

ID: 57584774

Infectious Diseases, Chronic Disease - Host Site Description

Santa Clara County Department of Public Health

Assignment Location: San Jose, US-CA
Santa Clara County Department of Public Health
Science Branch

Primary Mentor: Aracely Tamayo, MSW MPH PhD
Director of Epidemiology and Surveillance, Science Branch
County of Santa Clara Public Health Department (SCCPH)

Secondary Mentor: Wayne Enanoria, MPH PhD
Director, Science Branch
County of Santa Clara Public Health Department (SCCPH)

Work Environment

Hybrid

Assignment Description

The fellow will be placed within the Science, Epidemiology, Informatics, & Improvement Branch (referred to as the Science Branch) located in San Jose, CA. The Science Branch is considered foundational for the SCC Public Health Department and anchors public health programs and policies in evidence for effectiveness. The science branch consists of four primary teams: Epidemiology and Surveillance; Public Health Informatics; Statistical Modeling and Demography; and Research and Evaluation including Quality Improvement. We currently have 30+ staff in the Science Branch with a large team of epidemiologists and additional staff who are public health informaticists, biostatisticians, research and evaluation specialists, and quality improvement staff.

The goals of the Science Branch are to provide 1) accurate information and interpretation of data to support decision making 2) Strategic planning and technical assistance to understand system structure and impact , and 3) Scientific understanding on a public health topic . In the Science Branch, one of our roles is to support the data needs and communicate out to the public health department, external partners, and the community. In collaboration with others, Epidemiologists work to pull together papers, reports, dashboards, presentations, grants, for a variety of public health questions and needs.

The fellow will join the Epidemiology and Surveillance team and they will be incorporated into the day-to-day functioning of the Epidemiology team. They will work closely with their mentors as well as Sr Epidemiologists and epidemiologists collaborating on the same projects or areas. The Epi team has weekly and project based meetings with mentors and experienced staff where we discuss project updates, challenges, and present our work to each other. These meetings provide a collegial opportunity to understand applied epidemiology at a local health jurisdiction.

Day to day activities will include working on projects specified in this application including improving chronic disease surveillance system by exploring data sources for chronic disease and help in evaluating a respiratory disease surveillance system. As part of this work, the fellow may:

- *Conduct Epidemiology Studies
- *Monitor the health status of county residents using new or developing new surveillance tools
- *Track disparities, trends and health inequities
- *Assess the health of specific populations of interest and develop reports (Needs assessments)
- *Plan, develop, and implement countywide and neighborhood surveys
- *Conduct outbreak investigations
- *Analyze/provide demographic, surveillance and survey data for grants and program stakeholders and the community

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*Support all programs with data and information and knowledge for decision-making

Describe Statistical and Data Analysis Support, Such as Databases, Software, and Surveillance Systems Available to the Fellow

The Science Branch at SCCPH has an experienced team of epidemiologists with extensive experience in R coding across public health datasets, informatics and biostatistics support and a large variety of public health database and surveillance systems available to the fellow.

A deep roster of epidemiologists in the Science Branch can offer epidemiology, biostatistics, and coding support for an epidemiologist at any level of experience. We have recording training sessions for coding in R and for orientation to all our surveillance data systems to help orient any epidemiologist new to applied county level epidemiology. Our informaticists are actively working on building our data lake for centralizing our datasets and for efficient data storage, exchange, linkages, and analytics. Our research team is building COVID and other infectious diseases models for public health action. We are home to a cutting-edge public health lab that provides support to other counties throughout the region, and we can support projects that utilize exciting new methods like wastewater surveillance.

The fellow will receive training on the use and application of databases and surveillance systems that include infectious diseases (COVID-19, flu, TB, STIs, and other reportable diseases), birth and death data, syndromic surveillance, emergency department visits and hospitalizations, health assessment surveys, wastewater data, and datasets for social drivers of health including census data which has information on education, health, and other sociodemographic information and data on the built environment like vector control data.

Projects

Surveillance Activity Title: Improving Chronic Disease Surveillance

Surveillance Activity Description:

Comprehensive and accurate chronic disease surveillance systems are needed to implement efforts to reduce the burden of chronic diseases such as asthma, cardiovascular diseases, diabetes. Chronic disease trends are currently monitored by a limited number and often lagged sources of surveillance data including health claims data, survey data, and vital statistics that are often lagged and do not capture disease trends in real time. Additional and more timely data sources are needed to understand how chronic disease impacts SCC residents by race, ethnicity, and geography and to identify public health priorities or track the progress of preventive efforts. We are looking to include additional data sources for surveillance with electronic health record (EHR) systems and patient registries. These are new areas for the systematic collection and analysis of information based on the incidence and severity of chronic disease in populations under care.

