Assignment Description

The Colorado Department of Public Health and Environment (CDPHE) offers rich opportunities to practice applied epidemiology and public health within its many innovative and collaborative programs that span the lifecourse. This assignment in MCH epidemiology will provide a CSTE/CDC Applied Epidemiology Fellow with a well-rounded and unique experience working with the skilled epidemiologists and novel data sets in the Center for Health and Environmental Data (CHED) and the subject matter and public health programming experts in the Prevention Services Division (PSD). The Fellow will sit in the Health Surveys and Evaluation Branch and work closely with the maternal and child health, maternal mortality, and many other programs within PSD and across the Department. The Fellow will also be able to gain experience in responding to a multi-county or multistate communicable disease outbreak and to participate in emergency preparedness and response trainings.

The proposed Fellow projects focus primarily on topic areas addressed by the six surveys distributed to mothers as part of the Health eMoms program. Health eMoms is an online maternal and child health data collection system that draws a simple random sample of mothers from recent live birth certificates, then recruits these mothers by mail to join an online survey platform through which mothers receive six, short surveys from shortly after giving birth up to their new baby’s third birthday. Health eMoms collects both cross-sectional and longitudinal information on a wide variety of topics in the postpartum and early childhood periods. Health eMoms launched in April 2018 and continues to recruit new mothers each month. When the Fellow starts, weighted data will be available from the first three surveys and new data sets will be available every 6 months. Health eMoms will provide the Fellow with ample opportunity to plan and complete novel analyses and share never-before-seen data with a broad range of programs and partners within CDPHE, across the state, and nationally. The focus of these analyses will be informed by programmatic needs but ultimately determined by the interests of the Fellow.

In addition to supporting programs across CDPHE by analyzing and translating Health eMoms data, the Fellow will also work closely with the MCH program on their priority areas as well as the maternal mortality review program. The Fellow will not be limited to Health eMoms data and can complement Health eMoms analyses with data from other systems such as Vital Records, the Pregnancy Risk Assessment Monitoring System, the Colorado Child Health Survey, Behavioral Risk Factor Surveillance System, hospital discharge and emergency department data, the Maternal Mortality Review Information Application (MMRIA), and more. Through involvement in Health eMoms, the Fellow will also have the opportunity to gain skills in survey methodology, protocol management, and mail and electronic survey operations.

Dr. Thumm and Ms. Blackwell will share training and oversight responsibilities to meet at least the minimum requirements set forth by the CSTE. Both mentors are readily available for informal communication as needed for the duration of the fellowship. They will provide conceptual and technical
review of epidemiologic research and surveillance method and ensure project objectives are well-defined and attainable. After becoming familiar with department personnel, key partners, programs and organizational structure, it is expected that the Fellow will achieve a high-level of autonomy in initiating and executing designated activities. However, the Fellow’s mentors will always be available to help open doors and navigate roadblocks.

**Day-to-Day Activities**

The centralized location of the Health Statistics and Evaluation Branch (HSEB) promotes partnership and teamwork throughout the division and department. Numerous collaborations are necessary to collect, analyze, interpret, and disseminate data and evidence-based information to help inform public health programming. The Fellow will work collaboratively with partners to ensure that analyses and projects are not conducted in isolation from intersecting efforts within the department and state-wide. Both mentors and other HSEB and Prevention Services Division (PSD) staff will work closely with the Fellow to ensure that he/she receives an appropriate orientation to the agency, the division, and the branch, including arranging opportunities to meet department staff and key partners and to shadow appropriate staff in order to facilitate the development of collaborative relationships.

