Infectious Diseases

Florida Department of Health, Division of Disease Control and Health Protection

Tallahassee, Florida

Assignment Description

The Fellow will be placed in the Florida Department of Health Central Office in Tallahassee, Florida, within the Bureau of Communicable Diseases, Division of Disease Control and Protection. They will be part of a dedicated team of public health professionals working together in an integrated environment to prevent, control, and protect Florida's citizens from disease and striving to make Florida a healthy place to live and work. The Fellow will work collaboratively on cross-cutting projects that address each of the Bureau of Communicable Diseases service areas including HIV, sexually transmitted diseases (STDs), viral hepatitis and tuberculosis designed to build the Fellow’s epidemiologic competencies while promoting the Bureau’s focus on prevention, surveillance, disease investigation, public education and preparedness.

The Fellow will work closely with the HIV/AIDS section on efforts related to Ending the HIV Epidemic (EHE) in Florida. In February of 2019, the President announced a national plan to end the HIV epidemic in the United States with a five-year goal of reducing new HIV diagnoses by 75 percent and a 10-year goal of reducing new diagnoses by 90%. The plan includes targeting the 48 highest burden counties in the US, two jurisdictions, and seven states with substantial rural HIV burden. Florida is third in the nation for the rate of new HIV diagnose and number one for newly diagnosed cases. Florida has seven of the 48 counties with the highest HIV burden in the United States and plays a substantial role in meeting the national EHE goals. The EHE plan consists of using our resources to diagnose, treat, protect, and respond to HIV transmission. Many of the projects that the fellow will work on will assist the section with making progress on their EHE plan for Florida as well as intersecting with other communicable diseases.

The Fellow will have the opportunity to choose projects that most closely align with their interests and that meet the fellowship competencies. The projects the fellow will work on will provide a broad range of experiences in infectious disease epidemiology, including designing and evaluating communicable disease surveillance systems, participating in disease investigations, and providing recommendations on prevention and response measures based on surveillance data. Mentors will work closely with the Fellow to identify areas where the fellow would most like to grow, which projects and professional development opportunities would most help them reach their goals, and to help build confidence in their abilities as an applied epidemiologist. As the Fellow completes their projects, they will have the opportunity to work with and learn from their mentors as well as other experienced applied epidemiologists and biostatisticians from across the Bureau who will be able to provide analytical and other technical support. They will learn how to analyze, visualize and communicate surveillance data to those who can move data to action to improve the health of communities across the state. There will also be opportunities for the Fellow to explore other topic areas such as health equity, overdose, and maternal and child health through collaborations with other Divisions in the Department.
In addition to the collaborative work within the Department, the Fellow will have the chance to work with community-based organizations, other state communicable disease programs, and with representatives from the CDC. They will be encouraged to participate in CSTE subcommittee workgroups to gain experience on the contributions of states in driving national decisions around communicable disease surveillance. Throughout the fellowship the Fellow will have opportunities to share their work through presentations within the Department and for community partners, as well as at state and national professional meetings. The Fellow will also be encouraged to submit their work for publication in peer reviewed journals.

**Day-to-Day Activities**

The Fellow’s day to day activities will vary throughout the fellowship based on the projects the fellow is working on. When the Fellow first arrives, much of their day to day activities will consist of acclimating themselves to the data systems they will be using for their projects and meeting the staff throughout the Bureau that they will be collaborating with. Early in the fellowship the Fellow will have more regular meetings with mentors and other staff to ensure they have the support and direction to get started on their projects. Once the Fellow has adapted and is familiar with data systems, staff, and the direction of their projects, they will work more independently throughout their day. The Fellow will have regular meetings with mentors to ensure they are making progress on their projects, meeting their competencies, and feel they are progressing toward the goals they set for themselves at the start of the fellowship.

