ID: 73605288
Infectious Diseases - HAI, One Health - Host Site Description
Minnesota Department of Health

Assignment Location: St Paul, US-MN
Minnesota Department of Health
Infectious Disease Epidemiology, Prevention and Control Healthcare-Associated Infections & Antimicrobial Resistance Section

Primary Mentor: Kristen Clark, DVM, MPH
Epidemiologist Principal
Minnesota Department of Health

Secondary Mentor: Mari Freitas, MPH
Epidemiologist Senior
Minnesota Department of Health

Work Environment
Hybrid

Assignment Description

The Fellow will be mentored by the Director of One Health Antibiotic Stewardship (MDH Executive Office), and a senior epidemiologist in the Programs & Partnerships Unit (HAI/AR Section in the Division of Infectious Disease Epidemiology and Prevention), and will also work with other epidemiologists in the HAI/AR Section and collaborate with colleagues in the Public Health Laboratory. The Fellow will be active in HAI/AR Section activities, including surveillance, outbreak investigation, and special projects. They will also play a role in the both the HAI Advisory Group and the Minnesota One Health Antibiotic Stewardship Collaborative, working with non-MDH partners such as Stratis Health (the state's Quality Improvement Organization), Minnesota Hospital Association, Association of Professionals in Infection Control and Epidemiology-Minnesota Chapter, Minnesota Department of Agriculture, Minnesota Pollution Control Agency, and others.

In addition to providing a solid foundation in HAI epidemiology, response, and prevention, this position presents an exciting opportunity for a CSTE AEF Fellow to work in a professional, academically minded health department that is currently redefining the boundaries of how we can approach one of the most important public health problems of our time-antibiotic resistance. MDH is invested in expanding antibiotic resistance research and surveillance activities, supporting antibiotic stewardship initiatives across the continuum of healthcare, and tackling the problem of resistance and antibiotic use across disciplines by using a unique one health approach. In addition to garnering federal interest and fiscal support, MDH has become a rallying point for antibiotic use initiatives within Minnesota. There has been unprecedented attention to antibiotic resistance and use issues from clinical entities, federal agencies, the White House, and the United Nations. Minnesota has emerged as a leader in this area and is positioned to address data issues, provide support to healthcare facilities, and improve the public's understanding of their important role in antibiotic stewardship issues.

The Fellow will attend internal and external meetings, including those for infectious disease epidemiology and lab staff (e.g., Morning Report), antibiotic stewardship workgroups, the HAI/AR Section and the State HAI Advisory Committee; meet with mentors to discuss projects, progress, and opportunities; develop and execute epidemiologic projects; develop public health communications; provide technical assistance to healthcare facilities; write scientific reports; increase and maintain subject matter expertise by reading peer-reviewed literature and other relevant documents and by participating in online training; and present work products, including scientific posters and presentations at local, state, and national scientific conferences.

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

Available software includes SAS, Epi Info, Microsoft suite including Excel and Access, REDCap, and End Note. Surveillance systems and databases available include: MDH HAI outbreak database (REDCap), MDH containment database (REDCap), National Healthcare Safety Network (NHSN) dataset, the MDH Public Health Laboratory database (Laboratory Information Management System [LIMS]), and Minnesota Electronic Disease Surveillance System (MEDSS) database. Additional databases and software are available as needed, depending on fellow projects (e.g., SQL, Tableau, ArcGIS).

Projects

Surveillance Activity Title: Develop Summary Reports for NHSN Antibiotic Resistance Module

Surveillance Activity Description:
MDH has a data use agreement with CDC that allows for the review and analysis of National Healthcare Safety Network (NHSN) data including that of the antibiotic use and resistance (AUR) module. Recent changes to CMS's Promoting Interoperability Program requirements increased Minnesota hospital reporting to the AUR module as it is now a reporting requirement for acute care and many critical access facilities. With this increase, MDH and relevant stakeholders, including reporting facilities, are interested in antibiotic resistance (AR) option output. The AR option collects isolate-level susceptibility data and facility-wide summary data from reporting facilities and outputs measures of AR events, organisms, including the Standardized Resistant Infection Ratio (SRIR) and Pathogen-specific Standardized Infection Ratio (pSIR), and a facility-wide antibiogram. These ratios can be used for facility level benchmarking and can be tracked over time to inform quality improvement initiatives. The CSTE Fellow will investigate and summarize MDH's AR option data and convey these results to reporting facilities and other stakeholders.

Surveillance Activity Objectives:
The objective of this project is to conduct facility-wide and state-wide analyses of AR data reported into NHSN. Deliverables for this project will include developing facility and state level reports summarizing SRIR and pSIR measures, creating sustainable and annotated code facilitating future report output, developing process documentation, and creation of an interpretation guide. The CSTE Fellow will also have opportunities to educate relevant stakeholders on these reports and analyses, in addition to being encouraged to develop an abstract for submission to a CSTE conference.

