Assignment Description

The Fellow’s assignment would be in the Violence and Injury Prevention - Mental Health Promotion Branch of the Prevention Services Division. The Fellow will have the opportunity to collaborate across divisions within the department and across state departments, especially related to motor vehicle safety. For a brief summary of the CDC-funded core injury work, see: https://www.cdc.gov/injury/pdfs/stateprograms/colorado_core_svipp-H.pdf. To see topics in injury epidemiology, see https://www.colorado.gov/pacific/cdphe/injury-data-and-epidemiology. The Fellow could help enhance this webpage by reviewing other state and jurisdiction websites on injury data and epidemiology to identify gaps in Colorado’s webpage in order to build a more robust injury webpage for Colorado.

The Fellow will work closely with 40+ staff in the branch on topic areas of sexual assault, suicide, substance use, child fatality, older adult falls, drug overdose, health equity and more. The branch identifies and influences risks and protective factors that affect multiple positive or negative outcomes in the population. CDC and other national organizations recognize that our branch is a national leader in implementing this shared factor approach to improving population health. As a result, CDC awarded our branch separate funding to 1) mentor other states in this shared risk and protective factor approach to reduce drug overdose and 2) advance policies that support healthy childhood and thriving families. Every May in Keystone, Colorado, the branch sponsors an annual conference on shared risk and protective factors for local grantees, other local and state partners. Last year’s conference had over 300 attendees. The branch will pay the Fellow to attend in May 2021 and May 2022.

Day-to-Day Activities

CDPHE promotes partnership and teamwork as well as independent work. Both mentors will ensure that the Fellow receives an orientation to CDPHE, other state agencies, and partner organizations. Initially, the Fellow will shadow department staff and key partners. Then, the Fellow will work with partners to ensure that analyses and collaborative projects support the intersecting efforts (collective impact) within CDPHE and elsewhere in the state.

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

- Critical thinking in weekly meetings with mentors (2-4 hours/week minimum)
- Developing and implementing projects that address all applied epidemiology core competencies, such as: design and conduct an evaluation of a public health surveillance system (e.g. the new injury dashboard); develop a new set of data indicators (e.g. creating statewide...
indicators for alcohol outlet density surveillance); data collection, analysis, and dissemination, including preparation of fact sheets, blog posts, oral presentations, and peer-reviewed manuscripts

- Shared learning and strategic thinking during the monthly injury meetings of epidemiologists, evaluators, prevention specialists and grant managers
- Collaborating with staff in the division (such as the built-environment strategist), across divisions (e.g. Center for Health and Environmental Data) and across state and local agencies (e.g. Colorado Department of Human Services, Colorado Department of Transportation, local public health agencies) on projects
- Reading, trainings, webinars, and Colorado School of Public Health seminars on evidence-based public health, CDPHE’s Health Equity Framework, cultural competency, and more
- Participating on a CSTE injury workgroup of the Fellow’s choice (monthly calls)
- Participating on the four states funded to conduct injury surveillance quality improvement (1-2 calls/month) and conducting related analyses on injury hospitalizations, injury emergency department visits, and/or medical record review data (every few months)
- Conduct analyses and summarize them in response to custom injury data requests (1-2 per week)
- Participating with members of the injury prevention committee of the State EMS and Trauma Advisory Council (4 meetings/year), Drunk and Impaired Driving Task Force (4 times/year), Colorado TBI Program (1-2 times/year), division staff meetings (2 times/year), the Violence and Injury Prevention – Mental Health Promotion Branch (1 interactive meeting/month).
- Taking a 5-minute wellness break daily (e.g. walk, meditate, ride using CDPHE bike library)
- Facilitating or discussing epi topics and journal articles with other epidemiologists across CDPHE at the “Epi Forum” (6 times/year) started by the primary mentor and the child fatality epidemiologist. (A recent topic was about the overuse of the p-value and alternative statistics to p-value.)

Potential Projects

Surveillance Activity  Injury Outcomes for the Shared Risk and Protective Factor Dashboard

To determine what injury outcomes to add to the Colorado Shared Risk and Protective Factor dashboard, the Fellow will conduct a multi-variate analysis of the associations between Colorado injury and violence outcomes and Colorado risk and protective factors. This analysis will build upon CDC’s work and the work by CDPHE’s Violence and Injury Prevention-Mental Health Promotion branch staff who created the Colorado Shared Risk and Protective Factor Dashboard. The Fellow will get input and advice from the branch staff, use the CDC External Cause-of-Injury Framework for Categorizing Mechanism and Intent of Injury to select the major mechanisms (causes) of injury and then apply these categorizations to data sets on emergency department visits, hospitalizations and death to create the outcome data to use in the analysis. The Fellow will use updated CDC research on shared risk and protective factors for violence, motor vehicles and traumatic brain injury to design the analysis, identify the factors to use in the analysis and then conduct the analysis. The Fellow will present the results of the analysis to branch staff to further refine what to include in the dashboard. With the assistance of the Tableau specialist in the branch, the Fellow will then produce data files of the relevant injury and violence outcomes for the
dashboard and work with the Tableau specialist to design visualizations of the new outcome data. Annually, the Fellow and/or the injury epidemiologist (the secondary mentor) will update the outcome data in the dashboard.

