

## **Infectious Diseases, Non-Infectious Diseases (Cross-Cutting)**

### **Florida Department of Health, Division of Disease Control and Health Protection, Bureau of Epidemiology**

Tallahassee, Florida

#### **Assignment Description**

The Fellow will be assigned to work collaboratively with the Infectious Disease Prevention and Investigation Section and Surveillance Systems Section, as described prior. Together, these teams are responsible for coordinating the state response to most high profile infectious disease investigations. Additionally, the fellow will be among the first in line to be deployed to assist with local investigations along with subject matter experts or to be included in state teams that are assembled to plan response to future emerging disease threats.

Recent investigations or surveillance projects the team has been involved with include: measles outbreaks, meningococcal disease outbreaks, local Zika and dengue outbreaks, tattoo associated mycobacterium infections, multi-state small turtle associated salmonellosis, transfusion associated brucellosis, Clostridium difficile in nursing homes, Naegleria fowleri infection, outbreaks due to fungal or bacterial contamination in steroid medication, transplant acquired toxoplasmosis, brucellosis in feral swine hunters, human rabies, Hansen's disease in people and armadillos, Florida acquired Cryptococcus gattii infection, zoonotic hookworm infections, pertussis outbreaks, laboratory exposures to Brucella and Burkholderia pseudomallei and other select agents, and Shiga toxin producing E. coli and cryptosporidiosis associated in calf owners.

The programs have access to large databases including: Florida's Reportable Disease Database, "Merlin" and the Environmental Health Database that contains FWDP outbreak and complaint data and animal arboviral sentinel surveillance data. Programs also have access to statewide syndromic surveillance data, hospital and emergency room discharge data and vital statistics data.

The Fellow will be involved in all phases of investigations including: the initial complaint investigations, implementing control measures, the design of questionnaire, data collection, analysis, and report writing. Many outbreak investigations require the participation of multi-disciplinary teams. The ZVD, FWD, HAI and Acute Disease Investigation programs work closely with county epidemiologists and environmental health staff. Additionally, the FWD, HAI and ZVPD programs work closely with state agencies such as: the Department of Business and Professional Regulation, the Department of Agriculture and Consumer Services and the Fish and Wildlife Conservation Commission, as well as federal agencies like FDA, CDC, CMS and USDA.

### **Day-to-Day Activities**

The Fellow will be involved in many aspects of the Acute Disease Investigations Unit, ZVDP, FWDP, HAIP, and surveillance systems activities. Day to day duties will include: working with partners on case investigations and outbreaks of communicable, zoonotic, healthcare acquired and food and waterborne diseases, serve as a consultant for county health departments on questions regarding prevention and control of these diseases, data analysis, report and manuscript writing, web site development and web postings. The fellow will conduct epidemiologic studies on a variety of infectious diseases. The Fellow will also have opportunities to respond to emerging diseases and participate in field investigations, develop and present training programs, and participate in the process of developing guidelines, preparedness response protocols, policies and legislation on infectious disease surveillance and control related issues.

## **Potential Projects**

### **Surveillance      Zika Virus Infection Detection Using Emergency Department Data in ESSENCE-FL Activity**

The Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE-FL) generates county-specific, Visits of Interest emails for designated county users. These VOI emails, which are sent 365 days per year, alert the local-level epidemiologists to emergency department patients who may have a reportable disease. This alerting system has proved valuable and has helped to identify 15 Zika cases that were not reported by traditional methods. The proposed evaluation of this alerting surveillance system would include a review of mosquito-borne illness detection queries and the resources necessary for county-level and state-level follow up. As a result, of this evaluation, the fellow would conduct a cost-benefit analysis and propose changes to the present work flow.

### **Surveillance      Evaluation of Risk Factor Data for High Priority Infectious Diseases In STD and HIV Evaluation      Surveillance Databases**

Determine the utility of comparing data from reportable disease cases in Merlin to STD and HIV databases to identify additional risk factor information to supplement info captured during routine case investigation for high priority disease transmitted from person-to-person, such as meningococcal disease, pertussis, Shigella, and Hepatitis A. There is some evidence that routine investigations do not capture information on intimate close contacts, particularly among persons with high risk sexual practices, as effectively as STD and HIV interviews, and these contacts are a priority for outreach to stop disease transmission. In the past few years, multiple high priority outbreaks have occurred among men who have sex with men and Florida is looking to improve our use of data that could help define the transmission network of these diseases.

### **Major Project      Outbreak Surveillance and Response Assessment**

The Bureau has recently began documenting outbreak investigations that occur across FL 67 counties. The system used was developed in house and provides customization to meet the needs of the agency. A detailed assessment of the available information is needed to understand the characteristics of outbreaks that are currently documented. Additionally, The Bureau would like to develop and pilot syndrome/agent specific questionnaires about the interventions conducted by the County staff. The fellow will analyze outbreak reporting data, make recommendations to improve the system, and develop and pilot outbreak specific intervention documentation.

### **Major Project    Utilization of Viral Sequence Data to Guide Cluster Investigations in the Field**

Contribute to the development and implementation of procedures to investigate rapidly expanding molecular clusters of HIV infection. Recently, CDC has made available a system to analyze HIV sequence data routinely collected during antiviral resistance testing to detect clusters of persons with very closely related HIV, potentially signifying recent transmission. When these clusters are rapidly expanding, the persons in the cluster may have significantly more potential to transmit disease within their risk network. This potentially provides a unique opportunity to target interventions to persons related to the rapidly growing clusters. This is a new paradigm of thinking in HIV prevention and investigation. A multidisciplinary team, including the fellows primary supervisor and a former CSTE fellow, has been assembled to address this challenge over the coming years.

### **Additional        Develop an ArcGIS Online System to Simplify Mapping Diseases Project**

Create an ArcGIS project and ArcGIS online platform to provide dynamic mapping capacity of reportable disease data at varying geographic levels to be available for all DOH staff to visualize the distribution of diseases throughout Florida without formal training in ArcGIS.

### **Preparedness Role**

The FWDP, ZVDP and Acute Disease Investigations Unit work closely with the Department's disaster and bioterrorism preparedness team. Program staff has been involved in the epidemiological and environmental health response to the more than 9 hurricanes and tropical storms that have struck Florida since August 2004 including two in 2016-2017, and 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 and the Dade County local Zika response in 2016 were also managed using the Incident Command System (ICS) with emergency management experts. The programs 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 several opportunities to participate in the development and review of preparedness response plans and policy.

**Additional Activities**

- Outbreak Investigation and Response.
- High Priority Case Investigation.
- Surveillance System Design.
- Providing Recommendations to Prevent and Control Emerging Diseases.
- Creating Education Materials for Healthcare Professionals and the Public.

<b><u>Mentors</u></b>	
<b>Primary</b>	Scott Pritchard MPH Acute Disease Investigations Unit, Biological Administrator II
<b>Secondary</b>	David Atrubin MPH Statewide Syndromic Surveillance Manager
<b>Tertiary</b>	Danielle Stanek DVM Medical Epidemiologist