ID: 45530475
Maternal and Child Health - Host Site Description
Massachusetts Department of Public Health

Assignment Location: Boston, US-MA
Massachusetts Department of Public Health
Division for Family Health Data and Analytics

Primary Mentor: Mahsa Yazdy, BS, MPH, PhD
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Massachusetts Department of Public Health

Secondary Mentor: Sarah Stone, BA, MPH, PhD
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Massachusetts Department of Public Health

Work Environment
Hybrid

Assignment Description

The Fellow will join the Division of Family Health Data and Analysis (DFHDA) team, within the Bureau of Family Health and Nutrition at MDPH. The Division's mission is to conduct surveillance, research, training, and promotion of perinatal health to inform fellow public health professionals, researchers, healthcare providers and the general public about maternal, perinatal, infant, child, and family health outcomes and prepare tomorrow's researchers to carry the Division's work forward. The Division houses multiple surveillance and research efforts: the Birth Defects Monitoring Program (BDMP), Neonatal Abstinence Syndrome (NAS) Surveillance, the Maternal Mortality and Morbidity Review Team, and data from two national case-control studies on birth defects (the National Birth Defects Prevention Study [NBDPS], the Birth Defects Study To Evaluate Pregnancy exposureS [BD-STEPS]), the Pregnancy Risk Assessment Monitoring System (PRAMS) and the Pregnancy to Early Life Longitudinal (PELL) data system.

The BDMP was established in 1999 and is a statewide, population-based active surveillance program for birth defects among Massachusetts residents. In 2020, the BDMP was expanded to include NAS as a reportable condition. Highly trained medical record abstractors who review maternal and infant medical records, collect information on diagnostic tests, autopsy reports, and lab results to confirm diagnoses. Relevant demographic, clinical, family history and birth characteristics are also recorded. The BDMP is a rich data source that can be utilized to: 1) monitor the prevalence of birth defects across the state and to better understand the causes of birth defects and 2) provide timely and accurate data on NAS in MA in order to better understand the impact of NAS and have population level data available for DPH programs.

The Division participated in the NBDPS and currently participates in the BD-STEPS; both of these are case-control studies aimed at understanding the causes of birth defects. BD-STEPS was recently expanded to also focus on understanding risk factors associated with stillbirths without birth defects. Together NBDPS and BD-STEPS are the largest population-based studies on birth defects ever undertaken in the U.S. and include data from over 43,000 telephone interviews. These data are available for etiologic research examining risk factors for birth defects, as well as risk for stillbirths.

The Division began working closely with the Bureau of Infectious Diseases and Laboratory Sciences at the time of the Zika Virus epidemic and has continued that collaboration through the CDC's Surveillance for Emerging Threats to Mothers and Babies Network (SET-NET). As part of SET-NET, the Division led the COVID-19 Pregnancy Surveillance and assessed the impact of COVID-19 on pregnant women and their infants. The Fellow will have the opportunity to participate in the SET-NET efforts, as well as on collaborative projects related to pregnancy and infectious diseases.

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The Division is also home to PRAMS, a CDC-DPH collaboration regarding experiences, attitudes, and beliefs shortly before, during, and after pregnancy. DPH has been conducting PRAMS since 2007 and surveys approximately 2,500 new mothers each year on topics including preconception health, prenatal care, maternal mental health, oral health, infant sleep practices, breastfeeding, and social support. Data are weighted to represent Massachusetts births and findings are shared regularly with our clinical and community partners including PNQIN and March of Dimes, through our PRAMS Advisory Committee and posted at mass.gov.

The Pregnancy to Early Life Longitudinal (PELL) database is also housed in DFHDA. PELL comprises the linkage of the maternal hospital delivery administrative record, the infant's birth certificate, and the infant's birth hospitalization administrative record. To this, both maternal and infant subsequent hospital-based healthcare administrative records are linked (hospitalizations, emergency department visits, and observational stays) longitudinally. These records date from births in 1998 and can be linked to PRAMS to provide a robust dataset of maternal and infant experiences. PELL is also linked to records from the birth defects monitoring program (BDMP), and records are also linked to the state cancer registry, Early Intervention, and the state Universal Newborn Hearing Screening data systems as needed. The Fellow will have access to these datasets as needed to support projects.

In addition to data within the Division, data outside the Division are available for analyses and include data through such programs as the Massachusetts Home Visiting Initiative and Early Intervention. The Fellow will also have the opportunity to collaborate with staff and students from the MA DPH, local universities including Harvard University, Boston University, Tufts University, and the University of Massachusetts.

