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 provides a full range of services related to TB, including surveillance, clinical care, contact identification and evaluation, research, and provider and public education. The bureau 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. The Surveillance and Epidemiology Office’s work forms the basis for all aspects of TB control and prevention by describing the magnitude of TB as a public health problem in this particular setting and tracking how patterns in the disease change over time, in response to public health interventions and other factors. Surveillance and Epidemiology staff perform a number of functions, including: review and processing of all reports of suspected and confirmed TB disease received by DOHMH; TB electronic surveillance registry maintenance and support; investigations of large exposures to TB occurring in worksites, schools, and other congregate settings; TB outbreak and cluster investigations; laboratory coordination of TB specimens and test results; 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 and to experience the full range of its activities. The BTBC is an interdisciplinary setting, and the fellow will also have the opportunity to learn about the range of the bureau’s functions by working in close collaboration with staff in other units, particularly the Case Management 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.

At this time, most DOHMH staff are working remotely due to the shelter in place order currently being enforced in New York City. It is possible that we may still be working remotely when the fellowship starts. If that is the case, we are prepared to set up access to remote work resources for the fellow, and we will conduct initial training and mentorship meetings via web meetings to begin work on projects remotely.

**Projects**

**Surveillance Activity: Evaluating the Impact of COVID-19 on Care Seeking and Disease Outcomes among Tuberculosis Patients**

The NYC Bureau of TB Control (BTBC) conducts intensive case management to ensure that all TB patients remain under medical care and are treated appropriately until completion. Patients can receive TB care at one of the BTBC’s 4 chest centers, from a provider at a public or private hospital, or from a community provider. Directly observed therapy (DOT), which involves a trained staff watching a patient ingest each dose of anti-TB medication, is considered the standard of care for patients treated for suspected or confirmed TB disease. DOT is conducted in person or by video by BTBC staff or by other non-health department facilities in NYC. In March, 2020 New York City underwent several changes due to the impact of COVID-19. City residents were encouraged to stay home, and seek medical care through telemedicine to the extent possible unless symptoms and care were unmanageable at home. Within BTBC, 3 of the 4 chest centers switched to telemedicine, and one chest center remained open for high priority patients. Most patients were also switched to video directly observed therapy. The fellow will be responsible for studying the effect of the COVID-19 pandemic, social distancing rules, and self-isolation on individuals seeking care for tuberculosis. They would also look at clinical outcomes among patients who had tuberculosis during this time period of interest, and the impact of COVID-19 on the severity of tuberculosis disease presentation. The fellow would conduct analyses to explore the hypothesis that delayed care seeking or interruptions in care of TB disease due to the pandemic, could lead to seeing more severe cases of TB disease at presentation.

**Surveillance Evaluation: Epidemiology of Tuberculosis and COVID-19 co-infection**

In partnership with the NYC Bureau of Communicable Disease (BCD), BTBC will be conducting an ongoing surveillance data match to identify COVID-19 patients who are co-infected with tuberculosis, or who have a history of TB disease or infection. Using a matching algorithm, BTBC will be able to obtain information about the patient’s COVID-19 diagnosis date, hospitalization, and symptoms. The fellow will also have access to New York City electronic health record data through an online data hub, allowing them to gather additional information from the patients’ medical charts. The fellow will be responsible for reviewing the matches to verify match accuracy against our BTBC electronic surveillance registry, and reporting on any discrepancies. Additionally, the fellow will be responsible for analyzing the matched
data to further examine patients with tuberculosis and COVID-19 co-infection, and they will have the opportunity to develop and present data summaries based on the findings.

Surveillance Evaluation: Evaluating Tuberculosis Reporting Delays due to COVID-19 and the Impact on TB Control in New York City

In New York City, the health code requires public and private labs and providers to report individuals who have confirmed TB disease, individuals who are suspected of having TB disease, contacts of an infectious TB patient, and children less than 5 with a positive test for latent tuberculosis infection (LTBI) to BTBC. Accurate and timely reporting enables BTBC to connect patients to appropriate testing, treatment, and care promptly, and it allows case managers to start contact investigation, helping minimize TB transmission. With the implementation of social distancing and self-isolation in response to COVID-19, in-person care seeking has declined, which can cause lags in TB reporting. The fellow will have the opportunity to create a dashboard to monitor indicators of interest over time, particularly looking at delays in TB reporting due to COVID-19, and assessing the impact of decreasing TB reports on long term TB control in New York City.

Major Project: Assessing the Impact of Social Distancing on Household and Non-household Transmission of Tuberculosis in New York City

Contact investigation is an integral part of TB control, and NYC conducts routine contact investigations for infectious pulmonary TB patients. Household contacts are identified during contact investigation, and BTBC also has a team dedicated to conducting contact investigations in congregate settings such as workplaces, schools, and nursing homes where the patient may have spent time with others during their infectious period. Close contacts are tested for TB infection, and evaluated further if needed. As a direct impact of COVID-19 and the social distancing measures put into effect, most people are spending more time in their residences and with their household members than they may have otherwise. The fellow will have the opportunity to explore the average number of household and non-household contacts elicited during the period of interest, and to examine the results of contact investigations and transmission assessments. The fellow will analyze our surveillance data to examine if there is an increase in household transmission of tuberculosis due to social distancing. Conversely, they will also investigate if there is a decrease in social network/non-household transmission. As part of this project the fellow will perform case review, data cleaning, and analysis.

Additional Projects

Surveillance Evaluation: Evaluating Data Collection and Reporting of Key Variables to CDC

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 the form of a Report of Verified Case of Tuberculosis (RVCT). The data elements in the RVCT form are sent from the BTBC electronic surveillance registry to the CDC nightly, and this information helps inform funding for the program. In 2020, the CDC released a revised version of the RVCT with changes to the
data elements collected, and a new Multidrug Resistant (MDR) TB Supplemental Surveillance Form that incorporates several new required reporting fields. All tuberculosis programs are expected to implement this new form by December, 2022. The fellow will have the opportunity to conduct QA of the new variables to ensure data completeness and accuracy. Their findings will also help inform how we can best train staff in data collection.

**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, measles, and many staff are currently activated to respond to the COVID-19 pandemic.

During the suppression phase of the COVID-19 pandemic in New York City, the fellow will have the opportunity to participate in the response.

**Additional Activities (unrelated to COVID-19)**

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**

Hannah Jordan, MD, MPH

Epidemiologist, Office of Surveillance and Epidemiology
Jyotsna Ramachandran, MPH

City Research Scientist 2, Office of Surveillance and Epidemiology