ID: 74481080
Maternal and Child Health, Birth Defects and NAS - Host Site Description
Georgia Department of Public Health

Assignment Location: Atlanta, US-GA
Georgia Department of Public Health
Epidemiology

Primary Mentor: Tonia Ruddock, PhD, MPH
Director, Child Health Epidemiology
Georgia Department of Public Health

Secondary Mentor: Jerusha Barton, MPH
Science Advisor, Epidemiologist 3
Georgia Department of Public Health

Work Environment
Hybrid

Assignment Description

The Fellow will be integrated into the Epidemiology Division of the Georgia Department of Public Health (DPH), within the Maternal and Child Health Epidemiology (MCH Epi) Section. The Fellow's onboarding will involve working with mentors to develop a mutually agreed upon plan of action, prioritizing projects based on the Fellow's interests, and identifying the necessary support and preferred communication styles. Weekly check-ins with mentors will allow for progress assessments, priority setting, and feedback, with dedicated time for questions and discussions. The Fellow will also be invited to attend relevant Division, Section and team meetings, and will be encouraged to contribute to discussions and take initiative in independent analyses.

The Fellow's anticipated daily activities will include a balance of independent work, collaboration, and professional development. It is suggested the Fellow begin the day reviewing ongoing projects and planning tasks in coordination with mentors. The Fellow will conduct data analysis using a variety of maternal and child health datasets. Tasks may include coding, reviewing distributions, creating visualizations, and summarizing findings.

Regular participation in virtual team meetings will allow the Fellow to collaborate with other public health professionals, share insights from analyses, and receive feedback. The Fellow will also work with other teams and stakeholders to refine analyses and ensure data-driven recommendations align with public health objectives.

In addition to technical work, the Fellow will have opportunities to enhance their epidemiological skills by reviewing current public health literature and engaging in professional development activities, such as training sessions, webinars, and workshops on epidemiology, data science, and maternal and child health. Mentors and MCH Epi team members will be available through Microsoft Teams chat for quick responses and support.

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

The Fellow will have access to numerous databases, including: all Vital Records data (birth certificates, death certificates, fetal death certificates), hospital discharge data, the Notifiable Disease database (SENDSS, the electronic notifiable disease reporting system includes data on birth defects, neonatal abstinence syndrome, and newborn screening), Pregnancy Risk Assessment Monitoring System (PRAMS), and oral health survey data for both third grade students and children in Head Start. Several other data sources can be accessed depending on the project of interest, including the

immunization database (GRITS), HIV databases (eHARS, MMP, CAREWare, ADAP, NHBS), EIP data, ABC and FoodNet data, and the HAI database (NHSN).

Statistical and data analysis support is available many of the masters- and doctoral-level staff in the Epidemiology Division. MCH EPIs has a wide array of subject matter expertise to support the development of the Fellow. The Fellow will have access to SAS, SAS-Callable SUDAAN, R, ArcGIS suite (e.g., Pro, Dashboard, Insights), NVivo, and EpiInfo software, as well as basic Microsoft Office applications and the Internet.

Projects

Surveillance Activity Title: Birth Defects State Profile

Surveillance Activity Description:
The Birth Defects Registry (BDR) features complex and rigorous informatics framework designed to ensure thorough data collection. The system encompasses several key functionalities, including (1) pulling data from many data sources, ranging from vital records data (birth certificates, death certificates, and fetal death certificates) to early intervention (EI) services (EI referrals, Children's Medical Services), newborn screening data (pulse oximetry and hearing screening), facility-based reporting, and electronic health record data; (2) permitting real-time tracking of the medical record request process; and (3) facilitating case confirmation and data abstraction. This integrated approach not only streamlines the surveillance of birth defects, but also enhances the accuracy and comprehensiveness of the data collected, supporting public health initiatives and research efforts. Scientific posters produced from efforts to validate data used in the BDR, including birth certificates and hospital-based line lists, have consecutively won the Outstanding Poster Presentation Award in the Chronic Disease/Maternal and Child Health/Oral Health category at the CSTE Annual Conference. The Fellow will leverage existing momentum to develop dissemination products that effectively describe the burden of birth defects in the state and inform public health initiatives.

