

**ID: 83222093**

**Chronic Disease, Environmental Health - Host Site Description**

**Vermont Department of Health**

**Assignment Location:** Waterbury, US-VT  
Vermont Department of Health  
Division of Health Statistics and Informatics - Research, Epidemiology, and Evaluation Unit

**Primary Mentor:** Hannah Willett, BA, MPH  
Public Health Analyst  
Vermont Department of Health

**Secondary Mentor:** Paul Meddaugh, BS, MS  
Health Promotion and Disease Prevention Analytic Team Lead  
Vermont Department of Health

**Work Environment**

Hybrid

**Assignment Description**

The fellow will be placed in the Vermont Department of Health (VDH), situated in Vermont's Agency of Human Services. The fellow will work in the Division of Health Statistics and Informatics (HSI). HSI is responsible for the support of timely, quality, and accessible data collection, analysis, and evaluation for the VDH so that data may be used to inform and improve public health programs and policy and ensure that data systems are continuously improved, modernized, and secure.

Within HSI the fellow will work in the Research, Epidemiology, and Evaluation (REE) Unit primarily with the Health Promotion & Disease Prevention Analyst Team supporting VDH's chronic disease programs. The fellow will also closely collaborate with the other teams in the REE Unit, including the teams supporting injury prevention, substance use programs, and surveillance systems. The work of REE is primarily to support these four areas and associated analytic priorities by ensuring they have the tools and resources needed to perform assigned functions and projects within a collaborative space with other analysts serving similar functions across VDH programs.

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

The fellow will have the option of using either R, SAS, or SPSS statistical software for analytic work while at VDH, as well as ArcGIS for mapping, and Power BI for dashboard creation. Additionally, the fellow will have access to department resources for enhancing professional skills including courses on the State of Vermont's LINC Learning Management System, Leadership Skills Lunch and Learn sessions hosted by VDH's Division of Workforce Development, and other collaborative spaces such as the R Users and Evaluation groups which meet monthly to share resources and provide technical support.

Surveillance systems that the fellow will have access to include but are not limited to: Behavioral Risk Factor Surveillance System (BRFSS), Youth Risk Behavior Survey (YRBS), Vermont Uniform Hospital Discharge Data System (VUHDDS), Vermont Health Care Uniform Reporting and Evaluation System (VHCURES), Vermont Vital Records, National Environmental Public Health Tracking Network (NEPHTN), Violent Death Reporting System (VDRS), Cancer Registry, Statewide Incident Reporting Network (SIREN), Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE).

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**Projects**

**Surveillance Activity Title: Extreme Heat Exposure and Diabetes**

*Surveillance Activity Description:*

Excess heat can affect the body's ability to metabolize insulin, and nerve damage associated with diabetes also decreases the ability of the body to sweat and regulate temperature during periods of high heat. The number of days of excess heat in Vermont has been increasing for several decades, placing Vermonters with diabetes at greater risk of experiencing heat-related illness and related complications. In this surveillance activity, the fellow will explore associations between exposure to extreme heat and hospitalizations, emergency department and urgent care visits, and ambulance responses due to diabetes and heat-related illness.

*Surveillance Activity Objectives:*

This project aims to explore variations in hospitalization rates by factors such as care setting, time of year, co-occurring chronic conditions, and demographic factors using data from the National Environmental Public Health Tracking Network and our hospital discharge data system, the Vermont Uniform Hospital Discharge Data Set (VUHDDS), as well as looking at opportunities to incorporate syndromic data from the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE), medical claims data from Vermont's All-Payer Claims Database the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES), and emergency medical service responses through our Statewide Incident Reporting Network (SIREN) pre-hospital patient care data collection system. The fellow will be expected to produce a data brief and present key findings to the Vermont Diabetes Program and partners. The fellow will consult with the diabetes analyst, diabetes program, and environmental health epidemiologist as necessary ensuring communication and coordination across all.

*Surveillance Activity Impact:*

Diabetes has been identified as a leading co-occurring diagnosis among those experiencing heat-related illness in Vermont. One in eleven Vermont adults has diabetes and having high quality data on the impact of extreme heat events on those with diabetes will inform our understanding of who is at highest risk, outcomes of particular concern, and best practices for preparing for environmental events.

