ID: 76079450
Chronic Disease, Injury - Host Site Description
Minnesota Department of Health

Assignment Location: Saint Paul, US-MN
Minnesota Department of Health
Division of Health Promotion and Chronic Disease, Center for Health Promotion

Primary Mentor: Renee Kidney, PhD, MPH
Epidemiologist Principal
Minnesota Department of Health

Secondary Mentor: Ericka Welsh, PhD, MPH
Healthy Aging Fellow
Minnesota Department of Health

Work Environment
Hybrid

Assignment Description

The Fellow will join the Aging and Healthy Communities Unit coordinating Healthy Aging work at the Minnesota Department of Health. Initially for the first few months at minimum, the Primary mentor would like to engage with the fellow through weekly in-person meetings to build a strong foundation for our working relationship. The fellow can work remotely, in office (located in downtown St. Paul), or in a hybrid format as supports their work. The Aging and Healthy Communities Unit supports coordination of activities related to healthy aging across the agency and specifically leads implementation of work related to Alzheimer's disease and other dementias. The Aging and Healthy Communities Unit is located in the Health Promotion and Chronic Disease Division whose mission is to advance health equity by collaboratively preventing and reducing the impacts of chronic disease and disability. The fellow will also work closely with our partners in the Injury Prevention and Mental Health Division (IPMH) where the secondary fellowship mentor is located. Injury Prevention and Mental Health (IPMH) monitors and reduces the risk of injuries and adverse mental health outcomes. The Fellow will be mentored by the Healthy Aging epidemiologist and the supervisor of the Injury and Violence Epidemiology Unit. The Fellow will have the opportunity to work other MDH staff working on Healthy Aging and numerous other state and local partners.

We anticipate the Fellow's anticipated day-to-day activities to include:

- Meeting with mentors and project teams.
- Participating in trainings to support development of "soft-skills" as well as technical skills relevant to this project such as project planning, communication training, SQL or other tools for management of large datasets, etc…
- Participating in meetings with partners and community members to better understand who is using the data and for what purposes. This will help to inform the formulation of analysis questions and how the data are presented back. As aligned with project and fellow interests, we can look for opportunities for deeper engagement with partners.
- Staying current on project issues by reading journal articles, attending webinars and other training activities. MDH has an epidemiology community of practice and a health equity data community of practice where the Fellow can join other staff in sharing their work, getting comments and input, and learning about other work happening throughout the agency.
- Developing analysis plans; devising study methodology; collecting, editing and revising data; conducting analyses; developing data dashboards; writing, publishing and presenting reports; and submitting plans for potential program and policy change at the local, state and organizational levels.

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

The Fellow will have access to many datasets and relevant trainings to complete their work. These include: The Behavioral Risk Factor Surveillance System, MN Hospital Discharge Data, Mortality data, syndromic surveillance, All-Payer Claims Database, Trauma Registry, Traumatic Brain Injury Registry, Trauma, EMS data and other databases as the Fellow's projects develop. The Fellow will also have access to SAS, R, SPSS, ArcGIS, Tableau, and other software as needed. There are active communities of R, SAS and Tableau users at MDH who can help assist the Fellow with learning and development of these resources.

Both mentors will be able to provide data analysis and statistical support for the fellows. Both Renée and Ericka have expertise in chronic disease epidemiology and Ericka has expertise in injury epidemiology; together this shared experience creates a strong supportive foundation for work in Healthy Aging. The Healthy Aging Fellow will also be able to work with MDH staff who are skilled in developing dashboards and analyzing large administrative. There are also additional MDH staff who can provide support for the specific datasets mentioned above.

There are many communities of practice that the fellow can engage in to continue learning statistical and data analysis techniques. The Center for Health Promotion hosts a community of practice for epidemiologists and evaluators where people regularly bring current challenges and workshop them together. The agency hosts a monthly Health Equity Data Community of Practice that focuses on equity-related data analysis and helps to build connections to resources across the agency.

