

**ID: 35560170**

**Injury - Drug Overdose - Host Site Description**

**Baltimore City Health Department**

**Assignment Location:** Baltimore, US-MD  
Baltimore City Health Department  
Youth Wellness & Community Health

**Primary Mentor:** Darcy Phelan-Emrick, DrPH, MHS  
Chief Epidemiologist  
Baltimore City Health Department

**Secondary Mentor:** Amanda Smith, PhD, MPH  
Epidemiologist  
Baltimore City Health Department

**Work Environment**

Hybrid

**Assignment Description**

The Fellow's assignment will be based in Overdose Prevention in the Division of Population Health and Disease Prevention. This Division is responsible for the agency's clinical services, STD/HIV prevention, communicable disease and outbreak control, including COVID-19, overdose prevention, and field health services. The Fellow's work will focus on injury-drug overdose epidemiology. The Fellow will utilize law enforcement data to enhance non-fatal overdose surveillance reporting and evaluate the agency's use of ESSENCE for overdose surveillance. The Fellow will conduct an analysis on the overlap of overdose and sexually transmitted infection hotspots in Baltimore City. They will also investigate substance use in youth and use their findings to propose interventions. The Fellow will be assigned to a short-term detail with the Acute Communicable Disease team to learn about outbreak investigations. In addition, the Fellow will participate in BCHD's emergency preparedness and response activities. The Fellow will be supervised and mentored by BCHD's Chief Epidemiologist, Dr. Darcy Phelan-Emrick (primary mentor) and mentored by Dr. Amanda Smith (secondary mentor). Dr. Phelan-Emrick leads the Office of Epidemiology Services ("Epi Services"), which is also where Dr. Smith works. This office is in the Division of Youth Wellness and Community Health. Epi Services provides epidemiology support to BCHD as a whole and focuses on department-wide reporting and surveillance. The Epi Services team is made up of four full-time staff - the Chief Epidemiologist, two epidemiologists (Dr. Smith, and a masters-level epidemiologist), and one Research Analyst I.

Day-to-day activities will include:

- Analyze confidential and surveillance data (e.g., fatal overdose data, non-fatal opioid overdose EMS data, autopsy data, vital statistics data, emergency department and inpatient hospitalization discharge data, etc.)
- Summarize data analysis findings in reports and dashboards, including visualizations and maps
- Review and fulfill data requests received from BCHD staff, media, Mayor's Office, etc.
- Meet with BCHD staff and partners to discuss data, epidemiology, monitoring, and evaluation
- Write program monitoring and evaluation plans for funding applications
- Identify public datasets for analysis
- Read journal articles and the news to stay up-to-date with developments in behavioral health and injury-drug overdose epidemiology
- Work on the activities and projects described in this application

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

The primary and secondary mentors will provide statistical and data analysis technical assistance to the Fellow during their regular meetings. In addition, other BCHD epidemiologists will help facilitate the Fellow's analytic work. Several databases will be used by the Fellow, including autopsy data from the Maryland Office of the Chief Medical Examiner, fatal overdose data from the Maryland Department of Health for surveillance and for overdose fatality review, death certificate data, non-fatal opioid overdose-related EMS data, hospital discharge data (emergency department visits and inpatient hospitalizations) provided by the Maryland Health Services Cost Review Commission, vital statistics mortality data, and syndromic surveillance data through ESSENCE. The Fellow will have software licenses for Stata, ArcGIS Pro, R, Power BI, Microsoft Office Suite, and Nitro Pro. The Fellow will have access to ArcGIS Online, the R Shiny platform, and the mySidewalk digital platform. Surveillance systems available to the Fellow will include BCHD's non-fatal opioid overdose surveillance system (funded by CSTE as Project SOON in 2017-2018), ESSENCE for syndromic surveillance, the Maryland Behavioral Risk Factor Surveillance System (BRFSS), the Youth Risk Behavior Surveillance System (YRBS), and exposure to the National Electronic Disease Surveillance System (NEDSS).

