

Infectious Diseases/ Environmental Health

Assignment Description

The Fellow will work closely with the Florida Department of Health's Zoonotic and Vectorborne Disease Program (ZVDP), the Food and Waterborne Disease Program (FWDP), the Healthcare- Associated Infections Program (HAIP) personnel, and the Acute Disease Investigations Unit.

Recent investigations or surveillance projects the team has been involved with include: local dengue outbreaks, 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, measles, 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, 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 nurse 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 all aspects of the ZVDP, FWDP and HAIP activities and will also work regularly with the Acute Disease Investigations Unit. Day to day duties will include: CDC case report form reviews, answering calls from the public, working with partners on case investigations and outbreaks of 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 also have opportunities to participate in field investigations, develop and present training programs, and participate in the process of developing guidelines, preparedness response protocols, policies and legislation on zoonotic, health care acquired and food and waterborne disease surveillance and control related issues.

Potential Projects

A Fellow working with the ZVDP, FWDP and HAIP will have the opportunity to work on a variety of projects depending on his or her interests including:

Data Analysis:

A. A study of diagnostic and research laboratorian knowledge, attitude and practices (KAP) toward CDC and USDA Select Agent handling and reporting in Florida. The Laboratory Reporting Network (LRN) requires immediate reporting of suspect select agents such as *Brucella* and *Bacillus anthracis*, as well as institution of enhanced precautions to prevent exposure of laboratorians to these agents. However, every year 30 or more Florida laboratorians are potentially exposed to these pathogens and require antibiotic prophylaxis and serologic monitoring, and there are sometimes delays in notifiable disease reporting or submitting specimens for confirmatory testing. Results of the survey will be used to develop tools to help reduce future laboratory exposures and to decrease reporting time.

B. An analysis of the trends of selected food and waterborne diseases in the state. The FWDP has more than 10 years of electronically captured data on food and waterborne case investigations and outbreaks. Diseases of particular interest in Florida include: *Vibrio vulnificus*, *Vibrio parahaemolyticus*, *Campylobacter*, *Cryptosporidium*, *Cyclospora*, *Ciguatera*, and *Salmonella*, among others. A significant number of *Salmonella* cases type out with serovars commonly associated with reptiles or amphibians. Analysis of reptile and other animal-associated *Salmonella* infections is of particular interest.

C. Determine the impact of an antibiotic stewardship initiative for nursing homes addressing asymptomatic bacteriuria on the incidence of *Clostridium difficile* infections. The Department is currently working with a nursing home system that has eleven nursing homes in Florida to reduce antibiotic use for residents who do not meet the criteria for urinary tract infections. This pilot project includes educating staff on the appropriate signs and symptoms of a urinary tract infection, educating providers on current national guidelines for treating urinary tract infections, and collecting data on symptoms, urinalysis results, and antibiotic use. The healthcare-associated infection prevention program multi-disciplinary advisory board has suggested this retrospective analysis to determine the potential impact of this antibiotic stewardship initiative on *C. difficile* infections.

D. *Cryptococcus gattii* case identification. Sporadic *C. gattii* meningitis in immunocompetent people and animals are now being recognized outside the Pacific Northwest. A human case was recently identified in Florida. Project would involve using vital statistics death data to identify fatal *Cryptococcus* infections in immunocompetent individuals. A query will also be sent to large commercial human and veterinary laboratories to determine whether *C. gattii* specific testing is routinely being conducted on Florida samples.

E. Analysis of syndromic surveillance admission and discharge data for imported and local dengue cases in 2012 and 2013. In 2012, Florida experienced the highest number of imported dengue cases on record and in 2013, the second largest outbreak of local dengue occurred in recent years. Assessment would be conducted with the Arbovirus Surveillance Coordinator and local county health departments. Data would be used to try to develop useful queries to more rapidly identify dengue cases in order to provide faster case confirmation and response.

F. Analysis to determine how major events such as the Influenza A H1N1 pandemic, the fungal meningitis outbreak, and 9/11 have impacts on reporting of unrelated complaints and outbreaks during the same time frame. Are food and waterborne complaints and outbreaks still occurring at normal levels or do people stop reporting due to major incidents?

G. More than 2,000 animals are tested for rabies annually free of charge at Department BPHL due to exposure of humans or domestic animals. Pets involved in bite incidents can also be quarantined and monitored for rabies illness. Public health recommendation for human rabies post-exposure prophylaxis (PEP) treatment is also reportable in Florida and approximately 2,100 Florida residents are recommended rabies PEP annually. The cost for providing rabies PEP is estimated to be greater than \$3,000 for an average-sized adult. For this project the fellow would compare the costs associated with animal testing and quarantine to the costs associated with administering rabies PEP. Reportable disease and emergency room discharge data will be used. Results will be included in a white paper about the benefits of health insurance coverage for animal control activities.

Surveillance System Evaluation:

A. The Fellow will evaluate the Department's surveillance system for Salmonella. Florida Department of Health investigates more than 5,900 cases of salmonellosis each year and Florida is one of the states with the highest case counts and incident rates of salmonellosis in the country. Only about 20% of all isolates are currently serotyped and tested by pulse-field gel electrophoresis (PFGE), two tests used to detect common source sporadic outbreaks. The Department has recently allocated additional resources towards laboratory testing and is in the process of developing molecular serotyping capability. The fellow will evaluate whether PFGE testing and molecular subtyping of a larger number of isolates will improve the timeliness and sensitivity of outbreak detection.

B. Validate data that are reported into the NHSN and subsequently used by the CMS for public reporting. The CDC is developing data validation toolkits for states to use to validate NHSN data that are publicly reported by CMS. An analysis and summary of accuracy, common errors, and opportunities for improvement of reported data would provide the insight needed to train healthcare facilities on how to improve the quality of their data and ensure the quality of data that are publically reported for Florida.

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 7 hurricanes and tropical storms that have struck Florida since August 2004 including two in 2012, 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 Martin County local dengue response in 2013 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 BLOWATCH 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.

As part of the preparedness effort, the department, led by the Bureau of Epidemiology, convened a workgroup to develop an initial set of measures of epidemiologic effectiveness. This broad-based work group identified 14 indicators. In addition, DOH is obligated to collect data and report on about 10 performance metrics related to the epidemiologic components of public health emergency response. The Fellow would work with the PHP Program Manager and epidemiologists in the Division of Disease Control and Health Protection to develop and field test operational protocols for measures related to timeliness and completeness of reporting, notification, response, and intervention in urgent infectious and other acute disease emergencies, including those that are food-, water- or vector-borne.

Assignment Location: Florida Department of Health
Tallahassee, Florida

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