The Fellow’s day-to-day activities, learning opportunities, and challenging tasks will include:

- Attend weekly meetings with mentors (2-4 hours/week minimum).
- Develop and implement projects that address all of the applied epidemiology core competencies, including but are not limited to: design and conduct an evaluation of a surveillance system; enhance existing surveillance system(s) and/or contribute to the development of new surveillance systems; data collection, analysis, and dissemination, including preparation of fact sheets, blog posts, oral presentations, and peer-reviewed manuscripts; develop recommendations for MCH and partner program planning; work with MCH and partner program staff to assist with the interpretation and use of relevant data; and evaluate a public health intervention.
- Communicate and collaborate with PSD staff and internal and external partners (e.g., Department of Human Services, Department of Health Policy and Financing, local public health agency staff, Colorado Health Institute, The Colorado Health Foundation, Early Childhood Leadership Council, etc.) on projects.
- Gain proficiency in evidence-based public health, health equity and environmental justice, cultural competency, and other applied epidemiology competencies through reading, trainings, live or archived webinars, seminars at the University of Colorado School of Public Health, meetings, and conferences. Participate in mail and web operations for Health eMoms data collection.
- Contribute to Health eMoms survey development and revision.
- Participate on a national workgroup (e.g., CSTE subcommittees), if desired.
- Participate in the following meetings: Health Surveys and Evaluation Branch Epi meetings (quarterly), Health eMoms Advisory Board and Steering Committee meetings (quarterly), Pregnancy-Related Depression Advisory Team meetings (quarterly), MCH Advisory Team
meetings (annually), Maternal Mortality Review Committee meetings (quarterly), Cross-Division Epidemiology Forum and Workgroup (bimonthly)

- Take daily 30-minute wellness break (e.g., participate in onsite meditation or core or circuit training class or bike/walk along the Cherry Creek path that runs by the health department campus).

**Potential Projects**

**Surveillance Activity**

**Prioritize and Design Health eMoms Data Briefs**

Health eMoms is an online, longitudinal maternal and child health data collection system that is unique to Colorado. In collaboration with the Health eMoms Advisory Board, funding partners, and programmatic staff, the Fellow will prioritize topic areas for Health eMoms data briefs on a broad range of cross-cutting topics from the first few Health eMoms surveys. These data briefs could include prevalence at time of survey, individual-level trends across surveys, development of targets and comparison of baseline data to targets, and incorporation of complementary data from other data sources (Pregnancy Risk Assessment Monitoring System, Child Health Survey, National Immunization Survey, etc.). The Fellow would identify the indicators and metrics to include in the brief, gather and analyze the necessary data, and develop data visualizations for the data brief. The Fellow would then disseminate these data briefs through the Health eMoms partner network and through presentations at stakeholder meetings. Potential topic areas include:

- Breastfeeding initiation, duration, and exclusivity
- Immunizations perspectives, approach, adherence
- Maternal mental health needs, resources, services, stigma, coping
- Health care utilization and screening
- Barriers to preventive health care and behavioral health care as well as satisfaction with care
- Developmental screening, referral, and intervention
- Oral health: first year dental visits, application of sealants
- Employment, maternal leave, and family-friendly practices in places of employment
- Child care, barriers to child care, child care preferences, factors affecting child care decisions
- Child safety: childhood lead exposure risk, car seat use
- Substance use: marijuana and other substance use during and after pregnancy, safe storage, and secondhand exposure; prescription pain medication use during and after pregnancy; tobacco use; binge drinking
- Social determinants of health: general finances, resource insecurities, health insurance status, WIC participation, partner and social support, experiences of discrimination, community connectedness and neighborhood strengths
Surveillance Evaluation

Health eMoms Surveillance System Evaluation

When the Fellow starts, Health eMoms will have just entered its third year of operation and will be ripe for evaluation. The Fellow will plan and conduct an evaluation of the Health eMoms data collection system and develop a report that includes a prioritized list of recommendations for system revisions to be presented to the Health eMoms Steering Committee. The focus of the evaluation will be guided by the Fellow’s interest and judgment. The longitudinal nature of the study will provide the Fellow with opportunities to come up with creative and complex measures of surveillance system performance. Since Health eMoms is a home-grown data collection system, the Fellow will also be able to incorporate the recommendations that result from the evaluation into the system’s protocol and participate in the Institutional Review Board process for approval.

