ID: 86557979
Chronic Disease, Environmental Health - Host Site Description
Snohomish County Health Department

Assignment Location: Everett, US-WA
Snohomish County Health Department
Health

Primary Mentor: James Lewis, MD, MPH, BS
Health Officer
Snohomish County Health Department

Secondary Mentor: Suzy An, MS, BS
Epidemiologist II
Snohomish County Health Department

Work Environment
Hybrid

Assignment Description

The fellow will be mentored by Health Officer Dr. James Lewis and Epidemiologist II Suzy An. James reports to Health Department Director Kim VanPelt, and Suzy reports to Dr. Vivian Hawkins who reports to Dr. Lewis. As such, the fellow will be part of the Office of the Director, allowing the fellow a unique and valuable birds eye view into the leadership of the health department. The work done in the Office of the Director touches on every aspect of public health. Also reporting to the Office of the Director are the leads of Prevention Services and Environmental Health, as well as Policy, Finance, and Emergency Preparedness and Response. The fellow will have the opportunity to learn about these varied aspects of work. Kim VanPelt reports to the county executive, and the fellow will have the opportunity to attend Board of Health meetings, executive cabinet briefings and other high level policy events.

The fellow will become an integral part of the Epidemiology and Informatics team, attend team meetings, and work alongside the dedicated Epi staff here. We have a beautiful office in downtown Everett WA that has soaring ceilings and a greenhouse style roof. Most staff are primarily remote, coming into the office one to two days/week. The CSTE fellow will have the option to come into the office as often as they would like (up to daily) or may choose to come once or twice a week with the remaining time working remotely. The Epi team has two standing weekly meetings and connects ad hoc on projects as needed.

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

The fellow will have access to statistical packages including R, STATA and SAS (various Epi team members use different statistical packages, and the fellow will have the option to learn new packages if desired in order to contribute to team projects). The Epidemiology team has transitioned from using RStudio to Positron so the fellow will be able to use the most up to date platforms. The fellow will be able to receive a Tableau and PowerBI license, as the Epidemiology team is increasingly using both platforms to create data dashboards and maps. The fellow will also receive an ArcGIS license, if projects require mapping. The fellow will have the same access to databases, software and surveillance systems as every other member of the Epi team, including access to vital records data streams, the notifiable condition management system run by WA DOH, syndromic surveillance (ESSENCE) and the electronic medical records system used by clinics and staff in Snohomish, called Patagonia. The fellow will also have access to Dedoose, a qualitative and mixed methods analysis application, if projects require qualitative analysis.

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Projects

Surveillance Activity Title: Development of Community Health Indicators Dashboards and Surveillance Data Pipeline

Surveillance Activity Description:
Snohomish County currently does not have community health indicator data in a publicly available and user-friendly format. Multiple local health jurisdictions in Washington State have moved to create health indicator dashboards for their communities. The epidemiology team has recently updated a range of Community Health Assessment (CHA) indicators, but these indicators have not yet been integrated into a routine, automated surveillance system, nor are they currently displayed in a public-facing dashboard. Since the last CHA was completed, the county has also obtained several key new data sources. These include EMR data, and updated vital records data on mortality, birth, fetal death, and infant death. Together, they create new opportunities to expand and strengthen our population health monitoring. The fellow will review the existing indicator inventory alongside these newly acquired datasets to determine which indicators should be updated, expanded, or added to better reflect current community health priorities.

The fellow will work closely with epidemiology and informatics staff to understand the current infrastructure for data cleaning, analysis, and reporting. Drawing on these findings, the fellow will outline a sustainable, streamlined workflow to routinely process and analyze the range of datasets. This work will lay the groundwork for building an interactive Community Health Indicators dashboard that will allow programs, partners, and the public to easily access and understand key health trends in Snohomish County.

Surveillance Activity Objectives:
The fellow will begin by meeting with internal program staff to review current and new data sources to understand their structure, quality, and potential uses. As part of the planning process, the fellow will also review dashboards created by other local health departments in Washington State and nationally to identify approaches that may be useful for Snohomish County. The fellow will assess which indicators from the existing CHA should be included in the dashboards and identify additional indicators that should be developed to fill gaps in areas such as substance use, birth outcomes, mortality patterns, and health equity. The fellow will develop documentation outlining recommended indicator definitions, population categories, and data stratifications.

