Chronic Diseases, Substance Use/Mental Health
Utah Department of Health, Division of Disease Control and Prevention
Salt Lake City, Utah

Assignment Description
The Fellow would be placed in the UDOH, Division of Disease Control and Prevention, BHP, EPICC Program. The Division of Disease Control and Prevention includes the BHP, Bureau of Epidemiology, Utah Public Health Laboratory, and the Office of the Medical Examiner. The BHP, which includes programs related to chronic disease prevention and violence and injury prevention. The BHP, including the EPICC Program, is committed to addressing social determinants of health and reducing health disparities among the most vulnerable populations. The Fellow will be housed within the EPICC Program. The EPICC Program includes several aspects of chronic disease prevention, including diabetes, heart disease, and obesity through improved built environments to provide opportunities for physical activity and access to healthy foods, improved clinical care, and community clinical linkages. The EPICC Program has an Epidemiology and Evaluation Team, led by an Epidemiology Manager that oversees three epidemiologist/evaluators and will also include the Fellow as a member of the team. The Fellow will be able to use the various public health data combined with clinical EHR data to determine promising practices toward achieving health equity across Utah. Projects would be tailored to align with the interests of the Fellow, with a focus on adolescent health and relationships between chronic disease and risk factors, substance abuse, and mental health. The mentors and other staff within BHP would be excited to work with a Fellow with an interest in chronic disease epidemiology.

The UDOH hosts a multi-disciplinary team of fellows with whom the CSTE Fellow would collaborate. Currently, UDOH is hosting CDC Prevention Effectiveness, Public Health Informatics, and EIS fellows. UDOH has a successful history of hosting a variety of fellows including fellows from the CDC EIS program, Public Health Associate Program (PHAP), Prevention Effectiveness, and Public Health Informatics Fellowship. UDOH fosters a strong collaborative environment allowing fellows to quickly become part of the UDOH team. UDOH staff are excited to have fellows involved in their work, providing substantial growth and leadership opportunities to the fellows. Our goal is for fellows to gain a holistic understanding of public health, while also developing subject matter expertise in their areas of interest and experiencing leading innovative projects.

Day-to-Day Activities
The Fellow will be able to engage in the following day-to-day activities:

- Participate in workgroup meetings and staff meetings and provide regular updates on projects;
- Work with BHP epidemiologists to lead the development of research questions and appropriate data collection tools;
- Develop and submit IRB applications;
- Provide input into and lead various projects, including study design, data collection, analyses, interpretation, and dissemination via reports and presentations;
- Develop and maintain data sets, link data sets, clean and analyze complex data sets;
Apply epidemiologic methods to data analysis and interpretation to inform program improvement and guide policy;

Prepare, contribute to, and review manuscripts for publication;

Participate in professional development opportunities through webinars and in-person trainings;

Meet and review work with primary and secondary mentors on a regular basis;

Assume the lead on relevant data projects, working with other epidemiologists and stakeholders to ensure quality products;

Seek input from stakeholders on interpretation of data findings;

Develop maps to illustrate relationships between risk factors and health outcomes, such as greater risk for chronic conditions and low access to care in high-burden areas;

Participate in national, state, and local committees and workgroups;

Participate in strategic planning activities for the EPICC Program, the Informatics Workgroup (Clinical Data Strategic Plan), and the BHP Primary Prevention Workgroup

### Potential Projects

#### Surveillance Activity: Understanding the True Prevalence of Uncontrolled Hypertension

The EPICC program has been working with health systems across the state to obtain clinical patient-level EHR data in order to determine how well it corresponds with data available through the CHIE and to establish statewide rates of hypertension control and undiagnosed hypertension. UDOH is in the process of working with the CHIE to make necessary improvements in order to serve as a statewide chronic disease surveillance system. The Fellow would work to obtain additional clinical EHR data, as well as work to ensure data quality in the CHIE through the establishment of a Common Data Model. The Fellow would validate case definitions to determine rates of blood pressure control and undiagnosed hypertension using non-traditional data sources. The Fellow will have access to EHR data from selected health systems to examine patient records to identify clinical indicators and estimates for blood pressure control and undiagnosed hypertension. Results may then be used to identify which populations are most at risk for having undiagnosed or uncontrolled hypertension (e.g., by insurance status; by gender; by age; by clinic location). With assistance from other program staff, including the coordinator of the heart disease segment of the EPICC Program, the Fellow will be able to draft recommendations for improving the diagnosing of high blood pressure as well as improving control rates.

#### Surveillance Evaluation: Validating the Prevalence of Parkinson’s Disease Using Multiple Data Sources

Utah has a higher-than-the-nation death rate from Parkinson’s disease, but the true prevalence of this condition has been difficult to determine. Utah uses a registry to estimate the prevalence of Parkinson’s disease, but its representativeness has never been validated. The Fellow would link hospital discharge data, mortality data, and EHR data with the existing registry data to develop a new, unique patient dataset estimating the prevalence. Data will be stratified by age, gender, and rural/urban location. For this evaluation project, the Fellow will work with the Utah Health Improvement Network’s CHIE natural language processing to determine the number of people with a Parkinson’s disease diagnosis and/or other risk factors such as tremors to compare to the registry data. A comparison of the two sources will
help to better determine the accuracy of the registry as well as highlight existing reporting gaps in the registry. The Fellow would collaborate with the EPICC Program Informaticist working directly with the Utah Health Improvement Network’s CHIE, allowing for opportunities to gain experience in informatics work.

