ID: 73589018
Infectious Diseases - HAI, Environmental Health - Host Site Description
Tennessee Department of Health

Assignment Location: Nashville, US-TN
Tennessee Department of Health
Healthcare-Associated Infections and Antimicrobial Resistance

Primary Mentor: Christopher Wilson, MD, MPH
Medical Director
Tennessee Department of Health

Secondary Mentor: Carolyn Stover, MPH, BSci
Program Director
Tennessee Department of Health

Work Environment
Hybrid

Assignment Description

The CSTE fellow will be fully integrated into the TDH's Communicable Environmental Disease Services and Emergency Preparedness (CEDEP) Division. The Fellow will be placed within the Healthcare-Associated Infections and Antimicrobial Resistance (HAI/AR) program for daily work. This program reports to the Deputy State Epidemiologist. The fellow will have three mentors to ensure they gain familiarity with the breadth of public health skills. Dr. Wilson, the primary mentor, is an medical epidemiologist who instructs in the public health curriculum at the Meharry Medical College. Carolyn Stover is the program's senior epidemiologist, whilst Dr. Evans is among the nation's leading public health stewardship pharmacists. The fellow will work closely alongside applied epidemiologists and provide analytic support for specific programmatic activities including antimicrobial susceptibility with the healthcare-associated infections practice area, the surveillance of HAIs, and conducting research alongside CDC experts. This provides the fellow with a diverse set of experiences to help them identify their preferred area of future applied public health practice. The fellow will be expected to participate and eventually lead, all aspects of an outbreak investigation including questionnaire design, interview training and case/control interviews, data collection and management, data analysis, after-action reviews, and report writing.

Day to Day Activities

- Meet frequently with mentorship team, preferably weekly,
- Attend weekly CEDEP meetings, including staff meetings, and program area meetings while engaged in those projects,
- Attend CDC-led project update calls and provide Tennessee updates,
- Participate fully as a member of the HAI/AR outbreak team which includes attending routine and ah-hoc meetings, and leading investigation into alerts of MDRO clusters and infection control breaches,
- Work alongside HAI staff and program area SMEs to develop a framework to include Area Deprivation Index (ADI) into HAI/AR analytical products,
- Create data visualizations from HAI/AR surveillance data,
- Provide data analysis and report writing support to HAI/AR outbreak response activities and other program priorities,
- Participate in CEDEP's fellows weekly training group led by Vanderbilt University's Dr. William Schaffer;
- Conduct special studies to include aspects of study design, implementation, and analysis;
- Prepare presentations and publications, and deliver them at state and national meetings;

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

All HAI/AR epidemiologists and fellows are provided with access to SAS, Tableau, ArcGIS, and REDCap. Training will be provided on all software with the fellow expected to achieve external or internal proficiency certification by the end of their fellowship. Within their assigned projects, the fellow will also gain familiarity with the National Electronic Disease Surveillance System Base System (NBS) and the National Healthcare Safety Network (NHSN), two core surveillance systems in the HAI/AR field. As part of the fellowship at HAI/AR, a fellow can expect to complete epidemiological analyses of moderate difficulty including descriptive statistics, basic modeling (ie logistic and linear regressions), and spatial analyses. The selected fellow will be supported by HAI/AR's team of senior epidemiologists as well as establishing peer support relationships such that the fellow can become familiar with the expectations upon their permanent hiring.

Projects

Surveillance Activity Title: Ambulatory Surgical Center (ASC) Surgical Site Infection (SSI) Surveillance

Surveillance Activity Description:
This project aims to establish a surveillance system to guide priority intervention efforts (including targeted outreach) and to improve overall quality of the ASC setting in Tennessee. This project will begin with quantifying the SSI rate within the ASC setting in Tennessee through a data matching and analysis framework. The ultimate outcome of the project is the present a list of surgeries to surveil statewide from the ASC setting. The project was conceptualized in 2025 and hopeful to lead meaningful change in the state in 2027. The project lead is HAI/AR Medical Epidemiologist, Dr. Christopher Wilson and supported by the senior NHSN epidemiologist, Ashley Gambrell.

Surveillance Activity Objectives:
The objective of this project is to establish mandatory SSI reporting statewide for ASCs.

The deliverables of this project are:
1) Burden assessment of SSIs in ASC and quantify the estimated rate of SSIs in that setting,
2) Conduct epidemiologic analyses of surgical site infections for presentation to state leaders
3) Present recommendations for mandatory SSi surveillance to the Health Commissioner of Tennessee.

Surveillance Activity Impact:
Little is known about the burden of SSI in Tennessee with only 2 clusters being reported from the 160 licensed ASCs in the last 2 years. As such, no burden estimate has ever been established. Establishing mandatory reporting will aid in determining the true, rather than estimated, burden and identify locations that would benefit from PH interventions. Tracking ASC SSIs for the first time is likely to lead to improvement in practices and reduce the incidence of SSIs in the state.

