ID: 45317021
Maternal and Child Health, - Host Site Description
Colorado Department of Public Health and Environment

Assignment Location: Denver, US-CO
Colorado Department of Public Health and Environment
Center for Health and Environmental Data

Primary Mentor: Tess Clendenen, PhD, Environmental Health Sciences- Epidemiology, New York University School
of Medicine; BA, Molecular, Cellular, and Developmental Biology and Political Science-
University of Colorado-Boulder
Early Childhood Evaluator
Colorado Department of Public Health and Environment

Secondary Mentor: Sarah Blackwell, MPH, Epidemiology, Tulane University School of Public Health and Tropical
Medicine; BA, Anthropology, Tulane University School of Liberal Arts
Health eMoms Program Coordinator
Colorado Department of Public Health and Environment

Work Environment
Hybrid

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, evaluators, and novel data sets in the Center for Health and Environmental Data (CHED) as well as provide many opportunities to collaborate with programs across CDPHE and with external partners. The Fellow will sit in the Health Statistics and Evaluation Branch and work closely with maternal and child health, maternal mortality, and many other programs across the Department. The Fellow will also be able to gain experience in responding to a multi-county or multistate communicable disease outbreaks and to participate in emergency preparedness and response trainings.

The proposed Fellow projects focus primarily on the wide breadth of topic areas addressed by the four surveys distributed to postpartum people as part of the Health eMoms program. Health eMoms is an online maternal and child health data collection system that draws a sample of postpartum people from recent live birth certificates, then recruits participants by mail to join an online survey platform through which they receive four, 10-minute 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 originally launched in 2018 and data collection for this first iteration of the system continued through early 2022. The system briefly sunsetted due to funding shortfalls but has been restored by legislation that now provides dedicated and sustained state funding for the system in perpetuity. The new iteration of the system will relaunch in April 2023, and the new funding will allow us to rebuild Health eMoms as a more equitable and representative data system than it was before, with oversamples of historically underrepresented racial and ethnic groups.

The Fellow will have the opportunity to conduct cross-sectional and longitudinal analyses using the data collected from three birth cohorts (2018-2020) across several surveys administered during the first three years postpartum from the first iteration of Health eMoms. These surveys covered a wide breadth of novel topic areas that aren't available from other sources and allow for the assessment of how social circumstances, health, and behaviors change over time for individual families and what factors may mediate these changes.

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The Fellow will also have the opportunity to work with the data collected under the new iteration of Health eMoms, which will entail a strong focus on health equity due to the implementation of the oversample. 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 community and 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 Maternal, Infant, and Early Childhood Home Visiting Program (MIECHV); MCH program on their priority areas; and the maternal mortality review program. In their work with the MIECHV program, the Fellow will also have the opportunity to develop skills in collecting and analyzing qualitative data, which are an increasingly important component of the applied epidemiologist's tool box. 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 National Survey of Children's Health, 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 if desired.

Dr. Clendenen 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 methods, 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.

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 CHED and PSD staff and internal and external partners (e.g. Health eMoms Advisory Board members, Department of Early Childhood, 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.

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- 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, if desired.
- Contribute to Health eMoms survey development and revision, if desired.
- Participate on a national workgroup (e.g., CSTE subcommittees), if desired.
- Participate in the following meetings: Health Statistics and Evaluation Branch Epi meetings (quarterly), Health eMoms Advisory Board and Steering Committee meetings (quarterly), MCH Advisory Team meetings (annually), Cross-Division Epidemiology Forum and Workgroup (bimonthly), and CHED's Data Justice Workgroup.
- 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).

In addition to the Major Projects and Surveillance Activities described below, the Fellow will also have the opportunity to participate in other activities based on their interests:
- Support readiness assessment for maternal morbidity surveillance: To the degree that the Fellow is interested, they could support the Maternal Mortality Prevention Program in conducting a readiness assessment for maternal morbidity surveillance in the state. This would involve researching several maternal morbidity surveillance models and determining the scope of activities and needed resources to implement additional surveillance.
- Support 2023 Title V Maternal and Child Health Needs Assessment: To the degree that the Fellow is interested, they could support the MCH Epidemiologist with quantitative data analysis and interpretation in support of the 2025 Title V Maternal and Child Health Needs Assessment.
- Support Building an Early Childhood Data Portal/ Dashboard: To the degree that the Fellow is interested, they could be involved in curating and packaging data related to early childhood, using our department's various data sources, to providing easier access to these data for community members, local and other state agencies as well as advocates.
- Support Health eMoms partner engagement: As Health eMoms relaunches with the intent of becoming a more equitable and representative data system, CDPHE is also seeking to broaden representation and balance professional with community voices in Health eMoms' Advisory structure. To the degree that the Fellow is interested, they could help design ways to better engage community organizations and members in the governance of the system as well as to work with these groups on incorporating their priorities into the Health eMoms surveys and potential community-driven supplemental surveys.
- Support Health eMoms operations: To the degree that the Fellow is interested, they could be involved in the mail and web data collection operations for the survey program.
- Learn Health eMoms cleaning and weighting procedures: To the degree that the Fellow is interested, they could assist the Health eMoms analyst in cleaning and weighting survey data when surveys are closed.
- Update Health eMoms Areas of Wellbeing Reports: The Areas of Wellbeing Reports align with the Title V MCH priority areas.

