

Maternal and Child Health, Substance Abuse

Ohio Department of Health, Bureau of Maternal Child and Family Health

Columbus, Ohio

Assignment Description

The rapid advance of the opiate crisis has had far reaching effects on all aspects of public health, straining existing systems with new challenges and high volumes of impacted individuals. Accordingly, Ohio's State Health Improvement Plan prioritizes both Mental Health and Addiction, Maternal and Infant Health. The fellow would play a key role in the department's efforts to improve and expand surveillance and data analysis on opiate use disorder in MCH populations.

The fellow will be located within the BMCFH where both the primary and secondary supervisors are located. The fellow would be a valuable member of the MCH Epidemiology team. He or she would contribute to developing epidemiologic capacity to support these activities. The fellow's work will be closely coordinated with and supported by ODH's Violence and Injury Prevention Program. Projects are aligned with work of ODH partner agencies, the Ohio Department of Medicaid and the Ohio Department of Mental Health and Addiction Services.

Specific projects will include 1) evaluation of Ohio surveillance of Neonatal Abstinence Syndrome, which will support improvements in state surveillance and timely reporting; 2) development of a comprehensive system for surveilling opiate use within the MCH population, that will provide a stable and reliable system of linked data sets for monitoring selected indicators; 3) analysis of linked data sets to increase understanding of the consequences and underlying factors in maternal perinatal substance use in Ohio; and 4) epidemiologic support for state-wide implementation of patient safety bundles for maternal opiate use disorder.

Additional opportunities will be offered for the fellow to learn about public health in Ohio. These include tours of the ODH laboratory and vital statistics offices, site visits to local public health agencies, and participation in state-wide conferences or meetings. Opportunities for training exist with the state of Ohio and these may be available to the fellow depending on interest level. These include courses taught within the Ohio Department of Health, contracted SAS programming courses, and weeklong courses taught at the Ohio State University College of Public Health's Summer Program in Population Health.

Day-to-Day Activities

The fellow's day to day activities will contribute to maternal and infant health priorities as they relate to substance abuse and overdose. The fellow will participate in weekly MCH Epidemiology section meetings and the BMCFH data workgroup that meets monthly. The fellow will have a standing bi-weekly meeting with Jolene DeFiore-Hyrme, who leads the Violence and Injury Prevention Program. The primary and secondary supervisor will schedule a monthly meeting with the fellow and Ms. DeFiore-Hyrme (ODH VIPP) to ensure communication across the programs so that the fellow can focus on the stated goals.

It is expected that the fellow become an active member of CSTE's NAS workgroup if it is operating during the time of the fellowship. Participation in the workgroup will allow the fellow to connect with epidemiologists in other states who are struggling with NAS surveillance and also to share what is being learned in Ohio. The fellow will also participate in Ohio's Injury Prevention Partnership, and specifically two subgroups: the Data Action Group and the Prescription Drug Abuse Action Group.

Activities of the fellow will include conducting special investigations, communicating within and outside of the department and opportunities to participate in meetings, local conferences, and site visits that will enrich the fellowship experience. Most of the fellow's work will be completed within multidisciplinary teams.

Potential Projects

Surveillance Activity Developing Surveillance of Perinatal Substance Use

The opiate crisis is having far reaching effects on all aspects of public health and health care, straining existing systems with new challenges and high volumes of impacted individuals. No population group seems to be spared, from the unborn to the elderly. Existing surveillance systems concerned with maternal and infant health are not designed to monitor opiate abuse or its health outcomes on women, children and young families. Neither are they adequate to answer the myriad of new questions public health is faced with such as 1) how might opiate abuse be effecting infant mortality and through what mechanisms (birth defects, injuries, etc.), 2) how large is the problem of maternal overdose and what are risk factors for overdose in this population group, and 3) what are the outcomes of affected pregnancies.

To address this gap, the fellow will lead the development of a new surveillance system in Ohio that will take advantage of multiple existing data sources. Six data sources will form the core of the new system. They are Ohio's

- 1) Pregnancy-Associated Mortality Review (PAMR): includes review data on all deaths to women who are pregnant or within one year of pregnancy,
- 2) Vital Statistics (VS) birth data: includes all live births to Ohio residents.
- 3) VS death data: includes all deaths (including infants who were born live and women).
- 4) VS fetal death data: includes deaths after 20 weeks gestation that occurred prior to birth.
- 5) Child Fatality Review (CFR): includes review data on all deaths to children aged birth to 18, and
- 6) Ohio's Violent Death Reporting System, specifically data from the State Unintentional Drug Overdose Reporting System (SUDORS) module.

Other data sources to be explored for inclusion include data from Ohio's Automated Rx Reporting System, hospital discharges, MOMS program treatment, and Medicaid billing.

Many, but not all of the six data sources are routinely linked. However the information necessary to investigate questions related to opiate abuse in the maternal and infant population are not stored and organized in a way to make them readily accessible. The fellow would assist in developing a data management process for doing this retrospectively and prospectively. Additionally, useful indicators for monitoring opiate abuse in this population have not been defined. The fellow would lead the identification of indicators to be monitored in the new surveillance system. Finally, the fellow will assist with planning for how the data from the surveillance system will be shared and communicated both internally and with external partners.

Surveillance Neonatal Abstinence Syndrome Surveillance Evaluation Evaluation

Neonatal abstinence syndrome (NAS) is a set of symptoms associated with the abrupt withdrawal of opioids and other drugs when infants are born to mothers who were taking these substances. The symptoms can range from mild to severe, with the most common associated conditions being respiratory complications, low birth weight, feeding difficulties and seizures.

