Infectious Diseases

New York City Department of Health and Mental Hygiene, Bureau of Tuberculosis Control (BTBC)

Long Island City, New York

Assignment Description

The fellow will be assigned to the Bureau of Tuberculosis Control (BTBC), which is housed within the Division of Disease Control of the NYC DOHMH. New York City has one of the highest rates of TB (6.8 per 100,000 in 2018) in the United States (US), and the BTBC is the largest TB control program in the US with approximately 200 staff. BTBC is composed of the following offices: Bureau Director; Surveillance and Epidemiology; Clinic Operations; Field Operations; Outreach, Education and Training; Administration, Policy and Planning; and Medical Affairs.

The fellow will be assigned to the BTBC Surveillance and Epidemiology Office and will function as a full member of that group. Surveillance and Epidemiology staff perform a number of functions including review and processing of all reports received by DOHMH of suspected and confirmed TB disease, TB Registry maintenance and support, TB contact investigations in congregate settings, TB outbreak and cluster investigations, laboratory coordination, data analysis, and research. The fellow will have the opportunity to work closely with each of the units and teams of the Office of Surveillance and Epidemiology. The BTBC is an interdisciplinary setting, and the fellow will also work in close collaboration with staff in other units, particularly the Field Services, Planning and Policy, Education and Training and Outreach, and Medical Affairs units. Working at BTBC will provide the fellow a unique opportunity to participate in many local public health agency functions in a diverse setting where there are high rates of infectious and chronic diseases.

Day-to-Day Activities

The fellow will participate in routine surveillance and epidemiology activities, including analysis of epidemiologic and surveillance data, participation in research from the protocol development stage through manuscript preparation, outbreak and cluster investigations, field-based contact investigation in congregate settings, management and analysis of laboratory data, and presentations at internal and external seminars. These activities will provide opportunities for the fellow to gain hands-on field epidemiology and project coordination experience (including creating and revising protocols), work with large datasets, and be involved in many aspects of the largest TB control program in the country.

The fellow will have the opportunity to attend a BTBC orientation, monthly TB-related journal club and methods seminars, the Columbia Mailman School of Public Health TB epidemiology course, epidemiology staff meetings, DOHMH epidemiology grand rounds, relevant team meetings, and Citywide TB rounds. SAS, GIS and other relevant computer software training will be available along with other trainings at the NYC DOHMH in many areas such as scientific writing, presentation skills, and epidemiology methods.
Potential Projects

Surveillance Activity  Monitoring and Follow-Up Activities Related to Syndromic Surveillance
Matches

In partnership with the Bureau of Communicable Disease, BTBC utilizes data from broader syndromic surveillance efforts to locate TB patients who are lost to care. Using a matching algorithm based on DOB, gender and zip code, BTBC is notified when a patient who is lost-to-care is seen in a participating NYC facility. Auto-generated match alerts include the healthcare facility name, chief complaint, encounter date/time, and disposition. The fellow will be responsible for reviewing alerts to verify match accuracy and sending information about verified matches to BTBC case management staff, who will then follow-up with the healthcare facility to initiate efforts to return the patient to care. Additionally, the fellow will be responsible for generating and presenting summary data.

Surveillance Evaluation  Evaluating a Change in the NYC Health Code Related to Electronic Reporting of Blood-Based Tests for Tuberculosis Infection

A recent change in the NYC Health Code now requires that labs report results of any blood-based interferon gamma release assay (IGRA) test for tuberculosis infection via the New York State Electronic Clinical Laboratory Reporting System (ECLRS). Prior to this change, only positive results for children younger than 5 years of age were reportable. The fellow will be responsible for cleaning and reviewing data from these newly-reported results. The fellow will conduct a descriptive analysis of all reported IGRA results so that we may better understand the number of IGRA tests being performed in NYC, the labs that are reporting/complying with the health code, providers that are screening for TB, the prevalence of positive tests, and characteristics of both patients and reporters.