Surveillance Activity Objectives:
The Fellow will be responsible for cleaning and analyzing Birth Defects Registry (BDR) data and producing a series of dissemination products adhering to best practice health communication standards. Analyses will encompass demographic and descriptive statistics, such as maternal age, race/ethnicity, county and Public Health District, insurance at delivery, adequacy of prenatal care, and gestational age. The Fellow will characterize major conditions and various organ system defects, including critical congenital heart disease, neural tube defects, abdominal wall defects. More complex analyses will involve examining the timing of diagnosis and reporting to Public Health, the occurrence of multiple defects, mortality rates, and assessing BDR reports across multiple sources.

The primary objective is to describe the populations affected by a panoply of defects. The secondary objective will be to produce a high-quality dissemination products culminating in a comprehensive surveillance report. These products may include policy briefs, fact sheets, infographics, abstracts, manuscripts, and professional presentations tailored to various audiences, such as healthcare professionals, policymakers, and the lay public. By creating these materials, the Fellow will contribute to translating complex epidemiological data into actionable insights, thereby supporting evidence-based decision-making and promoting public health interventions. The tertiary objective is to prepare BDR data for submission to the semi-annual National Birth Defects Prevention Network (NBDPN) report, contributing to advancing the research on birth defects nationally.

Surveillance Activity Impact:
Birth defects occur in approximately one of every 33 live births. Prenatal care and newborn screening are crucial measures intended to rapidly identify infants with congenital conditions, initiate treatment, and enroll them into early intervention services. Timely identification, reporting to Public Health, treatment, and support are key to promoting the

best possible outcome for these infants and their families. The importance of these interventions can be demonstrated by a detailed look at BDR data. The fact sheets and ultimately, a surveillance report will offer both providers and expecting parents a window into the most affected populations and an appreciation of the importance of timely identification, reporting, referral, and treatment.

Surveillance System Evaluation Title: Birth Defects Registry Data Quality Improvement

Surveillance System Evaluation Description:
In 2016, the development of the Georgia Birth Defects Registry (BDR) was initiated to monitor and analyze birth defects across the state. The BDR integrates reports of birth defects from various sources, including vital records, hospital reports, and other health information systems. Due to the rarity of individual birth defects, initial surveillance data exhibited lags, and the onboarding of sources and their reporting cadences required time to reach the expected prevalences reported by the National Birth Defects Prevention Network (NBDPN). By 2019, the BDR data has achieved the expected reporting threshold, indicating a sufficient case volume to support descriptive analyses. The NBDPN produces reports using five-year aggregated data; thus, BDR data from 2019 onward represent the first opportunity to meet this requirement. Due to the time required for reporting to stabilize, efforts to ensure high data quality have lagged. The Fellow will have the opportunity to lead to a comprehensive evaluation of the BDR to assess data quality overall and by reporting source (e.g., vital records, hospital line lists) in preparation of the BDR dissemination products and surveillance report. Additionally, the Fellow will identify and institute changes to improve the data quality of the BDR with the aim of submitting data to the NBDPN semi-annual data summary for the first time.

Surveillance System Objectives:
Using the CDC's Updated Guidelines for Evaluating Public Health Surveillance Systems as a framework to evaluate the BDR, the Fellow will gain a comprehensive understanding of how to assess, refine, and enhance public health surveillance systems. This methodical, structured process offers several key value points and valuable skill development, including exposure to and application of federal and state guidelines, collaboration with stakeholders, assessing data quality for decision-making and fostering public health impact.

The Fellow will aid the birth defects epidemiologists and technical developer in identifying data elements for quality evaluation and will be the epidemiologist primarily responsible for conducting the assessment. Data elements selected from reporting sources need to be evaluated for logic and utility (e.g., what, if anything, constitutes an accurate diagnosis date from EI services referral reporting?); unacceptable dates and ICD-10-CM codes (e.g., how often does reporting from facilities contravene logical date order?); concordance of conditions across reporting sources (e.g., do some sources exclusively report not-otherwise-specified codes?); and timeliness of reporting by source, from birth to diagnosis, birth to reporting to Public Health, and diagnosis to reporting to Public Health. The Fellow will be expected to produce a data quality report for the BDR overall and by reporting source (e.g., Vital Records, facility reporting, EI services referrals); and give recommendations for improving overall BDR data quality (e.g., additional logic checks at the point of data ingestion).

