Chronic Diseases, Substance Use/Mental Health

Fairfax County Health Department, Division of Epidemiology and Population Health

Fairfax, Virginia

Assignment Description

The CSTE Applied Epidemiology Fellow will be located in the Division of Epidemiology and Population Health at the Fairfax County Health Department (FCHD) in Fairfax County, VA. Located in the National Capital Region, Fairfax County is not only the most populous jurisdiction in Virginia but also the most diverse. There are nearly 1.2 million people living in Fairfax County, with about 30% of residents being foreign born. Fairfax County is the 12th largest employment center in the nation, and includes important landmarks such as Virginia’s largest university, the nation’s largest community college, hundreds of federal government facilities, Fort Belvoir military base, multiple intelligence agencies, and the headquarters of ten Fortune 500 companies.

It is the third wealthiest county in the nation; yet about 7% of the population lives in poverty. There are over 90,000 people who lack health insurance, almost 80,000 people living below poverty level, and 60,000 who are food insecure. A recent analysis shows more than a 10-year disparity in life expectancy between the wealthiest and poorest census tracts in the county; ~3-fold differences in hospitalizations for chronic diseases (e.g., asthma, diabetes, heart disease) between African American and White populations; and substantial racial and ethnic inequities in obesity and food insecurity.

Recognizing that there are social, economic, and environmental disparities which lead to inequitable health outcomes, a key focus of our Division is using our epidemiologic skill sets to help advance equity across Fairfax County. Our work is closely aligned with the County’s One Fairfax policy a social and racial equity policy of the Fairfax County Board of Supervisors and School Board which commits the county and schools to intentionally consider equity when making policies or delivering programs and services. It is a declaration that all residents deserve an equitable opportunity to succeed regardless of their race, color, sex, nationality, sexual orientation, religion, disability, income or where they live.

The Division of Epidemiology and Population Health is a dynamic program that encompasses communicable disease surveillance, investigation and prevention, as well as a growing population health team. The Division includes 1 medical epidemiologist, 12 epidemiologists, 6.5 public health nurses, and 4 disease investigation and rabies specialists. FCHD is currently hiring additional staff for the population health team, where the CSTE Fellow will sit. The Fellow will be mentored by two former Epidemic Intelligence Service (EIS) Officers: Julia Painter, PhD, MPH (EIS 2013; Senior Epidemiologist with expertise in Behavioral Science), and Benjamin Schwartz, MD (EIS 1986; Medical Epidemiologist and Director of the Division of Epidemiology and Population Health).

The CSTE Fellow will serve as an integral member of the Population Health team and will have the opportunity to work on a variety of projects, including surveillance, data collection, epidemiologic analyses, and program evaluation. Potential projects include: conducting mortality surveillance to characterize infant and child deaths in Fairfax County, VA; evaluating syndromic surveillance of Emergency Department visits for opioids and other substance use; conducting an epidemiological analysis of risk and protective factors for diet and physical activity outcomes in the Fairfax County Youth Survey (completed annually by >30,000 Fairfax County Public School Students); evaluating a county-level
program to empower low-income residents to more effectively manage their own chronic disease care; and evaluating implementation of the Fairfax County Health Department 2020 Health Equity Impact Plan. The Fellow will have the chance to engage in emergency preparedness activities, and if interested, contribute to infectious disease outbreak response. Finally, the CSTE fellow will have the opportunity to engage in professional development activities and professional networking and will benefit from access to mentors who understand competency-based epidemiologist training programs.

**Day-to-Day Activities**

The Fellow will work on multiple projects that improve health and reduce disparities among Fairfax County residents while fulfilling all required competencies. Day-to-day activities will include:

- Create data collection tools, such as surveys and focus group guides
- Perform quantitative and qualitative analysis of epidemiologic data
- Summarize analyses in written and visual formats as reports, posters, manuscripts, and presentations
- Develop data dashboards using Power BI software
- Create data briefs, fact sheets, and reports for professional and lay audiences
- Present work at meetings within FCHD, with partners and stakeholders, and at scientific conferences
- Work on projects described in this position description, including surveillance, epidemiologic analysis, and program evaluations
- Build experience in using software, such as SAS, R, Redcap, and PowerBI
- Attend weekly check-in meetings with mentors
- Participate in meetings with FCHD leadership and key external partners, such as the Opioid Task Force, Fairfax County Public Schools, Community Services Board, and Division of Family Services
- Our close proximity to Washington DC will allow the Fellow to attend other meetings and trainings that may be of interest

