

ID: 88129961

**Chronic Disease, Substance Use/Mental Health - Host Site Description
Cook County Department of Public Health**

Assignment Location: Bridgeview, US-IL
Cook County Department of Public Health
Epi Unit

Primary Mentor: Alfreda Holloway, PhD, MS, Executive MBA(c)
Director of Epidemiology
Cook County Department of Public Health

Secondary Mentor: Shimu Paul, MBBS, MS, MPH
Epidemiologist IV
Cook County Department of Public Health

Work Environment

Hybrid

Assignment Description

The CSTE Fellow will be placed within the Epidemiology Unit of the Cook County Department of Public Health (CCDPH) in Bridgeview, Illinois. The unit monitors health issues, disparities, and trends among suburban Cook County residents by collecting, analyzing, and disseminating data from sources such as the Suburban Cook County Health Survey, vital records, hospitalizations, population statistics, and other secondary datasets. It also prepares community health profiles, responds to data requests, supports program evaluation and performance measurement, and provides analytic guidance for public health programs, policy development, and resource allocation.

The fellow will contribute to a variety of analytic and surveillance projects aligned with their interests and skills. Potential focus areas include maternal and child health (MCH), substance use disorders (SUDs), injury epidemiology, and chronic disease surveillance. Day-to-day activities may involve data cleaning and management, statistical analysis, report writing, visualization development, and responding to internal and external data requests. to day activities may involve data cleaning and management, statistical analysis, report writing, visualization development, and responding to internal and external data requests.

The fellow will also support ongoing work related to the Cook County Health Atlas, which integrates survey data, vital statistics, hospital discharge data, electronic lab reports, and social determinants of health indicators. Additional opportunities may include collaboration with the Communicable Disease Unit on real-time surveillance activities (e.g., opioid overdoses, vaping related incidents, occupational injuries via ESSENCE) and participation in special projects such as predictive modeling, outbreak support, or evaluation of public health interventions. time surveillance activities (e.g., opioid overdoses, vaping related incidents, occupational injuries via ESSENCE) and participation in special projects such as predictive modeling, outbreak support, or evaluation of public health interventions.

The Fellow's Day today activities will include monitoring and interpreting surveillance data, conducting statistical analyses, preparing reports, briefs, and data visualizations, and responding to internal and external data requests. Routine responsibilities will also involve supporting case investigations for noncommunicable diseases and contributing to community health assessments. to day activities will include monitoring and interpreting surveillance data, conducting statistical analyses, preparing reports, briefs, and data visualizations, and responding to internal and external data requests. Routine responsibilities will also involve supporting case investigations for noncommunicable diseases and contributing to community health assessments.

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Cook County Department of Public Health

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

The fellow will have access to a comprehensive suite of statistical, analytic, and surveillance tools, including SAS, R, Excel, ArcGIS Pro/Online, REDCap, Qualtrics, Metopio, BioSpatial, Tableau, and R/Shiny. They will also work directly with major public health surveillance systems such as the Illinois National Electronic Disease Surveillance System (I NEDSS) and ESSENCE through the National Syndromic Surveillance Program. As part of CCDPH's Epidemiology Unit, the fellow will analyze vital records, hospital discharge data, medical examiner data, EMS data, and other datasets provided by IDPH and partner agencies. Additional software and specialized analytic support will be available as needed for specific projects

Projects

Surveillance Activity Title: Implementation of a Substance Use Disorders Surveillance System

Surveillance Activity Description:

Substance use disorders (SUDs) often co-occur with mental health conditions, creating complex challenges for treatment, recovery, and prevention.

Despite the substantial burden of SUDs, many individuals do not receive adequate care due to stigma, limited resources, and barriers to accessing comprehensive services.

These challenges highlight the need for a coordinated and comprehensive surveillance system. At present, CCDPH does not have a unified system for monitoring SUD related outcomes including overall SUDs, alcohol and drug use disorders, illicit drug use, mental health conditions, suicide, hospitalizations, deaths, injuries, fatal motor vehicle crashes, chronic disease outcomes, hepatitis B and C, and cirrhosis.

The proposed surveillance system would integrate standardized definitions and recommended data elements to create a continuous, comprehensive record of substance use and related health outcomes within CCDPH's jurisdiction. This system would enable public health professionals and community partners to track trends, identify high risk populations, and evaluate the impact of prevention and intervention strategies. Establishing geographic scope and priority population groups will be a critical early step in system development.

Surveillance Activity Objectives:

Working in coordination with the state health department, the fellow will conduct a comprehensive review of public health epidemiologic frameworks and best practices to develop a typology of substance use disorders (SUDs) and mental health-related events. This work will include identifying and applying uniform definitions, recommended data elements, and relevant data sources. Data sources will include, but are not limited to, hospital discharge data, ESSENCE syndromic surveillance data, medical examiner records, emergency medical services (EMS) data, survey data, law enforcement data, and community reports.