Projects

Surveillance Activity Title: Assess and develop new data sources to estimate prevalence of Traumatic Brain Injury (TBI) and TBI-related disability in the general population

Surveillance Activity Description:
To address known gaps in the epidemiology of TBI, CDC's Report to Congress on Traumatic Brain Injury in the United States recommends improving TBI incidence and prevalence estimates to include patients with TBI who are treated in non-hospital settings and those with TBI who are not receiving medical care; generating state-specific TBI estimates; and producing population-level estimates of TBI-related disability. This fellowship project will focus on evaluating the potential for new data sources to generate more accurate estimates of incidence and prevalence than existing data based off of hospitalizations can produce.

The project will start by the fellow learning and evaluating the existing TBI registry which is based off of data obtained during hospitalization and then assessing the potential for other data sets to be used to enhance Minnesota TBI surveillance. These can include examination of the BRFSS TBI module (used in Ohio), the potential to add questions about brain injury to existing modules like falls or cognitive impairment which can be linked to history of TBI, and data from primary care and urgent care visits through the Minnesota EHR consortium or other data sources.

Additionally, the fellow will work with the TBI Registry Analyst and MDH's interoperability vendor to learn about the Minnesota TBI/SCI public health reporting data system currently being built. This system can be assessed for feasibility of using these data to generate prevalence estimates in the future and assess other potential uses of these data for public health action.

Based on these assessments, the fellow will work with mentors to decide which data should be incorporated into existing TBI surveillance systems and analyze available data to improve estimates of incidence, prevalence, and TBI-related disability.

Data Sources:

- TBI registry
- BRFSS
- Primary care and urgent care visit records
- TBI/SCI public health reporting data

Surveillance Activity Objectives:
Project objectives: Expand surveillance of TBI in MN to include measures of prevalence of TBI and prevalence of TBI-related disability

Project deliverables:

- Inventory of current and expanded TBI surveillance indicators
- Report summarizing data collection methods and recommendations for analysis and continued monitoring of TBI surveillance indicators (assuming that findings may not be possible during time frame of fellowship, e.g. BRFSS data not reported for a couple years)

Surveillance Activity Impact:
TBI is an important public health issue on its own and in relation to other chronic conditions. TBI involving loss of consciousness is estimated to affect around 1 in 6 adults over their lifetime. Adults 75 years and older have the highest rates of TBI-related hospitalizations and deaths among all age groups. Sequellae related to TBI are variable and can emerge immediately or many years later. Only recently has TBI been thought of as a chronic condition itself (being named as such by CMS). TBI also is known to be a risk factor for subsequent falls, dementia and epilepsy. The effects of TBI vary with age. Older adults who sustain a TBI have lower survival rates and less favorable outcomes than those who sustain a TBI during young and middle adulthood (Frankel et al., 2006; Hukkelhoven et al., 2003). In addition to the complexities described above related to age at time of event, delayed emergence of symptoms years later, and associations with other chronic conditions commonly associated with aging, quantifying the number of TBIs is challenging. Registries like the TBI registry only capture those cases that are treated in hospitals. Other data suggest many TBIs including moderate and severe TBI do not lead to hospitalization, meaning that hospital-based registries likely undercount total incidence and prevalence of TBI. This project will better estimate the true incidence and prevalence and will help to determine the degree to which underreporting affects estimates. More complete reporting of TBI will allow people who have experienced TBI to better access resources, especially in the not uncommon situation of the chronic health effects of TBI manifesting long after acute medical treatment and rehabilitation have been completed.

Surveillance System Evaluation Title: Evaluate Minnesota Falls-Related Surveillance System Measures and their Use

Surveillance System Evaluation Description:
The Fellow will conduct a targeted evaluation of the MN Falls-Related Surveillance System including measuring the completeness and accuracy of the data and its current use in helping to inform falls prevention-related activities. CDC guidance will be the main resource used to plan the evaluation. The Fellow will report on the evaluation findings. The overall evaluation goal is for continuous quality improvement of falls-related surveillance and utilization in designing and enhancing delivery of evidence-based falls prevention programs. This activity will give the Fellow hands-on experience in evaluating a surveillance system as well conducting a broader program evaluation focused on how data can be used to inform programmatic decision making.