**Potential Projects**

**Surveillance Activity**  **Assessing the Syndemics Of Hepatitis, HIV, And Overdose in Florida**

The opioid crisis in the United States is a public health emergency with drug overdose being the leading cause of death among people under the age of 50. Increases in injection drug use are driving rates of hepatitis B and C, and HIV to increase exponentially, with new hepatitis C cases increasing 165 percent from 2014 and 2018. HIV diagnoses with injection drug use associated risk exposure also increased 10 percent during this timeframe. To address these intertwined epidemics, information is needed to further understand the problem in Florida. This project will include analyzing Florida Emergency Management Systems (EMS) data on EMS responses to overdose calls from the National Collaborative for Bio-Preparedness Biospatial tool to identify areas in Florida experiencing high rates of overdose that would benefit from HIV and hepatitis testing and outreach events. The project would also include linking and analyzing additional data systems to assess the intersection of the hepatitis, HIV, and overdose epidemics, such as emergency department, hospital discharge, vital statistics, and disease specific surveillance systems, as well as producing maps and other data communication tools to describe the syndemics in Florida. These analyses could be used to develop a metric to measure the burden of injection drug use across the state as well as estimate the size of the population that would benefit from harm reduction and other services provided through syringe exchange programs. Depending on the fellow’s interest, the project could be expanded to include the development of an emergency response plan and could serve as a major project or a surveillance activity.
Surveillance Evaluation  

Automated Algorithm to Process Electronically-Reported Reactive Non-Treponemal Tests for Syphilis

Non-treponemal tests are blood tests used for the diagnosis of syphilis infection. Florida processes approximately 50,000 reactive non-treponemal tests each year for roughly 7,000 reported syphilis cases. This means that local program staff work around 7-8 reactive non-treponemal tests for every case that is eventually reported. Serofasting and biological false positive individuals create a considerable amount of the inefficiency. A theoretical model developed by CDC and FDOH showed that the inefficiency could be programmed out through the surveillance system in many ways and could effectively reduce the gap to around 3 reactive non-treponemal tests for every reported case of syphilis. FDOH is in the process of implementing this algorithm and a validation of the process. For this project, the surveillance system will be evaluated for accuracy, timeliness, reduction in workload, and acceptability.

Major Project  

Responding to And Preventing Rapidly Growing Molecular HIV Transmission Clusters

Molecular HIV surveillance (MHS) uses the genetic sequences obtained through genotype testing of individuals living with HIV to monitor the amount of HIV in the population that is resistant to HIV medication and to identify recent and rapid HIV transmission. Because HIV has a high mutation rate and the genetic sequence of the virus changes quickly over time, these sequences can be compared to identify clusters of individuals with genetically similar viruses. Latest findings indicate among 60 molecular HIV clusters in the United States, the transmission rate was 11 times as high as the national rate of HIV transmission, with a disproportionate number of HIV diagnoses among men who have sex with men. As of October 1, 2018, there are currently six rapidly growing HIV molecular clusters in Florida with at least five genetically linked HIV diagnoses within the past twelve months. MHS data are linked with other surveillance system data to identify broader HIV risk networks of individuals living with HIV and those who are at risk of HIV infection.

The HIV/AIDS section has developed a two-tiered response plan to facilitate cluster investigation and response at the individual and community levels to interrupt HIV transmission through these rapidly growing clusters. This includes: re-interviewing individuals identified within a rapidly growing cluster who are out of care or not virally suppressed; linking individuals living with HIV to care; obtaining samples for genotype testing on individuals living with HIV that do not already have a genotype; offering HIV testing to individuals in the risk network whose HIV status is unknown and pre-exposure prophylaxis (PrEP) to those who are HIV negative, and using social networking strategies. For this project, data collected through cluster investigations will be analyzed and used to improve the MHS system and cluster response. The fellow will also conduct social network analysis on the rapidly growing molecular HIV risk networks. Depending on the fellow’s interest, this could also serve as a major project or a surveillance system evaluation.

Surveillance Activity  

Evaluation of The HIV And Hepatitis of Laboratories Participating in Electronic Lab Reporting for Disease Surveillance

HIV genotype testing is a part of routine care for people living with HIV (PLWH) and should be one of the tests ordered within the first three months following an HIV diagnosis. Reported sequences are used for molecular HIV surveillance to identify recent and rapid HIV transmission as well as monitor HIV drug resistance within the population. In 2017, only 55% of new HIV diagnoses had a HIV nucleotide sequence test reported for surveillance purposes. It is possible for PLWH not to have HIV nucleotide
sequence available if they did not enter HIV care, if they entered HIV care but drug resistance testing was not ordered by their physician, or if they entered care and had a genotype ordered for drug resistance testing but the sequence was not provided for surveillance. HIV surveillance is currently conducting a lab survey of all Clinical Laboratory Improvement Amendments (CLIA) certified labs that participate in electronic lab reporting to better understand why a genotype is unavailable for the other 45% of new HIV diagnoses. This project will analyze data from the lab survey to evaluate reporting of HIV molecular sequences and identify ways to improve reporting timeliness and completeness. This project could also serve as a surveillance evaluation.

