Infectious Diseases

New York City Department of Health and Mental Hygiene, Division of Disease Control, Bureau of TB Control
Long Island City, NY

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 (7.2 per 100,000 in 2014) in the 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, Education and Training, Outreach, 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 office. The Office of Surveillance and Epidemiology is comprised of a surveillance team, data team, field epidemiology team, laboratory reporting team, and outbreak prevention and control team. Surveillance and Epidemiology Office staff perform a number of functions including TB registry maintenance and support, research, TB contact investigations at congregate settings, and TB outbreak and cluster investigations.

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 offices and units, particularly the Planning and Policy, Education and Training, 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 along with social disparities.

Day-to-Day Activities

The fellow will participate in routine surveillance and epidemiology activities such as analyzing epidemiologic and surveillance data, participating in research from the protocol development stage through manuscript preparation, conducting outbreak and cluster investigations, and presenting at internal and external seminars. These activities will provide opportunities for the fellow to gain hands-on program management experience (including creating and revising protocols), work with large data sets, 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 training at the NYC DOHMH in many areas such as scientific writing, presentation skills, and epidemiology.
Potential Projects

Surveillance Activity  Evaluation of co-morbidities data in the NYC TB case management and surveillance registry

In 2010, the NYC BTBC implemented a new case management and surveillance registry system. This system includes detailed information on co-morbidities for confirmed and suspected cases of TB. A number of co-morbidities, including HIV infection, diabetes, and hepatitis, are known to impact TB treatment and outcomes; as such, complete and accurate data on these conditions are essential. This project would seek to evaluate the completeness, accuracy, and consistency of co-morbidity data in the TB registry. Fellow activities would include data cleaning and analysis.

Surveillance Evaluation  Evaluating the use and reporting of a new rapid test for diagnosing TB in NYC

In April 2015, the NYC Public Health Laboratory began using a new PCR-based rapid diagnostic test to detect TB. This test, the Hain-MTBDRplus, is designed to detect the presence of M. tuberculosis complex as well as the genetic mutations that may confer isoniazid and rifampin resistance, the two most important drugs in the treatment of TB. This project would seek to evaluate the use of this test to 1) ensure that the test is being conducted on appropriate specimens; 2) evaluate the level of concordance with phenotypic results; 3) ensure that test results are being reported into the NYC TB surveillance registry appropriately; and 4) evaluate the impact of the results on both disease surveillance and patient care. Fellow activities would include the development of reports, data cleaning, and data analysis.

Major Project  Evaluating the impacts and outcomes of laboratory errors on TB control in NYC

The gold-standard for TB disease diagnosis is laboratory confirmation through mycobacterial culture. Proper handling of TB specimens is crucial to the accurate identification of TB and to TB control; however, as TB incidence falls, declines in experience with handling TB specimens can lead to errors. Laboratory contaminations, specimen mislabeling, and other errors can lead to misdiagnoses, inappropriate testing of TB contacts, patient distress, and wasted TB control resources. This project would seek to quantify the number of laboratory errors that have occurred involving TB specimens and evaluate the impact of these errors, including quantifying the number of patients misdiagnosed as having TB, the number of unnecessary TB infection tests done, and the amount of excess staff time expended on routine TB control activities that may have otherwise been unnecessary. The fellow will be responsible for cleaning and analyzing TB registry data generated from a wide array of TB control activities including lab error investigations, surveillance, case management, and physician review.

Major Project  Estimating recent TB transmission in NYC

New York City uses several methods to identify, assess and interrupt TB transmission, including systematic contact investigation in household and non-household settings, universal genotyping (using RFLP, spoligotyping, MIRU and whole genome sequencing), and genotype cluster investigation. New York City is one of few jurisdictions that systematically collects data for TB cases, contacts, and epidemiologic investigations, and is therefore uniquely positioned to explore recent TB transmission in a large, diverse urban setting using real-time data. This project would seek to quantify recent TB transmission in NYC (e.g. proportion of TB cases attributable to recent transmission; transmission in household/non-household settings; TB transmission hot-spots) using multiple data sources and methodological approaches. The fellow will be responsible for data cleaning and analysis.
**Preparedness Role**

The fellow will be part of NYC’s emergency response structure and be assigned to the Epidemiology/Surveillance sub-section. 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.

**Additional Activities**

*Outbreak/field investigations:*
The fellow 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.

*Genotype cluster investigations:*
The fellow will also participate in and lead genotype cluster investigations. This involves reviewing patient records and re-interviewing patients to identify sites of exposure and epidemiologic links between patients.

**Mentors**

**Primary**

Shama Ahuja, PhD, MPH  
Director, Surveillance and Epidemiology

**Secondary**

Lisa Trieu, MPH  
Director, Surveillance and Epidemiology