Infectious Diseases
New York City Department of Health and Mental Hygiene, HIV Epidemiology and Field Services Program
Queens, New York

Assignment Description
The Fellow will be assigned to the HIV Epidemiology and Field Services Program (HEFSP) of the Bureau of
HIV/AIDS Prevention and Control (BHIV). BHIV is one of six Bureaus of the Division of Disease Control. The
goals of HEFSP are to conduct HIV surveillance, perform partner notification and linkage to care services,
and carry out epidemiologic research in order to describe and contribute to a more comprehensive
understanding of the HIV epidemic in NYC. The Fellow’s main assignments will involve assisting in,
developing, and taking the lead on data analyses of HIV/AIDS surveillance data available to HEFSP’s
Surveillance Unit. HEFSP’s Surveillance Unit investigates and reports over 2,500 new HIV diagnoses and
1,500 AIDS diagnoses annually.

The Program’s epidemiology staff is also responsible for investigation of any identified clusters of HIV
infections or HIV cases of special public health interest. Several new surveillance systems are being
implemented to identify recent HIV infections in close to real time and antiretroviral-resistant infections
among the newly infected. The Bureau administers over 200 million dollars of programmatic funding for
HIV prevention, treatment, and other services for HIV-infected persons. The Fellow would join a
committed group of public health professionals working to address this highly preventable, life-
threatening, prevalent infectious disease at the population level through innovative surveillance and
programmatic interventions. The Fellow would specifically concentrate on areas where epidemiologic
analysis can impact the Bureau’s understanding of the state of the epidemic in ways that inform its
programmatic interventions.

Day-to-Day Activities
The Fellow will fully participate in the day to day activities of the Surveillance Unit, which include data
collection, cleaning, quality assurance, analysis, and dissemination. The Fellow will primarily conduct
analyses of HIV Surveillance data and work on data dissemination. Analyses will include descriptive
analyses of outcomes by demographic and other relevant variables, comparisons of these outcomes across
sample years, and inferential analyses of specific research questions. The inferential analyses will involve
developing and testing explanatory models using multivariable statistical techniques. Analyses will be
conducted using SAS and other analytic software.

In addition to assisting in ongoing analyses, the CSTE fellow will develop analysis concepts and take the
lead in implementing analyses. Dissemination activities will include responding to data requests from the
HIV Epidemiology and Field Services Program and other Programs in the Bureau of HIV Prevention and
Control, and from elsewhere in the Department of Health and external sources. In addition to working on
journal-quality articles, the CSTE fellow will develop and produce slide presentations, reports, and fact
sheets, and will participate in oral and poster presentations of data analyses. Other day-to-day activities
would be tailored to the fellow’s interests but could include:
Attending weekly Surveillance Unit meetings
Attending meetings with the Bureau of Sexually Transmitted Disease Control and other disease programs regarding ongoing programmatic collaborations
Participating in monthly surveillance conference calls with New York State regarding issues with surveillance data transfers and data flow
Attending PCSI Data Advisory Committee meetings
Attending DOHMH’s many formal educational opportunities including Epidemiology Grand Rounds, HIV Grand Rounds, research seminars, and trainings
Participating in collaborations with HIV researchers outside the Bureau and outside of DOHMH, including academic public health partners (e.g., Columbia University and Hunter College).

If the fellow has a specific interest in an area of HIV prevention and control, this could also be accommodated (e.g. anti-stigma campaigns; sex harm reduction/condom distribution; needle exchange; prevention in women, people of color or transgender persons, etc.).

**Potential Projects**

**Surveillance Activity**

*Participation in HIV/AIDS Surveillance Activities as Data Analyst*

The New York City (NYC) Department of Health and Mental Hygiene (DOHMH) HIV Epidemiology and Field Services Program (HEFSP) is authorized by the New York State Department of Health to conduct HIV/AIDS surveillance in NYC. The Surveillance Unit is responsible for the investigation and reporting of HIV/AIDS diagnoses as well as the investigation of any identified clusters of HIV infections or HIV cases of special public health interest. As of the end of 2013, there were 117,618 persons who had been diagnosed with HIV/AIDS, reported in NYC, and were presumed to be living. In 2013, 2,832 people were newly diagnosed with HIV in NYC and 1,784 people were diagnosed with AIDS.

