Infectious Diseases-HAI
Georgia Department of Public Health, Acute Disease Epidemiology
Atlanta, Georgia

Assignment Description

The CSTE Fellow will be housed in the Acute Disease Epidemiology Section (ADES) in the Epidemiology Program, which is directed by the Georgia State Epidemiologist, Dr. Cherie Drenzek. ADES is one of 6 Sections in the Epidemiology Program; the others include the Chronic Disease, Healthy Behaviors, and Injury Epidemiology Section, the HIV/AIDS Epidemiology Section, the STD Epidemiology Section, the TB Epidemiology Section, and the MCH Epidemiology Section. The mission of the Acute Disease Epidemiology Section (ADES) is to optimize the health of Georgians by preventing and mitigating certain communicable and/or notifiable infectious diseases. The ADES is dedicated to fulfill its mission by using epidemiologic methods to:

- Conduct surveillance of infectious diseases (opportunity to work in many other subject areas as well)
- Identify and respond to emerging infectious disease threats
- Provide support to local and district public health and private partners in identifying training and resource needs, developing guidelines for and investigating outbreaks or increases in endemic rates of disease, developing educational and training materials, and collecting and disseminating data.
- Publish and disseminate public health information: statistical reports (e.g. Georgia Epidemiology Report), outbreak investigation reports, annual data summaries, and educational materials.
- Participate in emergency preparedness planning, response and recovery efforts.

The Acute Disease Epidemiology Section is comprised of several infectious disease-specific Surveillance Teams, including the Foodborne Disease Epidemiology and Outbreak Investigation Team, the Vaccine-Preventable Diseases Epidemiology Team, the Healthcare-Associated Infections Team, the Vectorborne and Zoonotic Disease Epidemiology Team, and the Zika Epidemiology Team. The CSTE Fellow will have a range of project opportunities in each of these areas.

Day-to-Day Activities

1. Participate in numerous field outbreak investigations (in 2015, ADES supported District Epidemiologists in the investigation of >100 outbreaks)
3. Contribute to the development and routine dissemination of Targeted Assessment for Prevention HAI report for 124 Georgia hospitals.
4. Work with the DPH HAI Team to develop standard operating procedures for response to the identification of emerging pathogens, infection control breaches, and HAI clusters/outbreaks.
5. Work with HAI Epidemiologists to develop surveillance reports for internal and external use.
6. As one of only 10 Emerging Infections Program (EIP) sites in the United States, the Fellow would have the opportunity to conduct Georgia-specific epidemiologic analyses for Emerging Infections Program (EIP) datasets.
7. The Fellow may participate in a 2-3 week rotation through a District Health Office and work closely with the District Epidemiologist on disease surveillance, individual case follow up, or data analysis activities.

8. If interested, may participate in chronic disease, stroke registry, or other epidemiologic studies under the coordination of experienced CSTE Fellow mentors such as A. Rana Bayakly, MPH and Pascale Wortley, MD, MPH.

### Major Project: National Healthcare Safety Network Catheter-associated Urinary Tract Infection Data Validation

Georgia DPH initiated mandatory reporting in January 2013 of Healthcare Associated Infection data using the National Healthcare Safety Network (NHSN). DPH currently receives NHSN data from 101 acute care hospitals, 15 long-term acute care hospitals, 5 rehabilitation hospitals, and 309 outpatient hemodialysis centers. The monthly reported events include central-line associated bloodstream infections (CLABSI), catheter-associated urinary tract infections (CAUTI), *Clostridium difficile* laboratory-identified events, Methicillin-resistant staphylococcus aureus, and surgical site infections following colon and abdominal hysterectomy surgeries. In addition, monthly, 309 outpatient dialysis centers report data into NHSN about antimicrobial starts, positive blood cultures, and signs of vascular access infection (i.e., pus, redness, and swelling).