Deliverables will include a written plan describing a standardized data pipeline based in R for acquiring, cleaning, and analyzing the various datasets; updated or newly created indicators that reflect current health needs; and the initial structure and prototype of a Community Health Indicators dashboard. The fellow will begin populating the dashboard with preliminary data visualizations and will write and present summaries to demonstrate how routine reporting could be carried out moving forward. If time allows and depending on staff availability, the fellow will create and implement a plan to facilitate adoption by internal programs and community partners.

Surveillance Activity Impact:
Without health indicator dashboards, staff across programs at the health department often lack timely, accessible information about trends in mortality, birth outcomes, chronic disease risk factors, and other key health conditions. This makes it more difficult to identify disparities and communicate data effectively and efficiently to community partners and the public. It also reduces the amount of time epidemiologists have to respond to emerging issues and evaluate new activities and data sources.

Through the fellow's work, the county will gain a more modern and coordinated surveillance structure that strengthens routine monitoring of population health and makes essential health data more accessible, transparent, and actionable. The development of updated indicators and a clear data pipeline will position Snohomish County to begin regularly reporting on health trends in a way that supports program planning, resource allocation, and community engagement.

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Establishing a foundation for a public-facing dashboard will help ensure that data are not only analyzed but also used. Altogether, these improvements will support more informed and equitable decision-making, guide the development of targeted interventions, and contribute to more effective planning across public health programs and partnerships.

Surveillance System Evaluation Title: Evaluation of Blood Lead Case Surveillance Systems in Snohomish County

Surveillance System Evaluation Description:
Snohomish County currently tracks case management of elevated blood lead cases using the electronic health record (EHR) system, Patagonia, while lab and case reporting to the state is done through the Washington Disease Reporting System (WDRS). Recently, WDRS added new fields to the lead encounter module that could improve reporting, and the county is considering onboarding a different EHR in the coming year. While surveillance infrastructure exists, the capabilities, limitations, and interoperability of these systems have not yet been fully evaluated.

Since 2022, the county has used a blood lead reference value (BLRV) of 3.5 µg/dL, and Washington State will adopt this same BLRV starting February 5, 2026. This statewide change may prompt more updates to WDRS fields, reports, and workflows. Snohomish County is in Year 5 of its current CDC Childhood Lead Poisoning Prevent Program (CLPPP) grant, ending September 30, 2026, and preparing for the next grant cycle may require tracking new or additional data elements. The fellow will undertake an evaluation of Snohomish County's blood lead surveillance system to assess completeness, accuracy, and timeliness of key variables, both in Patagonia and in WDRS. This evaluation will also explore WDRS fields that are currently unused in CLPPP grant reporting, which may become relevant for future grant cycles. The fellow will map current workflows, identify gaps or redundancies, and propose improvements to ensure the county can efficiently capture, analyze, and report blood lead data now and in the future.

Surveillance System Objectives:
The fellow will first identify which variables are key for tracking blood lead cases and supporting program needs, including case demographics, lead exposure levels, follow-up actions, and other public health indicators. This will involve reviewing existing surveillance documentation, consulting CDC and state CLPPP guidance, and meeting with epidemiologists, health department CLPPP staff and program manager, and the Washington Department of Health lead program and data staff. Next, the fellow will assess the completeness, consistency, and timeliness of these key variables in both Patagonia and WDRS, taking into account upcoming changes due to the statewide adoption of the BLRV of 3.5 µg/dL. The fellow will also explore WDRS fields not currently used for CLPPP grant reporting to identify opportunities to capture additional or different indicators in future grant cycles.

Deliverables will include documentation of current workflows, identification of gaps or redundancies, and actionable recommendations for system improvements. The fellow will produce a report summarizing findings and recommendations for improving data quality, consistency, and reporting efficiency. They will present this report to the CLPPP epidemiologist and team. If findings suggest that the new WDRS fields prove sufficient for case management, this report will also be presented to the DOH lead program and data staff. If time allows, the fellow may develop prototype visualizations or summary tables demonstrating how improved workflows could support routine reporting, program planning, and communication with stakeholders and the public.