Building on this review, the fellow will assist in designing a prototype SUD surveillance system that integrates these definitions and data streams into a cohesive structure. The prototype will support monitoring trends in substance use patterns, treatment admissions, overdose incidents, and related health outcomes, and will facilitate evaluation of CCDPH programs and control measures. As part of this work, the fellow will also help develop procedures to ensure data accuracy, completeness, and timeliness across the system.

ID: 88129961

Chronic Disease, Substance Use/Mental Health - Host Site Description

Cook County Department of Public Health

Surveillance Activity Impact:

The development of a unified substance use disorders (SUD) and mental health surveillance system will significantly strengthen CCDPH's ability to understand, monitor, and respond to emerging and ongoing behavioral health challenges in the community. By integrating multiple data sources and applying standardized definitions, the system will provide a more accurate and comprehensive picture of SUD related and mental health-related outcomes across the jurisdiction. This enhanced visibility will allow CCDPH and its partners to identify high risk populations, geographic hotspots, and changing patterns in substance use, overdoses, treatment needs, and related health outcomes. The system will also support more timely detection of concerning trends, enabling earlier intervention and more targeted prevention strategies.

In addition, the surveillance system will improve CCDPH's capacity to evaluate the effectiveness of existing programs, guide resource allocation, and inform policy decisions. Over time, these improvements will contribute to more coordinated public health action, stronger partnerships, and ultimately, better health outcomes for communities affected by chronic disease, injury, SUDs, and mental health conditions.

Surveillance System Evaluation Title: Evaluation of the Usefulness and Effectiveness of Substance Use disorders data visualization

Surveillance System Evaluation Description:

The surveillance activity centers on developing and implementing a comprehensive surveillance system for substance use disorders (SUDs) and mental health. This includes defining standardized data elements, integrating multiple data sources, and creating a unified structure for monitoring trends and outcomes across CCDPH's jurisdiction. The evaluation activity focuses on assessing how effectively the system's outputs (particularly data visualization tools such as the Cook County Health Atlas) support this surveillance work. The evaluation examines whether dashboards and visualizations are useful, accessible, and aligned with the needs of internal and external stakeholders.

In simple terms:

- The surveillance activity builds data infrastructure and integrates the information.
- The evaluation determines whether the resulting visual tools are being used as intended and whether they successfully translate complex data into meaningful, actionable insights.

These activities are closely interconnected. While the surveillance system establishes the capacity to collect and analyze SUD and mental health data, the evaluation ensures that this capacity results in information that is understandable, relevant, and responsive to community and partner needs. Together, they strengthen CCDPH's ability to monitor substance use trends and support informed decision making across programs and collaborations.

Surveillance System Objectives:

The fellow will review epidemiologic frameworks and best practices to develop a standardized typology for SUD and mental health surveillance, including key definitions, data elements, and relevant data sources. They will help design a prototype surveillance system that integrates multiple datasets to monitor substance use patterns, overdoses, treatment admissions, and related health outcomes, while also establishing procedures to ensure data quality and timeliness. In addition, the fellow will evaluate how internal and external partners use existing CCDPH data visualization tools (such as the Cook County Health Atlas) to determine their usefulness, effectiveness, and alignment with stakeholder needs. Based on this evaluation, the fellow will recommend and support the development of improved or automated visualization tools that better serve partners, community organizations, and public health decision making.

ID: 88129961

Chronic Disease, Substance Use/Mental Health - Host Site Description

Cook County Department of Public Health

Surveillance System Impact:

The impact of this project becomes much clearer when you think about what CCDPH will be able to do once the surveillance system and visualization evaluation are complete. Here's a strong, concise description that captures that: The project will significantly strengthen CCDPH's ability to monitor, understand, and respond to substance use disorders and related mental health outcomes across suburban Cook County. By developing a standardized surveillance framework and integrating multiple data sources, the work will create a more complete and timelier picture of SUD related morbidity, mortality, and community level trends. Evaluating the usefulness and effectiveness of existing data visualization tools (such as the Cook County Health Atlas) will ensure that surveillance findings are accessible, actionable, and aligned with the needs of internal teams, external partners, and community organizations. Together, these efforts will enhance CCDPH's capacity to identify high risk populations, detect emerging issues earlier, guide resource allocation, and support more targeted prevention and intervention strategies. Ultimately, the project will improve data driven decision making and contribute to better health outcomes for residents affected by chronic disease, injury, SUDs, and mental health conditions.

