

Infectious Diseases- Foodborne

Assignment Description:

This assignment is in the Bureau of Communicable Disease working specifically on foodborne disease at the New York City Department of Health and Mental Hygiene. The NYCDOHMH is a large, and well-staffed Department with expertise in emergency management, program administration, surveillance and epidemiology. We are the primary public health agency for over 8 million ethnically and socio-economically diverse people in 321 square miles (the highest population density in the US). NYC is one of the major ports of entry for travelers and commerce with recent immigrants accounting for a third of the population leading to the threat of imported illness as happened with West Nile Virus in 1999. The Bureau of Communicable Disease oversees surveillance and outbreak investigations of over 70 reportable diseases as well as other infectious diseases reported in outbreak settings.

The fellow will be placed in the Bureau of Communicable Disease which is responsible for foodborne disease surveillance and outbreak response in New York City. There is a significant burden of foodborne illness in New York City with approximately 3200 enteric disease cases and 70 clusters and outbreaks reported each year. There are approximately 26,000 restaurants and 13,000 food retail establishments (e.g. grocery stores, delis, and wholesale stores) in NYC. In 2009, NYC DOHMH became one of seven FoodCORE sites in the US. FoodCORE sites receive funding to enhance foodborne disease outbreak response in the area of epidemiologic response, laboratory capacity, and environmental health assessments. The fellow will work on foodborne disease activities in the bureau including special projects and evaluations related to FoodCORE activities both locally and in collaboration with CDC and other FoodCORE sites.

Day-to-Day Activities:

1. The fellow will be assigned to the Enteric, Waterborne and Hepatitis Unit and have his/her own analytic, surveillance and educational projects to work on daily. In addition, the unit investigates an average of 70 clusters and outbreaks each year and the fellow will participate in all aspects of foodborne investigations with the goal of being able to manage them independently.
2. The fellow will also work on educational activities regarding foodborne illness. Because of the cultural diversity of NYC this will involve working with many different communities and ethnic groups. Additionally, every effort will be made to provide the fellow with opportunities to observe or work with other Bureaus that interact with BCD to better understand the workings of a large local health department.
3. Although the position will be primarily focused on foodborne disease, the fellow will also participate in the general activities of BCD including attending weekly outbreak meetings and serving in the rotation as Research Scientist of the Week to handle whatever public health issues arise that week in the bureau and analyzing the routine surveillance data to detect possible clusters.
4. The fellow will have the opportunity to work on other projects as they interest him/her or relate to foodborne illness in BCD or in other Bureaus which may include projects working closely with the Public Health Laboratory or the Office of Environmental Investigations.

Potential Projects:

The fellow will have the opportunity to work on a variety of projects that will demonstrate the opportunity for data analysis and surveillance evaluation. These projects include, but are not limited to, the following:

1. Investigating foodborne outbreaks. Outbreaks in New York City are identified from a variety of sources including reports from patients or providers and analysis of disease surveillance reports. In addition, pulsed-field gel electrophoresis (PFGE) clusters are reported by NYC's PulseNet laboratory. The DOHMH receives reports of approximately 30 foodborne outbreaks and 40 PFGE identified clusters each year. The fellow will take primary responsibility for investigating some of these outbreaks and clusters. The fellow will have the opportunity to oversee and become involved in every aspect of a foodborne outbreak which will include developing a questionnaire, conducting outbreak interviews, building Microsoft Access databases for data entry, analyzing outbreak data, and writing the final report. For multi-jurisdictional outbreaks, the fellow will participate in multistate calls and calls with CDC, FDA, USDA and other relevant agencies. S/he will have the opportunity to go on restaurant inspections, conduct hazard analysis critical control points (HACCP) reviews, and to take NYC's food safety training that is offered to restaurant operators.
2. NYC DOHMH receives approximately 2800 foodborne illness complaints each year with about 30 resulting in a foodborne outbreak associated with a restaurant. BCD works closely with the Office of Environmental Investigations and the Public Health Laboratory to investigate point-source restaurant associated outbreaks each year. The fellow would have the opportunity to evaluate data collected on restaurant associated foodborne disease outbreaks to understand the timeliness of the investigations, the proportion of outbreaks for which an etiologic agent was identified, and to summarize contributing factors in the environment of restaurants that have outbreaks. In addition, a more in depth analysis of complaints and how they correlate to actual outbreaks would potentially allow for more effective means of identifying outbreaks. NYC DOHMH has recently begun a project collaborating with a computer science professor at Columbia University to attempt to analyze data from restaurant reviews reported on the internet. The fellow will use complaint data and information available on restaurant review sites and potentially social networking sites to develop new innovative methods for identifying outbreaks more effectively. The fellow would have the opportunity to collaborate with Columbia University staff as well as work with the Office of Environmental Investigations.
3. The Public Health Laboratory receives approximately 1200 Salmonella isolates each year. Historically, the Enterics Unit at the Public Health Laboratory has conducted traditional serotyping of all Salmonella isolates received which can take up to 10 days to obtain results. The Enterics Unit plans to implement molecular serotyping for Salmonella isolates which will greatly reduce the burden in the lab as well as the turn-around time to getting results. The fellow will conduct a surveillance evaluation to assess the timeliness and completeness of molecular serotyping of Salmonella isolates and the impact that it has on improving communication of results to the PulseNet lab and BCD. The results from this evaluation would be beneficial to other health departments who are considering setting up similar activities in their respective jurisdictions. Working on this evaluation would give the fellow an opportunity to work directly with staff in the microbiology lab.
4. Since DOHMH became a FoodCORE site, the PulseNet lab has greatly increased the timeliness and completeness of Salmonella pulsed-field gel electrophoresis (PFGE). This has resulted in an

increase in the number of local and multi-state Salmonella clusters that are identified by the lab and has allowed epidemiologists to more effectively perform investigations. The fellow would conduct a surveillance evaluation to assess completeness and timeliness of the investigations as a result of the increased capacity in the lab. The fellow will also help to determine baselines and create protocols for what constitutes a cluster. The fellow would be involved in data collection, data management, and data analysis of this project and have the opportunity to work directly with the Chief of the PulseNet lab in NYC.

5. There is a significant burden of illness due to campylobacteriosis in NYC with approximately 1000 cases reported annually. Campylobacteriosis data in NYC has never been analyzed. The fellow may be involved in conducting an analysis of historic data focusing on differences in demographics and SES factors based on neighborhood of residence. This data could be used to develop additional studies that DOHMH may conduct on campylobacteriosis cases to further investigate risk factors.
6. Cyclic outbreaks of shigellosis occur in specific communities every 3-4 years in New York City. The most recent outbreak was in 2011-2012 with over 100 cases reported in two different neighborhoods. DOHMH conducted outreach efforts and has created health education material specific to practices in this community. However, a further understanding of risk factors is needed to help guide additional resources and future activities. The fellow would conduct a case-control study to determine risk factors for transmission in the households as well as schools. The fellow would be responsible for writing the protocol, developing the questionnaire, conducting interviews, managing and analyzing the data, and preparing a manuscript for publication.

Preparedness Role:

The NYCDOHMH has responded to a number of citywide and national emergencies in the last few years including the initial outbreak of West Nile virus in 1999, the response to the terrorist attacks and anthrax investigation in 2001, the Citywide blackout in August, 2003, and the H1N1 outbreak in 2009. All employees are assigned to an Emergency Preparedness Committee for purposes of planning for and responding to emergencies. The fellow would be assigned to the Surveillance and Epidemiology section and expected to participate in the DOHMH response in the event of an emergency and in all drills and meetings required by the unit.

Assignment Location:	New York City, New York
Primary Mentor:	Marcelle Layton, MD Assistant Commissioner New York City Department of Health and Mental Hygiene
Secondary Mentor:	Vasudha Reddy, MPH Foodborne Epidemiologist New York City Department of Health and Mental Hygiene