Surveillance Activity Objectives:

The objective of this project is to help develop more robust and timely chronic disease surveillance. In contrast to surveillance systems for infectious diseases and other reportable diseases there are often larger lags in surveillance data sources for chronic diseases. Much of the more timely health and demographic information for those with chronic disease and their outcomes are held by health systems within their Electronic Health Records (EHR) systems as they provide health care to residents. The fellow would work alongside other epidemiologists to examine possible data sources for asthma, cardiovascular disease, diabetes including looking at MENDS for EHR-based disease surveillance and possible using Electronic initial Case Reporting with this system. Another possible avenue is through the CalHHS Data Exchange Framework (DxF) currently underway that will be facilitate the secure and appropriate exchange of health and

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social services information for patients that may provide an opportunity to public health for chronic disease surveillance and action.

The objectives will be to:

*Evaluate the potential methods (MENDS, EiCR, CalHHS Dx) to use EHR data for chronic disease surveillance .

*May work with other members of the science branch to assist in the development of algorithms and data components needed to develop a chronic disease surveillance system based on EHR data

*Work with other members of the Science Branch to define what weighting and modelling will be needed to produce reliable estimates

Surveillance Activity Impact:

SCCPH would benefit from an increased capability to access and act on timely EHR-based surveillance data and would be better equipped to monitor population health changes, allocate resources, and evaluate targeted health interventions.

Surveillance System Evaluation Title: Evaluation of respiratory virus surveillance system

Surveillance System Evaluation Description:

Science Branch is expanding the data sources in our surveillance system for winter respiratory viruses (flu, RSV, COVID). The fellow can help evaluate our surveillance systems which pull data from numerous sources including wastewater, lab testing, case data, syndromic surveillance, and from death certificates. These surveillance systems drive our popular, web-based dashboards that present up-to-date data about wastewater concentrations in all major County sewer sheds, vaccination rates (stratified by age and race/ethnicity), ED visits, and deaths.

Surveillance System Objectives:

An overall question is how effective our surveillance system using these various data sources is in monitoring respiratory viruses in our county and how well it informs our public health response and stakeholders. The evaluation will describe the need for, describe the usefulness (value, practicality) of the system and how/whether the data are helpful to our stakeholders (IDR programs, PH policy makers, public, and others). As part of the evaluation the fellow will describe the attributes of the sources (e.g. simplicity, flexibility, data quality, acceptability, sensitivity, predictive value positive, representativeness, timeliness, and stability) for one or more of our sources. In addition, fellow would evaluate how well it can be used to identify health inequities and how communities are disproportionately affected by respiratory viruses.

Surveillance System Impact:

The purpose of evaluating the respiratory surveillance systems is to ensure that respiratory virus transmission, morbidity and mortality is monitored efficiently and effectively and that the system can be used for public health program response and to inform the content of the respiratory dashboards that are published for the public.

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Major Project Title: Climate Change and Development of Vector-Borne Disease Surveillance

Major Project Description:

Climate change is contributing to an increase in vector-borne disease in California. Recently, California has identified multiple local transmissions of dengue. SCCPHD has begun collaborations with vector control agencies to use vector control data to better understand mosquito patterns and associated health risk of mosquito borne diseases. The fellow will learn about One Health work and will have access to surveillance data from County Vector Control along with case information on locally acquired and imported vector-borne diseases such as Dengue, West Nile virus, and Lyme Disease.

Major Project Objectives:

A goal of this work is to generate temporal and spatial mosquito risk maps by profiling and mapping vector control mosquito trap data. These data can be linked to ACS census data, information on the natural and built environment, and area-based measures of social vulnerability like California's Healthy Places Index to identify and analyze areas with higher vulnerability and the influence of social factors on vector related health outcomes.

This project will be an opportunity for the fellow to work with the other infectious disease epidemiologists and vector control staff to develop expertise in general outbreak response and containing for emerging organisms according to CDC and state recommendations. As part of this project we would also examine the spatial and temporal distribution of our imported vector related cases to inform any response plans we might have/want to develop with vector control.

Major Project Impact:

We see this project as an important next step in surveillance for existing and emerging vector borne diseases. Establishing surveillance can create baseline maps of risk and provide early detection of changes in the prevalence and distribution of vector-borne risk and diseases. This is essential for understanding how these diseases may spread to new regions or emerge in areas where they were previously uncommon. Surveillance data can also provide insights into the complex relationships between climate change, vector behavior, and disease transmission. This understanding is essential for developing more targeted and effective interventions.

Additional Project #1 Title: Identification and Analysis of Climate Change Health Indicators in Santa Clara County

Project #1 Type: Major Project

Project #1 Description:

Santa Clara County is interested in identifying and developing climate change health indicators to better understand the burden of climate related events such as extreme heat, flooding, and wildfires. For example, heat related morbidity and mortality is a concern due to increases in the number of annual days of extreme heat. During extreme heat events a range of heat-related symptoms and conditions can develop including heat stress, heat cramps, and heat stroke. Relatedly, California has experienced and is subject to drought, wildfires and other related climate change related weather events that are of concern in Santa Clara County. We would like to explore emergency department and hospitalization data and the fellow would help identify other data sources that may be helpful to examine health effects related to climate change.