Major Project  Epidemiology of Multidrug Resistant (MDR) TB in NYC

Multidrug resistant (MDR) TB is defined as a TB strain resistant to isoniazid and rifampin, the two most important and effective drugs in the TB treatment regimen. MDR TB continues to present challenges to TB prevention and care efforts. In 2018, 12 patients were newly-diagnosed with MDR TB in NYC. The goal of this project will be to review data on NYC MDR TB patients over the last 10 years and to summarize patient characteristics, describe resistance patterns, and review treatment outcomes and the use of newer drugs (e.g., Bedaquiline). This project will utilize data from the BTBC case management and surveillance system, including data from conventional drug susceptibility tests as well as molecular-based mutation data (e.g., whole genome sequencing data). The fellow will be responsible for crafting study objectives, cleaning and analyzing the data, and presenting key findings.

Surveillance Evaluation  Evaluating Reporting of Missed Contacts Among NYC’s TB Patient Population

The Center for Disease Control and Prevention’s cooperative agreement with BTBC mandates that the program collect and report key patient characteristics (e.g., demographic, clinical, social) to the CDC in form of a Report of Verified Case of Tuberculosis (RVCT). A subset of this report includes variables that capture TB risk factors, including the variables Contact of an infectious TB patient and Missed contacts within the past two years. Contact investigation is a key component of routine TB control efforts, and accurately capturing these variables has implications for our ability to identify and interrupt TB transmission in NYC and evaluate contact investigation policies and protocols. The fellow will evaluate...
the Bureau’s current methods for identifying and documenting missed contacts, its criteria for defining a missed contact, and the accuracy and completeness of current RVCT data.

**Major Project  Improving LTBI Prevalence Estimates in NYC**

Persons with latent TB infection (LTBI) are not symptomatic or infectious and cannot spread TB to others; however, those with LTBI represent a reservoir of individuals at risk of developing active TB disease. Having accurate LTBI prevalence estimates specific to NYC is a crucial step in addressing LTBI and can inform TB prevention and elimination efforts. TB prevalence estimates from the National Health and Nutrition Examination Survey (NHANES) may be representative on a national level but are unlikely to be reflective of local epidemiology in urban areas such as NYC. Currently available NYC-specific estimates are based on patients tested at NYC TB clinics, which also may not be representative of the NYC population as a whole. The goal of this project will be to develop more generalizable estimates of the prevalence of LTBI in NYC using TB testing data from sources available outside of the health department (e.g., Regional Health Information Organizations (RHIOs), commercial laboratories, pharmacy data, hospital records, community health providers). The fellow will be responsible for cleaning and analyzing the source data to generate LTBI prevalence estimates.

**Preparedness Role**

The fellow will be part of NYC DOHMH’s emergency response structure and be assigned to the Epidemiology/Surveillance sub-section of the NYC DOHMH Incident Command System. This section is responsible for 1) investigating the incident to characterize event by person, place, and time; 2) collecting data and developing databases; 3) implementing enhanced, active or passive syndromic surveillance to monitor impact and recommend preventive measures. The fellow will receive emergency response training and may have the opportunity to participate in emergency response exercises such as point of distribution (POD) exercises. In the past few years the health department has been activated for a number of major city-wide emergencies including Hurricane Sandy, Ebola Virus Disease (EVD), Zika Virus, and measles.

**Additional Activities**

1. **Genotype cluster/outbreak investigations:**

The fellow will participate in and lead genotype cluster investigations. This involves collecting, reviewing and analyzing patient records, re-interviewing patients to identify sites of exposure and epidemiologic links between cases, compiling and presenting findings for internal and external audiences, and generating transmission assessments and related recommendations for public health intervention.

2. **Field-based contact investigations in congregate settings:**

The fellow also will serve as lead investigator for an expanded contact investigation (ECI) at a congregate setting (school, worksite, hospital, etc.) that has had a TB exposure. This typically involves working with the site to conduct an education session on TB and its transmission, arranging testing of persons
exposed to TB, ensuring all that are exposed are evaluated, reviewing and analyzing the evaluation results to make a transmission assessment, and writing a report of the investigation.

**Mentors**

**Primary**  
Shama Ahuja PhD, MPH  
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**Secondary**  
Jillian Knorr MPH  
City Research Scientist 2, Office of Surveillance and Epidemiology