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

The Department and Division provide a very data-rich environment with ample technical assistance in statistics and epidemiologic analyses. Unique to the placement of the Fellow in the Health Statistics and Evaluation Branch (HSEB) is the opportunity for the Fellow to have access to, analyze, and publish data from Health eMoms, Vital Records, the Pregnancy Risk Assessment Monitoring System, the National Survey of Children's Health, Behavioral Risk Factor Surveillance System, hospital discharge and emergency department data, the Maternal Mortality Review Information Application, and more. The epidemiologists in the Division use these and other datasets on a daily basis. The Fellow will receive technical assistance in using these data systems from staff in the Division and especially from the two mentors.

The Fellow will have the opportunity to gain a deep understanding of public health surveillance and applied epidemiology through participation in Health eMoms and other surveillance projects. The Fellow can participate in the Health eMoms survey development process and gain experience in incorporating analytic considerations into survey design and in finding relevant tested survey questions. The Fellow will also be able to critically examine a data collection system through a rigorous evaluation and make recommendations for protocol revisions that will directly improve the quality of the system. These activities will give the Fellow greater insight into the nuance and limitations of the data that they are analyzing, leading to a more appropriate analytic approach and proper communication of results. All of this experience will improve the Fellow's competencies in epidemiologic methods, persuasive communication in writing and verbally, and understanding of the strengths and limitations of data-driven public health practice as defined by Colorado public health law.

The Fellow will have access to statistical analysis software and the Microsoft Office Suite (Word, Excel, PowerPoint). Potential other software to be made available based on needs and desires of the Fellow include data visualization software (such as Tableau) and qualitative analysis software. The Fellow will receive additional statistical support from the SAS, R, and Tableau users groups at CDPHE as well as the HSEB Epi Team and the cross-Division Epidemiology Forum and Workgroup. The Fellow will have access to journal articles through the CDPHE digital library.

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Projects

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Surveillance Activity Title: Health eMoms data briefs

Surveillance Activity Description:
In collaboration with the Health eMoms Analyst, Advisory Board, community members, and CDPHE programmatic staff, the Fellow will prioritize topic areas for Health eMoms data briefs on a broad range of cross-cutting topics from the available Health eMoms birth cohorts and 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, National Survey of Children's Health, National Immunization Survey, etc.). The Fellow would identify the indicators and metrics to include in the data brief, gather and analyze the necessary data, develop data visualizations for the data, select qualitative comments from postpartum people to humanize the data, and identify the appropriate medical and social contexts to provide to appropriately frame the data. The Fellow would then disseminate these data briefs through the Health eMoms partner network and through presentations at stakeholder meetings. Based on stakeholder input and the Fellow's skills and interests, these could also take the form of digital data stories and dashboards.

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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 painkiller 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, Adverse Childhood Experiences

Surveillance Activity Objectives:
- Gather partner and community feedback on topic area priorities for Health eMoms data briefs/dashboards
- Create data brief(s) and/or dashboard(s) using Health eMoms data (deliverable: data brief(s) and/or dashboard(s))

Surveillance Activity Impact:
These data briefs will be used by CDPHE programs and partners to highlight the strengths and struggles of the diversity of postpartum people, drive program and policy priorities in Colorado, target and evaluate programmatic activities, apply for funding and report progress to funders, and identify additional data needed to understand the full scope of priority MCH issues in Colorado.