Surveillance Activity Impact:
The CDC reports that annually more than 2.8 million AR infections and more than 35,000 deaths as a result of those infections occur in the U.S. With growing concerns for AR pathogens spreading nationally, the results of this surveillance system will inform MDH activities for antimicrobial stewardship and healthcare associated infection education. A growing number of low resource facilities are onboarding the AUR module due to CMS reporting guidelines. For facilities without internal monitoring of antibiotic resistance pathogens, this surveillance activity will aid in meaningful use data utilization.

Surveillance System Evaluation Title: Veterinary Occupational Health and Infection Control Assessment (VOHICA) Surveillance

Surveillance System Evaluation Description:
MDH's Veterinary Occupational Health and Infection Control Assessment (VOHICA) program assists veterinary practices with creation of infection control and occupational health and safety programs in Minnesota and aims to designate veterinary technicians as veterinary infection preventionists statewide. VOHICA conducts onsite risk assessments to a variety of animal care facilities (veterinary clinics, shelters, sanctuaries, wildlife rehab facilities and zoos) in Minnesota as

well as state and federal partners including the MN Department of Natural Resources, the MN Board of Animal Health, the University of Minnesota (UMN) College of Veterinary Medicine, and the UMN Raptor Center. The CSTE Fellow will conduct a surveillance evaluation of the VOHICA program and identify and communicate key areas of growth or improvement.

Surveillance System Objectives:
This project is intended to provide actionable information to the HAI/AR Section and Zoonotic Diseases Unit (ZDU) regarding an important surveillance program. The Fellow will conduct a surveillance evaluation based on established criteria. The Fellow will be encouraged to summarize findings in an abstract for submission to a CSTE conference. The Fellow will summarize findings for the HAI/AR Section, ZDU, and other MDH programs.

Surveillance System Impact:
Assessment of the comprehensiveness and sustainability of surveillance systems is an important component of public health practice. This work sometimes facilitates refinement of case definitions and/or catchment, improvement of workflow, and estimation of the quality and generalizability of data collected. As a component of MDH's One Health work, VOHICA holds opportunities for the investigation of the human-animal pathway for antimicrobial resistant pathogens.

Major Project Title: NHSN Rebaseline Report Modification & Education

Major Project Description:
The National Healthcare Safety Network (NHSN) is the nation's most widely used healthcare-associated infection (HAI) tracking system. NHSN provides facilities, states, regions, and the nation with data needed to identify problem areas, measure progress of prevention efforts, and ultimately eliminate healthcare-associated infections. NHSN is currently updating national baselines used to calculate all HAI standardized infection ratios (SIRs) and standardized utilization ratios (SURs) within the Patient Safety Component, as well as the standardized antimicrobial administration ratio (SAAR) within the Antimicrobial Use (AU) and Resistance Module. These data are used at MDH as the basis for multiple facility-level quarterly reports and statewide surveillance efforts. The CSTE fellow will review updated analysis reports in NHSN for the new SIR, SUR, and SAAR rebaseline models as released by CDC and update facility and state level reports to incorporate the new data. The fellow will also develop presentations and resources that communicate these changes to Minnesota stakeholders in order to support their use of new data and updated reports to inform future quality and patient safety initiatives.

Major Project Objectives:
The objective of this project is to produce updated facility and state level reports which incorporate NHSN's rebaseline data, in addition to updating MDH's internal process documentation and associated report building code. Deliverables for the project will include updated process documentation, updated and annotated SAS code that generates needed data tables as well as report output, new facility and statewide surveillance reports, an updated facility guide, and a presentation that reviews updated data tables and figures to inform interpretation at the both the facility and state level. The fellow will summarize changes between the original and rebaseline data for the HAI/AR section and other MDH programs as appropriate, in addition to being encouraged to develop an abstract for submission to a CSTE conference.

Major Project Impact:
The facility and state level reports the Fellow will update are important resources that support hospital quality and patient safety initiatives as well as statewide improvement efforts related to HAIs and antibiotic stewardship. Updating the reports to incorporate new SIRs, SURs, and SAARs while also creating educational content that supports data

analysis and interpretation will ensure that internal and external stakeholders can efficiently utilize rebaseline data to inform their HAI and antibiotic stewardship priorities.

Additional Project #1 Title: Develop & Deploy an Allied Dental Professionals Antibiotic Stewardship Survey
Project #1 Type: Surveillance Activity

Project #1 Description:
Dentists prescribe approximately 10% of outpatient antibiotics. In addition, of community-associated Clostridioides difficile patients who reported recent antibiotic use, 15% reported taking antibiotics for a dental procedure. During winter 2015 and summer 2024, MDH conducted surveys of Minnesota dentists to obtain baseline information about antibiotic prescribing for treatment and prophylaxis, antibiotic selection, educational resources used to guide prescribing, barriers to professional guideline use, and patient communication about antibiotic risks. Since that time, we have made more materials available for dentists online and have had dentistry-relevant sessions at Minnesota's annual stewardship conference. This project will further expand our dental stewardship work through development of a survey on antibiotic stewardship knowledge and practices among non-prescribing members of dental care teams.

