Maternal and Child Health

Assignment Description:

Because of the tremendous public health importance of maternal and child health, and because of the great potential for improving quality of life and prevention and reduction of morbidity and mortality, Nebraska public health officials have prioritized the understanding of the MCH epidemiology in our population. As we increasingly focus our resources on controlling and reducing health care costs, we believe that all sectors of society will need and want a thorough understanding of the distribution and determinants of maternal and child health in our population. Our agency's goal is to be the leading provider of this information. We are extremely excited about the opportunity to supplement our current team with an MCH Epidemiology Fellow, and believe that such a resource will enable us to advance this agenda. For the qualified applicant, we expect employment opportunities to be available at the completion of the Fellowship.

The Nebraska MCH Epidemiology Section provides an ideal training opportunity to an MCH Epidemiology Fellow (MCH-EF). This is a small office with two seasoned professionals. However, because of this limited staffing, the office is currently unable to address many proposed or desired projects thus allowing the MCH-EF ample opportunity to pursue projects in his/her areas of interest. The office operates two surveillance systems, the Pregnancy Risk Assessment Monitoring System (PRAMS) which captures information on pregnant women and newborns and pregnant women, and the Child Death Review which captures information about deaths of children aged 0 to 17 years. The operation of these systems requires collaboration with other offices within the Lifespan Health Support Unit, particularly Newborn Screening; Women, Infants, and Children (WIC); and Reproductive Health. The office also produces an annual linkage of Medicaid claims data with birth certificate files, to assess Medicaid coverage of prenatal care and infant outcomes. Additionally, the MCH Epidemiology Section participates on the Substance Abuse Epidemiology Workgroup, directs the statewide Infant Mortality Workgroup, and provides support to the state's Office of Minority Health & Health Equity as well as other activities including the Nebraska State Breastfeeding Initiative and the Douglas County Baby Blossoms MCH Collaborative. On the basis of the five-year Title V Needs Assessment process, the office continually forges new relationships with diverse state agencies, ranging from Education to Transportation. The MCH Epidemiology Section has potential to expand the comprehensive analyses of MCH issues in Nebraska by using other public health databases available within other sections of the agency. This capacity is currently limited by the small number of professional MCH staff.

The MCH-EF will work as an integral member of this small team whose members and collaborators are located in close proximity to each other in various parts of our integrated Health and Human Services agency. The training and skill development of the MCH-EF will be the primary responsibility of the MCH Epidemiologist with secondary responsibility from the State Epidemiologist. All team members will be at the disposal of the MCH-EF to provide expertise in selected aspects of epidemiology and programmatic activities. The Fellow will be authorized to access and analyze data sets/surveillance systems in all of these areas.

The Fellow's anticipated day-to-day activities:

1) Develop an understanding of and familiarity with MCH surveillance datasets; 2) Refine data processing and data analysis skills; 3) Understand how to assess surveillance systems; 4) Acquire, analyze and interpret data; and 5) Prepare epidemiology reports. The training goals for the Fellow will be defined by Centers for Disease Control and Prevention (CDC)/Council of State and Territorial Epidemiologists (CSTE) Applied Epidemiology Competencies (AECs). At the completion of the fellowship, the Fellow will function as a well-qualified Tier 2, mid-level epidemiologist and will be highly employable in a wide range of public health settings.

Potential MCH Projects:

In addition to understanding ongoing projects and surveillance systems, the MCH Fellow will have the opportunity to choose from several pending projects, some focused on data and others on policy.

1) **Study perinatal regionalization in Nebraska**: The goal is to understand how/whether perinatal regionalization is working in the state and what improvements should and can be made. In the spring of 2007, 73 state birthing hospitals were surveyed to obtain information about their perinatal services and transport agreements. The hospital's self-designated perinatal capacity 'Level' was compared and contrasted with their formal Level on the basis of definitions from the AAP/ACOG Guidelines for Perinatal Care. Preliminary analysis of birthing distributions and outcomes by Level was performed but more extensive analyses are needed. This project was continued in 2008 with preliminary analyses of the state's linked infant birth and death data sets. In continuation of this project, the MCH Fellow would expand these preliminary analyses through more formal assessments of the relationships between maternal risk status, hospital of birth, and infant outcomes. Analyses of interest include: determining whether mothers with medical risk are transferred before or after the birth to a higher level hospital; computing birth outcomes including neonatal mortality rates by "Level of Care" of the infants' birth hospitals (Levels I, II, or III); and assessing predictors of outcomes and survival (possibly including GIS analysis of distance to hospital). The MCH Fellow would then be responsible for the final phase of the project to develop science-based policy recommendations related to referral of high risk mothers in Nebraska and for improvements to the system, ideally including legislative proposals as warranted.

2) Using Birth Defect Registry (BDR) and Birth Certificate databases, define the epidemiology of birth defects in Nebraska. Two separate goals of this project are:
a) define the sensitivity and specificity of birth certificates in detecting birth defects using the BDR as the "gold standard," and b) produce a state-wide profile of demographic, spatial, and temporal trends in birth defect occurrence possibly including water quality data into these analyses.

Other potential analytic projects include:

- Analyze PRAMS project data that has incorporated novel H1N1 influenza A information collected from the standard questionnaire. Data are expected beginning in January, 2010.

There are no plans for analyses other than reporting overall outcomes, but the data should be a rich source of information on trends in access and outcomes.

- Produce a profile of WIC clients and outcomes by linking PRAMS to the WIC database, with a secondary goal of determining whether PRAMS subjects that report WIC participation are an unbiased subset of all WIC clients.
- Conduct a formal analysis of maternal mortality, involving linking death certificates to women of reproductive age with birth certificates, and assessing the sensitivity of our existing passive systems of detecting maternal mortality. This matching typically involves a considerable amount of hand inspection of matches, although the MCH Fellow could develop skill and maximize linkage effectiveness by including review/analysis of individual medical charts and by having access to and using a data linking software application (the Section currently uses LinkageWiz software). Analytic tasks for this project include basic regression and descriptive statistics and interpretation of data for policy development.
- Customize a project to the interests and skill sets of the MCH Fellow to maximize the learning experience and meet the needs of the MCH Epidemiology program in Nebraska.

In addition to the proposed data projects, the Section is involved with two major policy-based initiatives around racial/ethnic disparities in infant mortality, and women's lifecourse health. Rather than planning specific projects under these topics, the Section is exploring their structural and systems-level determinants, and ways of weaving these themes sustainably into agency and other state/local policies and activities. Creating a systems-level "big picture" approach to both the prevention of health disparities and promotion of lifecourse health would be a significant learning opportunity for the MCH-EF, and a major contribution to public health in Nebraska.

Role of Fellow in State Emergency Preparedness:

The MCH-EF will be expected to respond to acute and emergent problems related to MCH Epidemiology, including emergency response activities related to naturally occurring and intentional events which have actual or potential impact on maternal or child morbidity/mortality. Nebraska's Bioterrorism Preparedness Program offers training and exercises to ensure Nebraska's preparedness in the event of an incident or attack involving biological, chemical, radiological or other agents of bioterrorism. The MCH Fellow can access this training and participate in such exercises as appropriate.

Assignment Location:	Lincoln, Nebraska
Primary Mentor:	Debora Barnes-Josiah, PhD, MSPH MCH Epidemiologist
Secondary Mentor:	Tom Safranek, MD State Epidemiologist