**Projects**

**Surveillance Activity Title: Utilizing Police Data for Non-fatal Overdose Surveillance**

*Surveillance Activity Description:*

BCHD receives non-fatal overdose call data from the Baltimore City Police Department. Currently, this information is reviewed but underutilized internally and externally. The Fellow will lead this project, aimed at informing public health strategies through the analysis and strategic application of police data. The primary goal is to leverage data-driven insights for both internal health department operations and external community benefits. The Fellow will conduct data analysis, examining existing police data for patterns, trends, and key indicators, with a focus on evaluating the potential for use both internally and externally (public-facing dashboard).

Internally, the Fellow will identify opportunities to optimize health department operations using the analyzed police data. This may involve enhancing resource allocation, improving post-event outreach, and overall operational efficiency through the development of data-driven strategies. Externally, the project aims to explore innovative applications of police data for the community, including tools for health promotion and presented on a public-facing dashboard.

*Surveillance Activity Objectives:*

In the first year of the fellowship, the Fellow will use police data to enhance the non-fatal overdose surveillance report for use by the city's Overdose Prevention Team, the Overdose Fatality Review team, and other stakeholders as requested. Deliverables include the report, statistical analysis code, and oral presentations to the city's Opioid Intervention Team and the Overdose Fatality Review team.

*Surveillance Activity Impact:*

The expected public health impact of this project is improved access to non-fatal overdose information to inform decision-making. This project will produce a useful tool for the city's Overdose Prevention Team and the Overdose Fatality Review team for policy making, evaluation, and monitoring.

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**Surveillance System Evaluation Title: Evaluation of ESSENCE Syndromic Surveillance Data for Overdose Surveillance**

*Surveillance System Evaluation Description:*

BCHD plans to incorporate syndromic surveillance data from the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE), hosted by the Maryland Department of Health (MDH), into the agency's overdose surveillance efforts in 2024. Currently, our main surveillance data sources are fatal overdose surveillance data from MDH Vital Statistics Administration, which is based on fatal overdoses reported by the Office of the Chief Medical Examiner, and nonfatal overdose surveillance data from the Baltimore City Fire Department Emergency Medical Services.

The Fellow will be tasked with evaluating the use of ESSENCE data in our overall overdose surveillance system. To do so, they will use guidelines from CDC, such as Updated Guidelines for Evaluating Public Health Surveillance Systems (MMWR, May 7, 2004 /53(RR05);1-11) and Framework for Evaluating Public Health Surveillance Systems for Early Detection of Outbreaks (MMWR, July 27, 2001 / 50(RR13);1-35), as well as more recent resources that summarize best practices, such as Public Health Surveillance Systems: Recent Advances in Their Use and Evaluation by Groseclose and Buckeridge (Annual Review of Public Health, March 2017, Vol. 38:57-79). Methods described by CSTE in its 2015 four-part webinar series on public health evaluation will be utilized as well. The Fellow will engage stakeholders in conducting the evaluation. The Fellow will write a report summarizing the evaluation, findings, and recommendations. The report will be shared with collaborators, and the Fellow will give an oral presentation to collaborators summarizing the evaluation findings. The Fellow will also prepare an abstract for submission to a conference.

*Surveillance System Objectives:*

During the second year of the Fellowship, the Fellow will produce an evaluation report on the use of ESSENCE syndromic surveillance data in overdose surveillance following best practice methodologies for surveillance system evaluations. Deliverables of this project include the evaluation report, an oral presentation to collaborators, and a potential conference abstract.

*Surveillance System Impact:*

The impact of performing this surveillance evaluation includes improving BCHD's current overdose surveillance reporting to better inform internal collaborators, and therefore result in better decision-making regarding overdose prevention and intervention strategies for Baltimore City residents.