Project #1 Objectives and Expected Deliverables:
The CSTE AEF Fellow will conduct a literature review related to dental antibiotic stewardship, particularly work that engaged non-prescribing members of the dental care team. The Fellow will also engage with dental partners including the MN Board of Dentistry, MDH Oral Health Program, MN Dental Association, and MOHASC members working in the dental field to inform development of a survey that assesses the knowledge, attitudes, and practices of non-prescribing dental care team members related to antibiotic stewardship; information technology capabilities; use of data to inform antibiotic prescribing; and barriers and facilitators to optimizing antibiotic prescribing in dental practices. Following survey distribution, the Fellow will analyze survey results and develop a presentation outlining key findings which will be shared with both dental partners and survey respondents. The Fellow will then lead development of educational materials, plan a stewardship webinar or other educational opportunity for non-prescribing dental professionals, and other outreach endeavors to address strengths and gaps.

Project #1 Impact:
Dentists prescribe a large proportion of outpatient antibiotics. Assessment of practices and awareness in MN, not only among dentists but among the larger dental care team, can help target education and improve antibiotic stewardship implementation. Some studies have shown national disparities in prescribing for dental conditions across different patient populations. Improved prescribing benefits all patients. When knowledge of appropriate practices is coupled with awareness of how prescribing might be influenced by non-clinical factors, we can also make progress in mitigating inappropriate prescribing.

Additional Project #2 Title: One Health Antibiotic Stewardship Collaborative - One Health Engagement Workgroup Chair
Project #2 Type: Major Project

Project #2 Description:
Since 2015, Minnesota leaders in human, animal, and environmental health have been working together through the Minnesota One Health Stewardship Collaborative (MOHASC) to combat antibiotic resistance and promote antibiotic stewardship. Our One Health-driven engagement promotes collaboration and ensures inclusive communication among Minnesota's public and professionals.

The CSTE AEF Fellow will participate in the Collaborative as the group works toward objectives outlined in the 2023-2027 Minnesota One Health Antibiotic Stewardship Strategic Plan. The Fellow will be involved in the One Health Collaborative

by cooperating on technical working group activities to meet strategic plan goals, managing Collaborative logistics and communications, facilitating meetings, conducting monitoring and evaluation of the state plan, and becoming a resource for partners and public on the One Health concept and the gains that can be made from engaging across disciplines. In addition to contributing to subject matter expertise in the field of antibiotic stewardship, this activity will provide the CSTE AEF Fellow experience beyond the science, including communication and collaboration with interdisciplinary scientific partners, leading professional work groups, and coordination of large scientific meetings.

Project #2 Objectives and Expected Deliverables:
The CSTE AEF Fellow will be given the opportunity to serve as chair of the One Health Engagement work group of the Collaborative. This involves developing agendas for quarterly calls, moderating these calls, and working with Collaborative leadership to connect the activities happening in other work groups. This role will also be involved in planning for multiple outreach initiatives, including professional One Health exchanges, the state fair volunteer booth, library display program, and US Antibiotic Awareness Week activities.

Project #2 Impact:
Issues like antibiotic stewardship require a collaborative effort across multiple disciplines. By using One Health-oriented communication, Minnesota's public and professionals grow awareness needed to think innovatively and responsibly about approaches to optimizing antibiotic use within each health field. More and more states are moving to a model of One Health stewardship. Participating in Minnesota's efforts will position the Fellow to lead and participate in similar initiatives after the fellowship.

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

There will be multiple opportunities for the CSTE Fellow to participate in MDH's emergency preparedness and response (EPR) activities. MDH EPR routinely conducts exercises with regional healthcare coalitions, and the Fellow will participate in planning meetings to support the development of at least one tabletop exercise with healthcare partners. The Fellow will also join MDH EPR team members in planning for and observing exercises as part of the high consequence infectious disease & Ebola workgroup.

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

The CSTE Fellow will serve as part of the HAI outbreak investigation team alongside an HAI team outbreak lead, infection control and response (ICAR) representative, and other team members such as an MDH public health laboratory representative as appropriate to each response. Examples of past HAI outbreak responses in which CSTE Fellows have been involved include MDRO containment, device/equipment breaches, product recalls, infection control breaches, and foodborne illness outbreaks taking place within health care facilities. Outbreak investigation teams collaboratively assess the nature of the outbreak/breach, gather additional data and information to inform and guide the response, maintain lines of communication with affected parties/facilities, as well section and division leadership, and contribute to documentation of each step in the response until the investigations are closed.

The CSTE Fellow will also have opportunities to participate in companion animal-related outbreak investigations, as well as H5N1 exposure/symptom monitoring interviews.