

## **Infectious Diseases**

**Santa Clara County Public Health Department – Infectious Disease and Response Branch**  
San Jose, California

### **Assignment Description**

The CSTE fellow will be placed in the Infectious Disease & Response branch at SCCPHD. The IDR branch is responsible for reducing the risk and disease burdens of a wide range of communicable diseases for all county residents. Its programmatic areas include Communicable Diseases (including vector-borne, foodborne, and vaccine-preventable diseases), TB, STD/HIV, public health emergency preparedness, and the public health laboratory. Core activities across these areas include disease surveillance and investigation, implementation of disease prevention and control measures, and development of policies. Programs also provide education, training, and technical assistance to the community.

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

The fellow will initiate and attend meetings; collaborate with coworkers and partners; attend trainings and workshops; collect, clean, and analyze data; write up projects as manuscripts, posters, or presentations; participate in outbreak investigations; and participate in workgroups.

### **Potential Projects**

#### **Surveillance Activity      Data quality assurance of disease reporting through the California Reportable Disease Information Exchange (CalREDIE)**

CalREDIE is a web-based surveillance system housed at the California Department of Public Health (CDPH) that receives infectious disease reports electronically from providers and laboratories. This system is widely utilized in some capacity by all 61 local health departments (LHD) in California, and 58 LHDs, including SCCPHD, use the system for surveillance of all notifiable diseases. However, instances of delays and missing electronic laboratory test reports have been identified through previous data validation projects by the SCCPHD. A daily monitoring of electronic reports at local level is essential to ensure that notifiable diseases are reported accurately and in a timely manner. The CSTE fellow will work closely with the SCCPHD's surveillance officer to assess timeliness, completeness, and accuracy of disease reports that are received through CalREDIE. The fellow will report to the state's surveillance team regarding any identified issues, help analyze and determine root causes, and resolve them. The fellow will also assist with SCCPHD's onboarding of the CalREDIE Electronic Case Reporting (CalREDIE eCR) module, a new module that will facilitate case reporting from health care providers and organizations by automatically generating and transmitting case reports from Electronic Health Records (EHRs) to CalREDIE. The CSTE fellow will assist with data quality assessment of CalREDIE eCR during onboarding phase and help develop a local quality assurance procedure. eCR is currently in the pilot phase and is anticipated to begin rollout in mid-2019.

**Surveillance Evaluation**      **Evaluation of carbapenem-resistant enterobacteriaceae (CRE) surveillance**

Carbapenem-resistant Enterobacteriaceae (CRE) are bacteria of the Enterobacteriaceae family that are resistant to the carbapenem class of antibiotics. Infections caused by CRE can be very difficult to treat, and mortality rates for invasive CRE infections are as high as 50%. CRE are highly transmissible in healthcare settings, and infected and colonized patients or residents can serve as sources of transmission. In California, only a suspected or confirmed CRE outbreak in a healthcare facility is currently reportable, but there are plans to make CRE reportable in California. SCCPHD is planning to make CRE reportable in 2019 for Santa Clara County and establish a local surveillance system prior to California as a whole. Using CDC surveillance evaluation guidelines, the fellow will engage with stakeholders including hospitals and laboratories to assess the simplicity, flexibility, quality, acceptability, sensitivity, predictive value positive, representativeness, timeliness, and stability of this new surveillance system and develop a final report with recommendations for system improvements.

**Major Project**      **Chronic hepatitis C care continuum**

In 2017, 1,700 Santa Clara County residents, or 87.4 per 100,000 people, were newly diagnosed with chronic hepatitis C (HCV). Males, people 55 years of age and older, and whites had the highest rates of HCV. Little is known, however, about engagement and retention in care of people diagnosed with HCV in SCC. Understanding the cascade of care will inform targeted interventions for improving case finding, referral, treatment uptake, and retention in care. The fellow will extract demographic and laboratory testing data from CalRDIE for Santa Clara County residents newly reported with HCV diagnosis since 2012, the year when CalREDIE was fully implemented at SCCPHD. The fellow will describe the characteristics of case patients and determine indicators for the care continuum that include the number of case patients who tested positive for HCV Ab, had HCV RNA testing ordered, are viremic (RNA positive), and have sustained virological response (SVR). The fellow will describe the disparities in care continuum indicators by sex, age, race/ethnicity, and geographic areas, and will conduct trend analyses to examine changes over time.

**Additional Project**      **Congenital syphilis prevention evaluation**

In February 2018, preliminary results showed that Santa Clara County was above the "high morbidity" threshold of 5 cases of primary and secondary syphilis per 100,000 women of childbearing age; this was accompanied by an increase in congenital syphilis cases. The STD Controller presented these data to multiple hospitals in the county along with a local recommendation to comply with American College of Obstetrics and Gynecology guidelines to begin screening all pregnant women both in the first trimester and again in the third trimester. It is anticipated that a statewide recommendation to do so will be issued in early 2019. The CSTE fellow will work with hospital data to assess the uptake of this new guidance by evaluating the frequency of syphilis screening in the first trimester, third trimester, and delivery and, if possible, calculate the estimated number of congenital syphilis cases averted by this change in guidance.

**Additional Project      Assessment of civil surgeon reports of tuberculosis during the first year of implementation of new technical instructions**

Santa Clara County has the third highest case rate of tuberculosis (TB) disease among all California jurisdictions. In SCC, 95% of patients with TB disease were born outside the U.S. with an estimated 90% of cases resulting from progression of longstanding latent TB infection (LTBI). Treatment of LTBI can decrease the risk of developing TB disease by >90%. As of October 1, 2018, U.S. civil surgeons are required to report all individuals diagnosed with LTBI in the U.S. as part of medical screening to apply for permanent resident status. The SCCPHD TB program uses an in-house system to track reports of people with LTBI and outcomes of LTBI treatment initiation and completion. The fellow will describe overall LTBI treatment initiation and completion rates among all reports, study differences in outcomes by reporting physician type (civil surgeon, primary care provider, or TB clinic), assess reasons for non-initiation or non-completion of treatment, and investigate reporting compliance.

**Preparedness Role**

There are many opportunities for the fellow to be part of emergency preparedness activities. The fellow may contribute to the development of after action reports and improvement planning for infectious disease incidents and exercises, serve as an exercise evaluator, and collaborate on planning, scheduling, and outreach for a two-day Epi-Ready Team Training on foodborne outbreak investigations provided by the National Environmental Health Association. The fellow can also assist epidemiologists develop a surge plan for epidemiological investigation and response efforts during public health emergencies. If needed, the fellow may collaborate on the revision/development of infectious disease preparedness plans.

**Additional Activities**

The fellow will have the opportunity to participate in the many outbreaks that SCCPHD investigates every year, one or more of which could lead to a major or minor project.

**Mentors**

**Primary**                    George Han MD, MPH  
Deputy Health Officer and Infectious Disease & Response Branch Director

**Secondary**                Wen Lin MD, PhD, MSc  
Senior Epidemiologist