The Fellow will be able to conduct epidemiological studies from a diverse array of data systems and the Division will work with the Fellow to tailor their experience based on their interest and expertise to ensure a fulfilling experience. In addition, the Fellow will have the opportunity to present their work internally as well as externally (e.g., the Advisory Committees, national conferences and meetings, local universities) and will be encouraged to publish their work in peer-reviewed journals.

DFHDA also conducts needs assessments and provides crucial data and decision support for HRSA's Title V MCH Block Grant and State Systems Development Initiative annual application and report. The Division is committed to performance management and quality improvement and works closely with the Office of Population Health to implement the Public Health Data Warehouse (PHD). PHD is a longitudinal dataset that is a partnership with other state agencies including Medicaid, Department of Mental Health, Department of Corrections, Department of Transitional Assistance, MA Cancer Registry and the Prescription Monitoring Program, and various programmatic data systems including data from the Women, Infants, and Children (WIC) Nutrition program, and the Early Intervention program.

The Division is home to 11 epidemiologists, 9 abstractors, and 6 support staff. While most staff hold an MPH, there are also 6 doctoral-level epidemiologists and 3MDs.

Day-to-day activities will include:

- Literature reviews
- Developing research and analytic plans
- Data cleaning and conducting analyses including data linkages
- Preparing and presenting results of their analyses
- Preparing and leading meetings
- Writing and submitting IRB applications, as needed
- Meeting and providing updates to mentors and collaborators
- Working with programs and initiatives to use the Division's data to inform their work
- Writing, submitting, and reviewing reports and manuscripts

- Presenting to internal and external collaborators
- Participating in meetings, trainings and webinars
- Joining one or more of the Division's quality improvement team projects
- Assisting with mentoring student interns

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

Many of the epidemiologists in the DFHDA have been trained in utilizing Tableau to create data visualizations and are available to provide instructions and support for the Fellow; additionally, the DFHDA has a library of Tableau learning resources available for use.

The Division recently migrated the majority of our datasets to SAS Studio, allowing for web-based analyses and data sharing. These datasets also include the Pregnancy Risk Assessment Monitoring System (PRAMS), a CDC-MDPH collaboration regarding experiences, attitudes, and beliefs shortly before, during, and after pregnancy. SAS Studio is also the platform for the Division's work with the Pregnancy to Early Life Longitudinal (PELL) data system, a longitudinal MCH data system created to utilize a broad range of public health data sources to examine the impact of the prenatal environment and experiences on postnatal child and maternal health. The Division also maintains desktop SAS as a resource for all analysts. Support using SAS is available both within DFHDA and through a DPH-wide SAS user group. Additionally, once a month the Division has research meetings where epidemiologists solicit feedback on their projects and are able to discuss any data issues or programming challenges they have encountered.

Projects

Surveillance Activity Title: Design a Fetal & Infant Mortality Review surveillance system

Surveillance Activity Description:
While MDPH maintains a Child Fatality Review, and the Division participates in the Birth Defects Study To Evaluate Pregnancy exposureS (BD-STEPS) study which has expanded to include women whose pregnancies ended in a stillbirth without a birth defect in order to better study risk factors that contribute to stillbirths, MDPH does not have a Fetal & Infant Mortality Review (FIMR). In the summer of 2024, the Governor of Massachusetts signed the maternal health bill, which mandated the creation of a FIMR Program in Massachusetts. Using the results of the Fetal Death Certificate Surveillance Evaluation described below, the Fellow would work with our staff and DPH colleagues to design a FIMR Program. The Fellow will begin by researching how other FIMRs operate to conduct a state-wide review of fetal and infant deaths and reviewing the FIMR guides from the National Center for Fatality Review and Prevention (CFRP). Next the Fellow will create a process map of how data: enter the system, are shared bi-directionally with local jurisdictions, are reviewed, and are finalized to create state-wide recommendations to decrease fetal and infant mortality. The Fellow will design the program to allow local jurisdictions to conduct their own FIMR, while also feeding data into the state-wide FIMRMI program. In tandem with mapping the data flow, the Fellow will create case definitions for fetal and infant deaths and explore the use of a systematic sampling plan to identify which cases would be reviewed by subject matter experts. A workplan will be developed to ensure that an appropriate number of cases can be reviewed each year, and that the FIMR stays on track to make timely recommendations.

Surveillance Activity Objectives:
The Fellow will work with members of the Division to design and map out the steps needed to implement a FIMR.

Deliverables:

- Complete the CFRP's Planning Tool for a New FIMR Team

- Develop criteria for selecting Massachusetts cases to review
- Create a process map for implementing a FIMR
- Develop a workplan for the first year of the FIMR

These will then lead the fellow to the implementation phase as the main project (see below).

