- Collaborating with health educators and SMEs on public health messaging campaigns to communicate recommendations for prevention and control.

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- Evaluating the use of death registry data and eCR data for improving case completeness.
- Assessing the alignment of Water Management Programs (WMPs) in healthcare facilities in New Jersey with national standards.
- Evaluating the progress of viral hepatitis elimination implementation activities.
- Participating in weekly check-ins with supervisors/mentors to discuss assignments and review progress.
- Participating in biweekly Epidemiology Coordination team meetings to collaborate on projects and provide updates.
- Participating in biweekly Epidemiology Update meetings with IZDP and other CDS staff to learn about updates from various program areas.
- Participating in monthly CDC National Wastewater Surveillance System (NWSS) Community of Practice meetings.

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

The fellow will have access to CDRSS, New Jersey's electronic, web-enabled system where public health partners statewide can instantly report and track incidences of communicable diseases. The Communicable Disease Reporting and Surveillance System (CDRSS) facilitates the timely reporting and immediate sharing of pertinent data, thus supporting appropriate public health responses, be they isolated incidences or multi-state outbreaks. Positive laboratory reports of communicable diseases are entered into CDRSS either by electronic laboratory reporting (ELR) transmissions or are entered manually on a daily basis from clinical laboratories and acute care hospitals. Follow up information is added by hundreds of trained users in various public health roles. The CDRSS is available 24 hours a day, 7 days a week and routine transmissions to the Centers for Disease Control and Prevention (CDC) support national as well as statewide surveillance.

CDS staff includes members with expertise in data analysis, data management, and informatics. Statistical and data analysis support will be made available to the CSTE fellow. The CSTE fellow will have the opportunity to query and analyze data from various surveillance systems including infectious disease case and outbreak data from CDRSS and syndromic surveillance data from EpiCenter. The fellow would receive training on how to use the state's surveillance systems and would be provided licenses for SAS and Tableau as needed. In addition, the fellow would have opportunities for expanding statistical analysis skills through SAS tutorials/webinars and routinely scheduled Tableau Doctor sessions.

Projects

Surveillance Activity Title: Using Wastewater Data for the Surveillance of Respiratory Activity

Surveillance Activity Description:
The fellow will use wastewater testing result data to conduct surveillance on SARS-CoV-2, influenza A/B, and RSV. An understanding of how the National Wastewater Surveillance System (NWSS) works will be established. Wastewater data will be interpreted and used, in conjunction with clinical case rates, hospitalization metrics, death rates, syndromic surveillance, and genomic surveillance data to inform public health action. Trends in wastewater activity will be compared with trends in other disease activity metrics to assess correlation and the ability of wastewater data to predict increases in hospitalization metrics.

Surveillance Activity Objectives:
Project objectives include:
1) Learn how wastewater surveillance systems work and how data from the NJDOH Wastewater Surveillance Program is shared with CDC NWSS.

2) Understand how wastewater surveillance data can be used as an early indicator that the number of people with COVID-19 in a community is increasing or decreasing.
3) Use wastewater data, in conjunction with other tools, to conduct surveillance of respiratory disease activity.

Project deliverables include:
1) Analyze and interpret wastewater surveillance data weekly for informing viral respiratory disease activity
2) Compare normalized wastewater testing result trends with trends in other disease metrics (i.e. hospitalizations) to assess the ability of wastewater to predict increases in disease activity.

Surveillance Activity Impact:
The project aims to examine the use of wastewater data as an early warning signal of increasing disease activity. This would inform preventative strategies and public health action.

Surveillance System Evaluation Title: Evaluating the use of Death Registry and eCR data to Improve Case Completeness

Surveillance System Evaluation Description:
This project will evaluate the utility in implementing a routine process of matching case data reported into the Communicable Disease Reporting and Surveillance System (CDRSS) with data from the state's Electronic Death Registration System (EDRS) and using eCR data to ascertain information on morbidity and mortality. Information on the date of death and/or cause of death for invasive Group A Strep cases reported into CDRSS are sometimes missing. The fellow would evaluate the process of matching invasive group A Streptococcal (iGAS) cases reported into CDRSS with data from EDRS as a means of improving data completeness within CDRSS. The fellow would also evaluate the use of eCR data in improving data completeness in regards to adverse outcomes associated with iGAS infections. This evaluation would inform the understanding of the risk in morbidity and mortality associated with iGAS infections and improve the accuracy of mortality rates calculated for iGAS-associated infections.