Surveillance System Evaluation Title: Health eMoms Surveillance System Evaluation

Surveillance System Evaluation Description:
The first iteration of Health eMoms was in operation from 2018-2021. During this time, the system collected highly acceptable, flexible, timely, and (above all) useful data for CDPHE programs and partners. The primary challenges of the system at that time were in its stability and representativeness. The former proved to be the first iteration of the system's downfall in 2021 when the program had to sunset due to funding shortages. However, due to the many strengths of the system, this sunset led to Health eMoms data users and supporters advocating for the system to receive dedicated and sustained funding through legislation (HB 22-1289), which passed in spring of 2022. Although this funding has brought stability and the opportunity to advance representativeness through oversamples of historically underrepresented racial and ethnic groups, the success of the new iteration of the system, which will relaunch in April 2023 remains to be seen. In the second year of their fellowship, the Fellow will evaluate the second iteration of Health eMoms to determine whether the system is now representative and if the data are useful and acceptable to partners and community members representing the racial and ethnic groups included in the oversample.

Surveillance System Objectives:
- Gather partner and community feedback on topic area priorities for Health eMoms data briefs/dashboards
- Create data brief(s) and/or dashboard(s) using Health eMoms data (deliverable: data brief(s) and/or dashboard(s))

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Surveillance System Impact:
This surveillance system evaluation will help us identify opportunities for quality improvements to Health eMoms to make it a more equitable and useful data system for public health partners and community organizations/members.

Major Project Title: Create a template/framework for an annual report of American Indian/Alaska Native maternal and child health in Colorado

Major Project Description:
In 2022, the Colorado Health Indicators Dataset (COHID) changed the racial and ethnic categories that it uses based on changes in the Census and at the Colorado Demographer's Office. On this Tableau-based platform, users can now only look at vital statistics (ex. birth and death data) among those who identify as American Indian/Alaska Native (AIAN) alone rather than by American Indian/Alaska Native in combination with any other race. As one of the most diverse and multicultural racial and ethnic groups in the United States, the former approach improperly shrinks the population size of the AIAN category, making it more likely for these data to be suppressed and less likely for them to lead to clear or actionable conclusions. For this project, the Fellow would work with CDPHE's Tribal Liaison and Tribal Data Specialists to develop the framework for a companion report or dashboard to COHID that would look at available maternal and child health data (birth record, Health eMoms, maternal mortality review, etc.) for the population of AIAN in combination with any other race in order to provide a short-term solution to the inequity in how the data are displayed in COHID.

Major Project Objectives:
Create a template/framework for an annual companion report or dashboard to COHID that will provide more comprehensive and actionable information on maternal and child health priorities among the AIAN population in Colorado.

Major Project Impact:
This project will help disseminate more meaningful data on AIAN MCH priorities in Colorado that could guide action among sovereign governments and organizations serving AIAN people in Colorado. It will also address an inequity in how these data are displayed and disseminated until the COHID system can be reconfigured.

Additional Project #1 Title: Evaluation of Family Engagement and Health Equity in the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program
Project #1 Type: Major Project

Project #1 Description:
CO MIECHV supports caregivers and families with young children to achieve positive maternal and child health outcomes. Programs are delivered based on the best evidence that they meet families' needs. Primary goals are to ensure families are receiving these benefits, by enrolling families who would benefit most from home visiting and reducing barriers to keep enrolled families engaged.

Project #1 Objectives and Expected Deliverables:
This is a multi-year mixed methods evaluation that will include: qualitative and quantitative data collection from participating and non-participating families; interviews and/or focus groups with home visitors, experts on home visiting programs and community referral partners; and descriptive analyses of secondary program and population data to provide context through which families enroll and engage in the program, with a focus on equity. The fellow will have the opportunity to consider different components of the evaluation that they find beneficial for their professional development, which may include measure/instrument development and testing (qualitative/quantitative), development of community based participatory evaluation plan, collection and/or analysis of qualitative and/or quantitative data,

planning/development of communication strategies and products to incorporate community voice in the interpretation of evaluation findings, and developing strategies for interactive virtual evaluation methods and data interpretation/dissemination.

Project #1 Impact:
Last year CO MIECHV served 3,539 caregivers and children from 1,714 households, over 69% of which are considered "low income". Through over 21,000 visits last year, MIECHV home visitors promoted regular maternal and child healthcare, breastfeeding, early literacy and positive parenting activities. They conduct developmental screenings for children, intimate partner violence and depression screenings for caregivers and refer to essential services for follow-up and intervention. Without access to home visiting, many families may not receive consistent health screenings and service referrals and, until their children are in school, often receive little positive parenting support. Developing strategies to study and improve parent engagement in home visiting will ensure that more families can access and receive these essential services in an equitable way that centers their needs and supports their goals.