**Potential Projects**

**Surveillance Activity**  
Mortality Surveillance to Characterize Infant and Child Deaths in Fairfax County, VA

A priority for FCHD is to characterize the epidemiology of infant and child mortality in Fairfax County, with a focus on identifying etiologies, risk groups and disparities. Infant and child mortality rates are key indicators of a population’s maternal and child health. Applying an equity lens, the study and analysis of infant and child mortality has the potential to reveal health disparities and inequities across populations by race, sex, socioeconomic status, and zip code throughout the county.

In 2017, the Virginia Office of the Chief Medical Examiner (OCME), investigated 324 deaths of children across the state. Males represented 63.9% of all cases, and infants under one year of age had represented 41.4% if all cases. The leading causes of death for children under 18 years of age were sudden unexpected infant death (SUID) (specifically among infants under 1 year of age), gunshot
wounds, and motor vehicle collisions. Understanding the extent to which these findings are similar or different in Fairfax County will inform where to focus interventions and target resources. Using data from the OCME, the CSTE AEF fellow will review and analyze 5-year infant and child death data to characterize the epidemiology of child deaths in Fairfax County. Example activities include 1) analyzing infant and child death data by key demographic factors (including race/ethnicity, sex, and age group), manner of death, cause of death, and other selected characteristics; 2) developing recommendations including strategies to prevent future infant and child deaths overall, and reduce inequities by race/ethnicity; and 3) communicating findings to policy-makers and key stakeholders through presentations and reports.

**Surveillance Evaluation**

**Evaluate Syndromic Surveillance of Emergency Department Visits for Opioids and Other Substance Use**

Addressing the opioid epidemic is a priority area for Fairfax County. Since 2014, opioid overdoses have been the leading cause of unnatural death in the County, with number of deaths increasing by about 40% in 2017 compared with the prior year. The county’s response to the opioid challenge is coordinated by a cross-agency Opioid Task Force, and the Division of Epidemiology and Population Health is responsible for leading the Data and Monitoring subcommittee. The team has developed an interactive opioid dashboard to display data to key stakeholders facilitating evidence-based decision making.

One data source used to monitor the impact of the opioid epidemic within the county is syndromic surveillance for Emergency Department (ED) visits related to opioids and other substance use. Surveillance data are collected through ESSENCE (Electronic Surveillance System for Early Notification of Community-based Epidemics) utilizing VDH and CDC configured queries. This surveillance system has not been assessed, and a deeper understanding of the data and the strengths and limitations of the system is needed to best use these data. Thus, the CSTE Fellow will evaluate syndromic surveillance for ED visits related to opioids and other substance use. Example activities include 1) validating surveillance reports, comparing triage note and chief complaint data with ICD-10 diagnosis codes or other medical record information; 2) assessing ED visits detected by current syndromic case definitions; and 3) developing recommendations to improve the quality and interpretability of the data.

**Major Project**

**Conduct Analysis of Risk and Protective Factors for Diet and Physical Activity Outcomes in The Fairfax County Youth Survey**

Each year, >30,000 Fairfax County Public School (FCPS) students in grades 8, 10 and 12 complete a comprehensive, anonymous Youth Survey. The Youth Survey examines behaviors, experiences, and other factors that influence the health and well-being of Fairfax County's youth. Historically, results from the Youth Survey have only been reported as overall frequencies with stratification by demographic factors. More sophisticated analysis of these data to identify associations can contribute to the development of interventions to address risk factors for poor health or health behaviors. Recently the public schools have provided Youth Survey databases from the 2017-18 and 2018-19 school years to the health department for analysis.