Major Project

Longitudinal Analysis of a Health eMoms Hot Topic

The nature of this analysis will be guided by the interests of the Fellow. Health eMoms collects information on how mothers’ health perspectives and behaviors, health care interactions, and social and economic circumstances unfold over the first three years of their baby’s lives by collecting data from the same mothers at six points in time. Examples of potential projects include:

- Exploring vaccine confidence and hesitancy and its relationship to planned approach and actual adherence to the vaccination schedule
- Examining changes in vaccine confidence and hesitancy over time and the ties between these changes and demographic characteristics or socioeconomic circumstances
- Creating a picture of how maternal mental health (with a focus on anxiety) changes over the first three years postpartum and how this is mediated by health and behavioral health care access and satisfaction with care as well as socioeconomic circumstances
- Examining dynamics of disparities over the postpartum and early childhood periods to determine whether gaps we see at birth or on the first survey grow, close, or remain stagnant.

The novelty of these longitudinal data provide great opportunities for publication.

Surveillance Activity

Data Coordination and Analysis for New Title V Priority Areas for 2021-2025

The Fellow will arrive as we are moving into a new five-year state action plan for Title V. As this transition takes place, there will be opportunity to be involved with data planning, analysis, synthesis, benchmarking, and interpretation on the new MCH priority areas of: mental health and substance use, economic security, racism and discrimination, access to care, social connectedness, and healthy eating and active living.

Additional Project

Analysis and Contextualization of the Colorado Maternal Mortality Data Collected in Maternal Mortality Review Information Application (MMRIA)

Colorado is a recipient of Enhancing Reviews and Surveillance to Eliminate Maternal Mortality (ERASE MM) grant from the CDC. This grant supports entry of maternal mortality case information into the CDC.
database, MMRIA. The Fellow will have the opportunity to conduct an exploratory analysis of this robust dataset to determine trends in maternal deaths. The Fellow will also be able to integrate data from the Pregnancy Risk Assessment Monitoring System, Health eMoms, and other data sources in order to create greater understanding of the context in which these maternal deaths occur.

**Preparedness Role**

The Colorado Department of Public Health and Environment operates a comprehensive training program in emergency preparedness through the Office of Emergency Preparedness and Response and is equipped to implement a full-scale command center response in the event of a public health or environmental disaster. The Department’s capabilities are routinely exercised. The Fellow could participate in emergency response trainings or exercises routinely planned for regional epidemiologists. The Fellow will also have the opportunity to participate in response to at least one multi-county or multi-state communicable disease outbreak and/or exposure notification event related to inappropriate use of syringes or other devices.

**Additional Activities**

The Fellow will have a lot of flexibility in choosing projects and activities. In addition to the projects described above, the Fellow could lead or participate in the following non-exhaustive list of projects and activities:

- Collaborate on analysis of marijuana and other substance use around the time of pregnancy
- Assist in the weighting of Center for Health and Environmental Data survey data sets
- Perform Pregnancy Risk Assessment Monitoring System analyses on topics of interest
- Participate in Health eMoms day-to-day mail and electronic data collection operations
- Develop new communications for Health eMoms participants and move these communications through the Institutional Review Board approval process
- Design experiments to test the effectiveness of Health eMoms recruitment packets, incentives, etc.
- Collaborate on publications related to Health eMoms methodology and survey data
- Contribute to the development and revision of Health eMoms surveys
- Participate in the Maternal Mental Health Collaborative Assessment workgroup
- Co-facilitate the Health Surveys and Evaluation Branch Epidemiology Team’s quarterly meetings
- Participate in the Substance Exposed Newborn Data and Research Workgroup as well as the Perinatal Substance Use Data Linkage Project
- Examine the Substance Exposed Newborn issue using data available at CDPHE
- Participate in Maternal Mortality Review Committee meetings and meeting preparation
Mentors

Primary  Brie Thumm PhD, CNM, RN, MBA
Maternal Health Clinical Consultant

Secondary  Sarah Blackwell MPH
Panel Survey Methodologist and Operations Manager