**Surveillance System Evaluation Title: Asthma Severity and Control Surveillance in Vermont**

*Surveillance System Evaluation Description:*

The last year of data collection for the Asthma Callback Survey (ACBS) concluded at the end of 2024, marking the end of a primary source for detailed population surveillance data on the health and experiences of Vermonters with asthma for the past several years. Two measures in particular, asthma control and asthma severity, have been consistently included in statewide surveillance reports and used as performance metrics for the Vermont Asthma Program (VAP) to measure progress towards improving the lives of Vermonters with asthma. Asthma control and severity are both composite measures which include metrics such as emergency department visits, school and work absenteeism, medication use, and frequency and duration of symptoms.

With the discontinuation of this data source, the VAP is eager to evaluate additional existing surveillance systems that may allow for the continued measurement of asthma control and severity. The fellow will explore both VHCURES, which includes medical claims data, and VUHDDS, which includes data on emergency room visits and hospitalizations, as potential surveillance systems for measuring asthma control and severity.

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*Surveillance System Objectives:*

Working with the asthma analyst and consulting with the VAP, the goal of this project will be to create new composite measures from available data and, once measures have been established, assess the chosen surveillance system's attributes such as data quality, sensitivity, and representativeness with respect to their measurement of asthma control and severity. Expected deliverables from this project include a report documenting the methodology used to create the new composite measures, as well as a detailed evaluation of the surveillance system. The fellow will also be expected to present findings to the VAP and other interested research partners in the state.

*Surveillance System Impact:*

The development of these measures will fill a major surveillance gap caused by the loss of the ACBS and allow for the continued monitoring of two key measures of the experiences of Vermonters with asthma.

**Major Project Title: Patterns in the Co-Occurrence of Chronic Disease in Vermont**

*Major Project Description:*

Chronic disease such as cardiovascular disease, chronic obstructive pulmonary disease (COPD), asthma, diabetes, arthritis, cancer, and mental health conditions impose a huge burden on many Vermont residents, impacting nearly every facet of their daily lives. Four of the top five leading causes of death in Vermont in 2023 were related to chronic disease, and further complicating this experience is the fact that many people experience multiple chronic conditions which may interact in unique ways. Those with diabetes, for example, are significantly more likely to have three or more chronic conditions in addition to diabetes than to have diabetes alone.

In this major project, the fellow will explore the experiences and impacts of co-occurring chronic disease for Vermonters. They will use data sources including hospital discharge data, vital records, and population survey data to explore higher prevalence disease combinations, as well as differences between those living with a single chronic condition and those with comorbid conditions. The fellow will explore specific considerations for those with co-occurring chronic diseases such as environmental events, emergency preparedness, and aging. The fellow will collect and analyze qualitative data on the lived experience of co-occurring chronic disease through key informant interviews or focus groups.

*Major Project Objectives:*

The primary objective of this project is to highlight the experiences of those living with multiple chronic diseases in Vermont and shed light on specific challenges and risks they may face in order to ultimately develop focused emergency preparedness resources. The fellow will work closely with chronic disease analysts at VDH and coordinate with the Health Promotion and Disease Prevention Team Lead to determine the most appropriate deliverable for this project, which might include a report, dashboard, or series of briefs highlighting key findings and special considerations for the population affected by co-occurring chronic conditions in Vermont.

*Major Project Impact:*

Chronic disease work often occurs in silos, considering only one condition at a time. This project will represent a significant opportunity for VDH to begin building an evidence base on the impact of co-occurring diseases and promoting the value of cross-program collaboration to best serve Vermonters.

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**Additional Project #1 Title: Suicide among Vermonters with Chronic Disease**

**Project #1 Type: Surveillance Activity**

*Project #1 Description:*

A mounting body of evidence demonstrates the profound impact of chronic conditions on mental health, including an increased risk for suicidal thoughts, attempts, and death observed in national data. Recent data in Vermont suggest that those with COPD, diabetes, cancer, or asthma were significantly more likely to experience depression than those without those chronic conditions. National data has shown elevated risk of suicide among those with chronic illnesses as well, but the state of Vermont has not yet been able to examine this relationship in-depth. In this surveillance activity, the fellow will be tasked with exploring suicidality among those with chronic conditions in Vermont using the open-text field of the Violent Death Reporting System (VDRS). The fellow will develop qualitative analytic methodology to classify those having died by suicide as having a chronic disease, and then apply that to the data to describe how many of those who die by suicide in Vermont are suffering from a chronic condition, and compare those who died by suicide with and without chronic conditions with respect to other social determinants of health and prior health care experiences. If there is capacity, the fellow may also examine quantitative data from other data sources (e.g., VHCURES) to provide a more comprehensive picture of the relationship between chronic disease and suicide risk in Vermont. The fellow will collaborate with chronic disease programs, as well as colleagues from the injury analytic team throughout the project.

