

**ID: 60455013**

**Chronic Disease, Infectious Diseases - Host Site Description**

**Minnesota Department of Health**

**Assignment Location:** St. Paul, US-MN  
Minnesota Department of Health  
CVH Unit/Health Promotion & Chronic Disease Division

**Primary Mentor:** James Peacock, Ph.D., M.P.H.  
Cardiovascular Health Unit Manager/Epidemiologist Supervisor Senior  
Minnesota Department of Health

**Secondary Mentor:** Emily Styles, M.P.H.  
Cardiovascular Health Epidemiologist  
Minnesota Department of Health

**Work Environment**

Hybrid

**Assignment Description**

Health Promotion and Chronic Disease Division/Center for Health Promotion/Cardiovascular Health Unit: The CVH Unit has broad responsibility for leading public health activities in Minnesota that intersect with cardiovascular disease, stroke, and their related risk factors. Currently, the CVH Unit is the recipient of 3 major CDC awards, including the National Cardiovascular Health Program (23-0004), the Innovative Cardiovascular Health Program (23-0005), and the Paul Coverdell National Acute Stroke Program. The CVH Unit is also the home of the Minnesota Stroke Program, which is enabled by Minnesota Statute and tasked with implementing Minnesota's stroke system of care, ensuring that Minnesotans throughout the state have access to the highest quality emergency stroke care.

Day-to-day activities of the CVH Unit center around planning and collaboration with partners to move grant strategies and activities forward. They may also include developing education, training or awareness messages for various audiences. For epidemiology staff day-to-day activities include compiling quantitative evaluation and performance metrics, responding to internal and external data requests, providing data guidance and interpretation to internal staff or external partners, and conducting data analyses and compiling reports and dashboards.

The Fellow's anticipated day-to-day activities would include work on surveillance and main project activities listed in the next section. Other routine activities would include:

- Participation in CVH Unit and chronic disease program meetings to better understand ongoing programmatic work that analyses can inform.
- Collaboration with CVH epidemiologists on other cardiovascular disease and stroke surveillance activities.
- Participation in regular team meetings of chronic disease epidemiologists to deepen understanding of applied epidemiological work, network, and to learn about new techniques.
- Participation in CVH Unit and chronic disease evaluation team meetings and, as appropriate, work on evaluation projects to understand how surveillance system data can be utilized in program evaluation.
- Assisting with program evaluation activities for CVH Unit programs.
- Regular meetings with mentors -- minimum of four hours per week during the first month and two hours per week thereafter.
- Present data and surveillance findings to internal and external partners in support of programmatic deliverables.

**ID: 60455013**

**Chronic Disease, Infectious Diseases - Host Site Description**

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

Data sources that will be readily available for a CSTE fellow include: Behavioral Risk Factor Surveillance System (BRFSS), the Minnesota hospital discharge dataset, Minnesota’s full mortality dataset, Minnesota Stroke Registry data (includes more than 90% of stroke cases treated at Minnesota hospitals), medical and pharmacy claims in the Minnesota All-Payer Claims Database (MN APCD), and the Minnesota State Ambulance Reporting System (MNSTAR). In addition, the fellow will have access to data collected directly from partnering organizations who work with the Minnesota Department of Health through our existing CDC grants.

Both Dr. Peacock and Ms. Styles have extensive experience in data analysis methodologies and have dozens of publications between them. These publications range from surveillance reporting to use of GIS methodologies for data visualizations, program planning, and evaluation purposes and include both descriptive epidemiology as well as model testing and multivariate regression. Ms. Styles is a leader in using the MN APCD for public health planning and surveillance purposes, leading our agency on applying complicated surveillance methodologies to describe provision of services such as medication therapy management and cardiac rehabilitation, to assessing medication adherence for anti-hypertensive, lipid-lowering, and diabetes medications.

The primary and secondary mentor can offer support for the fellow in the use of the following software packages: SAS, Tableau, ArcGIS, and Microsoft Excel. Although not used by the primary and secondary mentor, the Minnesota Department of Health has an active and growing R users group, to which the fellow would have access.

