

Infectious Diseases-Foodborne, Infectious Diseases

Chicago Department of Public Health, Communicable Disease Program

Chicago, Illinois

Assignment Description

The fellow will be assigned to the CDPH Communicable Disease (CD) program, which is responsible for monitoring communicable diseases in Chicago (excluding tuberculosis, some vaccine-preventable diseases, and STI/HIV). The CD program performs surveillance of >70 reportable infectious diseases, investigates case clusters and outbreaks, and plans for public health emergencies involving or leading to the spread of contagious agents. CD program epidemiologists monitor surveillance systems for unusual patterns of disease in Chicago and oversee investigation and response efforts when clusters and outbreaks are detected. A large proportion of staff time and resources is dedicated to the investigation of enteric disease cases and outbreaks, many of which have a foodborne etiology. A primary focus on foodborne infectious diseases will provide the fellow with ample opportunities to learn effective case investigation techniques and eventually to lead outbreak investigations. Additionally, given the complex nature of the protocols and procedures needed to support such a high-volume program area, the fellow will be able to participate in process improvement initiatives and program evaluation efforts. The CDPH CD program works closely with the Illinois Department of Public Health, which maintains the INEDSS surveillance system and fosters open communication across Illinois jurisdictions. The CDPH CD program also partners with the Minnesota Department of Health's (MDH) Integrated Food Safety Center of Excellence (CoE) and consults this team of experts during foodborne investigations. The fellow will develop working relationships with both IDPH and the MDH CoE. The fellow will also participate in other cutting-edge program areas in which he/she shows interest. For instance, as an Epidemiology and Laboratory Capacity site funded for work on hospital associated infections, investigations of Carbapenem-Resistant Pseudomonas and the emerging fungal pathogen, *C. auris*, have become a fast-growing focus area for the CDPH CD program.

Day-to-Day Activities

The fellow will attend recurring programmatic meetings, including all-staff daily morning briefings, weekly outbreak meetings, weekly CD program epidemiologist team meetings, weekly check-ins with the emergency preparedness program, and monthly Food Protection program staff meetings. The fellow will also accompany primary and secondary mentors to cross-programmatic collaborations more frequently toward the beginning of his/her fellowship to become familiar with CDPH activities and get to know colleagues. Given the high volume of cases and fast-paced nature of work in the CDPH CD section, the fellow will encounter new and challenging situations each day. The fellow may perform site visits, whether to observe practices at food establishments implicated in a foodborne outbreak or to participate in HAI point prevalence surveys at care sites. However, the fellow will be afforded dedicated time to focus on surveillance process and system improvement projects each week.

Potential Projects

Surveillance Activity Development of an algorithm for the investigation of Campylobacter cases in Chicago

The required reporting of Campylobacter infections to the Illinois Department of Public Health (IDPH) was reinstated at the start of 2016. Campylobacter infections represent a sizable proportion of case reports received by the CDPH CD program. Given limited programmatic resources, CDPH staff are unable to administer complete hypothesis-generating questionnaires to all Campylobacter cases. The fellow will incorporate INEDSS reports, SEDRIC information, NARMS isolate selection protocols, and ArcGIS mapping of case residential addresses to propose a protocol for staged investigation of Campylobacter cases in accordance with available resources.

Surveillance Evaluation Evaluation of CDPH surveillance system for Campylobacter infection cases

The fellow will evaluate the CDPH surveillance system for reporting Campylobacter infections. The fellow will query reports received through the INEDSS system and work with area healthcare providers to obtain medical record information for each case. He/she will abstract laboratory and other relevant information to determine the proportion of reports to CDPH that meet case definition. The fellow will further investigate whether test type (e.g., culture, PCR, etc.) influences accuracy of case reporting. The fellow may help create general or site-specific educational materials related to Campylobacteriosis diagnosis and reporting. As part of this evaluation project, the fellow will also prepare a public-facing summary of surveillance data that can be formatted for and posted on the CDPH website. Results of the evaluation may also be used to identify additional projects to mitigate deficiencies in surveillance system, on which fellow may take the lead.

Major Project Analysis of predictors of foodborne outbreak risk among Chicago restaurants

Under the guidance of the primary supervisor, the fellow will develop a strategy to link existing environmental inspection, outbreak reporting system, and communicable disease enteric disease investigation data sets. Information contained within the National Environmental Assessment Reporting System (NEARS) may also be incorporated as Chicago implements routine use of the NEARS reporting system. The fellow will define and extract variables of interest and design and implement an analytic study to assess predictors of foodborne outbreak risk among Chicago restaurants. Additionally, the fellow will compile and present findings to both internal and external stakeholders.

Additional Project Uses of social media data to improve the CDPH foodborne illness complaint system

The fellow will work with CDPH information technology staff who have developed Foodborne Chi, an automated system for detecting complaints of foodborne illness from Twitter feeds, to more effectively link complainants to a form that collects initial information needed to initiate an investigation of foodborne illness. The fellow will additionally explore ways to further improve detection of legitimate foodborne illness complaints, including adaptation of publicly available code to mine Yelp reviews that was developed by New York City.

Additional Project Creation and maintenance of a Chicago restaurant food safety log

The fellow will create a log of restaurants with suspected food poisoning (SFP) complaints, or named by confirmed cases, that can be cross-referenced when new SFP complaints are filed and used to help determine when outbreak investigations are warranted. The fellow will further develop restaurant risk ranking scores, incorporating log data to help inform environmental food safety inspection scheduling.

Preparedness Role

The fellow's primary supervisor is the Biosurveillance capability lead for the Bureau of Public Health Emergency Preparedness (PHEP) at CDPH. The fellow will accompany the primary supervisor to monthly PHEP all-staff meetings and quarterly training sessions aimed at raising situational awareness and preparing staff for emergency situations. The fellow will participate in scheduled exercises. Additionally, the fellow will gain experience in drafting After Action Report/Improvement Plans following real-world outbreak responses that will inform emergency preparedness efforts.

Additional Activities

The fellow will participate in, and eventually lead, investigations of foodborne outbreaks as they occur. Once trained in CDPH enteric disease and foodborne outbreak investigation protocols, the fellow will serve in rotation with other CDPH CD program epidemiologists as lead epidemiologist for foodborne outbreak investigations. The fellow will perform primary epidemiological analysis for assigned outbreaks, with support from the primary supervisor. The fellow will further contribute to the revision and improvement of forms and protocols pertaining to enteric disease and foodborne outbreak investigation. In addition, the fellow will assess the utility of syndromic surveillance in regularly monitoring conditions of particular interest in the CDPH CD program, such as hemolytic uremic syndrome (HUS).

Mentors

Primary

Peter Ruestow PhD, MPH

Epidemiologist IV

Secondary

Stephanie Black MD, MSc

Medical Director