Assignment Description

The CSTE fellow will be fully integrated into the Tennessee Department of Health’s Communicable Environmental Disease Services and Emergency Preparedness (CEDEP) program. He or she will gain a detailed understanding of Tennessee’s Foodborne Diseases Active Surveillance Network, or FoodNet, and Foodborne Diseases Centers for Outbreak Response Enhancement, or FoodCORE, surveillance and programmatic activities. FoodNet conducts surveillance for nine foodborne disease pathogens and FoodCORE centers work collaboratively with CDC to develop new and better methods to detect, investigate, respond to and control multistate outbreaks of foodborne diseases. Tennessee has been a member of FoodNet since 2000 and a member of FoodCORE since 2012.

The Fellow will be expected to participate, and have the opportunity to 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. Collaboration with local, regional and state health department staff, as well as agencies outside of TDH such as the Tennessee Department of Agriculture, CDC, FDA, USDA-FSIS and others will be necessary.

CEDEP staff members and Fellows have been involved in numerous outbreak investigations and surveillance system projects. Our previous fellow evaluated the Centers for Disease Control and Preventions Norovirus Sentinel Testing and Tracking System. She discovered the system exhibits usefulness by providing close to real-time awareness, which allows for timely response and detection of trends. Ms. Coatsworth has also worked with the Tennessee Department of Health’s Medical Leadership Team in developing a document titled “Exclusion Guidance for High Risk Groups with Enteric Diseases in Tennessee”. The intent of this document is to provide a set of standardized guidance for exclusion, restriction and reinstatement for frontline public health staff in Tennessee. We anticipate that the new fellow will similarly and successfully work within the context of CEDEP. The fellow will be fully supported to complete projects and take on responsibilities that will influence statewide activities.

The Fellow will have the opportunity to collaborate with regional Integrated Food Safety Centers of Excellence (CoE) in developing and delivering food safety training and educational materials to states and jurisdictions in need. The Centers are partnerships between designated state health departments and academic institutions that serve as resources for local, state and federal public health professional to response to foodborne illness outbreaks. In collaboration with the University of Tennessee, the Fellow will participate in the review development of various on-line outbreak response trainings for epidemiologists, nurses, disease investigators, laboratorians and environmental health specialists.
Day-to-Day Activities

- Attend weekly CEDEP meetings, including FoodNet / FoodCORE/CoE staff meetings, EHS Net and GEH meetings as time allows
- Participate fully in interviewing, cluster evaluation, and acute foodborne outbreak investigations
- Interview Salmonella and STEC cases using standardized surveillance interview tool
- Serve as a consultant for local and regional health department staff on questions regarding foodborne disease outbreak investigations
- Work with FoodNet staff to revise Foodborne Outbreak Response Manual using the Council to Improve Foodborne Outbreak Response (CIFOR) guidelines as a template
- Provide data analysis and report writing support to local and regional health departments
- Attend all statewide epidemiology trainings including monthly CEDEP conference calls and face-to-face meetings
- Conduct special studies to include aspects of study design, implementation, and analysis
- Prepare presentations and publications, and deliver them at state and national meetings
Potential Projects

Surveillance Activity

A review of the National Environmental Assessment Reporting System (formerly known as NVEAIS)

NVEAIS is a national effort to systematically collect, analyze, interpret, and disseminate environmental data from foodborne illness outbreak investigations. According to CDC, the system provides food safety program officials with information to:

- Take food safety actions and assess effectiveness
- Support program evaluation
- Develop or modify program policies or regulations based on sound epidemiologic data
- Train environmental health specialists about environmental causes related to foodborne illness outbreaks
- Help prevent foodborne illness outbreaks associated with restaurants and other food venues (such as banquet facilities, schools, and other institutions).

Data collected in NVEAIS helps CDC and other public health professionals determine and understand the primary causes of outbreaks. CDC states that users will submit data about foodborne illness outbreaks, which will improve response to and prevention of future outbreaks. Analysis of the data will help to determine how and why outbreaks occur. CDC will use data from NVEAIS to:

- Recommend actions for food safety programs
- Share findings with food safety programs, food industries, and academia

The recommendations and sharing of findings should increase effectiveness of food safety programs, increase food safety, and decrease foodborne illness. By participating in NVEAIS, CDC states that state and local jurisdictions can help identify the environmental causes of foodborne illness outbreaks and reduce future outbreaks.

Using the updated guidelines for evaluating public health surveillance systems, our Fellow will assess whether NEARS (NVEAIS) has the ability to increase the effectiveness of food safety programs, increase food safety and reduce future outbreaks.