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The existing Falls Surveillance data includes multiple measures derived from the BRFSS, Emergency Department and Hospitalization data, and death records. There are other data sources the health department has access to that could be examined for potential to enhance the existing system. These include data from the Trauma Registry, EMS data, and syndromic surveillance (based on real-time hospitalization data) which may provide additional insights into the causes of falls, potential comorbidities that may be undiagnosed like cognitive impairment, and any potential underreporting because of the additional data fields included compared to standard hospital discharge records or the future inclusion of urgent care visits in syndromic surveillance data systems.

Falls data have been utilized to make the case for increased investment in and referrals to evidence-based falls prevention programs. The fellow can examine the current uses of data to drive public health action and evaluate the potential to use both existing and added data to inform the development and promotion of falls-related interventions

Data Sources:

- BRFSS
- Emergency Department data
- Hospitalization Data
- Mortality Data
- Trauma Registry Data
- EMS data
- Syndromic Surveillance

Surveillance System Objectives:
Project objectives: Evaluate the existing Minnesota Falls-Related Surveillance System and the current uses of the data to guide public health action

Project deliverables

- Report describing the current Falls-Related Surveillance System data collection methods and using CDC guidance, assess completeness, accuracy and other surveillance system qualities. The report will include assessments of other data that could be utilized to enhance the system and make recommendations for improvement.
- Report describing the current use of Falls-Related data to guide or motivate public health interventions to address falls and opportunities to further utilize Falls-Related data.
- Oral presentation and discussion of report on use of Falls-Related data to MDH programmatic staff engaged in injury prevention and healthy aging activities.

Surveillance System Impact:
MN has one of the highest rates of falls in the nation. The higher rates cannot be solely explained by ice in winter or the fact that age expectancy is higher in MN than in other locales.

Falls are also extremely costly and in older adults, they often are events that initiate or signal a decline in overall health. Because of the large financial and quality of life impacts, it is important to understand the degree to which our surveillance systems are accurately capturing the total burden of falls in Minnesota and if these data are being used optimally to inform programmatic strategies related to falls-prevention.

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Major Project Title: Healthy Aging Dashboard (highlighting dementia)

Major Project Description:
Dedicated Federal funding through the Building Our Largest Dementia (BOLD) Infrastructure Act funding focused on dementia has allowed many states and local jurisdictions to develop coordinated public health responses to this condition. The Minnesota first received BOLD dementia funding in 2021 and began exploring public health's role in addressing dementia and worked with partners to develop a dementia state plan. Through multiple workgroup conversations, partners developed a slate of indicators for a dementia dashboard that will track key population health outcomes and focus attention on developing capacity to collect key data that is lacking. Many of these indicators, especially those that relate to dementia risk reduction are key to Healthy Aging. Healthy aging is defined by WHO as "the process of developing and maintaining the functional ability that enables wellbeing in older age."

Currently, the Minnesota Department of Health is engaging in a series of focused conversations to develop deeper understanding of Healthy Aging work that is ongoing across the department. Based on that deeper understanding, a workgroup will develop a MDH-specific framework to describe this work, identify key opportunities for further collaboration, and develop a set of Healthy Aging population-level indicators to monitor population level trends.

The Fellow will support the process of developing a Healthy Aging dashboard by joining a team finalizing the list of Healthy Aging indicators and analyzing relevant datasets to generate state level indicators and disaggregated data to explore connections by demographic factors, social determinants of health, etc. The fellow will work with the Healthy Aging team and partners to design a Healthy Aging Dashboard that is aligned with and potentially has shared elements with the Dementia Dashboard. The fellowship project will involve determining the most appropriate dashboarding tool for the tasks (available tools include PowerBI, Tableau, Excel, Infogram, and Results-Based Accountability dashboards). The fellow will also build workflows to streamline regular updates of indicators.