Surveillance System Evaluation Title: Evaluation of National Healthcare Safety Network (NHSN) Antibiotic Use (AU) Surveillance

Surveillance System Evaluation Description:
Tennessee was one of the first state's to mandate the reporting of antibiotic use for Acute Care Hospitals (ACHs). This state mandate was recently replicated by CMS who rolled out national reporting in 2025. Whilst enrolment into NHSN AU's module has long been monitored, a systematic evaluation of the utility within Tennessee of the surveillance system has not been conducted.

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The fellow will work with their mentor, Dr. Evans, the program area SME, to develop an evaluation framework and provide recommended improvements to the state's support of NHSN AU reporting and the use of NHSN AU data.

Surveillance System Objectives:
The objective of this project is to complete an entire Plan, Do, Study, Act (PDSA) cycle during their fellowship. This will allow for evaluation of a concrete systems intervention leading to practical and immediate improvements in facility support and data use.

The deliverables will be:
1) NHSN AU evaluation report
2) Recommendations for surveillance system support improvements
3) Recommendations for surveillance system data use improvements
4) A suggested improvement rollout timeline.

Surveillance System Impact:
This project will have a direct and immediate public health impact by providing recommendations for additional support to NHSN AU reports and improve data use to lead to better clinical outcomes.

Major Project Title: Multi-state Pediatric Hospitals Report

Major Project Description:
Every 2 years, the TN HAI/AR program releases reports detailing the performance of hospitals in the state regarding HAIs and antimicrobial use as reported to NHSN. These reports help facilities to benchmark their own performance and set performance goals for the future. It was recently determined that the state's pediatric hospitals gained little benefit from these reports due to the small number of comparator hospitals in the state. To remedy this, TN HAI/AR is launching a project to recruit a multi-state sample of pediatric hospitals to allow the establishment of pediatric hospital specific benchmarks. TN HAI/AR will partner with states in the South and Midwest regions to recruit a significant sample of pediatric hospitals to join this project.

Major Project Objectives:
The objective of this project is to deliver a multi-state report compiling data from eligible pediatric hospitals within participating states.

The deliverables will be:
1) Gaining access to NHSN data from multiple states
2) Aggregating data from participating hospitals to create HAI and AU benchmarks for that population
3) Publishing a report which includes aggregate as well as facility specific NHSN data.

Major Project Impact:
Presently there is no data available that allows pediatric hospitals to benchmark their performance against aggregate data from peer hospitals. This project will deliver insight for pediatric hospitals to aid in the identification of areas to improve patient safety.

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Additional Project #1 Title: Statewide healthcare facility Area Deprivation Index (ADI) Mapping
Project #1 Type: Major Project

Project #1 Description:
Whilst risk factors for Multidrug-Resistant Organisms (MDROs) and Healthcare-Associated Infections (HAIs) are well known, the impact of socio-economic factors is not as well understood, particularly at the state level. To address this, TN HAI/AR's Rural Health team is exploring the impact of patient population factors on clinical outcomes. The Rural Health team is developing an innovative methodology to quantify the Area Deprivation Index (ADI) of populations within hospital catchment areas. The project led by senior HAI/AR epidemiologist, Carolyn Stover, PhD, who is a named mentor to the CSTE fellow.

Project #1 Objectives and Expected Deliverables:
The project objective is to link hospital reported HAIs with ADI catchment areas to analyze any relationship between the two.

The deliverables will be:
1) Mapping all healthcare facilities in the state
2) Calculating and visualizing the ADI for all census tracks in the state
3) Conduct investigations into associations between facility location, ADI, and HAIs, and publishing a report outlining analytical findings.

Project #1 Impact:
The impact of socio-economic factors on HAIs is not as well understood with the project providing valuable insight into any relationships between ADIs and HAIs in the state.

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

The fellow will participate in general preparedness and response activities by completing all required ICS trainings. This will prepare the fellow to be integrated into any future response activities that may occur during their assignment to TDH. Typically, fellows have participated as part of the ICS infrastructure in multiple previous responses such as outbreak investigations, Ebola response, and more recently the COVID-19 response. It is difficult to specify a particular response activity or role at this point, but their role will be adapted to meet the situation and the fellow's skills as the opportunity arises. The trainings typically require 10 hours of contact time.

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

The TN HAI/AR team has an established outbreak team comprised of epidemiologists and infection preventionists. This team has been trained to manage multidrug-resistant organism (MDRO) containment responses in addition to non-MDRO HAI/AR outbreaks. We have the staffing capacity to conduct high volumes of HAI/AR responses, including novel/targeted MDROs. As an expected activity, the CSTE fellow will be embedded within the outbreak team and conduct all onboarding training activities similar to an incoming epidemiologist. This includes didactic lessons and shadowing of an experienced epidemiologist to gain the practical skills required to effectively contain outbreaks within the HAI/AR field. Over time, the complexity of outbreaks assigned to the fellow to lead will increase until the fellow feels comfortable investigating the entire breadth of HAI/AR outbreaks. Training from prior experience is expected to take 80 hours, delivered over a 3 month period. It is expected that the fellow will dedicate 8 hours per week to outbreak response activities once fully trained.