As of July 10, 2014, Ohio Revised Code requires maternity units, newborn care nurseries, and maternity homes to report to ODH the number of newborns diagnosed as opioid dependent at birth, commonly referred to as NAS. To assist hospitals in complying with this law, ODH partners with the Ohio Hospital Association to access hospital discharge data associated with NAS.

Hospital discharge data have demonstrated that between 2006 and 2015 in Ohio, 11,283 inpatient hospitalizations resulted from NAS. In 2015 alone, there were nearly six admissions per day. Over that time, the rate of NAS grew nearly 8 times from 20 to 155 per 10,000 live births and the average charge associated with NAS hospitalizations increased from \$39,561 to \$61,371 while the average stay (LOS) fluctuated between 14 and 20 days. In 2015, the average inpatient charge was four times higher for NAS infants, and the average LOS was almost four times greater than for all Ohio infants. Data on exposure to noxious substances through the placenta or breast milk suggests an increasing number of infants are exposed to opioids (i.e., heroin and prescription pain medication) and hallucinogens. About 6,406 infants were exposed to opioid and hallucinogens between 2006 and 2015. The annual number of inpatient hospitalizations related to opioids and hallucinogens increased 816 percent during this period; and opioid and hallucinogens combined have surpassed cocaine as the common drugs of exposure in 2009 and remained the leading drugs of exposure in 2015. In addition to the rise in NAS, approximately 29,425 hospitalizations resulted from drug abuse or dependence among mothers at time of delivery between 2006 and 2015. Hospitalization rates doubled from 135 per 10,000 in 2006 to 285 per 10,000 discharges in 2015. Opioid continue to be the second most common drug abused among mothers at time of delivery after marijuana.

While NAS is being reported in Ohio, the quality of the data ascertained has not been assessed. Given the public health importance of NAS and related issues, understanding the completeness and quality of reported data is vital to interpretation and application of these data to program planning and evaluation. The fellow will use CDC's surveillance evaluation methodology to assess Ohio's current NAS surveillance through hospital discharge data alone. Ohio is particularly interested in how well Ohio's current NAS surveillance captures the events that it is intended to capture. Methods of assessing sensitivity and specificity include limited clinical chart review, or collaboration with the Ohio Perinatal Quality Collaborative's effort to increase consistent scoring of NAS for all infants. The ODH VIPP is interested in recommendations for improving the quality of NAS surveillance.

Improved data will assist ODH and their partner agencies, the Ohio Department of Mental Health and Addiction Services and the Ohio Department of Medicaid, in assessing the burden of NAS, developing, targeting and evaluating interventions.

Major Project Consequences of and Underlying Factors in Perinatal Substance Use in Ohio

The major project will include a series of data analyses based on the existing and proposed data linkages outlined in the fellow's Surveillance Activity. Through these data linkages, gaps in current understanding of the consequences of and underlying factors in perinatal substance use in Ohio can be filled concurrently with the identification of opportunities to improve outcomes for families. Each of the analyses will be completed as part of interdisciplinary teams. Defining a public health problem, planning and completing a project, and communicating results will require that the fellow work with staff across the department and partners outside of the department. The fellow is encouraged to publish the results of projects and will be supported in doing so. Statistical analyses will be supported by supervisors and MCH epidemiology staff. The fellow's interests, strengths, and individual training needs will influence the specific analysis projects undertaken. Proposed analyses include:

- Geographic mapping across the state with relation to maternal mortality from overdose and infant mortality (main data sources: VS, PAMR).
- Describe birth outcomes associated with maternal mortality from overdose (main data sources: VS, PAMR, CFR).
- Investigate the association between maternal mortality from overdose and fetal, infant, or child mortality (main data sources: VS, PAMR, CFR).
- Estimate the prevalence of chronic and psychosocial co-morbidities associated with maternal opioid use disorder (main data source: hospital discharge.)
- Estimate the burden of maternal opioid use before and during pregnancy on birth defects, NAS, preterm birth, low birth weight, and infant mortality (main data sources: VS, hospital discharge, Medicaid, Rx Reporting System).
- Assess the association between treatment of substance use disorder and birth outcomes (main data sources: VS, Medicaid, MOMS).

Additional Project Implementation of obstetric safety bundles for women with opiate disorder

The Alliance for Innovation in Maternal Health (AIM) this year released a patient safety bundle for women with opiate use disorder, and the Ohio Department of Health has committed to be a participating state in this bundle, and is considering being an AIM state. By participating in this bundle, ODH will be provided with implementation and data support. The work occurs through state teams and health systems to align national, state, and hospital level quality improvement efforts to improve overall maternal health outcomes. The fellow will be part of the team from ODH that supports this work. Specifically, the fellow will assist with epidemiologic support of the AIM work and related quality improvement measures.

Preparedness Role

As with past CSTE fellows and EIS officers, the fellow will be invited to participate in trainings, planning meetings (such as the Bioterrorism Steering Committee Meeting), desktop exercises, and other elements of Ohio’s emergency preparedness plan such as school emergency planning. The secondary supervisor serves a role as MCH point person for Zika preparedness and response and has working relationships with staff in related programs. The State Epidemiologist and Office of Health Preparedness have committed to providing additional support and opportunities for the fellow’s involvement in emergency preparedness.

Additional Activities

Participation as a member in Ohio's Injury Prevention Partnership's "Data Use Group" and "Prescription Drug Abuse Action Group". Participation as a member of Ohio's Pregnancy Associated Mortality Review committee.

Mentors

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| Primary | Reena Oza-Frank PhD, RD
Epidemiology Section Supervisor |
| Secondary | Elizabeth Conrey PhD PhD, MS
State MCH Epidemiologist |