Because accurate surveillance data are a critical component to the prevention of HAIs, the validation of NHSN data are essential to state health department activities. The CSTE Fellow will lead an HAI validation project for their Major Project. The CSTE Fellow will participate in an evaluation of statewide HAI NHSN data to target HAI needs, and design a sampling plan to select the facilities and records to be validated.

The work scope includes identification of the validation target and sampling frame, completing CDC-developed training on NHSN surveillance and validation, creating a database for validation findings, conducting the validation to assess local surveillance data quality, and preparing a report describing the validated sample, the accuracy of reporting, and recommendations. The Fellow will be provided with opportunities to present findings of the validation study to include, but not be limited to, the State HAI Advisory Committee, other state professional associations, and national associations as identified. The HAI program includes four staff with NHSN validation experience to support the fellow in this activity in addition to the primary and secondary mentors.

The actual project will involve validation of catheter-associated urinary tract infection (CAUTI) data from acute care or long-term acute care hospitals. In 2015, CDC revised its definition of CAUTI, and we need to evaluate the impact of the definition change and to assess accuracy. In addition to validating infections reporting, the CSTE Fellow may validate accuracy of denominator reporting, and include assessment of the effectiveness of electronic medical records to report denominator data. These findings will be used to improve reporting accuracy through educational efforts, which will be developed by the CSTE fellow and may include webinars or in-person trainings for the infection prevention and healthcare communities. These efforts may be conducted in conjunction with partners such as the Georgia Hospital Association or Georgia Infection Prevention Network.
As a result of this project, the CSTE Fellow will be trained to work with reporting facilities for data validation and surveillance quality issues and will have an in-depth understanding of common reporting errors, barriers to reporting, and how to address them. The Fellow’s work will also contribute to the accuracy of surveillance data reported to the state and the state’s ability to prevent HAIs.

Aspects of this project may also be used to complete the Fellow’s required surveillance system evaluation as well as the Major Project.

**Surveillance Additional HAI Reporting Surveillance Evaluations**

**Evaluation**

In addition to the major project, DPH has two HAI surveillance evaluation projects that the Fellow could choose from, including: 1) Alliant Quality, the Georgia Quality Improvement Organization, is currently working with 60 nursing homes to report *Clostridium difficile* data using NHSN. Validation of nursing home NHSN reporting could be compared EIP laboratory data; 2) comparison of EIP MRSA and/or *Clostridium difficile* laboratory reported data to hospital data reported to NHSN. This project would involve comparing the two data sets and conducting record review to determine differences between the data. The goal of the project would be to determine if differences between the two data sets can be used by the state health department to target NHSN validation. It is understood that the EIP laboratory-based method is the gold standard, and if we could use it to target NHSN data, we would improve NHSN data with minimal resources.

**Surveillance Zika Virus Surveillance System Evaluation**

**Evaluation**

Since early 2016 a small team of DPH epidemiologists have triaged more than 6,000 inquiries concerning Zika virus and have facilitated laboratory testing for more than 1,200 Georgia citizens. An electronic surveillance system was rapidly developed as part of our State Electronic Notifiable Disease Surveillance System (SendSS) to collect and maintain information for tracking and follow up on all persons tested for Zika in the state which includes demographics, clinical information, travel history, and laboratory results. Additionally, development of surveillance systems for Georgia’s participation in the US Zika Pregnancy Registry and Zika Birth Defects Registry are underway. All three systems are intended for sustainable use or to inform development of similar systems when responding to emerging infectious disease threats. The CSTE Fellow would complete a surveillance evaluation of the system(s) and provide feedback and assistance in improving the surveillance systems for sustainable use. The CSTE Fellow may also be involved in response efforts for Zika, depending on the landscape of the response at the time of assignment.
Surveillance Activity  
Syphilis Surveillance in Fulton County

Work with the Fulton County Department of Health and Wellness (Local Health Department which covers most of the city of Atlanta) to systematically analyze available program data on syphilis to define the scope of the epidemic, co-infection rates with HIV and other STIs, risk behavior and demographic profiles, or geographic trends. Use the findings to design interventions for populations at risk.

