ID: 46656984
Environmental Health, Occupational Health - Host Site Description
California Department of Public Health

Assignment Location: Richmond, US-CA
California Department of Public Health
Environmental Health Investigations and Occupational Health Branches

Primary Mentor: Robert Harrison, MD, MPH
Chief, Occupational Health Surveillance and Evaluation Program
California Department of Public Health

Secondary Mentor: Michelle Pearl, PhD, MPH
Research Scientist
California Department of Public Health

Work Environment
Hybrid

Assignment Description

Both EHIB and OHB will directly involve the Fellow with "hands on" with project teams that are working on public health research, epidemiological surveillance and case-based investigations:

- Perform environmental and occupational epidemiological studies utilizing existing data sets
- Respond to case-based outbreaks of injury and disease in the environment and workplace, including development of survey methods and tools, field visits, and data collection and analysis
- Provide expert consultation and advice about environmental and occupational health issues to local county health officers, public health professionals, health care providers, employers and workers
- Collaborate with community, employer and worker organization partners to develop and disseminate information about scientific findings, and translate public health information for prevention and intervention efforts
- Participate in technical and scientific meetings with OHB, EHIB and other CDPH Centers and Programs to gain experience in State public health goals and operations
- Attend local, State and National meetings to refine public speaking and presentation skills

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

The fellow will have access to various spreadsheet, database, statistical, and graphics programs (Microsoft Office, SAS, Stata, R, Epi Info, etc.). For statistical support, the programs have epidemiologists and data analysts proficient in the use of SAS, Stata, and R for complex statistical analysis of epidemiologic surveys, environmental monitoring data, census data, vital records, etc. For additional epidemiologic methods discussion, there are two monthly meetings that the fellow could attend, the EHIB Epidemiology Collaborative and Epi Journal Club. There is also a major investment in GIS (Geographical Information Systems) infrastructure, with dedicated workstations, servers, CDPH geocoding service, a large format color printer, and staff members who are specialists in the use of GIS software.

The State of California maintains a large number of health and environmental databases. Besides the specific study datasets, the state offers vital statistics data (births, fetal deaths, deaths), statewide cancer registry, birth defects monitoring program, hospitalization and emergency department data, Medicaid claims, electronic workers compensation data, pesticide use reporting, and childhood lead poisoning surveillance. Additionally, the California

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Department of Public Health participates in electronic reporting to NIOSH of surveillance data for elevated blood lead, asthma, pesticides, and work-related fatalities.

Projects

Surveillance Activity Title: California Work-related Heat Illness

Surveillance Activity Description:
Over 600,000 injuries and illness occur at work annually in California and are reported by employers through the California workers'compensation claims system. We have developed specific criteria to identify, extract and code approximately 1,500 acute work-related heat illness (HRI) cases each year. CDPH also routinely collects and analyzes data from hospital discharge data based on payor source (workers compensation) and receives monthly data from CalOSHA for all employers who have reported an employee with a hospitalization. In addition, the OHB has access to annual and weekly death certificate data (including industry and occupation) that can provide a rich data source for analysis of temperature-related mortality among outdoor workers. Analysis of this data will identify interventions for specific groups, make the case for vital public health funding, and advocate for effective programs and policies.

Surveillance Activity Objectives:
The objective of this activity is to contribute to a comprehensive analysis of work-related heat illness in California, with a focus on high-risk worker populations (agriculture, construction, indoor warehouse, etc). The analyses should link the data findings to outreach and intervention activities with special attention to outdoor workers. California is among the few states with a specific OSHA standard for heat related illness, and this analysis will also be critical to support regulatory enforcement.

Surveillance Activity Impact:
This activity will lead to establishment of a new surveillance system that will target interventions to specific groups, make the case for vital public health funding, and advocate for effective programs and policies.

Surveillance System Evaluation Title: Occupational Lung Disease Reporting Using Electronic Health Records

Surveillance System Evaluation Description:
With support from CDC/NIOSH, we have implemented the use of the Reportable Conditions Knowledge Management System (RCKMS) for the rapid case ascertainment of silicosis and other occupational lung diseases. The overall goal is to develop an efficient and rapid system for early case detection for occupational lung disease reporting in the US. This can help make the case for vital public health funding, and advocate for effective programs and policies for finding unknown and ongoing sources for silica and other occupational exposures.

Surveillance System Objectives:
The overall objective is to evaluate the use of the RCKMS for collection and analysis of occupational lung disease including silicosis. California has the largest data set for silicosis cases, however reporting through physician case reports requires intensive follow-up and outreach. The goal of RCKMS is to develop and implement a much more efficient and less resource intensive system. While RCKMS has been used for COVID-19 reporting in California, this project represents the first effort to use RCKMS for a chronic occupational disease.

Surveillance System Impact:
This evaluation will be useful for the CDC and other states who can use RCKMS for a national occupational disease surveillance system.