**Projects**

**Surveillance Activity Title: Cardiovascular Disease Data Dashboards for Public Use**

*Surveillance Activity Description:*

Beginning in 2023, the CVH Unit has collaborated with the MDH Diabetes and Health Behavior Unit to redesign the way we make chronic disease data available to the public, using data from multiple data sources to create web pages with embedded user-friendly dashboards. To advance data equity, the dashboards are stratified by a number of available variables including age, sex, race, ethnicity, social vulnerability, and geography. The initial phase of this project includes prevalence, hospitalization and mortality data related to heart disease, stroke and diabetes and future phases could incorporate other chronic conditions, such as asthma. The fellow will be involved in analyzing data to make annual updates to the dashboards, expand available data by incorporating additional conditions and stratifications, and develop new dashboards. The fellow will also produce short companion reports (data stories) with narrative that dive deeper into certain topics or populations to provide additional context to the data.

*Surveillance Activity Objectives:*

- 1) Conduct analysis to make annual updates to data in existing dashboards;
- 2) Assess data availability and data quality for new stratification variables;
- 3) Produce 1-2 data stories annually;
- 4) Collaborate with other chronic disease units to incorporate new conditions into existing dashboards;
- 5) Participate in development of new dashboards.

**ID: 60455013**

**Chronic Disease, Infectious Diseases - Host Site Description**

**Minnesota Department of Health**

*Surveillance Activity Impact:*

The goal of this project is to make chronic disease surveillance data available in a format that is accessible to a wider and more diverse audience. The data can be used by community organizations, health professionals, local public health organizations, students or journalists to describe these conditions in the state, within their demographic group or their geography. These data can also be used to identify and drive interventions to address inequities in health outcomes in the state. This Surveillance Activity project is related to the following priorities of the Data Modernization Initiative: 1) Building the Right Foundation, and 2) Supporting and Extending Partnerships.

**Surveillance System Evaluation Title: Evaluation of the Minnesota Stroke Registry**

*Surveillance System Evaluation Description:*

The Minnesota Stroke Registry is a statewide data collection system that captures detailed stroke patient care data from more than 100 hospitals in Minnesota, typically including more than 15,000 cases annually. Collection of these data by hospitals are required the state-funded Minnesota Stroke System (MN Statutes 144.493-144.494), a coordinated system of care that ensures hospitals statewide are equipped and ready to treat stroke quickly. The Registry enables both the Minnesota Department of Health (MDH) and hospitals to collect, monitor, report on, and use data to inform quality improvement in the care of acute stroke patients. All hospitals are required to submit case-level stroke patient data to the MDH. Hospitals meet reporting requirements for the Minnesota Statewide Quality Reporting and Measurement System (SQRMS) by submitting data to the Registry. It also supports the data collection requirement for CDC's Paul Coverdell National Acute Stroke Program, in which Minnesota has participated in 2007. This evaluation exercise will assess the quality of the data being submitted by participating institutions, assess the feasibility of linkage with other datasets (such as the Minnesota State Ambulance Reporting System), and validate these data against other systems, such as the Minnesota hospital discharge dataset (not available until 2 years after the data are closed), in-hospital mortality as recorded in Minnesota death data, and potentially the MN All-Payer Claims Database. It will assess the quality of data elements that are required for submission to CDC, and assess the value of Minnesota-specific additions, such as new demographic data that aligns with the new Race and Ethnicity Data Disaggregation Standard. These results will be used to inform future Quality Improvement Activities for Minnesota Stroke System hospitals, and help to assess the suitability of these data for linking to other datasets, such as pre-hospital EMS data.

*Surveillance System Objectives:*

- 1) Identify data sources and data elements that align with information in the Minnesota Stroke Registry;
- 2) Create evaluation plan, conduct analyses, and any associated linkages;
- 3) Prepare evaluation report to communicate results and inform Stroke QI initiatives;
- 4) Present results to Minnesota Stroke Advisory Group, Acute Stroke Ready Quality Improvement Collaborative, Stroke Health Equity Learning Collaborative, and others.