Additional Project #2 Title: Annual Reports on Pregnancy-Related Deaths and Maternal Health
Project #2 Type: Major Project

Project #2 Description:
The Colorado Maternal Mortality Review Committee reviews all deaths of persons during pregnancy through one year after the end of their pregnancy. The committee determines the cause of death, whether the death was related to the pregnancy, what factors contributed, and what steps could have been taken to prevent the death. The data generated by the committee is used to inform public health programming, clinical quality improvement, and community-driven solutions to prevent maternal mortality across the state.
Data are published at three-year intervals for legislatively mandated reports, but interim reports, as well as topical data briefs, are needed to keep publicly available data current.

Project #2 Objectives and Expected Deliverables:
With support from the Maternal Mortality Prevention Program, the fellow will develop annual and other topical reports that address pregnancy-related deaths and maternal health, with a focus on disaggregating data by demographic factors to identify inequities. The fellow will be involved in all steps of the report creation, including working with external stakeholders to identify data needs, analyzing both vital statistics data and data generated by the Maternal Mortality Review Committee, and writing the report. The fellow will have the chance to focus topical reports on specific personal areas of interest, within the realm of maternal mortality (i.e. the impacts of the COVID-19 pandemic, intimate partner violence, behavioral health, etc).

Project #2 Impact:
Maternal mortality remains high in Colorado, with a pregnancy-related mortality ratio of 19.9 deaths per 100,000 live births from 2014-2018. Overall, 73.5% of those maternal deaths were determined to be preventable. Significant disparities exist in maternal mortality rates for the American Indian/Alaska Native and Black populations. Leading causes of death have shifted in recent years, with obstetric complications overtaking suicide and drug overdose as the leading cause of death. Ensuring that data are published annually allows for more real time identification of the drivers of maternal mortality, which allows stakeholders and community partners to use data to guide maternal mortality prevention work.

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

CDPHE operates a comprehensive training program in emergency preparedness through the Emergency Preparedness and Response Division 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, such as during the COVID-19 pandemic response. The Fellow could participate in emergency response trainings or exercises routinely planned for regional epidemiologists. Through collaborations with state epidemiologist, Dr. Rachel Herlihy (see letter of support) and her staff in the Division of Disease Control and Public Health Response, the Fellow will have the opportunity to participate in the planning and implementation of public health preparedness and response activities related to communicable disease outbreaks, including potential COVID-19 pandemic response activities. We expect the Fellow to spend 2-6 weeks during the two-year training on preparedness and response efforts, with some opportunity for additional time based on ongoing public health needs and the Fellow's interest.

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

The Fellow will have the opportunity to participate in response to at least one multi-county or multi-state acute disease outbreak and/or time-sensitive investigation. Through their participation, they will write a field investigation report of an infectious disease or other approved outbreak investigation. Please see the letter of support from the state epidemiologist overseeing outbreak investigation activities for CDPHE, Dr. Rachel Herlihy. Exact time allocation would be dependent on the communicable disease landscape during the fellowship and the fellow's interests, but we would expect that the Fellow will spend 2-4 weeks during the two-year training on cluster and outbreak investigations.

Please Describe the Fellow's Anticipated Role in the COVID-19 Response – Include Activities and Time Allocation

We will work with the Fellow to determine their interest in participating in CDPHE's COVID-19 response, but do not anticipate them to take any role. CDPHE is currently conducting case and outbreak investigations and there is opportunity to help, but it would not be a requirement. Unless they wish to participate, the Fellow's time will be protected from the COVID-19 response.

Please Describe Opportunities for Fellows to Work in Health Equity as well as Incorporating Diversity, Equity, and Inclusion into their Work

The Health eMoms oversample of historically underrepresented racial and ethnic groups as well as its data collection on factors of social identity such as sexual orientation, gender identity, and disability status make this a rich data system for health equity analyses. This system is also in the process of expanding its Advisory Board to include greater representation from community organizations and members and democratizing its survey development process to collect data of more relevance and import to the community. This will provide the Fellow with opportunities to engage with community members and apply an equity lens to their analytic priorities, process, and products. The Fellow's work on the Maternal, Infant and Early Childhood Home Visiting evaluation will also incorporate health equity considerations as these programs support pregnant people and parents with young children who live in communities that face greater risks and barriers to achieving positive maternal and child health outcomes. Further, a focus of the evaluation activities for the CO MIECHV program for next four years is family engagement and health equity.