ID: 45663876
Infectious Disease - Host Site Description
Minnesota Department of Health

Assignment Location: St. Paul, US-MN
Minnesota Department of Health
Infectious Disease Epidemiology, Prevention and Control

Primary Mentor: Beth Gyllstrom, PhD, MPH
Epidemiologist Principal
Minnesota Department of Health

Secondary Mentor: Ashley Fell, MPH
Epidemiologis Senior
Minnesota Department of Health

Work Environment
Hybrid

Assignment Description

The fellow will be mentored by Dr. Beth Gyllstrom, the EIDER Epidemiologist Principal and Ms. Ashley Fell, the Long COVID Epidemiologist (within the IDEPC EIDER Section) and will also work with epidemiologists within the EIDER Section, the HPCD division and IDEPC overall. The fellow will be active in EIDER Section activities, including surveillance, outbreak investigation, emergency response, and special projects. This person will play a role in our collaborative long COVID enhanced surveillance work.

In addition to providing a solid foundation in emerging infectious disease epidemiology, response, and prevention, this position presents an exciting opportunity for a fellow to work in a professional, academically minded health department. The EIDER section is currently refining how we proceed with endemic surveillance activities for COVID-19, prepare for the next pandemic, and broaden surveillance and public health communication efforts from COVID-19 to include other viral respiratory pathogens (i.e., influenza and RSV). In addition, MDH continues to focus efforts on identifying populations at increased risk of severe outcomes from viral respiratory pathogens as part of promoting health equity in Minnesota.

The fellow will attend internal and external meetings, including those for infectious disease epidemiology and lab staff (e.g., Morning Report), the EIDER Epi and Data Unit meetings; meet with mentors to discuss projects, progress, and opportunities; develop and execute epidemiologic projects; develop public health communications; write scientific reports; increase and maintain subject matter expertise by reading peer-reviewed literature and other relevant documents and by participating in online training; and present work products, including scientific posters and presentations at local, state, and national scientific conferences, and prepare manuscripts.

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

Available software includes: SAS, R, Tableau, Epi Info, REDCap, Microsoft suite including Excel, and End Note. Surveillance systems and databases available include: MDH Public Health Laboratory database (Laboratory Information Management System [LIMS]), Minnesota Electronic Disease Surveillance System (MEDSS) database, and Oracle BI Discoverer. Other databases and software as needed (e.g., ArcGIS software, Minnesota Registration and Certification database, etc.).

Projects

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Surveillance Activity Title: Prospective, statewide, enhanced surveillance of long COVID in Minnesota

Surveillance Activity Description:
Throughout the COVID-19 pandemic response, there was growing awareness of potential long-term sequelae post active infection. Long COVID or post-COVID conditions has been a topic of study and interest at the state, national and international level. MDH was one of the first health departments to establish a Long COVID program, housed within the Health Policy and Chronic Disease (HPCD) division, whose work is conducted in close collaboration with the IDEPC EIDER section. The large number of potential signs and symptoms, as well as changing definitions, have made it difficult to fully characterize the magnitude and burden of long COVID in populations. MDH piloted a single-county, prospective enhanced surveillance project for long COVID in spring 2022. Early results were encouraging and prompted MDH to expand long COVID surveillance statewide in fall 2024. The design incorporates an initial phone interview one month after specimen date and has follow-up data collection at 3-, 6-, and 12-months post-infection.

Surveillance Activity Objectives:
- Work on a team comprised of staff from IDEPC and the Health Promotion Chronic Disease (HPCD) division to enhance surveillance of long COVID in MN, including methods development, analysis and communications to key stakeholder audiences.
- Compare and evaluate the findings of MDH long COVID enhanced surveillance with the work of other jurisdictions and academic institutions.
- Develop recommendations for future long COVID surveillance and how to target resources effectively.

Surveillance Activity Impact:
Long COVID is estimated to affect 8-15% of persons who had SARS-CoV-2 infections. Methods differ across projects and studies. The potential for prolonged disability and poor health has serious implications for public health, particularly as it affects persons of working age. This project aims to better describe the experiences of persons living with Long COVID to help identify the need for resources and support.

Surveillance System Evaluation Title: Evaluation of Minnesota Long COVID Enhanced Surveillance

Surveillance System Evaluation Description:
Minnesota has conducted one retrospective surveillance project to assess long COVID in Minnesota, as well as a prospective pilot project. We recently expanded long COVID enhanced surveillance statewide. We have not had the opportunity evaluate these systems in terms of their ability to provide timely and relevant data for decision-making, both individually and collectively. We anticipate having a full year of complete data in fall of 2025, which is well-timed for a fellow to assist with analysis and conduct an evaluation of the long COVID surveillance system. The fellow would assist with a comprehensive evaluation of our COVID-19 surveillance system.

Surveillance System Objectives:
- Evaluate strengths/limitations of the current individual data systems and sources.
- Evaluate data reporting mechanisms and timeliness of data availability.
- Provide recommendations for how to "right-size" our enhanced Long COVID surveillance system, given potential resource limitations in the future.

