Infectious Diseases

New Jersey Department of Health, Communicable Disease Service
Trenton, NJ

Assignment Description

The fellow will report directly to the primary and secondary supervisors in the Communicable Disease Service (CDS). The Division of Epidemiology, Environmental and Occupational Health resides in NJDOH’s Public Health Services Branch which includes staff with epidemiologic and programmatic expertise in communicable disease; occupational health; consumer and environmental health; cancer epidemiology; and family health services. The Fellow would be able to collaborate with staff in these various areas, depending on the Fellow’s interests and projects.

Day-to-Day Activities

The fellow would be an integral part of the CDS team. The fellow’s anticipated day-to-day activities would include work on long-term analytic projects and acute outbreak investigations. Other routine activities would include:

- Long-term analytic projects, which would involve collecting and analyzing epidemiological data and reporting findings
- Acute outbreak investigations, which would potentially involve field investigations, developing and/or administering questionnaires, developing database/linelist, analyzing data, participating in conference calls with local, federal, and other state public health agencies. The CDS receives over 100 reports of communicable disease outbreaks of various etiologies involving a wide range of settings each year.
- Oral and poster presentations to the public and health professionals
- Access to statewide in-person and online public health trainings, e.g., SAS refresher course, Public Health Media Training, Communicable Disease Investigator Training, Introduction to Logic Models
- Phone duty once a week (CDS epidemiologists rotate daily to answer phone inquiries from public health and health care partners regarding reportable communicable disease issues);
- Participation in CDS off-hours “on call” approximately twice a year;
- Participation in weekly meetings with CDS epidemiologists regarding current investigations/outbreaks and topical infectious disease discussions; and
- Participation in monthly meetings with regional (i.e., based at local health departments) epidemiologists regarding current investigations/outbreaks and lectures on topic in public health
**Potential Projects**

**Surveillance Evaluation**

The addition of non-culture based methods into *Shigella* surveillance data has been problematic. As laboratories implement these methods and *Shigella* case definitions change to include these methodologies, *Shigella* case counts fluctuate making it difficult to track disease trends over time. *Shigella* surveillance is particularly critical in New Jersey where there have been large outbreaks of *Shigella* in the past associated with Hassidic and Orthodox Jewish communities. The proposed project would involve evaluating current *Shigella* surveillance system with an emphasis on the impact of non-culture based methods as it relates to overall case counts and application of revised case definitions.

**Surveillance Activity**

Influenza-associated pediatric mortality is nationally-notifiable. Since 2003, New Jersey has been tracking not only influenza associated pediatric deaths, but also severe cases defined as admission to an intensive care unit. While this information is used in weekly and seasonal analysis to assess the impact of circulating influenza viruses, an analysis of clinical and epidemiologic data captured as part of this surveillance has not been conducted. The proposed project would involve evaluating the data collected as part of severe and fatal pediatric influenza surveillance including providing a description of clinical and epidemiology characteristics of cases.

**Major Project**

Analysis of communicable disease reporting associations with syndromic disease surveillance

In September 2014, an increase in severe respiratory disease primarily impacting children was observed. This increase was attributed to the appearance of a rare enterovirus serotype D68. Enterovirus is not a reportable condition in New Jersey and alternative methods of monitoring this virus needed to be implemented. New Jersey utilized a subset of syndromes (cough, wheeze, exacerbation) from our syndromic surveillance system in an effort to monitor the impact of this virus in our population. The proposed project would involve an evaluation of syndromic surveillance systems and their ability to detect communicable disease events. The specific focus would be on respiratory anomalies used to detect circulation of non-influenza viruses (enterovirusD68).

**Additional Project**

Evaluation of pertussis surveillance

Pertussis is nationally-notifiable. Although many pertussis cases are not diagnosed and therefore, not reported, the surveillance system is useful for monitoring epidemiologic trends. The laboratory criteria for diagnosis include isolation of *Bordetella pertussis* from clinical specimens or positive polymerase chain reaction (PCR) for the organism. The limitations of laboratory diagnostics make the clinical definition essential to pertussis surveillance. It is important to determine the duration of cough – specifically whether it lasts 14 days or longer – in order to determine if a person’s illness meets the definition of a clinical case. The proposed project would involve evaluation of information collected as part of New Jersey pertussis surveillance including laboratory methods for confirmation and identification of clusters and outbreaks.
**Additional Project**

Hepatitis B among hepatic and other cancer cases

Hepatitis B virus (HBV) infection is one of the most common viral infections worldwide. While chronic HBV infection has been shown consistently to be associated with hepatocellular carcinoma, data on an association with other cancers also exists. All diagnosed cases of HBV are reportable to public health authorities. Within New Jersey, data on known cases of HBV infection are maintained within our electronic disease registry, the Communicable Disease Reporting and Surveillance System (CDRSS). The proposed project would involve linking CDRSS records with cancer registry data. The purpose would be to evaluate the number of individuals with HBV infection who die from hepatocellular carcinoma and/or other cancers and the number of new cases of hepatocellular carcinoma and/or other cancers among people infected with HBV in a specified period of time.

**Preparedness Role**

The CDS has a close relationship with the Division of Public Health Infrastructure, Laboratories and Emergency Preparedness (PHILEP). CDS participates in activities and meetings with PHILEP and is involved planning for such events as pandemic influenza. In addition, CDS has a close working relationship with staff stationed at Newark International Airport located from the CDC's Division of Global Migration and Quarantine (DGMQ). CDS and DGMQ interact frequently to prevent the introduction of emerging pathogens into New Jersey through international travel. This relationship has been key in coordinating efforts regarding Ebola screening and contact tracing. The fellow is welcome to participate in these meetings and activities. In the event of a public health emergency, the fellow would be part of the CDS response team (which includes sub-teams in the areas of business continuity, Emergency Call Center, communications, epidemiology/surveillance, and data management). The fellow would serve in either the epidemiologic/surveillance or data management sub-teams.

**Additional Activities**

1) Analysis of hepatitis A post exposure prophylaxis efforts (compare timeliness and other attributes before and after hepatitis became immediately reportable condition).
2) Arboviral disease surveillance (e.g., West Nile Virus)
3) Develop a method to validate reports of influenza healthcare personnel vaccination data collected in the National Healthcare Safety Network (NHSN)

**Mentors**

**Primary**
Barbara Montana, MD, MPH, FACP  
Medical Director, Communicable Disease Service

**Secondary**  
Lisa McHugh, MPH  
Research Scientist 1