Despite enormous resources employed to construct NEARS, uptake has been poor. The fellow will provide recommendations to enhance the surveillance activity and its uptake.

Surveillance Evaluation

Evaluation of STEC risk factor surveillance

Over 100 cases of Shiga Toxin-producing E.coli are reported in Tennessee each year. Evaluation of national risk factor surveillance for STEC will be conducted in collaboration with CDC and CSTE. We will assess commonly ascertained exposures and promote the implementation of the recently adopted position statement to standardize STEC exposure ascertainment. The position statement was written and passed by a past CSTE fellow.
**Major Project**  
**Analysis of viral gastroenteritis outbreaks, Tennessee**

Approximately 100 enteric outbreaks are reported to the TDH every year. Roughly 60% of those outbreaks are due to norovirus. The majority of norovirus outbreaks occur in long-term care facilities in Tennessee. The Fellow will analyze norovirus outbreaks in Tennessee by setting and CaliciNet sequence type to describe circulating genogroups of Norovirus, differential morbidity and spatial differences in the occurrence of outbreaks.

These data will be provided to TDH health regions on a quarterly basis to inform where infection control educational efforts are needed most. Data will be shared with the Department of Health Licensure to show the burden of norovirus in facilities regulated by this department.

**Additional Project**  
**Post Outbreak Meetings**

The Council to Improve Foodborne Outbreak Response (CIFOR) recommends post outbreak meetings among members of the outbreak team to assess lessons learned and to compare notes on ultimate findings. This type of after-action review is extremely important for multiagency investigations but is also important for single agency investigations.

The CSTE fellow will develop an after-action process for reviewing outbreaks led by Tennessee public health staff. He/she will work with local, regional and state staff to develop and pilot this plan. Recommendations from the field and state will be evaluated and implemented. A final plan will be presented and will be utilized for all foodborne disease outbreaks led by Tennessee staff.

**Major Project**  
**Analysis of Inspection data for recreational water and foodborne outbreak contributing factors**

The fellow will work with the Division of Environmental Health to assess common gaps in restaurant and swimming pool regulations by analyzing historical inspection data. Enteric disease outbreaks associated with recreational water are increasing. A more thorough understanding of inspection results will inform future prevention efforts.

**Preparedness Role**

The Fellow will participate in all ICS training and certification activities and participate in emergency response activities. These include assessment of BioSense surveillance as it relates to AGE and outbreak detection and participation in Community Assessment for Public Health Emergency Response (CASPER) and Ebola preparedness activities. Opportunities will exist for the Fellow to participate in emergency response training, exercises, and events. The CSTE fellow will become familiar with the State Health Operations Center, Incident Command System, and response plans.
**Additional Activities**

Tennessee reports approximately 1,000 cases of Salmonellosis each year. The majority of cases, especially those who reside in the western section of the state, are thought to be caused by environmental exposures. At this time, TDH has not conducted an analytic study to support this hypothesis. The Fellow will analyze spatial and temporal clustering for common Salmonella serotypes (e.g., S. Javiana, S. Newport, S. Typhimurium) and PFGE patterns to develop hypotheses for future analytical studies. Once a hypothesis is generated, the Fellow will develop the study questionnaire, database, and analysis plan. He or she will train other TDH staff to assist in interviewing and data entry activities. The fellow will also collaborate in an ongoing project assessing environmental reservoirs and environmental exposures with the University of Memphis. A final report will be developed including recommendation for changes to current surveillance interview tools.

Analyze foodborne illness complaint data to detect clusters across multiple public health jurisdictions in Tennessee. Tennessee has constructed a centralized database which has been in use for 3 years. The analysis will include program evaluation and design of a customer focused questionnaire to collect data on who reports complaints, their ability to give a good history, and preferred methods of submitting complaints. This will be done in collaboration with EHS-Net staff in Tennessee.

The BioSense program is a public health surveillance system that increases the ability of health official at local, state and national levels to efficiently, rapidly and collaboratively monitor and response to harmful health effects of exposure to disease or hazardous conditions. BioSense provides public health officials a common electronic health information system with standardized tools and procedures for rapidly collecting, sharing and evaluating information. Collaborating with TDH Public Health Emergency Preparedness staff the Fellow will conduct an evaluation of BioSense as a tool for acute gastroenteritis (AGE) outbreak detection. The Fellow will gain a full understanding of BioSense and will frequently interact with health department and hospital-based users.

**Mentors**

**Primary**

John Dunn, PhD, DVM  
Deputy State Epidemiologist

**Secondary**

Katie Garman, MPH  
Director of Enteric Disease Surveillance and Outbreak Investigations