Infectious Diseases - Foodborne

Los Angeles County Department of Public Health, Acute Communicable Disease Control

Los Angeles, California

Assignment Description

The CSTE fellow will be assigned to the Food Safety Team (FST) of the LAC-DPH Acute Communicable Disease Control (ACDC) Program. The FST is responsible for the surveillance, investigation, and prevention of enteric illnesses reported in LAC. Because LAC-DPH serves a large and diverse population of over 10 million residents, foodborne illnesses contribute considerable morbidity in our jurisdiction, accounting for more than 4000 confirmed reportable enteric disease cases in 2018. Being a fully integrated member of the FST, the fellow will gain experience in the full spectrum of infectious disease epidemiology, from the surveillance of individual cases to the investigation of nationwide disease clusters. The fellow will have the opportunity to work with Public Health Nurses (PHNs) in case investigations of salmonellosis and shigellosis, as well as conduct their own case investigations of vibriosis, listeriosis, and brucellosis. The fellow will also have the opportunity to oversee outbreak and cluster investigations. In 2018, LAC received nearly 2,500 complaints of foodborne illness related to restaurants, parties, or other events. Of these, FST investigated 33 foodborne illness outbreaks. Through Whole Genome Sequencing (WGS), nearly 200 LAC cases of salmonella were a part of 18 local, 5 state, and 21 multistate cluster investigations. During outbreak investigations, FST partners with Community Health, Environmental Health for restaurant inspections, and the Public Health Laboratory for the testing of complainants and food handlers, providing the fellow with an even broader experience of Public Health. There will also be opportunities to collaborate or work on other projects within ACDC or other programs at LAC DPH.

Day-to-Day Activities

On a daily basis the fellow will work on surveillance activities, work with other team members on outbreak investigations, assist with (and sometimes lead) cluster investigations, and participate in webinars and conference calls with CDC and the California Department of Public Health. The fellow will:

- be responsible for the disease surveillance of a reportable condition. This includes reviewing reports of illness to determine whether additional follow-up is needed, contacting physicians and hospitals for medical records, contacting laboratories for isolates to be forwarded to the Public Health Laboratory, and interviewing the suspect cases for more detailed demographic, medical, and exposure history
- assist with, and occasionally lead, foodborne outbreak investigations. This includes the monitoring of illness complaints received by ACDC regarding restaurants, catered events, etc., interviewing potential cases and controls, interviewing food handlers, coordinating the collection of stool and its delivery to the Public Health Laboratory, entering and analyzing the data, and writing the final report
• take the lead in investigating some salmonellosis and shigellosis clusters. This would involve reviewing case report forms completed by public health nurses and possibly conducting additional questionnaires with the case(s).
• work on projects or outbreaks that can be presented at meetings, and potentially written up for publication.

Potential Projects

Surveillance Activity       Enteric Disease Surveillance

The fellow will learn how to manage surveillance of one or more reportable enteric diseases. For shigella and salmonella, the fellow will provide support to PHNs who interview the cases and review the reports submitted by the PHNs to check for completeness, accuracy, and consistency. For listeria, vibrio, and brucella, the fellow will conduct the case interviews themselves. The fellow will also analyze the surveillance data to identify clusters and/or outbreaks.

Surveillance Evaluation     Use of Social Media to Identify Unreported Foodborne Outbreaks

LAC is currently working with New York City Department of Public and Mental Health and Columbia University to establish in LAC the system currently used by NYC to scan restaurant reviews on Yelp for complaints of foodborne illness. The fellow would assist with adjusting the system to identify relevant reviews in LAC and subsequently develop a protocol to efficiently manage and analyze the Yelp reviews for possible foodborne outbreaks.

The fellow may also choose to evaluate a surveillance system for a particular disease from diagnosis to reporting, investigation, prevention activities and outbreak detection and investigation.

Major Project      Salmonella Cluster Investigation

In 2018, approximately 18 local clusters were identified in LAC. FST is solely responsible for investigating these clusters, which includes creating and implementing hypothesis-generating questionnaires (HGOs), analyzing the data collected, and investigating the food source, if identified. Currently, there is one full-time staff who is responsible for the surveillance of individual salmonella cases, investigating the local clusters, and assisting the State and CDC with the multi-County or multi-state clusters. The fellow will assist with cluster investigations. For local clusters, this would include reviewing case report forms for commonalities (food sources, geographic, ethnicity, etc.), developing a HGQ, interviewing individual cases with the HGQ, analyzing the data, investigating the food source (if identified), and writing the final report.

Major Project       Foodborne Outbreak Description and Trend Analysis
Each year the FST investigates an average of 26 foodborne outbreaks. Although there is an annual report characterizing the outbreaks, there is no in-depth analysis of outbreak trends over the years. Especially lacking is the analysis of food items implicated in outbreaks over the years. The fellow will evaluate information from various data sources such as outbreak investigation reports and restaurant inspections and design a study to analyze the trends of foodborne outbreaks with respect to etiologies, food sources (imported/domestic, fresh/cooked), severity, or any other variable the fellow determines to be of interest.

**Additional Project**  
**Listeriosis in the Elderly**

The fellow would review and analyze data on risk factors in elderly persons with listeriosis. The results would then inform the development with other ACDC staff of educational materials aimed at the elderly or vulnerable populations to be used by DPH and other health education staff. In addition, an outreach to the medical community about listeriosis and health education materials they can use for their patients would be made.

**Preparedness Role**

- Participate in special pathogen response trainings and activities. For example, when a potential botulism case is reported there are several activities that must occur before anti-toxin is released. The fellow may assist with the completion of those activities.
- Participate in tabletop exercises to test emergency plans as they currently exist.
- Take mandatory trainings that instruct how to react to emergency situations such as earthquakes, fires, and active shooters while in the office.

**Additional Activities**

Developing detailed protocols for surveillance and outbreak investigation activities.

**Mentors**

**Primary**  
Roshan Reporter MD, MPH  
Medical Epidemiologist

**Secondary**  
Marifi Pulido PhD, MPH  
Epidemiologist