Potential Data Sources:
- All-Payer Claims Database
- Data Portal
- MN EHR Consortium Data
- Statewide Quality Reporting and Measurement System
- Hospitalization Data
- Mortality Data
- Syndromic Surveillance
- TBI registry
- Trauma Registry Data
- EMS data

Major Project Objectives:
Project objectives: The fellow will design and build the Healthy Aging dashboard that has an integrated Dementia Dashboard in a user-engaged process

Project deliverables:
- Needed indicator analyses completed.
- Healthy Aging Dashboard developed and available for others to use (at least internally)
- Development of data analytic workflow to easily export data for future dashboard updates
- Small assessment of end user experience with dashboards and documentation of steps that can be taken to enhance use

- Presentation of Healthy Aging dashboard to MDH staff and key partners

Major Project Impact:
Minnesota, like the rest of the US, is amid a large demographic shift. Within the next 20 years, for the first time, we will have a larger proportion of the population that is 65 and older than 18 and under. This transition presents both opportunities and challenges. Facing challenges and opportunities thoughtfully requires understanding key data related to health and wellbeing related to Healthy Aging.

Requests for clear, actionable data related to Healthy Aging and Dementia have been made by two legislatively appointed groups. This dashboard will serve as a key vehicle for sharing this data broadly with many partners to enable them to use it for planning and monitoring public health interventions for impact.

These data will support many public health initiatives related to Healthy Aging including but not limited to, efforts to build Age-Friendly Public Health Systems sponsored by Trust for America's Health, the Federal Building our Largest Dementia (BOLD) Infrastructure Act, Minnesota's 2030 Plan, and the Blueprint on Aging.

Additional Project #1 Title: Support completion of baseline assessment of Minnesota caregiver wellbeing
Project #1 Type: Surveillance Activity

Project #1 Description:
As part of coordinated efforts between MDH in developing dementia indicators and the Minnesota Department of Human Services developing caregiving related indicators, we coordinated on planning efforts, developed aligned indicators, and even included a few new questions in surveys to better understand the experience of caregivers. The 2025 BRFSS survey will be the first year that it will be possible to develop all these indicators. The fellow will conduct analyses of 2025 Minnesota BRFSS Caregiver data to obtain these measures and support descriptive analyses of Minnesota Caregivers. There may be opportunities to partner with Minnesota DHS in analyzing the data and comparing it to data obtained from people receiving state-funded caregiver services. There may be opportunities to develop shared messaging. The fellow will generate a report for policy makers and individuals working to build caregiver support services that describe caregivers, including dementia caregivers, in Minnesota.

Project #1 Objectives and Expected Deliverables:
Project objectives: Analyze BRFSS data to describe the overall health and wellbeing of MN caregivers and share data to inform policy and programming decisions.

Project deliverables

- Documentation of completed BRFSS Caregiver data analyses completed.
- Report on Minnesota Caregiver Health and Wellbeing
- Development of a resource with key Minnesota Caregiver Health and Wellbeing talking points.

Project #1 Impact:
Caregiving is a universal experience. Rosalynn Carter said, "There are only four kinds of people in the world: those who have been caregivers, those who are currently caregivers, those who will be caregivers, and those who will need caregivers." (Rosalynn Carter Institute - Rosalynn Carter Institute for Caregivers)

Caregivers provide a large amount of care for loved ones in need of support related to physical or mental health challenge. The work can be extremely rewarding. It can also be challenging, requiring caregivers to juggle school or employment alongside caregiving responsibilities. Caregivers often contribute from their finances to support their loved ones need. Caregiving can be emotionally and physically taxing as well and may make it hard for caregivers to care for

their own needs. It is important to know how Minnesota caregivers are and what their needs may be to be able to better support them.