**Major Project Title: Investigation of Overdose and Sexually Transmitted Infection Hotspots Overlap in Baltimore City**

*Major Project Description:*

A recent article published in the journal Sexually Transmitted Diseases (1) notes that substance use disorders (SUDs) can impact the occurrence of sexually transmitted infections (STIs). For example, substances can cause mood-altering effects, which can directly impact sexual motivation and behaviors. Additionally, opioids cause powerful withdrawal symptoms, which may motivate individuals to engage in high-risk sexual behaviors for money or drugs. Furthermore, the association of SUD with HIV and viral hepatitis outbreaks have been well explored. A recently published study utilizing National Survey on Drug Use and Health data found that a nationally representative sample of 18-25-year-olds who used illicit drugs in the past year had three times the odds of being diagnosed with a STI compared to those who did not (2).

To investigate the juncture between SUD and STIs in Baltimore City, the Fellow will first conduct a literature review to gain knowledge on the intersection of SUD and STI risk in the United States, and then more specifically in Baltimore City. They will also explore best practices for mapping overlapping case occurrences. BCHD already identifies clusters ("hotspots") of non-fatal overdose in space and time via our daily non-fatal overdose surveillance system. Therefore, the second phase of the project will involve analyzing STI data in a similar manner, using SaTScan to detect clusters of STIs in

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both space and time. Finally, the Fellow will conduct an analysis to identify where overlap between cases and clusters occurs for overdose and STIs in Baltimore City using ArcGIS Pro. Their analysis will include data on fatal and non-fatal overdose, STI incidence (including HIV), demographics, maps, and trends over time. The Fellow will compile their findings into a comprehensive report and present them to the Overdose Prevention team and the Clinical Services/HIV Prevention team at BCHD.

Sources:

1. Strathdee SA, Bristow CC, Gaines T, Shoptaw S. Collateral Damage: A Narrative Review on Epidemics of Substance Use Disorders and Their Relationships to Sexually Transmitted Infections in the United States. *Sex Transm Dis.* 2021 Jul 1;48(7):466-473. doi: 10.1097/OLQ.0000000000001341. PMID: 33315749; PMCID: PMC8184578.

2. Haider MR, Kingori C, Brown MJ, Battle-Fisher M, Chertok IA. Illicit drug use and sexually transmitted infections among young adults in the US: evidence from a nationally representative survey. *Int J STD AIDS.* 2020 Nov;31(13):1238-1246. doi: 10.1177/0956462420950603. Epub 2020 Sep 30. PMID: 32996867; PMCID: PMC7951999.

*Major Project Objectives:*

During the two years of the Fellowship, the Fellow will complete an analysis and report to assess the overlap of overdose and STI cases and clusters in Baltimore City. Deliverables will include the report, maps, statistical analysis code, oral presentation to the Clinical Services/HIV Prevention team and overdose prevention committees (internal and external), conference abstract, and possible peer-review publication.

*Major Project Impact:*

The expected public health impact of this project is an improved understanding of the intersection between SUD and STI occurrence in Baltimore City. The findings will inform opportunities for collaboration between the Overdose Prevention Team and the Clinical Services/HIV Prevention team at BCHD, which can lead to more impactful decision making and programming.

**Additional Project #1 Title: Understanding and Addressing Youth Substance Use: A Comprehensive Analysis in Baltimore City**