In the 2018-19 Survey report, more students reported drinking a sugar sweetened beverage at least once per day in the past week (33.1%) than eating fruits and vegetables at least five times per day in the past week (22.7%). Only 38.4% of students participated in at least one hour of physical activity on five or more days in the past week, the lowest level since 2010; and 50.1% reported spending three or
more hours on an average school day playing video or computer games or using a computer (including tablets and smartphones) for non-school activities, also was the highest proportion since 2010. The CSTE Fellow will conduct an epidemiologic analysis of risk and protective factors for diet and physical activity outcomes in the Fairfax County Youth Survey. Example activities include: 1) analyzing data to explore risk and protective factors for relevant behaviors (e.g., drinking sugar sweetened beverages, eating fruits and vegetables, and participating in physical activity); 2) developing recommendations to increase healthy behaviors based on the analysis and the evidence base of effective interventions; 3) sharing results with FCPS partners and key stakeholders; and 4) disseminating results through presentations at national conferences and a peer-reviewed publication.

**Additional Project Evaluation of The Chronic Disease Case Management Program to Empower Patients to Their Chronic Disease Care**

In 2017, FCHD launched the Chronic Disease Case Management Program (CDCM) to improve outcomes for low income, vulnerable patients through by empowering them to collaborate in managing their own chronic disease (e.g., hypertension, diabetes mellitus, etc.). Program components include initial home assessments; formal care plans and standardized education; ongoing home visits by a nurse or community health worker; community resource referrals and behavior change to address factors that contribute to the chronic disease condition; and ongoing communication with the health care team.

To determine the program’s effectiveness in empowering patients and the relationship between empowerment, behavior change and improved health outcomes, the CSTE Fellow will conduct an evaluation of this program. Outcome data available from medical records may include improvements in participants’ laboratory tests and clinical measurements, and reduction in ED visits and hospitalizations. Data on patients’ knowledge, behaviors, self-efficacy, social capital, and receipt of services are collected longitudinally and can be analyzed for association with outcome. Example activities include 1) conducting a process evaluation to assess the quality of program implementation; and 2) analyzing outcomes and factors associated with improved outcome. This evaluation will help determine how successful the CDCM program has been in achieving its goals and identify areas for improvement.

**Additional Project Evaluation of The Fairfax County Health Department 2020 Health Equity Impact Plan**

In 2019, the Fairfax County Health Department (FCHD) convened an Equity Team to draft a plan to reduce inequities and promote optimal health and well-being for all. Our guiding statement is: Eliminate individual, institutional, and structural biases to advance equity in health outcomes across Fairfax County by transforming the organizational culture of the Health Department and applying a racial and social equity lens to all aspects of the Department’s policies, budget, practices and procedures. Equity Plan components include: 1) collecting and analyzing data from FCHD clients to understand risk and protective factors linked with health outcomes, facilitators and barriers to accessing services, and sources of strength and resiliency in the community; 2) analyzing existing data with an intersectional lens to understand more about the combined effects of belonging to multiple disenfranchised groups; 3) using self-assessment tools, small group conversations, and interactive experiential learning to increase internal awareness and illustrate the impact of bias on ourselves and residents; and 4) developing and implementing communication strategies and content for different audiences, including getting input from internal and external stakeholders to craft, field test, and evaluate acceptability and resonance of messages for various audiences.
To determine FCHD’s effectiveness in achieving goals outlined in the 2020 Equity Plan, the CSTE Fellow will conduct an evaluation of the plan’s implementation and impact. Example evaluation activities include 1) conducting a process evaluation to assess the quality and consistency of plan implementation (e.g., tracking employee participation in discussions about racism); 2) evaluating short-term outcomes resulting from plan implementation (e.g., analyzing quantitative survey data and qualitative focus group data to assess employee understanding and attitudes regarding social inequity and racism based on small-group discussions); and 3) evaluating the impact of plan implementation (e.g., measuring how employee interactions with clients, community stakeholders and other staff within the HD have changed with greater understanding of social inequity and racism, based on survey and qualitative data).

**Preparedness Role**

The CSTE Fellow will have the opportunity to participate as an epidemiologist in FCHD’s public health emergency preparedness activities. Specifically, the fellow will complete necessary trainings to assist with events involving the Incident Command System (ICS), and would be able to perform epidemiological duties in large scale investigations and ICS events. The CSTE Fellow will participate in tabletop exercises and drills, and actual emergency responses as the need arises. Based on the Fellow’s interests and professional development goals, the Fellow could perform descriptive data analysis and summarize data following an actual emergency event.

**Mentors**

**Primary**

Julia Painter PhD, MPH  
Senior Epidemiologist

**Secondary**

Benjamin Schwartz MD  
Director, Division of Epidemiology and Population Health