*Surveillance System Impact:*

The Minnesota Stroke Registry has been collecting data on stroke events in Minnesota since 2007 but has never been formally evaluated. This project will provide invaluable insight into the quality of data collected and help to identify areas of improvement. These results will be communicated with stroke hospital partners advising the Minnesota Stroke System, and leaders of organizations implementing Quality Improvement Initiatives to inform future directions and QI focus for the Minnesota Stroke Program. Future plans include sharing results with Minnesota legislators to demonstrate the importance of the Minnesota Stroke Registry as the critical data foundation for effective functioning of the state-funded Minnesota Stroke System.

This Surveillance System Evaluation project is related to the following priorities of the Data Modernization Initiative: 1) Building the Right Foundation, 2) Accelerating Data Into Action, and 3) Supporting and Extending Partnerships.

**ID: 60455013**

**Chronic Disease, Infectious Diseases - Host Site Description  
Minnesota Department of Health**

**Major Project Title: Building a Syndromic Surveillance System for Time-Critical Cardiac Events**

*Major Project Description:*

For this project, the fellow will work with a team of staff from sections across MDH to support an expanded build out of the existing, flexible syndromic surveillance system in Minnesota to provide key real-time data on chronic conditions of public health importance and social determinants of health (SDOH) such as food insecurity, housing etc. that influence the incidence, prevalence, and severity of these conditions leading to hospitalizations. Currently, this system receives data from hospitals treating more than 80% of hospitalized patients in Minnesota has been successfully implemented to document changes in respiratory conditions and substance use. This work will focus on expanding the conditions tracked through the current system to include the reporting of chronic disease and SDOH factors will provide critical real time data to inform public health interventions at the local and state levels. The fellow will design and conduct an analysis of these data related to heart disease and stroke outcomes. If time permits, the fellow may develop methodologies to identify vulnerable populations experiencing acute consequences of unmanaged chronic conditions, and SDOH indicators such as homelessness, incarceration, or other patient-level social factors indicated by Z-codes.

*Major Project Objectives:*

- 1) Perform landscape analysis of syndromic surveillance for chronic conditions through literature search and structured interviews with other jurisdictions;
- 2) Initiate the development and testing of codes to identify trends in acute myocardial infarction (heart attack) hospitalizations as a test case for additional conditions;
- 3) Initiate the analysis of trends in myocardial infarction hospitalizations by demographic characteristics (race, ethnicity, sex, age group, geography, etc.) using analytic and visualization software packages;
- 4) Assess the current use of syndromic surveillance markers for vulnerable populations (inclusive of conditions such as hyperglycemia, hypertensive crisis, uncontrolled asthma, or SDOH indicators such as homelessness, incarceration, or other patient-level social factors indicated by Z-codes);
- 5) Present results to CVH Unit mentors, other chronic disease epidemiologists, evaluators, and leadership.

*Major Project Impact:*

This work is key to building out real time surveillance systems for cardiovascular conditions, which are not reportable events in Minnesota. The early stages of the COVID-19 pandemic elevated the need for a more rapid surveillance system for time-critical cardiovascular conditions, as there were no data to confirm major declines in chest pain patients at Minnesota hospitals until late 2022. Having data that can monitor these changes in care-seeking behavior in real time can support more rapid public messaging to call 9-1-1 if experiencing chest pain. In addition, this work will initiate our first assessment of the ability to track SDOH needs in Minnesotans seeking hospital care, especially in those patients experiencing time-critical cardiac emergencies. This pivot will complement grant-funded efforts to address SDOH in patients with hypertension and high cholesterol, but who have not experienced a cardiac event.

This Major Project: Building a Syndromic Surveillance System for Time-Critical Cardiac Events is related to the following priorities of the Data Modernization Initiative: 1) Building the Right Foundation, 2) Accelerating Data Into Action, and 3) Supporting and Extending Partnerships.

**Additional Project #1 Title: Building a STEMI Quality of Care Data System**

**Project #1 Type: Major Project**

*Project #1 Description:*

This project will require the fellow to engage with the cardiology programs at approximately 16 hospitals in Minnesota who offer 24/7 emergency care for ST-elevation Myocardial Infarction (STEMI) to establish an agreed-upon minimum data set for submission by hospitals to MDH.