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Major Project Title: Epidemiology and Surveillance of Climate-Related Health Impacts in California

Major Project Description:
The Climate Change and Health Unit (CCHU) conducts epidemiological investigations and surveillance on the health impacts of climate change, focusing on exposures related to wildfire smoke, drought, and extreme precipitation. CCHU is actively engaged in enhancing the California Department of Public Health's (CDPH) capacity to routinely monitor, track, and analyze statewide trends in these exposures and their associated health outcomes.

The fellow will engage in designing and implementing analyses to assess statewide trends and identify populations most impacted by climate-related health risks in California. The fellow will utilize diverse data sources, including statewide health records, syndromic surveillance data, environmental and climate indicators, and geographic and demographic information to conduct epidemiological analyses and characterize climate-related health impacts across regions, time periods, and population groups.

Major Project Objectives:
The primary objective is to assess trends in climate-related health impacts, including exposure to wildfire smoke, drought, and extreme precipitation, with a focus on disproportionately affected communities. The fellow will work with CCHU staff to develop and evaluate climate-health indicators for tracking exposures and health outcomes associated with climate events. They will also apply statistical and geospatial methods to assess the sociodemographic composition of communities impacted by exposures and climate-related health outcomes, prioritizing racial health equity, social determinants of health, and environmental justice. The fellow will have the opportunity to support community engagement efforts by developing survey instruments, collaborating with community partners, or translating epidemiological findings into actionable public health messaging and adaptation strategies.

Findings will be reported through written or oral formats (e.g., manuscript, conference presentation, or webinar) and will include data visualization products (e.g., GIS-based mapping, infographics, tabulated, or summarized data) tailored for government agencies, public health professionals, or community groups. Climate-related health indicators will be evaluated in terms of feasibility for syndromic surveillance, long-term monitoring, and public health decision-making. Deliverables may also include public health messaging and health risk communication materials tailored for diverse audiences, including government agencies, public health professionals, or community groups.

Major Project Impact:
This project will strengthen CDPH's capacity to address the impacts of climate change on public health. Advancing the understanding of the health risks associated with wildfire smoke, drought, and extreme precipitation in California will:

- Advance evidence-based public health decision-making and policy to reduce health risks.
- Enhance state syndromic surveillance systems to support early detection of health threats related to climate impacts for public health response efforts.
- Improve climate adaptation and resiliency strategies at the state and local levels.
- Inform the development of tailored public health interventions and communication strategies to mitigate climate-related health impacts and enhance community resilience.

Additional Project #1 Title: Characteristics of California residents with Elevated Serum per- and Polyfluoroalkyl Substances [PFASs] Concentrations and Those with Very Low PFAS Concentrations.
Project #1 Type: Major Project

Project #1 Description:
Biomonitoring California collects data on exposures to various pollutants (e.g., metals, per- and polyfluoroalkyl substances [PFASs], and phenols). The program is charged with establishing trends in the levels of these chemicals in

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Californians' bodies over time and assessing the effectiveness of public health efforts and regulatory programs to decrease exposures of Californians to specific chemical contaminants. The fellow would design and conduct analyses to identify characteristics (e.g., demographic, geographic, behavior, etc.) of residents with both elevated concentrations and those with no or low measured levels. The project would entail examining the wealth of information from surveys of biomonitoring study participants, including diet, hobbies, occupation, housing characteristics, and demographics, as well as geocoded address, to identify impacts from and opportunities for individual and societal interventions.

Project #1 Objectives and Expected Deliverables:
The CSTE fellow would be expected to create a study plan; descriptive tabular data of participants and exposure characteristics and their relationships; a written summary for internal use; and if appropriate, a manuscript for peer-reviewed journal and accompanying lay summary for our website and public presentations. The fellow can also use this work for a conference presentation, if desired.

Project #1 Impact:
The desired public health impact is to decrease exposures of Californians to harmful chemical contaminants. Biomonitoring data supports this goal by establishing trends in chemical exposures, validating modeling and survey methods, supporting epidemiological studies, identifying highly exposed communities, addressing the data gaps between chemical exposures and specific health outcomes, informing health responses to unanticipated emergency exposures, assessing the effectiveness of current regulations, and helping to set priorities for reform.

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

The multi-disciplinary Environmental & Occupational Emergency Preparedness Team (E&O EPT) addresses environmental and occupational hazards and emergencies. The E&O EPT works with State, local, tribal, and federal government; healthcare; private sector; and community-based organizations to support preparedness, response, recovery, and mitigation activities. Projects for a CSTE Fellow may include: participating in a Rapid Needs Assessment; developing data pipelines and queries for hazardous material incident surveillance; piloting a tool focused on preparedness for hazardous material incidents; developing educational materials for populations vulnerable to chemical threats; contributing to responder safety and health activities; and participating in response and recovery activities, as needed.

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

The Occupational Health Branch has a robust and long-standing capacity and commitment to workplace cluster and outbreak investigations. The OHB has unique statutory access to workplaces for investigation, which gives the CSTE Fellow the opportunity to conduct and/or participate workplace visits, interview workers, review records and analysis data. Over the past decades, we have investigated many occupational diseases with innovative and leading public health impact. While these outbreaks cannot be predicted with certainty, all CSTE Fellows have taken a leading role in cluster and outbreak investigations over their two years.