Assignment Description

The fellow will be a part of the Epidemiology and Research Office at PRDH and the Epidemiology Team at the CDC Dengue Branch. The PRDH Epidemiology and Research Office includes 10 epidemiologists assigned to 6 health regions around the island and they serve as a resource for collaboration and local investigations. Frequent opportunities to lead public health responses through more than 50 food borne, water borne and communicable diseases investigated by the Epidemiology and Research Office annually. Collaboration with Virgin Islands Territorial Epidemiologist provides opportunity to lead outbreak investigations in USVI as well. The Epidemiology and Research Office leads over 30 outbreak investigations and/or special needs projects each year such Varicella and RSV among health care workers, Ciguatera poisoning and Tuberculosis in cruise ship employees.

The mission of CDC Dengue Branched is to develop, implement and evaluate strategies to reduce dengue morbidity and mortality. We carry out research-minded outbreak investigations throughout Puerto Rico and the world. The Dengue Branch has long-term research and surveillance projects in Puerto Rico and abroad and our work includes high-profile investigations of high-impact illnesses. As a CSTE fellow at CDC Dengue Branch you will have the opportunity to learn about all aspects of dengue (epidemiological, clinical, diagnostics, entomology, and prevention). In addition to working closely with PRDH, the CSTE fellow will receive strong mentoring from recognized international experts in dengue.

Strong Spanish skills are desired but not required. Fellows with strong people skills will fare best in this position.

Day-to-Day Activities

The fellow can expect to work in an engaging and dynamic workplace environment. The fellow will work in a team environment from the beginning to the end of a project including: designing studies, writing protocols, collaborating with local epidemiologists, gathering primary data in outbreak investigations or planned field studies, analyzing data, and presenting work in oral and written formats. There is a balance of office work and field work with 10-20% travel throughout Puerto Rico.
Potential Projects

**Surveillance Activity**
Repeat serosurvey in southern Puerto Rico to look at risk factors for Zika incidence and the impact of gravid mosquito-cidal trap intervention

Since 2012, four communities in two municipalities in southern Puerto Rico, Salinas and Guayama, have participated in an ongoing field trial of AGO traps to control *Ae. aegypti* mosquitoes. Two intervention communities used three AGO traps per home for vector control whereas the other two, nonintervention communities, used only surveillance traps to monitor mosquito population densities. A recent study showed that Chikungunya incidence was lower in the AGO intervention communities compared to incidence in the non-intervention communities. We want to evaluate if the AGO trap intervention had an effect on Zika incidence during the ongoing/recent Zika outbreak.

**Surveillance Evaluation**
Evaluation of Zika-related Surveillance System

Since 2012, four communities in two municipalities in southern Puerto Rico, Salinas and Guayama, have participated in an ongoing field trial of AGO traps to control *Ae. aegypti* mosquitoes. Two intervention communities used three AGO traps per home for vector control whereas the other two, nonintervention communities, used only surveillance traps to monitor mosquito population densities. A recent study showed that Chikungunya incidence was lower in the AGO intervention communities compared to incidence in the non-intervention communities. We want to evaluate if the AGO trap intervention had an effect on Zika incidence during the ongoing/recent Zika outbreak.

**Major Project**
Assessment of the promotion, adoption and barriers to the routine administration of Human Papilloma Virus (HPV) vaccine among girls and boys in Puerto Rico.

Data has shown slow uptake of the Human Papilloma Virus (HPV) vaccine among girls and boys in Puerto Rico. A project to evaluate the promotion, adoption, and barriers to administration of the HPV vaccine could be very beneficial to the public's health in Puerto Rico.

**Major Project**
Initiation of a prospective evaluation of the dengue rapid diagnostic tests in the SEDSS site

The Sentinel Enhanced Dengue Surveillance System is a surveillance platform that allows CDC to carry out a variety of research or evaluation projects. This project would require writing a protocol, getting IRB approval and beginning a prospective evaluation of dengue rapid diagnostic tests. The findings of this project could have a significant worldwide impact.
**Surveillance Activity**

In 2010, the estimated incidence of HIV infection in the San Juan Metropolitan area was 34/100,000, among the highest rates in the US. Surveillance data from persons living with HIV to evaluate co-infection rates (e.g. hepatitis C and/or tuberculosis) and adherence to treatment for improved outcomes is needed.

**Preparedness Role**

Due to its geographical location in the Caribbean, weather patterns and position as a popular tourist destination, Puerto Rico is susceptible to various types of natural disasters and epidemics such as earthquakes, hurricanes, and novel disease epidemics/pandemics. During an incident that impacts or places strain on the public health systems and clinical services in Puerto Rico, the Department of Health Secretariat and the Emergency Management Agency (PREMA) can activate the Emergency Support Function #8 (Public Health and Medical Services). Under the ESF# 8 the State and Department of Health Incident Management Structure is activated within this structure epidemiologists can play important roles within the Planning and Operations sections.

With basic Incident Command System training (which the PRDH can provide or be taken as Independent study courses online), the CSTE Applied Epidemiology Fellow can play a role in both emergency preparedness and emergency response activities.

**Emergency Preparedness activities could include:**

- Provide Surveillance/Epidemiology subject matter expertise (SME) for the development of a Concept of Operations of an emerging infectious disease; including the layout of protocols for disease notification, quarantine/isolation measures and contact tracing.
- Provide awareness level training/seminars for first responders
- Evaluate surveillance systems in order to identify areas that can be improved in preparation for an epidemic or pandemic event.

**Emergency Response activities could include:**

- Provide data analysis support for surveillance systems due to an increase of disease case counts during an epidemic or pandemic event.
- Lead/assist in outbreak investigation among responders during a mass fatality event (due to the mishandling of cadavers).
- Lead/assist in outbreak investigation among shelter populations
- Participate in the development of a disease surveillance system for an emerging infectious disease.

**Additional Activities**
Recent Epi Aids in Puerto Rico: Infection Control Practices and Multidrug-Resistant Acinetobacter baumannii Outbreak in a Hospital Puerto Rico, 2013; Contact Investigation of Melioidosis Cases Reveals Regional Endemicity Puerto Rico, 2010 and 2012; Reasons for Low Influenza Vaccination Coverage Among Adults in Puerto Rico, Influenza Season, 2013-2014

**Mentors**

**Primary**
Stephen Waterman, MD, MPH
Dengue Branch Chief

**Secondary**
Brenda Rivera-Garcia, DVM, MPH
Territorial Epidemiologist