**ID: 60455013**

**Chronic Disease, Infectious Diseases - Host Site Description**

**Minnesota Department of Health**

Hospitals in Minnesota currently collect some data on STEMI quality of care, but they use a variety of registries, making central data reporting through one vendor impossible. The fellow will be tasked with engaging with members of the Minnesota Cardiac Systems of Care Collaborative (comprised of STEMI program managers and quality improvement staff at STEMI hospitals in Minnesota) to identify a limited set of reportable data elements to measure statewide progress on the quality of care for STEMI.

*Project #1 Objectives and Expected Deliverables:*

- 1) Perform landscape analysis of existing STEMI registries and quality of care initiatives;
- 2) Meet with MDH project mentor, American Heart Association (AHA) quality improvement staff, and select STEMI program representatives to evaluate data elements for public reporting;
- 3) Design and test a data submission protocol and secure data collection instrument for STEMI quality of care data;
- 4) Present results to key partners, including The Minnesota Cardiac Systems Collaborative, AHA, and other STEMI program representatives.

*Project #1 Impact:*

Minnesota has a robust and mature stroke system of care, requiring participation in a patient care registry that informs hospital level and coordinated state quality improvement initiatives. This system has led to improved, coordinated care for acute stroke in Minnesota since its launch in 2013. Recognizing the success of the Minnesota Stroke System, partners in our state have sought improved data collection and a more coordinated approach for STEMI care in the last several years. Through the Minnesota Cardiac Systems of Collaborative, progress has been made on developing a Minnesota-specific STEMI care guideline, including transport protocols, and shared-decision making tools. The development of a trusted public reporting mechanism to benchmark individual STEMI program performance and design hospital-specific and statewide goals is a high-priority next step for Minnesota to implement a coordinated, statewide approach to STEMI care.

This Major Project: Building a STEMI Quality of Care Data System is related to the following priorities of the Data Modernization Initiative: 1) Building the Right Foundation, 2) Accelerating Data Into Action, and 3) Supporting and Extending Partnerships.

**Additional Project #2 Title: Population-Based Disease Prevalence Estimates from Claims Data**

**Project #2 Type: Major Project**

*Project #2 Description:*

The CVH Unit has integrated use of the MN All-Payer Claims Database (MN APCD) into our data and surveillance activities more than any other disease-specific program area at MDH. The MN APCD contains medical and pharmacy claims data from all Medicaid and Medicare-covered Minnesotans, but only about 40% of patients with commercial insurance. The comprehensive coverage of the MN APCD provides an opportunity to calculate prevalence estimates of hypertension and other conditions at local levels, down to the Zip code, for Medicaid and Medicare members. The fellow will assist in developing an adjustment methodology to account for missing commercial claims to allow the creation of more reliable estimates of chronic disease prevalence at the state and local levels for all Minnesotans. We have strong support from the Health Economics Program (stewards of the MN APCD) to collaborate on this project.

*Project #2 Objectives and Expected Deliverables:*

- 1) Conduct a literature review to see if adjustment methods exist;
- 2) Develop analysis and validation plan;
- 3) Calculate prevalence estimates of various cardiovascular and chronic diseases for all Minnesota zip codes;
- 4) Present results to chronic disease programs and the MN APCD data stewards.

**ID: 60455013**

**Chronic Disease, Infectious Diseases - Host Site Description  
Minnesota Department of Health**

*Project #2 Impact:*

The most frequently cited estimates of hypertension in Minnesota come from the Behavioral Risk Factor Surveillance System (BRFSS). While BRFSS survey data are useful as a surveillance tool for states and the nation as whole, the data is self-reported and comes from a survey that only samples a small proportion of people in the state, preventing MDH from assessing hypertension prevalence at smaller geographies across the state. Data on hypertension, high cholesterol, or other cardiac conditions from the MN APCD is based on actual clinical diagnosis and allows us to look deeper into geographic differences in chronic condition prevalence across the state.

