Infectious Diseases

Oklahoma State Department of Health, Office of State Epidemiologist
Oklahoma City, Oklahoma

Assignment Description

For this applied epidemiology fellowship in infectious diseases, the CSTE Fellow will be located within the Oklahoma State Department of Health (OSDH) Acute Disease Service (ADS). The State Epidemiologist is the ADS Director and will provide global supervision of the Fellow and facilitate completion of the core skills and competency-based training requirements for the fellowship. The ADS is professionally staffed by 11 Masters degree level epidemiologists (2 administrative program managers and 9 staff epidemiologists) and a 4-member tuberculosis control medical team. The ADS is responsible for the surveillance and control of all infectious diseases affecting Oklahoma residents, with the exception of HIV, STDs, and hepatitis B & C.

Oklahoma Administrative Code 310:515 specifies diseases and conditions that must be reported by any health practitioner or laboratory personnel to the OSDH electronically via the secure web-based Public Health Investigation and Disease Detection of Oklahoma (PHIDDO) system, telephone, or fax within a specified time period upon suspicion, diagnosis, or testing. Disease reports are investigated by ADS epidemiologists or county health department (CHD) public health nurses to determine the risk to a specific population group or to the general population at large. Disease investigations result in the implementation of control measures such as isolation and exclusion of a person during their infectious period; quarantine or monitoring of exposed, susceptible contacts; and recommendation of appropriate prophylactic measures to exposed individuals (antibiotics, immunization, or immune globulin). Standard data variables are collected on all disease reports to monitor trends in disease occurrence, and to gather information regarding the epidemiology of certain diseases. This enables the ADS and public health partners to evaluate and target our control, education, and prevention efforts across Oklahoma.

Data collected during reportable disease investigations are entered into the PHIDDO system and stored in a secure data warehouse. Data variables include demographics, clinical history, outcome, disease-specific risk factors, and exposure information. Analysis is conducted on a regular schedule and on an as-needed basis to evaluate surveillance data to identify potential clusters, outbreaks, unusual occurrences, or changing epidemiology of an endemic disease. Surveillance data is monitored for data completeness and quality, timeliness of reporting and investigation of infectious diseases, and submission of required organisms to further characterize disease occurrence.

The OSDH host site will provide a variety of infectious disease epidemiology opportunities for the CSTE Fellow. Assignments will include routine investigation of notifiable diseases, on-call consultation, assuming various roles in outbreak investigation teams, analysis of surveillance and outbreak data, coordination of epidemiologic studies, and participation in preparedness exercises and responses to real public health events.
**Day-to-Day Activities**

Upon completion of a standard Acute Disease Service (ADS) training orientation, the Fellow will be assigned notifiable disease case investigations, which may be conducted in collaboration with CHD communicable disease nurses. All case investigation information will be entered in the Public Health Investigation and Disease Detection of Oklahoma (PHIDDO) system. The Fellow will also be inserted into the Epi-on-Call rotation; the Epi-on-Call provides consultations for healthcare providers, laboratorians, and the public who contact the OSDH regarding infectious disease diagnosis, case reporting, contact management and other infection prevention & control measures. The Fellow will also work with ADS epidemiologists to investigate case clusters of reportable diseases or infectious disease outbreaks. If an outbreak involves multiple states, the Fellow may have the opportunity to collaborate with other state public health departments and federal agencies, such as the CDC, USDA, or FDA.

SAS, Microsoft Access, and Excel will be used to manage data and perform statistical analyses of surveillance data in the PHIDDO system, outbreak datasets, and other project-related datasets. Using, reviewing, and preparing data dictionaries/coding guidelines will be a frequent activity as well. A typical day may also include conducting literature reviews and locating information needed to prepare reports, presentations, or tailored responses to inquiries from healthcare providers or the public. As the Fellow gains more experience with OSDH processes, the Fellow will have opportunities to develop news releases and complete media interviews on infectious disease topics. The Fellow will attend weekly infectious disease surveillance meetings that include representation from the Public Health Laboratory, OSDH Nursing Services, Immunization Service, Consumer Protection Division, and Tulsa and Oklahoma City CHDs.

**Potential Projects**

**Surveillance Activity**

**Evaluation of Shiga toxin-producing Escherichia coli (STEC) Surveillance Data**

Since 2008, an increasing incidence of STEC infections has been observed in Oklahoma. For this surveillance project, the Fellow will work with a foodborne disease epidemiologist to analyze STEC surveillance data to describe case outcomes and trends by serogroup and production of shiga toxin (STX) 1 and/or 2. Overall trends and geographic distribution of STEC infections by pulsed-field gel electrophoresis patterns will also be described.

**Surveillance Evaluation**

**Evaluation of Oklahoma's Influenza-associated hospitalization and mortality surveillance system**

Since September 2009, influenza-associated hospitalizations and deaths among all ages have been reportable in Oklahoma. The Fellow will evaluate the representativeness, timeliness, completeness, acceptability and other attributes of this surveillance system using standard guidelines. Hospital discharge data and vital statistics data will be linked and analyzed to further assess the current surveillance system for serious outcomes of seasonal influenza during 2011-2015.
**Major Project**

**Estimating food exposure attribution for Salmonellosis and STEC infections**

The Fellow will work with ADS epidemiologists to coordinate interviews of culture-confirmed cases of Salmonella and STEC infections with a detailed exposure questionnaire to generate food frequency tables to estimate background rates among the state's population for specific foods and other exposures (animal contact). This database will be used in a binomial model for case-to-case comparisons to rapidly evaluate potential hypotheses during local and regional case cluster investigations.

**Additional Project**

**Determination of Tuberculosis (TB) Infection Among a Marshallese Worker Cohort by Targeted T-Spot Testing**

The Fellow will analyze data collected during a targeted TB testing and treatment outreach project conducted during 2016 among a large cohort of Marshallese workers in a commercial food production plant.

**Surveillance Activity**

**Descriptive Epidemiology of Tuberculosis Disease in Oklahoma Using Genotyping Data**

The Fellow will analyze Oklahoma TB patient data and linked genotyping results to describe historical trends of TB transmission and identify transmission clusters of recent cases. The goal of the project is to provide evidence-based support for integrating genotyping data into standard TB case management and contact investigations, and predict future case clusters.

**Preparedness Role**

The Fellow will attend the standing monthly meeting of the OSDH multi-disciplinary “All Hands” group where OSDH employees and extramural partners provide updates on core preparedness activities, key infectious disease surveillance findings, and recent drills or activations of the Incident Command System (ICS). Oklahoma is well recognized for the state’s ability to respond to natural disasters and the OSDH typically activates its Emergency Operations Center to operate through an ICS structure at least twice per year. Recent ICS activations have included public health response to active monitoring of travelers returning from Ebola outbreak-affected countries in West Africa (August 2014 – December 2015), and a large scale patient notification and epidemiologic investigation into hepatitis C virus transmission in an oral surgical facility (March – July, 2013). To fulfill the core competency of emergency preparedness, the Fellow will receive ICS training and be assigned to lead a Branch or Unit during an ICS activation during their fellowship. The Fellow will also be encouraged to participate in emergency preparedness or pandemic table top exercises or drills.

**Mentors**

**Primary**

Kristy Bradley, DVM, MPH  
State Epidemiologist

**Secondary**

Laurence Burnsed, MPH  
Administrative Program Manager, Communicable Disease Division