Surveillance System Impact:
The utility of BDR data is intrinsically connected to the quality of the reported data. By rooting out data elements with consistently illogical dates, for example, analyses of timeliness of identification and reporting will inform outreach and education efforts to improve birth defects surveillance in Georgia. Understanding the patterns of reporting quality by source will allow the birth defects epidemiologists to implement stronger standards for data ingestion and tailor training of birth defects reporters where necessary. Overall improvement of birth defects data will also affect early intervention service estimates, as BDR data are frequently requested to demonstrate or forecast service needs for the most vulnerable population in the state.

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Major Project Title: Enhancing Neonatal Abstinence Syndrome Surveillance and Data Integration

Major Project Description:
In 2023, Georgia was selected as a jurisdiction for the CDC Pregnant People-Infant Linked Longitudinal Surveillance (PPILLARS) grant to conduct surveillance on two conditions: stillbirth and neonatal abstinence syndrome (NAS). Surveillance, data abstraction, and case confirmation are carried out in designated areas of the state-20 counties for stillbirth and 49 counties for NAS-covering birth cohort years beginning in 2020 and 2023, respectively.

Stillbirth cohort identification primarily relies on vital records, while NAS case identification utilizes multiple data sources, including case reports from birthing facilities, electronic laboratory reporting (ELR; Tier 1 per the 2023 CSTE case definition), and administrative data such as hospital discharge data (HDD; Tier 2). A key priority is linking these sources with vital records to ascertain birth cohorts efficiently and collect the necessary data for medical records requests.

The Fellow will have the opportunity to streamline the case linkage process and refine deduplication methods to rapidly identify complete NAS birth cohorts for both the PPILLARS grant and statewide surveillance. Cohorts identified will be maintained in a tracking system, where the Fellow will assist Medical Record Abstractor (MRA) Lead in enhancing dashboards that monitor record logistics and demographic characteristics. Additionally, the Fellow will work with ESRI Survey123, where MRA data are housed, contributing to improvements in data ingestion, export processes, and overall data quality initiatives. Lastly, the Fellow will support the development of protocols for generating an annual surveillance report.

Major Project Objectives:
The primary objective of the Fellow's work will be to refine and enhance the cohort ascertainment and deduplication processes to ensure accurate and reproducible results. The Fellow will work with existing data linkage code developed in SAS and R to improve the identification of NAS and stillbirth cases across multiple data sources. Given the challenges posed by case report and electronic laboratory reporting (ELR) data, which may lack consistent identifiers for linkage, the Fellow will develop a standardized and replicable process to match or append unique cases, creating comprehensive cohorts that integrate all methods of case ascertainment.

A key deliverable will be the development of a deduplication protocol that can be consistently applied to future cohorts and easily updated as new guidance becomes available. Additionally, the Fellow will play a critical role in data management by ensuring the integrity of datasets imported into and exported from ESRI, producing high-quality reports for submission to the CDC. Lastly, the Fellow will contribute to the statewide expansion of NAS surveillance and assist in developing protocols for compiling annual surveillance reports, as mandated by Georgia's legislature.

Major Project Impact:
In Georgia, timely identification of NAS cases is crucial to ensure that providers and families in high-burden areas receive appropriate education, interventions, and related services. Rapid cohort ascertainment supports the effective allocation of resources and informs policy decisions, enabling the team to meet legislative requirements, including the annual report. Additionally, the timely contribution of high-quality datasets to the CDC facilitates aggregated, multi-jurisdictional analyses, providing valuable insights for healthcare providers on treatment approaches and outcomes, identifying populations at greatest risk, and informing policymakers on trends in substance use during pregnancy and the communities most in need of support and intervention.

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Additional Project #1 Title: Georgia Child Health Profile
Project #1 Type: Major Project

Project #1 Description:
The Georgia Child Health Profile will serve as a comprehensive analytical tool that provides a detailed picture of child health outcomes in Georgia. Additionally, it will make data more accessible to stakeholders, enabling data-driven decision-making and prompt action.