This Major Project: Population-Based Disease Prevalence Estimates from Claims Data is related to the following priorities of the Data Modernization Initiative: 1) Building the Right Foundation, 2) Supporting and Extending Partnerships.

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

Emergency Preparedness and Response Division will provide opportunities to learn more about emergency preparedness and response at the state level. Potential activities:

- Orientation to the Emergency Preparedness and Response Division to include an overview of the public health preparedness program and healthcare preparedness program.
- Participation in MDH response and incident management workshops and exercises. Share information of related emergency preparedness workshops and conferences in Minnesota.
- Attendance at a meeting with partners to enhance knowledge of preparedness and response training in Minnesota. Meetings include:
  - Science Advisory Team, established by MDH to develop operational processes for the provision of crisis clinical care in the event of a public health emergency and provide clinical and operational expertise to MDH prior to and during events requiring such input.
  - Regional Hospital Preparedness Quarterly Meeting which includes the regional healthcare preparedness coordinators, public health preparedness consultants, members from health care coalitions and MDH staff. These meetings provide for collaboration inter-regionally across the state for planning and response purposes.
  - Local Public Health meetings with directors and emergency preparedness staff for information sharing.
  - Tribal Emergency Preparedness meeting with tribal staff, EPR staff and staff from the MDH Office of American Indian Health.

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

Fellowship mentors have connected with staff in the Foodborne Diseases Unit and the Emerging Infectious Disease Emergency and Response Unit. The fellow will have the opportunity to work on a foodborne outbreak investigation during the first year of the fellowship. If a more unique outbreak opportunity arises during the two-year fellowship, the fellow would also be able to participate in some capacity. Previous CSTE fellows in the agency have assisted with Ebola travel monitoring and measles outbreak investigations.

The fellow will have the opportunity to participate in a foodborne or suspected foodborne outbreak investigation. Prior to taking the lead, the fellow will participate in the Foodborne Disease Unit (FDU) weekly meetings to hear about on-going outbreaks, and they will assist an experienced epidemiologist on an investigation. If leading the investigation, they will be mentored and supported by an experienced epidemiologist and the FDU Supervisor.

**ID: 60455013**

**Chronic Disease, Infectious Diseases - Host Site Description**

**Minnesota Department of Health**

As part of the investigation, the fellow will assess illness incubation, duration, and clinical presentation to infer possible outbreak etiology, they will collaborate with the appropriate environmental health agency (state or local) and provide response guidance based on suspected etiology. The fellow will identify best approach for case finding and control ascertainment based on outbreak setting or situation, conduct an analytical study (specific study design will be dependent on the investigation), summarize results, communicate results with the investigation team, and write an outbreak report summarizing findings. Throughout the investigation, the fellow will provide updates to the investigation team, to MDH staff in internal meetings, and to the Foodborne Diseases Unit Supervisor.

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

In addition to the syndromic surveillance activity described as a major project opportunity that is related to time-critical heart events influenced by COVID-19, the fellow will also have the opportunity to participate in investigating COVID-19 cases. These investigations include telephone interviews with COVID-19 cases from targeted populations. These interviews include parents/guardians of infant COVID-19 cases, long-COVID, and cases that may be associated with an outbreak or cluster.

The Minnesota Department of Health was also one of the first state health departments in the country to have a program and staff dedicated to long COVID and post-COVID conditions. The long COVID program sits within the same division as the CVH Unit. Depending on the fellow's interest and needs of the long COVID program, there is potential to partner on analyses related to long COVID symptoms related to cardiovascular disease

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

The fellow will be able to work on health equity concepts throughout their assignment, including analyzing data by race and ethnicity, age group, sex, payer, social vulnerability, geography, and more.

Finally, the fellow will have the opportunity to engage with agency and division-level health equity activities, include the agency-wide Health Equity Data Community of Practice, and with the Health Promotion & Chronic Disease Division, a vigorous and active Health Equity Leadership Team, with work groups on the following topics: 1) Improving Interpersonal Understanding; 2) Structural Racism and Health; 3) Integrating Health Equity into our Work; 4) Policing and Public Health; and 5) Holding Ourselves Accountable.