Although new HIV and AIDS diagnoses and deaths among people with HIV are declining, NYC continues to have one of the largest HIV epidemics in the United States. The Fellow would be based within the Surveillance Unit of HEFSP, and therefore, their main assignments would involve assisting in, developing, and taking the lead on data analyses of HIV/AIDS surveillance data. Specific surveillance activities could include the following: shadow field staff during medical record abstraction for case investigation, participate in manual review of data matches with NYC HIV Surveillance data, complete data requests using SAS and other analytic software, participate in quality assurance checks for frozen analytic datasets, develop and produce slide presentations and reports, and participate in oral and poster presentations of data analyses.
Surveillance Evaluation of Differences Between eHARS Registry Data and Frozen Analytic Dataset

A major activity of the HEFSP Surveillance Unit is to create a quarterly frozen analytic dataset. This dataset is a cleaned version of registry data from eHARS and incorporates various additional data sources, such as expanded pediatric surveillance data, HIV-2 data, acute HIV investigations, and death surveillance data. Cleaned, analytic versions of core variables are created and appended to this dataset. The Fellow would evaluate the current and potential contributions of these additional data sources by comparing the registry data with the cleaned and expanded analytic dataset. Variables such as HIV transmission risk, transgender status, and diagnostic status could be compared. Additionally, there is a need for ongoing evaluation of the current gender variable in the eHARS registry and incorporation of additional information about transgender status will be needed. The Fellow would evaluate the need for any updates to the registry based on information found in additional surveillance data sources and could create datasets with necessary updates on a regular basis.

Major Project Analysis of Medical Monitoring Project Data

The Medical Monitoring Project (MMP) is a national, ongoing supplemental surveillance study designed to learn more about the experiences and needs of people who are living with HIV. MMP is sponsored by the Centers for Disease Control and Prevention (CDC) and is conducted by 23 local health departments, universities, and other collaborators in the US, including the NYC DOHMH. The project is cross-sectional and is conducted yearly. Face-to-face structured interviews are used to collect information on demographics, health status, behavioral risk factors, and adherence to HIV medication regimens. Additionally, medical record abstraction is used to collect information on prescription of antiretroviral therapy, comorbidities, and health service utilization. As a major project, the Fellow would analyze MMP data in order to examine the effect of self-reported health-seeking behavior on HIV-related clinical indicators, such as CD4 count and HIV viral load. Additionally, the Fellow could match MMP data with NYC HIV surveillance data in order to get a more complete picture of the epidemic and possibly explore unmet needs of people living with HIV.

Additional Project Post-Match Analyses of PCSI Cross-Match Data

The CDC’s National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP) has prioritized program collaboration and service integration (PCSI). Through PCSI, NCHHSTP promotes better collaboration between programs and supports appropriate service integration. From 2010-2013, the NYC DOHMH Division of Disease Control was awarded a PCSI demonstration grant from NCHHSTP. A major goal of PCSI was to improve data sharing across disease programs to better understand co-occurrence and co-infection of disease. In this vein, NYC DOHMH has conducted two cross-matches of disease registries. The most recent match was conducted in 2015 and contains case data for 2000-2013 from the HIV, STD, TB, communicable disease (including viral hepatitis), A1C, and vital statistics registries. As part of fellowship activities, the Fellow would have access to this cross-match dataset for conducting HIV-focused analyses, such as assessing comorbidities among persons with HIV.
Surveillance Evaluation

Refinement of Multiple Imputation Model for NYC

After CDC’s expansion of the AIDS case definition in 1993, there was an increasing trend in the proportion of HIV/AIDS cases reported without categorized risk information. The expansion led to a surge of newly reported cases and a lack of resources for proper follow-up of all reports with missing risk information. Additionally, reliance on laboratory reports for AIDS diagnoses resulted in initial reports with little if any HIV risk factor information, as laboratories generally do not receive patient transmission risk information from the provider ordering the test. More recently the trend has been leveling off and slightly decreasing, although the proportion of new diagnoses with unknown transmission risk still remains around 20%.