Major Project Title: Enhancement of Suburban Cook County Substance use and Mental health disorders epidemiology surveillance and reporting capacity expansion project

Major Project Description:

A project that supports in strengthening our epidemiology capacity to track and respond to Substance use and Mental health disorders, with a focus on building better surveillance systems, developing data visualization for data capturing and analysis, and the sharing of best practices among other stakeholders and states to prevent and reduce the impact of Substance use and Mental health disorders and providing training to public health personals.

Major Project Objectives:

The fellow will support the CCDPH Epidemiology Unit by conducting analyses that identify:

- Indices of frequency, such as total cases, deaths, incidence, prevalence, and mortality rates.
- Indices of severity, including hospitalization rates, disability rates, bed disability days, and case fatality ratios.
- Disparities and inequities associated with substance use and mental health outcomes.
- Economic impacts, including costs associated with these health events.
- Preventability and potential clinical course in the absence of intervention.

The fellow will also contribute to identifying, processing, reporting, and enhancing visualizations for multiple datasets related to substance use and mental health disorders. These datasets may include demographic information, mortality and hospitalization data, prevalence estimates, survey data, and other relevant public health indicators.

Major Project Impact:

The project will strengthen the department's ability to generate and communicate timely, actionable data on substance use and mental health disorders. Improved metrics and visualizations will guide agency policies, operational decisions, program development, and resource allocation. By producing neighborhood level health measures using readily available datasets, the project will support local health departments and community partners in planning prevention strategies, shaping health policy, and improving health care delivery. Ultimately, this work will help centralize and share critical public health information, enhancing the community's capacity to prevent and reduce the burden of substance use and mental health disorders.

ID: 88129961

Chronic Disease, Substance Use/Mental Health - Host Site Description

Cook County Department of Public Health

Additional Project #1 Title: Strengthening Epidemiologic Surveillance and Reporting Capacity for Maternal and Child Health in Suburban Cook County

Project #1 Type: Surveillance Activity

Project #1 Description:

This project aims to strengthen Suburban Cook County's epidemiologic capacity to monitor, analyze, and respond to key Maternal and Child Health (MCH) outcomes. The initiative focuses on improving surveillance systems, enhancing data capture and visualization tools, and promoting the exchange of best practices among local, state, and national partners. It also supports training for public health personnel to better prevent, detect, and address maternal and child health challenges across the community.

The project will help build a more robust infrastructure for tracking indicators such as maternal morbidity and mortality, infant mortality, birth outcomes, prenatal and postpartum health, and child developmental and behavioral health. By improving data quality, accessibility, and reporting processes, the initiative will support more timely and effective public health action to improve the health and well-being of mothers, infants, and children in Suburban Cook County.

Project #1 Objectives and Expected Deliverables:

The fellow will support the CCDPH Epidemiology Unit by conducting analyses that generate key public health indicators, including:

- Indices of frequency, such as total cases, deaths, incidence, prevalence, and mortality rates.
- Indices of severity, including hospitalization rates, disability rates, bed disability days, and case fatality ratios.
- Assessment of disparities and inequities related to substance use and mental health outcomes across demographic and geographic groups.
- Economic impact estimates, including direct and indirect costs associated with these health events.
- Evaluation of preventability and potential clinical course in the absence of intervention.

In addition, the fellow will contribute to the identification, processing, reporting, and enhancement of visualizations for multiple datasets related to maternal and child morbidity and mortality. These datasets may include demographic characteristics, mortality and hospitalization records, live birth data, prevalence estimates, survey data, and other relevant public health indicators. The fellow's work will support improved data interpretation, reporting, and dissemination to inform maternal and child health programs and policy decisions.

Project #1 Impact:

Strengthening epidemiologic surveillance and reporting capacity for maternal and child health (MCH) in Suburban Cook County will directly enhance the region's ability to identify, monitor, and respond to emerging health concerns affecting pregnant individuals, infants, and children. Improved data quality, timeliness, and analytic capacity will support earlier detection of disparities, trends, and high risk populations, enabling more targeted interventions and resource allocation. By expanding surveillance infrastructure and standardizing reporting processes, this project will help local health departments, health care providers, and community partners make informed decisions that improve maternal and child health outcomes. The enhanced system will also support the development of evidence-based programs, strengthen coordination across agencies, and contribute to long term reductions in preventable morbidity and mortality among mothers and children in Suburban Cook County.

ID: 88129961

Chronic Disease, Substance Use/Mental Health - Host Site Description

Cook County Department of Public Health

Additional Project #2 Title: Enhancement of the Opioid Overdose Surveillance Program and Reporting Capacity Expansion

Project #2 Type: Surveillance Activity

Project #2 Description:

This project aims to strengthen epidemiologic capacity to track and respond to opioid overdoses by improving surveillance systems, enhancing data visualization for data capture and analysis, and promoting the sharing of best practices among stakeholders, local health departments, and states. The overall goal is to prevent and reduce the impact of opioid overdoses while supporting training for public health personnel.