Surveillance System Impact:
This project will help ensure that blood lead surveillance in Snohomish County is complete, accurate, and timely, which is essential for protecting children from lead exposure. Testing for blood lead levels among children aged 0-6 has been increasing steadily in the county and statewide. While this improves overall surveillance, it also means more elevated blood lead cases are identified each year. The project will streamline case management reporting, reduce redundancies, save public health nurses time, and address limitations of the current EHR system. Improved surveillance will allow staff to identify trends, address barriers to case follow-up and treatment, and respond effectively to all cases.

In addition, this work will help Snohomish County capture new or different indicators in future CDC CLPPP grant cycles. By exploring unused WDRS fields and assessing their potential for expanded reporting, the fellow will contribute to a more comprehensive and flexible surveillance system. Strengthening the surveillance system now will provide a foundation for ongoing program evaluation, support data-driven decision-making, and ultimately improve health outcomes for children in Snohomish County.

Major Project Title: Expansion and Validation of Chronic Disease Surveillance Using Syndromic and Population Health Data in Snohomish County

Major Project Description:
In a prior fellowship year, Snohomish County initiated the development of a chronic disease surveillance system by identifying priority chronic disease indicators and calculating baseline rates using All Payer Claims Data (APCD). The CSTE fellow also built upon that foundation by refining National Syndromic Surveillance Program (NSSP) ESSENCE query definitions to track emergency department visits related to diabetes complications.

This project will continue and expand this work by further evaluating and applying syndromic surveillance methods to additional chronic disease conditions prioritized by the county. The fellow will use asthma-related emergency department visits as a starting point to gain familiarity with ESSENCE and to assess an existing, well-established NSSP query definition. The fellow will then explore the development and testing of ESSENCE queries for heart disease related conditions which have been identified as a priority through community navigator focus groups. As part of this work, the fellow will engage with existing NSSP user communities and discussions to understand best practices, challenges, and emerging approaches to chronic disease surveillance using syndromic data.

The fellow will also compare trends observed in ESSENCE data with those derived from APCD, BRFSS, and mortality data, including asthma- and cardiovascular-related deaths, to assess alignment across surveillance systems. This work will help clarify how syndromic surveillance can complement existing data sources for monitoring chronic disease burden and acute complications in Snohomish County.

Major Project Objectives:
The fellow will refine, test, and evaluate NSSP ESSENCE query definitions to monitor emergency department visits related to chronic disease complications. Work will begin with asthma-related visits to support onboarding and familiarity with ESSENCE data structures, followed by exploratory query development for heart disease related conditions and other priority chronic diseases as appropriate. The fellow will evaluate these queries for sensitivity, stability over time, seasonality, geographic variation, and data completeness, and will document the strengths and limitations of syndromic surveillance for monitoring chronic disease-related emergency department utilization.

Deliverables will include a set of validated or recommended ESSENCE query definitions, a technical methods document describing query logic and performance, and a comparative analysis of syndromic surveillance trends against APCD, BRFSS, and mortality data. Where feasible, analyses will explore differences by demographic characteristics to assess the ability of these data sources to identify disparities. The fellow will also develop an interactive analytic product (such as a Power BI, Tableau, or ArcGIS-based report) that allows internal staff and partners to explore chronic disease related emergency department visit patterns over time. Findings will be summarized in written and oral presentations for epidemiology staff and program partners, providing a clear example of applied surveillance evaluation and cross-system data integration.

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Major Project Impact:
This project will strengthen Snohomish County's chronic disease surveillance system by expanding validated syndromic surveillance methods across multiple priority conditions. By refining and evaluating ESSENCE queries and comparing results across established data sources, the county will gain a clearer understanding of how syndromic surveillance can support timely monitoring of chronic disease complications and health care utilization.

Improved surveillance will enhance the county's ability to identify emerging trends, geographic patterns, and disparities related to chronic disease burden. This work will support more informed program planning and resource allocation and will ensure that chronic disease surveillance efforts are sustainable, coordinated, and actionable across public health programs.