Multiple imputation (MI) is a missing data method in which missing values are replaced with values predicted by a regression model. The CDC has used MI to impute missing HIV risk factor information since 2007. The CDC has since encouraged local and state health departments to incorporate MI methods and has developed a SAS program based on national data for performing MI with jurisdiction-level HIV registry data. A previous validation study performed by the proposed mentors suggested that multiple imputation could be a useful method for improving HIV transmission risk classification at the local level. It may be necessary to further refine the model used for multiple imputation, though, as the current model provided by the CDC only results in moderate agreement with risk information confirmed on re-investigation. The Fellow would further explore the use of multiple imputation for routine NYC HIV surveillance activities. This would include a refinement of the regression model used for local purposes, including the addition of NYC-specific variables, and a validation of the updated multiple imputation model.

Preparedness Role

The Fellow would be assigned a role within the NYC DOHMH emergency response structure (the Incident Command System). Past fellows have been activated to work on various emergency situations, such as the Ebola response and outbreaks of Invasive Meningococcal Disease (IMD) and Legionellosis. The Fellow would also attend Point of Dispensing (POD) training, which is regularly offered to agency employees. In the event of a large-scale public health emergency, NYC would open up to 200 PODs which would operate around the clock to dispense medication as needed.

Additional Activities

1. Perform staging analysis:

   The Revised Surveillance Case Definition for HIV Infection released by the CDC in 2014 emphasizes the use of five infection stages for confirmed HIV cases (0, 1, 2, 3, or unknown). Early infection is classified as stage 0 and acquired immunodeficiency syndrome (AIDS) is classified as stage 3. The Fellow could be involved in analyses that aim to describe the stages of people living with HIV (PLWH) in NYC. Laboratory data (CD4s and VLs) would be used to define stages for all PLWH, both at diagnosis and at time of analysis. The demographic and clinical characteristics of PLWH by stage could be analyzed. Additionally, the Fellow could explore ways to capture staging in our standard reporting.
2. **Update Surveillance Standard Slide Sets that are published on the NYC DOHMH website:**

   Each year the Surveillance Unit publishes slide sets that provide information on the epidemiology of HIV and AIDS in NYC. These slide sets contain information about the overall epidemic in NYC as well as among certain subgroups, such as females, men who have sex with men, transgender persons, children, and foreign-born persons. The Fellow could participate in and/or take the lead on reviewing the content included in the standard slide sets, keeping the current epidemic and public interests in mind. They could make recommendations to the analysis team regarding removal or addition of certain figures and topics. If the Fellow has an interest in data visualization, they could update the presentation of data and the standard formatting and colors used in the slide sets in order to align with the Surveillance Unit’s Annual Report and other standard output.

3. **Further explore the categorization of transmission risk among transgender persons:**

   HEFSP is exploring the possibility of disseminating additional information about transgender persons with HIV in NYC. This dissemination would benefit from further research into the categorization of transmission risk among transgender persons so that we can determine proper ways to display the data. The Fellow could take the lead on this research and could provide input during meetings with the analysis team.

4. **Evaluate laboratory reporting completeness:**

   The Fellow could evaluate the completeness of laboratory reporting in the NYC HIV surveillance registry. This could involve comparing electronically received laboratory reports against reports collected via active field surveillance or other data sources.

5. **Participate in outbreak investigations and field investigations, such as the following:**

   a. Investigate identified clusters of HIV infection
   b. Investigate a tuberculosis outbreak with the NYC DOHMH Bureau of TB Control
   c. Investigate a foodborne outbreak with the NYC DOHMH Bureau of Communicable Disease

**Mentors**

**Primary**

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**Secondary**

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