**Major Project  An Exploration of the Relationship between Mental Health, Other Risk Factors, and Obesity among Adolescents**

In Utah, 13.2% of high school youth are overweight, and 9.6% are obese (YRBS 2017). Overweight and obesity are complex issues and the root causes, especially among adolescents, are not well understood. In particular, more information is needed about factors that influence the relationship between poor mental health and obesity. Poor mental health is associated with unhealthy lifestyle choices, such as lack of engagement in physical activity. These factors, in turn, contribute to the risk of obesity, creating a bi-directional relationship. In the 2017 YRBS, one third (33.0%) of Utah high school students reported they had felt sad or hopeless almost every day for at least two weeks in a row. The proposed analyses will use the SHARP survey, comprised of two cross-sectional surveys that are conducted biennially in Utah public schools (YRBS and PNA) to explore how factors such as social isolation, bullying, physical activity, alcohol and drug use, rural/urban residence, and sense of safety are related to obesity. Statistical models will be used to identify main effect and intervening variables. Data will also be used to identify any spurious relationships and provide a better explanation of how related variables are intertwined. Greater understanding of the complex interrelationships as well as the interactive influence of risk and protective factors, independently or in combination with other risk factors, will help both the EPICC Program and Violence and Injury Prevention Program strengthen their interventions and develop a more tailored approach to combating obesity among youth. The Fellow will be able to work closely with the current EIS Officer to further examine these relationships.

**Surveillance Activity  Relationships between Adolescent Screen Time, Social Isolation, and Suicide**

The suicide rates among adolescents in Utah is one of the highest in the nation. In the past decade, the number of suicides in Utah among youth aged 10 to 17 has more than doubled, from 16 deaths in 2008 to 40 in 2018 (https://health.utah.gov/vipp/data/suicide.html). In 2017, 21.6% of Utah high school students reported they had seriously considered suicide and 9.6% have attempted suicide (YRBS 2017). A number of factors contribute to the risk of suicide, including exposure to bullying (either on school property or electronically), alcohol or drug abuse, excessive screen time, and poor mental health. Despite the known risk factors, it is still challenging to identify individuals most likely to consider and/or attempt suicide. The Fellow will use SHARP data to develop statistical models to demonstrate the relative strengths of these risk factors on suicide thoughts and attempts.

**Additional Project  Primary Prevention Pilot Project in 4 Communities**

Public health cannot underestimate the importance of the social determinants of health in the study of chronic disease. Over the past few years, the Utah BRFSS questionnaire has included questions from the Social Determinants of Health Module and the Social Context Module (at least partially), providing a rich source of data for this topic. The Fellow will have full access to the data (with 137 variables). Mentors will help the Fellow become familiar with the weighting and stratification processes used in analyzing BRFSS data. Data will be used to determine the most appropriate preventive interventions taking into
account the root causes of chronic conditions. These interventions will be piloted in four communities in Utah with the greatest opportunities for health improvement.

**Preparedness Role**

The culture of preparedness is extremely important to the UDOH as the nation experiences non-traditional responses, like the Opioid crisis. The Fellow will have the opportunity to work across the UDOH, with the Bureau of EMS and Preparedness within the Division of Family Health and Preparedness through planning, training, and exercises as well as real world events such as communicable disease outbreaks, natural disasters, and environmental health exposures. The Preparedness Program has worked to recruit and train staff through the development of the Emergency Response Team (ERT) to provide their skills and expertise in the event of an activation of the Department Operations Center and to ensure the UDOH has built resource depth. The Fellow will also have the opportunity to work with the State Epidemiologist, EIS officer, Preparedness Epidemiologist, and other CDC field assignees to assist in preparedness and response through the use of epidemiological methods and tools. In addition, public health preparedness is a large crosscutting field and the Fellow will have the opportunity to apply their interests and work with the Populations with Access and Functional Needs Coordinator or the Department of Human Services, Disaster Behavioral Health Response Team.

**Additional Activities**

a) The Fellow will be expected to participate in CDC conference calls, CDC site visits, and bureau data team meetings.

b) The Fellow will be asked to submit at least one abstract of his or her work for a presentation at the CSTE annual conference.

c) The Fellow will also have the opportunity to assist the Utah Tobacco Prevention and Control Program by using ArcGIS to map the sites where the cases of hospitalizations for vaping-related illness are most concentrated. Data will also be available to geocode locations for designating vaping shops to see if any correlation exists between shops and vaping-related hospital discharges.

d) The Fellow will assist in outbreak investigations as need arises, such as the recent vaping-related lung injury outbreak in Utah.

e) The Fellow will develop GIS maps to inform programmatic interventions and policy, such as mapping patient proximity to care, population density, social determinants of health, and disease burden and risk factors.

**Mentors**

**Primary**

Michael Friedrichs, MStat  
Epidemiology Manager II

**Secondary**

Brenda Ralls, PhD  
Epidemiologist II