Additional Project #1 Title: Evaluating the Implementation of the Changed Acute Respiratory Illness Universal Masking Threshold (might be done by King County before Summer 2026) (https://pubmed.ncbi.nlm.nih.gov/38344925/)
Project #1 Type: Surveillance System Evaluation

Project #1 Description:
On April 3, 2023, the Washington State Secretary of Health Mask Order requiring universal masking in healthcare facilities was discontinued. Recognizing the ongoing importance of masking in these spaces to protect the health and well-being of patients and healthcare workers, the Acute Infectious Disease Masking Workgroup was formed. This workgroup consists of infectious disease and public health subject matter experts (SME) representing the major healthcare systems and jurisdictions in our regional coalition and whose goal was to establish an approach to universal masking in healthcare facilities. After careful deliberation, the Workgroup developed a syndromic surveillance-based approach to trigger masking in participating healthcare systems during times of increased respiratory virus transmission. The initial implementation, in fall 2023, utilized separate syndromic surveillance thresholds for Influenza, RSV, and COVID-19 based on CDC's Moving Epidemic Method). Participating Local Heath Jurisdictions (LHJs) including Snohomish, King and Pierce counties, agreed to provide public facing dashboards demonstrating syndromic activity of these three pathogens updated weekly. When one of the three thresholds was surpassed, masking was implemented in participating healthcare organizations until activity was below the threshold for all three for 2 consecutive weeks. Each year the threshold values were recalculated based on data from previous seasons including the immediate past season. This approach was maintained until the 2025-2026 season. In 2025, the Workgroup considered the following issues when re-evaluating its threshold approach: COVID-19 epidemiology has remained difficult to predict compared to the consistent autumn/winter peak seen for RSV and influenza; alignment with national respiratory illness surveillance approaches; identification of a general respiratory illness metric that is inclusive of COVID-19, influenza, RSV and other respiratory infection burden; and the ability to quickly identify when respiratory infections are rising in the community.

Based on these principles, for the 2025-2026 respiratory season the Workgroup agreed to base universal masking implementation on measurements of acute respiratory illness (ARI) in EDs instead of individual disease (RSV, influenza, COVID-19) thresholds. The ARI metric is reliable, broadly available, and timely. By using a broader respiratory illness metric, additional respiratory pathogens are reflected in the metric that could also be mitigated by masking in healthcare settings. Implementation of the ARI metric will include a transmission alert threshold that will identify periods of higher acute respiratory illness burden. The transmission alert threshold will be calculated following CDC's baseline methodology and will be applied to the ARI ED data. Given this significant change in methodology, the counties of King, Snohomish and Pierce believe it is important to evaluate the 2025-2026 ARI methodology to see how performance compares to the previous pathogen based individual thresholds. The fellow will work with partners in King County and Pierce County to perform an analysis of the performance of this new methodology to ensure it is providing timely intervention during times of increased respiratory virus transmission.

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Project #1 Objectives and Expected Deliverables:
The objective of this project is to evaluate the implementation and performance of the 2025-2026 Acute Respiratory Illness (ARI)-based universal masking threshold in regional healthcare facilities and compare it to the previous individual pathogen MEM threshold methodology. The fellow will develop analytic models of the 2025-2026 season using the previous pathogen-specific thresholds and simulate how masking would have been triggered under each approach. The fellow will also apply the newer ARI methodology to the previous three seasons to identify periods when masking thresholds were or would have been met, enabling comparison of timeliness, sensitivity, and specificity between the two approaches. The fellow will document strengths and limitations of both methodologies and provide guidance on their use for future masking interventions.

Anticipated deliverables include a comprehensive technical report summarizing analytic methods, model results, and comparisons of ARI versus pathogen-specific thresholds; visualizations of threshold performance over time and across jurisdictions, potentially created in Power BI, Tableau, or ArcGIS; fully documented analytic code and methods to support reproducibility; a set of recommendations for refining threshold methodology for the 2026-2027 respiratory season; and contributions to a manuscript suitable for submission to a peer-reviewed journal, extending previously published work on syndromic surveillance-based masking strategies (https://pubmed.ncbi.nlm.nih.gov/38344925/). The fellow will present their findings from their report to the Acute Infectious Disease Masking Workgroup, helping guide regional public health decision-making.