Surveillance Evaluation  Evaluation of a New Interactive Injury Dashboard

The Fellow will evaluate a new public, interactive dashboard for injury surveillance. To assess the usefulness of the dashboard and to collect ideas on enhancements, the Fellow will first develop a survey and/or conduct key informant interviews of users of the new injury interactive dashboard to be launched in June 2020. Using CDC guidelines for surveillance evaluation (https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5013a1.htm) the Fellow will describe in a written report the attributes of the surveillance system, the objective, the timeliness, and usefulness of the injury interactive dashboard. The Fellow will identify ideas for new information to enhance the dashboard and any confusing visualization or navigation. The Fellow might create a performance test, such as injury questions for key informants to answer using the dashboard, to see how quickly and accurately the informants can use the dashboard and how well the visualizations communicate the main injury findings. The Fellow will also learn how to use web analytics to quantify the use of the dashboard.

Major Project  Journal article on a Colorado Injury Surveillance Quality Improvement Study

The Fellow will write a peer-reviewed manuscript on one of the Colorado injury surveillance quality improvement studies on suicide attempts/self-harm, child abuse and neglect, or spinal cord injury. The Fellow will pick one of the studies to write up, conduct a literature review, summarize methods (either a medical record review or data linkage), and summarize results in tables and figures. To inform the written discussion in the manuscript, the Fellow will present results on a monthly call of the four states (CO, KY, MA and MD) funded to conduct injury surveillance quality improvement and facilitate a discussion of the implications of the findings and the limitations of the study. The Fellow will gain experience using JANE journal estimator to select journals interested in the manuscript and the STROBE guidelines for writing a manuscript on an observational study available at the EQUATOR website.

Surveillance Activity  Develop Statewide Indicators for Alcohol Outlet Density in Colorado

In public health, excessive alcohol use is a cross-cutting factor that affects injuries and violence. Colorado’s statutory framework for regulating alcohol sales has been rapidly changing in the last five years. As laws impacting alcohol outlet density (AOD) continue to evolve in Colorado, the state public health department is tasked with creating new, innovative surveillance systems to track AOD and its impact on communities. The Fellow will work with mentors to create statewide indicators for alcohol outlet density, which will be responsive to the specific statutory and regulatory context in Colorado. The Fellow will lead the indicator design process and get hands-on experience cleaning, analyzing, interpreting, and disseminating these AOD surveillance data. These indicators will be used at the state and local levels to monitor changes in AOD over time and can be used to assess: 1) potential correlations between AOD and marijuana outlet density; 2) associations between AOD and relevant health outcomes
(e.g. violence, motor vehicle crashes/fatalities, alcohol-related EMS encounters); and 3) associations between certain types of alcohol outlets (e.g. liquor stores, bars) and relevant health outcomes.

Preparedness Role

The Fellow will have the opportunity to collaborate with Colorado Department of Public Health Emergency Preparedness staff to gain experience and see how state and local staff coordinate timely responses. Examples include participating in tabletop exercises with local public health agency staff to prepare and practice for a potential fentanyl outbreak or investigate suicide attempts after the Colorado syndromic surveillance system of near-real time data on emergency department visits identifies a spike of suicide attempts above baseline. The mentors will ensure collaboration across CDPHE divisions to expose the Fellow to state and local emergency preparedness activities and outbreak investigations as opportunities arise. The Fellow can also attend the quarterly coordinating meetings of branch staff and emergency preparedness staff, which currently focus on preparing for an outbreak of overdoses, such as with fentanyl.

Additional Activities

Colorado is an exciting environment for an epidemiologist to gain applied experience and develop professionally, given its approach to leveraging data, funding and common strategies across multiple threats and opportunities related to population health. The recent outbreak in electronic vaping associated lung injury has provoked CSTE and CDPHE to more intentionally ensure that applied epidemiologists get training in communicable disease outbreaks and in epidemiologic investigations of non-communicable conditions, like injury. In addition, the CDPHE mentors and Fellow will regularly discuss the fellowship experience and projects to ensure alignment with the Fellow’s long-term professional goals. The mentors will encourage the Fellow to select activities that fuels the Fellow’s passion for public health and that demonstrate the power of epidemiology.

The following list provide examples of activities that could broaden the Fellow’s network of colleagues and build numerous competencies in applied epidemiology:

- Design an evaluation of the Colorado Violent Death Reporting System
- Design, conduct and write up an analysis of deaths by suicide among military veterans
- Assess the usefulness of the data in the sexual assault dashboard, identify new data sources or new data indicators for the sexual assault dashboard
- Design a medical record review and sampling strategy to confirm a new data indicator for sexual assault that the Colorado injury surveillance quality improvement team would execute
- Analyze deaths, hospitalizations, and emergency department visits following the CDC guidance on injury indicators and traumatic brain injury indicators
- Develop a set of relevant injury indicators using EMS data, such as EMS calls for “lifting and assisting” persons who have fallen and need help or conduct a descriptive analysis of “lift and assist” calls and give a talk on the findings at a quarterly meeting of the injury prevention committee of the State EMS and Trauma Advisory Committee
• Write an “after action” report about any investigation of a spike in suicide attempts based on syndromic surveillance data
• With the drug epidemiologist, conduct a formal trend assessment of non-fatal drug poisoning in compliance with the Board of Health rule on drug poisoning and present findings to the Colorado Hospital Association
• Conduct a focus group of injury data users about what “injury data products” (such as an infographic, narrative talking points of the main state findings, or a brief fact sheet) are needed to complement the injury dashboard
• Conduct a statistical analysis of linked motor vehicle crash and health datasets to measure associations between crash outcomes and shared risk and protective factors (e.g. seat belt usage, compliance with driver’s license restrictions, impairment) as well as measure severity of injuries.

**Mentors**

**Primary**
- Barbara Gabella MSPH
  - Senior Scientist in Injury Epidemiology

**Secondary**
- Christine Demont MPH
  - Injury Epidemiologist