Additional Project

There are opportunities in many areas of Epidemiology depending on the Officers interests. Examples of possible projects include:

1. Conduct Georgia-specific epidemiologic analyses for Emerging Infections Program (EIP) datasets, analyze/interpret FoodNet performance measures
2. Assist with development and analysis of opioid overdose-related morbidity and mortality surveillance, work with diverse community stakeholders on opioid-overdose prevention
3. Analyze HIV data to examine longitudinal care patterns; conduct a geospatial analysis of new HIV diagnoses and the HIV care continuum by neighborhood poverty level; link longitudinal data from HIV core surveillance to cross-sectional data from the Medical Monitoring Project to examine impact of specific conditions (such as depression)
4. Evaluate the Health Information Exchange Out-of-Care watch list derived from the enhanced HIV/AIDS Reporting System (eHARS) as a surveillance system for Data to Care; analyze HIE data for determinants of re-engagement in care and sustained viral suppression
5. Evaluate the efficacy of the school-based influenza immunization program
6. Determine predictors for congenital syphilis by matching congenital syphilis data to vital records and/or PRAMS (Pregnancy Risk Monitoring System) data;
7. Conduct geospatial analysis of Georgia antimicrobial resistance data to identify changes over time and key areas of the state requiring response
8. Develop methods to map patient transfer patterns between healthcare facilities to optimize HAI prevention and response activities
9. Build database to support data collection for HAI program healthcare facility assessments, analyze/interpret results with corresponding HAI data
10. Evaluate the impact of culture independent diagnostics on EIP (ABCs and FoodNet), by describing the clinical and epidemiologic characteristics of persons diagnosed with tests such as PCR and EIA for reportable enteric and invasive bacterial infections and evaluating the impact of these types of tests on reportable disease surveillance
11. Collaborate with the Zoonotic and Vectorborne Disease team to develop guidance for emerging zoonotic and vectorborne diseases in the state of Georgia (for example, the previous CSTE Fellow assisted in developing guidance for the 2014 response to Chikungunya); this may also include writing justifications for the addition of diseases to the notifiable disease list in Georgia
Additional Foodborne Disease Projects

There are many opportunities for projects in the area of foodborne disease, a few examples include:

1. Create electronic *Salmonella* and/or *Campylobacter* surveys to be e-mailed to case-patients rather than conducting telephone interviews. Compare data completeness and timeliness in electronic survey vs phone interviews
2. STEC descriptive analysis looking at specific serotypes OR comparative analysis of O157 vs non-O157 serotypes in Georgia
3. *Salmonella* in Georgia: comparative study of serotypes commonly associated with foodborne infections (Enteritidis, Heidelberg) to those commonly associated with environmental exposures (Javiana, Newport)
4. Comparing syndromic surveillance GI illness data to notifiable disease and enteric disease outbreak data.

Preparedness Role
There are many opportunities for involvement with epidemiologic preparedness, including:

participating in emergency responses; developing a plan to implement the ICS command structure for disease outbreak investigations; developing a plan for DPH first responder pre-deployment and just-in-time training, using a newly developed responder tracking system, as well as deployment and post-deployment health and safety monitoring; developing standard operating procedures for responding to zoonotic disease outbreaks that affect the human and veterinary community; analyzing shelter surveillance data and barriers to reporting during Hurricane Matthew.

Additional Activities
Our goal is to give the CSTE Fellow the richest experience possible. They will have the opportunity to participate in a wide-range of acute disease outbreak investigations. In addition, DPH works across a wide variety of subject areas, both in surveillance and programs. The CSTE Fellow will have an opportunity to learn about and get involved in the many things going on at DPH, tailoring the experience based on their interests. We also try to ensure that our fellows have ample opportunities to publish and present their work in a variety of settings.

Mentors
Primary  Cherie Drenzek, DVM, MS
          State Epidemiologist

Secondary  Laura Edison, DVM, MPH
            Career Epidemiology Field Officer