Surveillance Activity Impact:
Understanding the causes of fetal and infant deaths can inform strategies to reduce the incidence of these tragic events and inform appropriate supports for bereaved families.

Surveillance System Evaluation Title: Evaluation of the Massachusetts Fetal Death Certificate

Surveillance System Evaluation Description:
In order to prevent fetal deaths and the devastating impact on families, we need to understand the causes and factors that led to the loss, which means data are needed to monitor these outcomes. The Fellow will do an evaluation of the Massachusetts Fetal Death Certificate to better understand how we can conduct surveillance for fetal deaths in the state. Currently, Massachusetts does not have an active, population-based surveillance system for fetal deaths; the only available source of data on fetal deaths (deaths occurring in utero at >20 weeks gestation or >350 grams) is the fetal death certificate. In addition to assessing if the fetal death certificate is an effective surveillance system for monitoring fetal losses, the Fellow could potentially focus on two areas for the evaluation:1) evaluating the completeness and accuracy of the cause of death field or 2) evaluating the completeness and accuracy of the autopsy field.

Surveillance System Objectives:
Objective: The objective of this project is to assess the accuracy and completeness of the fetal death certificate, as well as to evaluate the effectiveness of the fetal death certificate as a mechanism for surveillance of fetal losses.

Deliverables:

- Assess the completeness of selected variables on the fetal death certificate.
- Develop a report that includes data on fetal deaths, as well as activities and supports available to residents around pregnancy losses.
- Make recommendations for conducting surveillance for fetal deaths in Massachusetts.

Surveillance System Impact:
There is a significant variation in the rates of fetal deaths, being more than twice as likely among non-Hispanic Black women and non-Hispanic Native Hawaiian or Other Pacific Islander. In addition, the loss of a baby in utero can have devastating impacts on maternal mental health; studies have found that following a perinatal loss, mothers have significantly higher rates of psychological distress, lower self-esteem, and significantly elevated levels of anxiety and depression. Given little is known about fetal deaths, more data are needed to better understand the causes and guide prevention efforts; therefore, this project would help us identify how best to monitor and collect data on fetal deaths.

Major Project Title: Implementation of a Fetal & Infant Mortality Review.

Major Project Description:
Based on the work conducted as part of the Surveillance System Evaluation and the Surveillance Activity, the fellow would take the lead in implementing the processes outlined in the Surveillance Activity to establish a Fetal & Infant Mortality Review (FIMR) Program. Massachusetts recently passed legislation that requires MDPH to promulgate regulations regarding the FIMR; as such, the Fellow will work with MDPH's Office of General Counsel to ensure alignment of the FIMR program with regulations that will be promulgated; they will get to better understand the regulatory and legal process for setting up a new program. The Fellow will work to ascertain how the FIMR will

coordinate with the Child Fatality Review, review resources from CDC, HRSA, and the National Center for Child Fatality Review (CFRP). The Fellow will also join in meetings with the Boston Public Health Commission, which is endeavoring to establish its own FIMR, along with Worcester and Cambridge. The Fellow will work with data from CFRP case reporting system, upload test cases, assess the data flow from the Registry of Vital Records and Statistics, and incorporate stillbirth surveillance and birth defects surveillance data. The fellow will also help draft processes to identify fetal and infant missed diagnoses, misdiagnoses and whether treatments were available or utilized for fetal/infant conditions. The Fellow will support the Division in recruiting members of the FIMR Committee and help establish a support team for Committee meetings.

Major Project Objectives:
Objective: Building on the work of the Surveillance System Evaluation and the Surveillance Activity, the fellow will begin to implement the processes to establish the FIMR Committee.

Deliverables:

- Draft regulations guiding the operation of the FIMR
- Establish criteria for selecting cases to review
- Develop written procedures for day-to-day operations of the FIMR
- Establish format/template for an annual FIMR report
- Draft a public-facing web page for the FIMR

Major Project Impact:
Every year in Massachusetts, approximately 300 infants born alive do not survive until their first birthday. Approximately the same number of infants are stillborn. While infant mortality has declined over the last several decades, inequities persist, especially among Black, Hispanic and Native American women. Fetal & Infant Mortality Review uses an action-oriented, community-based process aimed at improving services, systems, and resources for women, infants, and families. Using a multidisciplinary team, cases are reviewed to help understand families' experiences, provide services to families experiencing loss, and to prevent subsequent cases.