**Project #1 Type: Major Project**

*Project #1 Description:*

According to the National Institute on Drug Abuse, unintentional drug overdose death rates among youth in the US (aged 15-19 years) continue to increase (3). This national crisis is being felt in Baltimore City. As a data-driven agency, BCHD seeks to better understand the impact that substance use has on youth in Baltimore City. In collaboration with the Local Behavioral Health Authority (LBHA), Behavioral Health System Baltimore (BHSB), this project focus on substance use and overdose among young residents. The Fellow will conduct a literature review to gain knowledge on fatal and non-fatal overdoses among the youth population in the United States and Baltimore City. The Fellow will work alongside staff members on the established BCHD/BHSB collaboration, Kids Off Drugs (KOD). KOD is a culturally relevant program presented to youth in schools and communities to start the conversation about substance use. The Fellow will collect anecdotal information gathered from interviews with both youth and school staff conducted during the school-based events. Understanding overdose risk in this subpopulation will improve our agency's programming and response and provide potential prevention and intervention strategies for behavioral health among youth. The Fellow will write a report on their findings as well as present their findings to the LBHA Prevention Team. The Fellow may prepare an abstract for submission to a conference and explore the possibility of submitting a manuscript to a peer-reviewed public health journal.

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Source:

3. Unintentional Drug Overdose Death Rates Among US Youth Aged 15-19, NIH, December 2023, <https://nida.nih.gov/research-topics/trends-statistics/infographics/unintentional-drug-overdose-death-rates-among-us-youth-aged-15-19>, accessed January 24, 2024.

*Project #1 Objectives and Expected Deliverables:*

During the second year of the Fellowship, the Fellow will conduct an analysis focused on substance use in Baltimore City youth. Deliverables include a written report, statistical analysis code, datasets, and oral presentation to the LBHA Prevention Team.

*Project #1 Impact:*

The expected public health impact of this project is improved understanding of substance use and overdose risk in youth in Baltimore City. The insights gained will inform more effective programming and interventions tailored to this specific population, ultimately contributing to better public health outcomes.

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

The Fellow will participate as an entry-level epidemiologist in BCHD’s public health emergency preparedness and response activities. They will complete the necessary trainings, including FEMA National Incident Management System (NIMS) Incident Command System (ICS) 100 and 200 courses, within 6 months of onboarding (10 hours). The Fellow will become familiar with the epidemiology components of BCHD’s emergency response plans and will participate in tabletop exercises, drills, related activities (10 hours), and, if necessary, actual emergency responses. After receiving training, the Fellow will serve as the agency’s on-call (nights and weekends) Infectious Disease Duty Officer for approximately 2 weeks per year. This is a duty assigned to all agency epidemiologists. If the mpox response is still ongoing, the Fellow will run the monthly mpox testing and vaccination report (1 hour per month) as well as the quarterly mpox epidemiology report (2 hours per quarter).

**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 a short-term detail with BCHD’s Office of Acute Communicable Diseases (ACD) so the Fellow can gain experience in conducting outbreak investigations (estimated at 20 hours). The ACD team includes three epidemiologists, one of whom serves as the Director. The Fellow will join the ACD team as it progresses start-to-finish through the steps of at least one outbreak investigation. The Fellow will write a field investigation report and receive feedback on the report from the ACD team. The team will also expose the Fellow to NEDSS and other tools and resources used during their daily operations. Counts for selected notifiable conditions for Baltimore City are available at <https://shorturl.at/bhCGR>.

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

The Fellow will attend our agency’s monthly COVID data meeting (1 hour per month). The Fellow will meet with our two dedicated COVID-19 epidemiologists to learn about their work.

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

In their everyday work, the Fellow will examine disparities in health outcomes and risk factors by demographics, geography, and by other factors when data are available. Identification of health disparities is a key step in achieving health equity, according to the Robert Wood Johnson Foundation (RWJF) (citation: <https://www.rwjf.org/en/library/research/2017/05/what-is-health-equity-.html>, accessed January 23, 2024). The Fellow will be involved with monitoring and evaluation of efforts to address health disparities. If the Fellow wishes, they may join the agency's Health Equity Committee. In terms of diversity, equity, and inclusion, the Fellow will learn about unconscious bias and addressing bias in the workplace. The Fellow will be encouraged to share their preferred gender pronouns with others. The Fellow will work with diverse set of colleagues and partners. The primary and secondary mentors will work with the Fellow to help them understand the reasons for medical and public health mistrust in Baltimore City and the role and effects of structural racism in the city's past and present.