ID: 70665902
Infectious Diseases - HAI - Host Site Description
Pennsylvania Department of Health

Assignment Location: Harrisburg, US-PA
Pennsylvania Department of Health
Bureau of Epidemiology/Division of Healthcare Associated Infection Prevention

Primary Mentor: Stacy Tressler, PhD, MPH
Epidemiologist
Pennsylvania Department of Health

Secondary Mentor: Laxmi Modali, PhD, MPH
Epidemiologist
Pennsylvania Department of Health

Work Environment
Hybrid

Assignment Description

This position is located in the Pennsylvania Department of Health (PA DOH), Bureau of Epidemiology's Healthcare Associated Infection Prevention Division (HAIP). The Division is responsible for a broad range of disease surveillance and control activities in Pennsylvania including healthcare-associated infection (HAI) outbreak investigation and response, coordinated response and prevention efforts for emerging multidrug-resistant organisms (MDRO), HAI surveillance data analysis, working with partners to facilitate prevention-based collaboratives, providing education and training opportunities for HAIs and antimicrobial stewardship, and advising on public health policy related to HAI.

The fellow will fully participate in the day-to-day activities conducted by HAIP, primarily as a member of the outbreak response and prevention program. Activities will include participating in disease investigations and outbreak response, analyzing data and writing surveillance reports, creating and delivering educational programs on health care infection prevention and emerging organisms, participating in conference calls with federal, local, and regional partners, attending departmental meetings as well as local, regional and national conferences. Participation in on-site investigation at health care facilities is expected to occur two to four days per month.

The fellow can expect to be involved in a number of outbreak investigations; recent examples include multi-jurisdictional outbreaks of Candida auris, identification of carbapenem-resistant Enterobacterales in long-term care facilities, Toxic Anterior Segment Syndrome (TASS; a severe post-operation inflammation of the eye) related to cataract surgery, a cluster of Mycobacterium abscessus related to contaminated water in ventilated pediatric residents, a cluster of invasive Staphylococcus aureus infections following injections at a pain clinic, and numerous group A Streptococcus outbreaks in long-term care, postpartum, and post-surgical settings. Many investigations are performed onsite where the fellow will be trained to use standardized Infection Control Assessment observational tools to assess the nine domains of infection prevention and control in health care facilities. Results from the assessment form the basis for recommendations to contain and control outbreaks.

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

The following databases are used and may be available to the fellow, either regularly or by special request according to project needs:

- National Healthcare Safety Network (NHSN) for hospital HAI reporting
- Pennsylvania Patient Safety Reporting System (PA-PSRS) for nursing home HAI reporting

- PA-NEDSS which is our web-based disease reporting and surveillance database
- PA Bureau of Laboratories laboratory information management system (LIMS)
- Healthcare Facility Licensing database (Facility Master File)

Due to Pennsylvania's mandatory HAI reporting law, PA has an extensive database of HAIs. This robust database consisting of both hospital and nursing home associated HAIs provides the potential for numerous activities and analyses depending on the fellow's interests. There are many opportunities for analyses, including the ability to conduct sub-analyses of HAIs that cannot be assessed in other states where reporting requirements are more limited. Annual reports on HAIs are issued, and the fellow can participate in the preparation of these reports if desired.

Statistical and data analysis support is available within the HAIP Division from the CSTE fellow's supervisors and other HAIP epidemiologists including a team led by a healthcare analytics epidemiologist. Additional statistical consultation is available through the Department's Statistical Support Section located in the Bureau of Health Statistics.

Projects

Surveillance Activity Title: Invasive Group A Streptococcal Disease Surveillance

Surveillance Activity Description:
In Pennsylvania, invasive group A Streptococcus (iGAS) is reportable. A single invasive case in a long-term care facility (LTCF) resident triggers public health action, with more intensive follow up initiated if additional cases are identified. A potential project for the fellow would be to assist the HAIP team with development of a surveillance report to characterize cases and outbreaks of iGAS in LTCFs. The fellow would perform a descriptive analysis of data from our electronic disease surveillance system, PA-NEDSS, interpret the data, and prepare a final surveillance report of LTCF-associated iGAS cases and outbreaks in Pennsylvania. The report may include factors such as geographic location, patient and outbreak characteristics, and emm type, when available. This would help the HAIP Outbreak and Prevention team assess the impact of iGAS outbreak response and prevention efforts and identify potential future interventions.

Surveillance Activity Objectives:
The objective of this project is to describe the epidemiology of iGAS cases and outbreaks associated with long-term care in Pennsylvania. Deliverables for the fellow include a written analysis plan and a brief internal report. Opportunity for external publication may exist depending on the findings.

Surveillance Activity Impact:
This project will identify patterns that will inform targeted assessment or educational interventions to reduce transmission of iGAS in long-term care settings. Additionally, we anticipate that it can help to refine protocols for public health action targeting the highest risk scenarios.

Surveillance System Evaluation Title: Multidrug-resistant Organisms: Evaluation of Current Surveillance in Pennsylvania

Surveillance System Evaluation Description:
Antimicrobial resistance is a major threat to public health globally that requires coordinated efforts to slow the emergence of targeted multidrug-resistant organisms (MDROs), like carbapanemase-producing organisms (CPOs) and Candida auris. Understanding MDRO surveillance is crucial in Pennsylvania because of the potential for spread across health care facilities. Although nationally notifiable, MDROs targeted by HAI programs are not yet reportable in Pennsylvania. Surveillance for MDROs in Pennsylvania relies on voluntary reporting into PA-NEDSS, Pennsylvania's version of the National Electronic Disease Surveillance System, and submission of isolates to the state lab by clinical and

commercial labs. This project aims to evaluate MDRO surveillance in Pennsylvania by estimating how well PA-NEDSS is capturing targeted MDRO cases. As part of this project, labs will be surveyed to understand their testing capabilities, triggers for testing, reporting practices, and submission of isolates to the state lab for mechanism testing.