Additional Project #1 Title: Improving maternal and infant outcomes: The role of paid maternity leave.
Project #1 Type: Surveillance System Evaluation

Project #1 Description:
MA PRAMS has collected maternity leave information since 2012. An analysis of 2012-2019 Massachusetts PRAMS data, during which time there was no state-funded maternity leave, found that 32.6-42.7% of MA employed women with a recent live birth took paid leave only, 36.5-42.1% took unpaid leave only, 15.2-27.6% took both paid and unpaid leave, and 2.8-4.6% did not take any leave during these years. We examined 2020 data separately due to the unprecedented effects that the COVID-19 pandemic had on all areas of life, especially on the workforce. In 2020, 47.5% of employed women took paid leave only, 33.2% took unpaid leave only, 13.1% took both paid and unpaid leave, and 6.3% took no leave. Massachusetts Paid Family Medical Leave became available in 2021 to qualified applicants. MA PRAMS 2021 data already show improved use of this benefit. In 2021, PRAMS data indicated that 66.2% of women took paid leave only, 20.4% took unpaid leave only, 8.1% took both paid and unpaid leave and 5.3% took no leave. By 2022, 68.2% took paid leave only. In addition to leave types, we also have data on the length of maternity leave taken and reasons affecting maternal decisions about taking leave from work. Since the implementation of Massachusetts Family and Medical Leave (FML) in 2021, data have been collected through the Department of Family Medical Leave (DFML). BFHN has collaborated with DFML to help them understand the reach of implementation of the policy and will provide BFHN with data on parents who apply and participate in the program. DFHDA can then link FML data to our vital records data, PRAMS data, and PELL data. We are interested in examining use of FML by maternal characteristics, and breastfeeding duration and exclusivity, postpartum depressive symptoms, safe sleep practices, and postpartum visit attendance by

maternity leave. Using the PRAMS-PELL-FML linked dataset, the fellow can also examine infant's health care utilization including emergency department use, hospitalization, and causes of hospitalization by maternity leave length and preterm status.

Project #1 Objectives and Expected Deliverables:
Objectives include understanding the uptake of paid family leave for new parents and for evaluating the impact that paid leave has on maternal and infant outcomes. Expected deliverables include presentation to DFML and BFHN of findings, and development of data briefs and infographics.

Project #1 Impact:
While report of women taking paid family leave after delivery is increasing, the impact of taking paid leave in MA has not yet been analyzed. BFHN has collaborated with DFML to help them understand the reach of implementation of the policy, and DFML will provide BFHN with data on parents who apply and participate in the program. The fellow can take a lead in analyzing the data on health outcomes for women who participate in FML and their infants to better understand and promote its uptake. These data can then be used to promote broadening the policies to more families.

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: Currently Massachusetts does not have the capacity to address the needs of women of reproductive age (WRA), especially pregnant and postpartum women, infants, and children with special health needs and their families, during public health emergencies and disasters. "A public health emergency can include an infectious disease outbreak, natural disaster, human-caused disaster, or other event or incident that requires a jurisdictional response to protect the public's health or to recover from mass injury, loss of life, or widespread property damage." The Fellow will have the opportunity to work with the Title V Program, the Division of Pregnancy, Infancy and Early Childhood, the Division for Children and Youth with Special Health Needs, and the Bureau of Emergency Preparedness on a strategic plan with a focus on special population groups such as pregnant women and children with special health needs that may require additional assistance beyond what the general population needs in a public health emergency or disaster. In addition, the Fellow will have the opportunity to participate in emergency preparedness exercises or responses (e.g., assisting with the Boston Marathon, participating in MA Responds). Time allocation can range from several part-time days to a full week of training.

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

The Division works closely with the Community Health Assessment team within the Bureau of Environmental Health, including convening quarterly meetings between the groups to discuss any potential concerns from the community (e.g., community members, clinicians) around clusters of birth defects. When concerns are brought forth, data from the BDMP are utilized to answer their questions. The Fellow will also have the opportunity to collaborate with colleagues in the Bureau of Infectious Disease and Laboratory Sciences (BIDLS) to lead an outbreak investigation. Past Fellows have conducted investigations of food-borne illness, other gastrointestinal illness of unknown etiology, an investigation of birth defects due to contaminated groundwater, and an outbreak of SARS-CoV-2 infections among vaccinated people in Barnstable County, MA. The time allocation for the Cluster and Outbreak Investigation is approximately one to two weeks. Activities will be specific to the nature of the investigation but may include meeting with key BIDLS staff, other Bureau staff, conducting record reviews, interviewing patients, creating a database of the cluster/outbreak, data analysis, and presentation of findings.