Surveillance System Objectives:
Project objectives include:
1) Improve data completeness for iGAS cases within CDRSS
2) Inform morbidity and mortality risk associated with iGAS infections

Project deliverables include:
1) Analyze CDRSS iGAS case data and assess extent of missing/incomplete outcome information.
2) Assess improvement in CDRSS case completion after matching onto EDRS data and/or using eCR data.
3) Provide recommendations for the use of eCR data for informing morbidity associated with iGAS and EDRS data in informing mortality associated with iGAS infections.

Surveillance System Impact:
The project aims to improve data completeness within the state's communicable disease surveillance system. Additionally, the project aims to provide information on the risk of morbidity and mortality associated with iGAS infections and improve the accuracy of mortality rates calculated.

Major Project Title: Evaluation of Water Management Programs in Healthcare Facilities

Major Project Description:
This project will assess the alignment of Water Management Programs (WMPs) in healthcare facilities in New Jersey with national standards. The fellow will work closely with the ICHEE unit and will be tasked with creating a standardized

survey tool to systematically review WMPs and gather information on the barriers to implementing best practices. This project aims to enhance the water management practices in healthcare facilities, ultimately contributing to a safer and healthier environment for both patients and staff.

Major Project Objectives:
Project objectives and expected deliverables include:
1) Survey Development: Develop a comprehensive survey tool that evaluates the key components of WMPs, ensuring alignment with national standards. The tool should cover aspects such as risk assessments, control measures, monitoring, and response protocols.
2) Barrier Analysis: Incorporate questions in the survey to identify and analyze barriers faced by healthcare facilities in implementing water management best practices. This could include challenges related to resources, knowledge, or any other obstacles hindering adherence to standards.
3) State-wide Training: Conduct a state-wide training session for healthcare facilities on the importance of effective water management and provide guidance on aligning WMPs with national standards.
4) Comprehensive Report to NJDOH: Compile and issue a detailed report to the New Jersey Department of Health summarizing findings from the survey. The report should include recommendations for improvement, highlight common challenges, and propose strategies for overcoming identified barriers.

Major Project Impact:
This project aims to enhance water management practices in healthcare facilities, ultimately contributing to a safer and healthier environment for both patients and staff.

Additional Project #1 Title: Viral Hepatitis Elimination
Project #1 Type: Surveillance System Evaluation

Project #1 Description:
This project will evaluate the progress of viral hepatitis elimination implementation activities in the state of New Jersey. The fellow will work closely with the hepatitis team to assist in elimination efforts and will assess gaps in access to testing and treatment among vulnerable populations. This project includes a health equity lens.

Project #1 Objectives and Expected Deliverables:
Project objectives include:
1) Reduce new cases of viral hepatitis.
2) Identify the impact of enhanced testing availability and treatment access among at-risk populations.
3) Evaluate the progress of viral hepatitis elimination implementation activities.

Project deliverables include:
1) Identify barriers and gaps in community testing and linkage to care/treatment.
2) Analyze CDRSS, Medicaid, and other datasets to monitor gaps in testing and treatment (by county, region, population).
3) Monitor progress towards viral hepatitis elimination.

Project #1 Impact:
The project aims to prevent new viral hepatitis infections and reduce viral hepatitis-related disparities and health inequities.

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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)
In the event of a public health emergency, the fellow would be part of the CDS response team. The response team would consist of staff from various areas including business continuity, administration, communications, epidemiology, surveillance, and data management. In the past, fellows at NJDOH have had the opportunity to be a part in responses to Ebola, Lassa fever, COVID-19, and mpox.

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 ample opportunity to participate in communicable disease cluster and outbreak investigations, both healthcare- and community-acquired.

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

The fellow will assist in the following COVID-19 response activities: monitoring COVID-19 activity using various surveillance tools, including wastewater data; analyzing and interpreting data, developing recommendations, updating guidance and policy documents, and communicating messaging to stakeholders.

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

Additional project #1, described above, includes a health equity component in that the fellow will work to identify barriers to testing and treatment for viral hepatitis among vulnerable and at-risk populations.