Surveillance System Objectives:
The objective of this project is to complete a surveillance evaluation to estimate how well PA-NEDSS is capturing targeted MDRO cases from clinical and commercial labs in Pennsylvania. Expected deliverables include a survey for clinical and commercial labs and a final report detailing the findings of the evaluation.

Surveillance System Impact:
The fellow's evaluation will improve understanding of missed opportunities to identify targeted MDROs through both reporting into PA-NEDSS and isolate submission to the state lab. Results from the evaluation will inform future interventions to improve reporting and isolate submissions from labs performing phenotypic tests or mechanism testing.

Major Project Title: Containment response for Candida auris and carbapenemase-producing organisms (CPOs)

Major Project Description:
Containment response is a term coined by the CDC to describe the public health response to novel and targeted MDROs that are spread primarily in health care settings. We aim to contain the spread and reduce the burden of these highly transmissible organisms. Patients at highest risk of acquiring one of these organisms are those with high medical needs such as mechanical ventilation or intravenous catheters. These patients are also most vulnerable to developing a severe infection. Treatment of infections with these MDROs can be difficult, as they are highly drug resistant. Following the CDC guidance entitled, Interim Guidance for a Public Health Response to Contain Novel or Targeted Multidrug-resistant Organisms (MDROs), our outbreak team conducts extensive containment activities across the state.

During 2024, our outbreak team conducted 98 containment responses, which included 11 site visits at health care facilities, including skilled nursing facilities, long-term acute care hospitals, acute care hospitals, inpatient rehab centers, and outpatient settings. We receive frequent reports of Candida auris (over 150 cases in 2024) and carbapenemase-producing Acinetobacter baumanii, with occasional reports of carbapenemase-producing Enterobacterales. Each report triggers a case investigation and when a health care history is identified, the team works with facilities to conduct infection control review and assessment, coordinate colonization screening with our state and regional public health laboratories and provide recommendations.

This project will be an opportunity for the fellow to join the team of outbreak epidemiologists to develop expertise in containment response for novel and high-concern organisms according to CDC guidelines. The fellow will initially participate in and observe responses and eventually develop expertise to lead responses while being mentored by experienced members of the outbreak response team. Outbreak response principles learned in the formal educational setting will be applied in the field setting, with ample opportunity to improve both written and verbal communication skills as a representative of our department.

Major Project Objectives:
The objective is to learn the process of public health containment response for novel and high-concern organisms in health care settings. Through this process the fellow will also gain expertise in infection prevention and control. Deliverables include producing letters of recommendation to facilities following an on-site assessment and email response summaries for leadership and team members.

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Major Project Impact:
Quantifying the impact of containment response on the health of Pennsylvanians is something both we and CDC are working to better understand. However, we are certain this containment work prevents transmission of dangerous organisms in our health care facilities, saving lives in the process. The work may also allow the fellow to disseminate lessons learned through presentation or publication, or to create educational trainings for health care facilities and public health partners.

Additional Project #1 Title: HAI non-MDRO outbreak investigations
Project #1 Type: Major Project

Project #1 Description:
The fellow will take an active role in HAI outbreak investigations. After shadowing and co-leading investigations, they will have the opportunity to lead outbreak investigations and participate in activities such as case confirmation, case finding, chart review, creating questionnaires, data collection, database management, designing epidemiologic studies, and analyzing and interpreting data. Many HAI investigations also include on-site visits to review and observe infection prevention and control practices, identify areas for improvement and the possible source of the outbreak. Following on-site investigation, we provide detailed written recommendations to facilities. Opportunities for both formal and informal communication skill advancement are expected to be plentiful. In a safe, supportive, and educational environment, the fellow will become familiar with the epidemiology, infection prevention, regulatory, and legal aspects of these investigations. Outbreak investigations are often the source of data for oral presentations or publication in peer-reviewed journals.

Project #1 Objectives and Expected Deliverables:
The objective is to learn the process of healthcare-associated infection outbreak response. Through this process the fellow will also gain expertise in infection prevention and control. Deliverables include producing letters of recommendation to facilities following an on-site assessment and email response summaries for leadership and team members.

Project #1 Impact:
Our work in outbreak response and infection prevention and control reduces the transmission of pathogens in health care facilities, saving lives in the process. The work may also allow the fellow to disseminate lessons learned through oral presentation or publication, or to create educational trainings for health care facilities and public health partners.

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

The fellow will provide support in any public health emergencies or preparedness table-top exercises that occur during the fellowship period. Mentorship in general emergency preparedness activities will be provided by CDC assignee Dr. Jeffrey Miller, a former member of the HAIP Division currently working in 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 be fully integrated into the outbreak response team within the Division of HAIP and will actively be involved in responding to the containment of novel and high-concern organisms, investigating non-containment HAIs, and investigating infection control breaches. Activities include providing recommendations to facilities, coordinating testing with state and regional labs, conducting on-site IPC assessments, providing written infection control recommendations to facilities, and monitoring outbreaks through their conclusion.

Approximately 50% of the fellow's time will be allocated to outbreak investigation.