Project #1 Objectives and Expected Deliverables:

Identify and establish trends for climate change related indicators using ED and hospitalization discharge data. Explore other data sources that would complement health care utilization and death data.

Project #1 Impact:

Tracking rates of emergency department visits, hospitalizations, and other health outcomes due to heat, flooding, or wildfires may be useful indicators for climate change health surveillance and public health preparedness and action.

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Additional Project #2 Title: OD2A Overdose Detection Project

Project #2 Type: Major Project

Project #2 Description:

Overdose prevention is an important focus for Santa Clara County. This project would involve assisting in the creation an aberration detection system to monitor overdose events in the county to inform harm reduction activities. This aberration detection system would include data from the Santa Clara County Medical Examiner Coroner, ESSENCE (syndromic surveillance system), and EMS data. The fellow will work with our modelling experts to develop statistical models to detect temporal and spatial aberrations in overdose data.

Project #2 Objectives and Expected Deliverables:

The fellow will work with other epidemiologist to review new data compiled for overdose surveillance and help review data to understand burden of overdose events in the county. The fellow will provide analysis results and written summaries of findings to project team members and harm reduction programs.

Project #2 Impact:

This monitoring system will help us identify where and when overdoses are occurring in the county informing harm reduction activities. The goal is to develop and implement a data to action monitoring system.

Please Describe the Fellow’s Anticipated Role in Preparedness and Response Efforts – Include Activities and Time Allocation (Required Competency of Fellowship)

A small percentage of a fellow’s time, <5% may be involved in preparedness and response efforts. The fellow will be asked to take ICS trainings and to participate in tabletop training exercises around emergencies. In case of an emergency or natural disaster, the fellow may be asked to be an emergency responder in the same role as a regular staff epidemiologist. SCCPH will have conducted a CASPER focused on emergency preparedness and climate change impacts of a vulnerable region in our before the fellow starts but the fellow may be asked to help with the write up and/or help with the presentations that will be shared out after the report is published. The CASPER will help communities and government agencies prepare for future emergencies.

Please Describe the Fellow’s Anticipated Role in Cluster and Outbreak Investigations – Include Activities and Time Allocation (Required Competency of Fellowship)

A small percentage of a fellow’s time, <5% may be involved in investigations of acute disease outbreaks or exposures. It is possible that fellows participate in communicable disease outbreak investigations including that of foodborne illness outbreak. These investigations will occur in collaboration with the Communicable Disease and Prevention team, Environmental Health and can possibly include other local health jurisdictions, the California Department of Public Health, and staff at the national level (CDC). It is also possible that the fellow may be involved in surveillance and analysis of other health areas including that of environmental exposures or substance use fatal and non-fatal overdoses. The fellow’s anticipated role would be to help with investigations or assist in writing information al briefs and summary reports.

Please Describe the Fellow’s Anticipated Role in the COVID-19 Response – Include Activities and Time Allocation

The fellow may be asked to assist in requests for COVID-19 information and analysis. Epidemiologist sometimes need to review the new COVID-19 literature, be up to date on the evolving COVID-19 variants, and support the communicable Disease and Prevention program that continues to investigate outbreaks in high-risk settings. SCCPH has extensive surveillance data for COVID-19 that we review and analyze for new or evolving questions.

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We continue to conduct COVID-19 surveillance for wastewater, syndromic surveillance, testing, outbreaks, hospitalizations, and death data. As part of the fellow's respiratory virus surveillance system evaluation, they will need to use COVID-19 surveillance data so we would estimate that the fellow might spend about 15% of their time in projects involving COVID-19 data in some way.

Please Describe Opportunities for Fellows to Work in Health Equity as well as Incorporating Diversity, Equity, and Inclusion into their Work

Health equity work is interwoven into the work of epidemiologist in the science branch and equity work to identify the communities and geographic areas that carry the burden of disease for all health conditions we monitor. The fellow may support the analysis and/or follow-up needed for ongoing countywide or community-specific needs assessments and evaluations. One example is the Latino Health Assessment, a comprehensive assessment of Latino health with community partners and in collaboration with other county agencies. While there has been improvement in some health outcomes for the Latino community over the last decade, Latinos in Santa Clara County continue to face higher rates of obesity, diabetes, and COVID deaths compared to others. Public Health is leading a Latino Health Assessment that will gather input from the community and lay out an action plan for the next few years. The fellow may work on the various stages of the assessment, the analysis and community presentations and engagement of assessment findings. The fellow may also help with the development of other planned community assessments for priority populations including for the LGBTQ+ community.