Project #1 Objectives and Expected Deliverables:
The Maternal and Child Health Epidemiology (MCH Epi) Section manages data from a panoply of sources, including newborn screening data from hospitals, birth defects reported through electronic medical records (EMRs), neonatal abstinence syndrome (NAS) cases identified from electronic laboratory reporting (ELR), as well as vital records, early intervention service referrals, and hospital discharge data (HDD). While each dataset is robust in their respective areas, they often lack comprehensive demographic attributes, maternal and/or infant characteristics, and risk factors.

To address these gaps, the MCH Epi Section has been selected to participate in the Council of State and Territorial Epidemiologists' (CSTE) Data Science Team Training (DSTT) program. This initiative aims to enhance data science skills within public health agencies. Through this opportunity, the MCH Epi team will link their datasets with validated health statistics from the Department of Public Health's Office of Health Indicators for Planning (OHIP), resulting in a comprehensive maternal and child health dashboard.

A CSTE Fellow will have the opportunity to utilize this integrated dashboard to conduct an extensive analysis of child health in Georgia. This includes developing child health profiles with a focus on key indicators such as infant mortality, child morbidities, and under-5 mortality. The primary objective is to enhance the dashboard’s utility by interpreting findings and providing research-based recommendations in collaboration with appropriate stakeholders. These analyses will provide valuable insights into the accessibility and quality of healthcare services and interventions, ultimately informing strategies to improve maternal and child health outcomes in the state.

Project #1 Impact:
The Maternal and Child Health Epidemiology (MCH Epi) Section manages data from a panoply of sources, including newborn screening data from hospitals, birth defects reported through electronic medical records (EMRs), neonatal abstinence syndrome (NAS) cases identified from electronic laboratory reporting (ELR), as well as vital records, early intervention service referrals, and hospital discharge data (HDD). While each dataset is robust in their respective areas, they often lack comprehensive demographic attributes, maternal and/or infant characteristics, and risk factors.

To address these gaps, the MCH Epi Section has been selected to participate in the Council of State and Territorial Epidemiologists' (CSTE) Data Science Team Training (DSTT) program. This initiative aims to enhance data science skills within public health agencies. Through this opportunity, the MCH Epi team will link their datasets with validated health statistics from the Department of Public Health's Office of Health Indicators for Planning (OHIP), resulting in a comprehensive maternal and child health dashboard.

A CSTE Fellow will utilize the integrated dashboard to analyze child health in Georgia, focusing on key indicators such as infant mortality, child morbidities, and under-5 mortality. The primary objective is to enhance the dashboard's utility by interpreting findings and providing research-based recommendations in collaboration with stakeholders. These analyses will offer valuable insights into the accessibility and quality of healthcare services and interventions, informing strategies to improve maternal and child health outcomes in the state. The secondary objective is to monitor the translation of data insights into actionable public health practices. By systematically tracking how data from the Child Health Profile datasets inform policy decisions, program implementations, and resource allocations, we can assess their utility.

Quantifying data-informed processes and assessing their impact will help identify the strengths and limitations, as well as build evidence for modifications and expansion.

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

DPH offers many opportunities for involvement with emergency preparedness, including: participating in emergency responses and the Incident Command System for disease outbreak investigations; developing a plan for DPH first responder pre-deployment and just-in-time training, using a recently developed responder tracking system, as well as deployment and post-deployment health and safety monitoring; developing standard operating procedures for responding to zoonotic disease outbreaks that affect the human and veterinary community; and analyzing shelter surveillance data and barriers to reporting during recent hurricanes. The Fellow will receive Incident Command training to enable deployment in our Emergency Operations Center during an event. The Fellow will allocate up to 10% of their time and effort for preparedness and response efforts.

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

Among the Fellow's projects, there will be ample opportunity to perform statistically rigorous cluster analyses and to take part in outbreak investigations. MCH Epi seeks a candidate who is willing to learn how to perform space-time analyses adherent to the current practices. Within the primary surveillance projects in this grant (birth defects and neonatal abstinence syndrome), MCH Epi will be working toward establishing a means of systematically monitoring and assessing previous and ongoing clusters. This effort could take 5-10% of the Fellow's time and effort.