Project #2 Objectives and Expected Deliverables:

The fellow will support the CCDPH epidemiology unit by researching and identifying modeling techniques suitable for generating meaningful small area estimates using Syndromic Surveillance data, vital statistics, hospital discharge data, communicable disease and behavioral health survey datasets, and medical examiner (ME) data. The fellow will collaborate with CCDPH staff to apply, compare, and validate results using CDC recommended rate stabilization methods and other small area estimation tools. These efforts will culminate in the development of standard operating procedures (SOPs) outlining recommended steps for rate calculation, interpretation, and reporting.

Project #2 Impact:

Local health departments and the communities they serve require neighborhood level population health measures to guide prevention planning, resource allocation, policy development, and health care decision making. This project will help identify racial disparities in life expectancy across Suburban Cook County and strengthen harm reduction strategies aimed at preventing overdose fatalities in the most affected communities. Activities include expanding naloxone distribution, providing overdose prevention education, and connecting individuals to treatment services to reduce fatal overdoses.

Additional Project #3 Title: Chronic Disease Prevention: Monitoring and Reporting Neighborhood Level Prevalence of Chronic Diseases, Conditions, and Health Behaviors

Project #3 Type: Major Project

Project #3 Description:

Chronic diseases and conditions (including heart disease, stroke, cancer, type 2 diabetes, respiratory diseases, and obesity) remain among the most common, costly, and preventable health challenges. These conditions place a substantial burden on individuals, families, and communities. Yet many chronic diseases can be prevented or effectively managed through access to quality health care, supportive environments, and policies that promote healthy behaviors. Like many local health departments nationwide, CCDPH increasingly requires fine scale spatial analyses to identify and address geographic disparities in chronic disease morbidity, mortality, risk factors, treatment access, and overall health outcomes. Producing accurate neighborhood or census tract-level estimates require high quality local data and robust analytic tools. To meet this need, CCDPH aims to develop standardized procedures for calculating and routinely reporting local level measures of chronic disease burden for internal use and public dissemination.

Project #3 Objectives and Expected Deliverables:

The fellow will support the CCDPH Epidemiology Unit by researching and identifying modeling techniques suitable for generating meaningful small area estimates using vital statistics, hospital discharge data, communicable disease data, and behavioral health survey datasets. Working alongside CCDPH staff, the fellow will apply, compare, and validate these methods using CDC recommended rate stabilization approaches and other small area estimation tools.

ID: 88129961

Chronic Disease, Substance Use/Mental Health - Host Site Description

Cook County Department of Public Health

This work will culminate in the development of standard operating procedures (SOPs) outlining recommended steps for rate calculation, interpretation, and reporting to ensure consistent and reliable production of neighborhood level chronic disease indicators.

Project #3 Impact:

Local health departments and the communities they serve rely on neighborhood level population health measures to guide prevention planning, resource allocation, policy development, and health care decision making. This project will strengthen CCDPH's capacity to produce and communicate local level chronic disease estimates using existing datasets, enabling more precise identification of disparities and priority areas.

The resulting reports will highlight populations and geographic areas with elevated chronic disease burden or limited access to preventive and clinical services. By collaborating with community partners, the project will support efforts to improve the delivery and utilization of high-quality health care, promote early detection of illness, and enhance management of risk factors, ultimately contributing to reduced chronic disease morbidity and mortality across Suburban Cook County.

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

The fellow will support the CCDPH Epidemiology Unit by identifying and applying modeling techniques to generate meaningful small area estimates using vital statistics, hospital discharge data, communicable disease data, and behavioral health survey datasets. Working with CCDPH staff, the fellow will compare and validate these approaches using CDC recommended rate stabilization methods and other small area estimation tools. This work will lead to the creation of SOPs that standardize rate calculation, interpretation, and reporting for neighborhood level chronic disease indicators.

In addition to this analytic work, the fellow will contribute to preparedness and response efforts by integrating small area estimates into emergency planning, helping identify vulnerable communities, and supporting data analysis and situational awareness during active responses. Their work will strengthen CCDPH's ability to use high resolution data to guide planning, resource allocation, and targeted interventions during public health emergencies.

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

The fellow will support CCDPH's Epidemiology Unit by applying spatial analysis methods to identify and map localized clusters of chronic disease prevalence. After receiving training in ArcGIS, R, and Bayesian statistical techniques, the fellow will assist with detecting spatially significant hot and cold spots at the municipal and census tract levels. This routine analytic work will occur periodically, typically requiring one to two hours every couple of weeks. In addition, the fellow will contribute to cluster and outbreak investigations as needed by providing spatial analyses, generating maps, and helping interpret geographic patterns that may signal emerging public health concerns. Through these activities, the fellow will strengthen CCDPH's capacity to detect, visualize, and respond to geographically concentrated health events.