Project #1 Impact:
This project will continue to work toward the normalization of masking in healthcare settings during periods of elevated respiratory virus transmission to protect vulnerable patient populations from nosocomial infections and healthcare workers from workplace exposures. The results will also help optimize the timing and effectiveness of masking interventions in health care settings, contributing evidence-based guidance to the workgroup's strategy for future respiratory seasons. This will also add to the literature regarding reasonable implementation strategies for masking in healthcare that are acceptable to healthcare professionals as well as methodology that can help flag the start of respiratory season which has been an age-old public health conundrum.

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

The fellow will have the opportunity to work closely with the Public Health Emergency Preparedness and Response (PHEPR) Program, which is also situated in the Office of the Director. The PHEPR program is responsible for preparing for and responding to emergencies that impact the health of Snohomish County residents. Moving forward, the PHEPR program aims to focus on improving the efficiency and effectiveness of public health emergency responses by leveraging epidemiological principles.

The fellow could partake in the following preparedness and response related projects:

Medical Reserve Corps Program Evaluation/Assessment:

- Background: The Medical Reserve Corps (MRC) is a national network of more than 300,000 volunteers organized locally to improve the health and safety of their communities. The PHEPR program runs the Snohomish County MRC, and under the supervision of the Health Officer, activates them to augment their capabilities during public health emergencies.
- Project Overview: The fellow will characterize the Snohomish County Medical Reserve Corps by defining notable strengths and gaps in our units' skills and trainings. They will use their findings to develop recommendations for a training and exercise plan to ensure our unit has the skills needed to keep Snohomish County residents safe and healthy.

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Readiness Assessments to Inform Public Health Emergency Responses:

- Background: In order to prepare for public health emergency responses, the Snohomish Health Department (SHD) conducts Readiness Assessments. These assessments are used to provide leadership with a clear view of activities at the health department pertaining to emerging public health threats and to identify any actions or resources needed to ensure a swift and effective emergency response.
- Project Overview: If emerging health threats should arise, the Fellow will shadow a PHEPR Emergency Management Specialist conducting a Readiness Assessment and have the opportunity to conduct one themself. They will facilitate key informant interviews with groups of subject matter experts at SHD, share findings with the PHEPR team, and identify necessary steps and action items needed to prepare for potential public health emergency responses.

Evaluating the Impact of CDC PHEP NOFO Training and Exercise Requirements on Local Public Health Preparedness and Response Capacity:

- Background: The Centers for Disease Control and Prevention Public Health Emergency Preparedness (PHEP) Notice of Funding Opportunity (NOFO) is the federal government's primary mechanism for funding, standardizing, and holding accountable state, local, tribal, and territorial public health emergency preparedness systems. The NOFO establishes required preparedness capabilities, workforce competencies, and training and exercise expectations intended to ensure consistent, operational readiness across jurisdictions. While these requirements are designed to strengthen preparedness nationally, there is limited local-level analysis examining how mandated trainings and exercises translate into measurable improvements in preparedness and response capacity, both within health departments and across Emergency Support Function 8 (ESF-8) partners.
- Project Overview: The Fellow will conduct a structured evaluation of the CDC PHEP NOFO's training and exercise requirements and assess their impact on Snohomish County's public health emergency preparedness and response capacity. This project will compare NOFO-defined requirements to Snohomish County's current preparedness systems, workforce capabilities, and exercise outcomes to determine how required trainings and exercises contribute to changes in local preparedness and response over a two-year period.

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

The fellow will be closely connected with cluster and outbreak investigation work and will have the opportunity to participate in field work and outbreak identification and investigation. As an example, given that we are a population of ~867,000, Snohomish County regularly has cases that are part of state and national foodborne illness related outbreaks. In the course of the fellow's assignment here, we will ensure that the fellow is involved in several outbreak investigations. Specific opportunities will of course vary based on notifiable condition reporting and outbreaks. In general, the fellow will be expected to assist with investigations of multi-drug resistant organisms (MDROs), outbreak investigations in long term care facilities (such as norovirus and influenza), and measles outbreak investigations.