Surveillance System Impact:
The COVID-19 active pandemic response required intensive state and local resources in Minnesota, both in terms of staffing and data systems. As the active portion of the COVID-19 response ended, it became apparent that a significant portion of Minnesotans were still experiencing longer term sequelae. Minnesota is one of the only states to be addressing long COVID collaboratively as a partnership between our infectious and chronic disease teams. There are a

variety of approaches to try and assess the burden of long COVID, but most have not been evaluated. The time is right to evaluate our enhanced long COVID surveillance and make recommendations for a sustainable system that can continue, acknowledging likely decreases in resources (both staffing and financial). it is critical to identify those components of a long COVID surveillance system that result in data to support policymakers and citizens in decision-making around interventions and mitigation strategies.

Major Project Title: Analysis of COVID-19 in Minnesota using GIS and mapping techniques

Major Project Description:
MDH is currently in the process of geocoding all COVID-19 case data which will create numerous opportunities for the fellow to conduct more in-depth analysis of cases using GIS and mapping techniques, as well as community-level measures of socioeconomic status (e.g., social vulnerability index) by census tract. Geocoded case data could also provide a deeper understanding of trends in vaccine breakthrough cases, reinfections, hospitalization, death, and transmission of variants of concern, depending on the interests of the fellow. This project will focus on analyzing our 1.7 million COVID cases through the perspective of geospatial and community-level variables, in conjunction with standard variables of interest from our case database.

Major Project Objectives:
- Apply and make recommendations to incorporate community-level social indicators into our databases to allow for better assessment of health disparities and identification of vulnerable populations.
- Work collaboratively with the MDH Center for Health Equity and our COVID Community Coordinators (CCCs) to maximize the use of data for public health recommendations and interventions. The CCCs are community-based organizations that were created during the COVID-19 active response to connect Minnesota's diverse communities to COVID-19 testing, vaccination and other resources and to provide access and support for comprehensive health recovery post-pandemic.
- Develop community engagement opportunities to translate and discuss findings from the medical literature that are focused on vulnerable and underserved populations. Using bidirectional exchange of information, together develop recommendations for communities on the prevention, treatment, and control of COVID-19.

Major Project Impact:
These data will help MDH continue to advance health equity by identifying additional vulnerable and underserved populations most impacted by COVID-19 and help inform the COVID-19 response by better targeting interventions and resources.

Additional Project #1 Title: Enhanced Infant COVID Surveillance
Project #1 Type: Major Project

Project #1 Description:
Enhanced COVID-19 Infant Surveillance has been underway in Minnesota since spring 2023 and augments routine surveillance. This work is designed to identify factors that contribute to elevated rates of infection in this population. While some of these differences can potentially be explained by testing patterns (e.g., small children are not approved for at home COVID-19 tests and likely receive tests in clinic or hospital settings), there are differences by age group within this young population. This is an opportunity for a fellow to be involved early on in assisting with the analysis and presentation of results.

Project #1 Objectives and Expected Deliverables:
- Evaluate the enhanced surveillance design for monitoring infant COVID infections and characterize strengths/limitations through the perspective of feasibility as well as data integrity.

- Provide recommendations on incorporating various study designs into ongoing surveillance activities.
- Determine if and how these approaches could be expanded and applied to other pathogens.

Project #1 Impact:
Reducing COVID-19 infections in our youngest populations has important short-term and longer term public health impacts. Some of this population is not eligible for COVID-19 vaccines, so it is critical to identify what factors might be contributing to increased infection rates. Data from a variety of studies suggest that multiple COVID-19 infections have the potential to result in longer-term sequalae. In addition, this work does include examining potential co-infections, specifically with small children infected with RSV.

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

It is anticipated that there will be opportunities to participate in emergency responses to public health threats. The EIDER section has worked closely with the MDH Center for Emergency Preparedness and Response throughout the COVID-19 pandemic and continue to collaborate closely on COVID-19 and other responses, including Ebola travel monitoring, Marburg travel monitoring, multiple measles outbreaks, and the Lassa Fever response (Iowa case, Minnesota residents had potential lab exposures). Mentors provided leadership to the MDH response for COVID-19 and have done so since the beginning of the pandemic (winter 2020). Dr. Gyllstrom and Ms. Fell were leads in implementing Ebola and Marburg travel monitoring, as well as coordinating the Lassa Fever response with Iowa. There are also opportunities to participate in general preparedness activities, including bioterrorism preparedness. There is opportunity to work with bioterrorism preparedness staff and participate in the development of table-top exercises, as well as attend emergency preparedness workshops and/or conferences.

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

The EIDER section has several processes in place to identify, characterize and respond to potential COVID-19 clusters including the use of geocoded case data, whole genome sequencing and variant analysis, reporting from healthcare facilities (e.g., long-term care facilities, acute care hospitals), as well as regular review of surveillance data. We are particularly interested in examining how the pandemic affected areas of higher social vulnerability and/or are comprised of high priority population groups. This includes Black, Indigenous and people of color (BIPOC), as well as medically-underserved communities, and differences among rural and urban populations in Minnesota. In addition to COVID-19 outbreaks, we will offer the opportunity to lead a foodborne or other outbreak investigation within another section of IDEPC. Depending on the opportunities, EIDER will prioritize the Fellow's time to complete their competencies. Previous fellows have devoted 0.25-0.50 FTE to cluster and active outbreak investigations.