In Minnesota, there are an estimated 640,000 adults that they provided unpaid care to a loved one (2017 data). This care provides unquantifiable benefits for families and society, but economic analyses that estimate the cost savings of care that might have been provided by a personal care attendant estimate the value to be at least $8.6 billion (in 2017) annually.

A 2021 analysis of Minnesota BRFSS data indicated that caregivers had poorer mental health than people who did not report currently being a caregiver. They also had higher rates of smoking and chronic disease than people not caregiving currently. There are clearly opportunities to improve health and wellbeing. The 2025 questionnaire includes additional questions related to mental health, loneliness, and the financial strain of caregiving to name but a few of the additional data that will be available to paint a more detailed picture of overall wellbeing to support program planning and policy decisions related to caregivers.

Additional Project #2 Title: (optional) Using APCD to describe the burden of conditions commonly associated with aging such as dementia, osteoporosis, and Parkinson's disease.
Project #2 Type: Surveillance Activity

Project #2 Description:
This project will be developed by the fellow and the fellowship mentors. The Minnesota All-Payer Claims Database (APCD) is the most comprehensive set of Minnesota claims data available for health-related analyses. It contains ambulatory care, hospital care, pharmacy and dental claims for all Medicaid and Medicare members in Minnesota. In addition, an estimated 40% of commercially insured individuals are also included in the database. This large, complex database is a powerful tool for describing population health and requires special skills related to managing and analyzing large datasets to utilize it that the fellow will be able to learn.

Analyses will focus on conditions related to the topic of Healthy Aging including but not limited to dementia, Parkinson's disease, and osteoporosis. At a minimum, analyses will be used to devise estimates of condition prevalence and cost. Additional questions related to total or specific types of health care utilization can also be asked. There may be some opportunity to pair APCD derived estimates with other Minnesota data to tell a story about conditions and related risk factors (e.g., osteoporosis and physical activity by age to assess opportunities for preventive strategies).

Project #2 Objectives and Expected Deliverables:
Project objectives - Develop an approved APCD analysis plan for one or more conditions associated with healthy aging (e.g., Dementia, osteoporosis, and/or Parkinson's Disease). Complete analysis and communicate major findings about these conditions and how they advance our understanding of aging in Minnesota.

Project deliverables

- Develop analysis plan and obtain approval to use APCD data to explore these questions.
- Documentation of completed analyses.
- Communication about findings - can be a newsletter summary, a brief report, or other style of presentation as appropriate.

Project #2 Impact:
Alzheimer's disease is the 3rd most common cause of death in Minnesota and it has an outsized physical, emotional, and societal impact. Public health approaches driven by data are needed to develop systems that better prevent the development of dementia, detect it early, and support people living with the condition and their loved ones. In addition

to Federal calls for more work in this area under the BOLD Act, the Minnesota Alzheimer's Disease Working Group commissioned by the Minnesota Legislature outlined key actions Minnesota needed to take. One of these was more analyses of data to describe the impact of dementia, especially utilizing the APCD.

Parkinson's disease is a highly impactful neurological disease that is more common as we age. Mortality rates are rising (MMWR 2019). We lack detailed data describing this condition in Minnesota, which also contributes to dementia. Analyses of APCD data could provide insight into disease prevalence, distribution in the population, costs associated with treatment, and dementia as a comorbidity with can all be used to inform program planning including use of ACL funding directed to supporting caregivers for people with Parkinson's disease.

Additional Project #3 Title: (Optional) Develop or refine aging-related code sets for analyzing Electronic Health Record (EHR) data for population-level surveillance
Project #3 Type: Surveillance System Evaluation

Project #3 Description:
The Minnesota Electronic Health Record Consortium (MNEHRC) is a partnership between 11 Minnesota healthcare systems and state and county public health agencies to provide timely and granular data to inform the real-time actions of policymakers, health system leaders, and researchers. The Consortium focuses on informing health policy and practice through comprehensive data and collaboration. Through the Health Trends Across Communities in Minnesota Dashboard, we share data from these healthcare systems which represent around at least 90% of all Minnesotans at the state, county, zip-code, and census tract levels to inform public health planning. Available data includes prevalence of many chronic health and behavioral health conditions and data are available stratified by patient characteristics to identify any groups with disparate impact. Mental health data includes information about anxiety, depression, bipolar disorder, and suicidal ideation. Chronic disease data includes chronic kidney disease, diabetes, heart disease and high blood pressure among others. While chronic disease and behavioral health data are available stratified by age including age 65 and older, there are gaps related to key conditions of public health concern related to aging including: dementia, falls, traumatic brain injury and others.