**Major Project  Protecting Moms and Babies: Assessing Sentinel Events to Reduce Congenital Syphilis and Perinatally Acquired HIV**

Women of childbearing age living with HIV often have poor health outcomes and maintain the lowest rate of viral suppression compared to other demographic groups. Furthermore, this population has also experienced increases in sexually transmitted infections (STIs), resulting in a rise in congenital syphilis across Florida. There is a need to assess surveillance data to identify missed opportunities and barriers to care and treatment for HIV and STIs among women of childbearing age. For this project, the Fellow will collect, analyze and evaluate data from multiple systems to assess whether the current HIV and STI testing law for pregnant women that requires testing during the first and third trimester and at labor delivery is being adhered to by providers. The Fellow will be responsible for determining what led to these sentinel events and will participate in congenital syphilis and HIV fetal and infant mortality and morbidity reviews. The Fellow will also assess the accuracy and completeness of reported data and will then assist in making recommendations to providers and facilities to mitigate future congenital or perinatally acquired diagnoses in infants. Depending on the fellow's interest this could serve as a major project or a surveillance activity.

**Preparedness Role**

The Secondary Mentor as State Epidemiologists and others in the Division of Disease Control and Health Protection and the Bureau of Communicable Diseases work closely with the Department’s disaster and bioterrorism preparedness team. Division staff have been involved in the epidemiological and environmental health response to the more than 8 hurricanes and tropical storms that have struck Florida since August 2004, including two in 2012 and most recently Hurricane Michael in 2018. Division staff have also been involved in the planning of surveillance efforts associated with the 2005 and 2009 Superbowl and the 2012 Republican National Convention. Significant infectious disease outbreaks such as the fungal meningitis outbreak in 2012-2013, the Martin County local dengue response in 2013 and the Ebola response in 2014 were also managed using the Incident Command System (ICS) with emergency management experts. The Bureau of Epidemiology staff are represented on teams that are standardizing the department’s syndromic surveillance efforts, developing protocols for collaborative investigations with the FBI and other law enforcement entities, developing our BIOWATCH response plan, the epidemiology and biological incident response sections of the state’s Comprehensive Emergency Management Plan, and the zoonotic portions of the state’s biologic plan. The Fellow will have a myriad of opportunities to participate in the development and review of preparedness response plans and policy.

The Fellow will complete the Incident Command System Training that all FDOH employees complete upon hire and would have the opportunity to volunteer to participate in an incident command structure
if one is implemented to respond to an event during their fellowship. The Department deploys staff with various skill sets to support preparedness and response efforts, and if an event does take place while the Fellow is here and they have the necessary skills required for deployment, they would have the opportunity to deploy to areas impacted by an event. In addition, there are also opportunities for the Fellow to complete public health preparedness projects such as an analysis of access to ADAP HIV medications after a large storm, the development of a protocol for injection drug use related outbreaks, and other analyses on the effectiveness of hurricane preparedness and response.

**Additional Activities**

- Developing and updating factsheets, reports, and other communication materials for diseases within the Bureau
- Updating the Monthly Communicable Diseases Surveillance Report and assisting in the facilitation of the monthly Communicable Diseases Surveillance Meeting
- Designing and developing SAS programs for automation of surveillance reports and other projects
- Conducting ArcGIS mapping of communicable diseases
- Participating in medical abstractions for HIV fetal infant mortality and morbidity review and perinatal HIV exposure reporting
- Participating in and presenting at community advisory groups and prevention and patient care planning meetings
- Based on the fellow’s interests there are opportunities to collaborate on other HIV Projects related to HIV stigma, patient care, and prevention and partnerships are in place for the Fellow to evaluate other data systems
- Support can be provided in addition to professional development funding for travel to present at state and national professional meetings as well as relevant professional development trainings

**Mentors**

**Primary**

Emma Spencer PhD, MPH  
HIV and Hepatitis Surveillance Program Manager

**Secondary**

Carina Blackmore DVM, PhD, Dip. ACVPM  
State Epidemiologist and Director of the Division of Disease Control and Health Protection