*Project #1 Objectives and Expected Deliverables:*

The project objective will be to explore the prevalence and characteristics of deaths by suicide among those with chronic conditions in Vermont. The fellow will be expected to produce methodology for identifying cases of chronic disease among those who died by suicide that could be replicated for future analyses, as well as a data brief summarizing the key findings.

*Project #1 Impact:*

The resulting data brief will support the work of both the Division of Health Promotion and Disease Prevention, which serves Vermonters with chronic diseases, as well as the Comprehensive Suicide Prevention grant and folks working to serve Vermonters facing mental health crises. Results may inform future public health communication campaigns or programming specifically focusing on the mental health challenges imposed by living with chronic disease.

**Additional Project #2 Title: Tobacco Product Use and Oral Health**

**Project #2 Type: Surveillance Activity**

*Project #2 Description:*

In this surveillance activity, the fellow will explore the impact of tobacco product use on oral health in Vermont, with a particular focus on new or newly popular products entering the marketplace. Tobacco products such as cigarettes, cigars, and smokeless tobacco (e.g. dip, snuff, and chewing tobacco) have been shown to increase the risk of a variety of oral health problems including mouth and throat cancer and tooth decay. The risks associated with newer products such as e-cigarettes and nicotine pouches are less well known, but concerns about periodontal disease make this a priority research area for the Vermont Oral Health Program and the Vermont Tobacco Control Program.

*Project #2 Objectives and Expected Deliverables:*

The fellow will explore data sources including population survey and tobacco retail market data to explore the prevalence of oral health problems among those using various tobacco products. The project aims to describe high risk populations and examine any available data about oral health care utilization among those using tobacco products. There may be data gaps in Vermont's surveillance of tobacco and oral health, in which case the fellow will be encouraged to document these gaps and make recommendations for improving surveillance. Expected deliverables from this project include a data brief and a data gaps memo.

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*Project #2 Impact:*

There is a paucity of research on the relationship between tobacco product use and oral health in Vermont, and this project will serve to provide both the oral health and tobacco programs with critical information needed to promote oral health and reduce tobacco use in the state.

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

All staff at the Vermont Department of Health are expected to participate in ongoing emergency preparedness training, including both hands-on tabletop exercises and online modules, and the fellow will be expected to complete these as well. If a Health Operation Center (HOC) is activated to respond to a crisis or emergency during the fellow’s time at VDH, they would be invited to observe various aspects of HOC operations and participate in the response as permitted by the particular circumstances and staff capacity.

In addition to these trainings, the fellow will be conducting a needs assessment examining existing public health data in Vermont that provide insight into the overlap between chronic conditions and environmental events such as wildfire, extreme heat, and drought. As these events become more frequent and more extreme, there is a growing body of research on the impacts such events may have on those with chronic conditions such as challenges in disease management, disruptions to medical care and medication access, added mental health burden, and elevated risks to those with compromised immune systems. The fellow will begin with a literature review of existing research. The needs assessment will include meeting with partners around VDH, an inventory of existing data sources on chronic disease and environmental health, a summary of previous analyses or data products on the subject. The final deliverable will be a report including a data inventory and data gaps memo and a summary of future areas of exploration to inform emergency preparedness efforts geared toward those with chronic conditions.

The routine VDH emergency preparedness trainings are anticipated to take about 4 hours of the fellow’s time spread out over their two years at the host site. The needs assessment will be considered as a standalone project, and time will be allocated to complete this project over 2-3 months.

**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 on call to assist the VDH cancer analyst and Vermont Cancer Registry in investigating any reported concerns of possible cancer clusters that may arise during their fellowship.

With the guidance from the VDH cancer analyst and assistance as needed the fellow will perform a literature review of cancer risks associated with PHAS/PHOA. If the fellow’s capacity permits, they will also conduct an exploratory analysis of Vermont cancer registry data informed by the literature review to build our knowledge base about potential risks in Vermont and equip the cancer program to respond to periodic public reports of concern. Should a potential cluster arise, the fellow will also be involved with statistical analyses to identify whether a statistically significant cluster exists and explore exposures of potential concern.