In this project, the fellow will work with MN EHR Consortium leaders and fellowship mentors to identify an aging-related public health topic for inclusion on the HTTAC dashboard. The fellow will work with MN EHR Consortium teams to develop code sets or refine code sets for the selected condition and to develop population-level estimates. The fellow will work with MN EHR Consortium leaders and fellowship mentors to complete a brief report that will describe the work completed, especially any analyses that may not be suitable for display on a dashboard and highlight the public health implications of the findings.

Project #3 Objectives and Expected Deliverables:
Project objectives
Support MN EHR Consortium team in developing or refining new aging related code sets, such as dementia, TBI, and/or falls, and generate data that can be shared via report and public portals.

Project deliverables

- Document describing process for code set development that includes the rationale for and benefit of modifications.
- Completed analysis of aging-related outcome formatted for integration in the public-facing HTAC dashboard (e.g., CSV file).
- Brief report describing the purpose of the analysis, methods, result, and implications for public health including opportunities to further analyze data to drive action.

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Project #3 Impact:
Use of EHR data in public health surveillance is fairly novel outside of the NYC Macroscope project and the MENDS pilot. This is an opportunity for the fellow to support efforts to use EHR data collected by a consortium of 11 health systems for public health purposes and planning. The MN EHR Consortium data is estimated to describe about 90% of Minnesotans and can provide data at the community level to support local action. This work will contribute to an emerging body of work that is identifying case definitions for chronic disease and aging related data using EHR data and exploring how these new data sources can be used to define project implementation as well as guide quality improvement efforts and project evaluation.

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

The Fellow would have several opportunities to become involved in emergency preparedness efforts. Specifically, the Division of Health Promotion and Chronic Disease (HPCD) provides staffing for the Long-Term Surveillance (LTS) Annex, a team of injury and chronic disease MDH staff which stands ready to provide expertise for responding to the long-term surveillance needs in emergency responses. The LTS Annex was activated in 2020 to track long term impacts of COVID, including surveillance of long COVID. More than 15 investigation topics have been identified so far. HPCD staff contribute to staffing the LTS Annex and the Long-COVID unit, which developed from the COVID long-term annex, is housed within HPCD. If the LTS Annex is activated for another emergency response, the Fellow would have the opportunity to participate. Additionally, when the LTS Annex resumes meeting to prepare for unknown future responses, the Fellow will be included. Further training on emergency preparedness may also be used to fulfill the Fellow's needs for emergency preparedness experience or exploring the potential of HHS empower data to inform emergency response planning for the Long-Term Surveillance Annex or broader Emergency preparedness activities. Time allocation: 0.05 FTE, engaging in preparedness exercises and supporting any activation of the TLS Annex.

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

Dr. Ruth Lynfield, our state epidemiologist, will assist with connecting the Fellow with a cluster/outbreak investigation. Potential activities include developing a working case definition, identifying cases in a systematic way, conducting case investigation interviews, and developing and testing hypotheses about transmission within the outbreak. If new work-related clusters or outbreaks of COVID-19 cases or other infectious diseases are detected, we would expect the Fellow to be involved in the investigation. The COHS has begun working with the zoonotic and vector borne disease programs on risks to workers, and in the case of outbreaks of these infectious diseases among workers, the Fellow would be included. Time allocation: 0.05-0.1 FTE, to be spent on potential workplace outbreaks or COVID-19, or other infectious diseases such as zoonotic diseases.