ID: 73790805
Injury, Injury - Drug Overdose - Host Site Description
North Carolina Department of Health and Human Services

Assignment Location: Raleigh, US-NC
North Carolina Department of Health and Human Services
Division of Pulbic Health, Injury and Violence Prevention Branch

Primary Mentor: Bruce Nawrocki, MS Comp Sci, MBA
Public Health Epidemiologist / Data Architect
North Carolina Department of Health and Human Services

Secondary Mentor: Scott Proescholdbell, MPH
Epidemiologist and Unit Manager, Injury Epidemiology, Surveillance and Informatics Unit (ESI)
North Carolina Department of Health and Human Services, Injury and Violence Prevention Branch

Work Environment
Hybrid

Assignment Description

Chronic diseases and injuries account for approximately two-thirds of all deaths in North Carolina. To address this, the NC DPH's Chronic Disease and Injury Section collaborates with local health departments and other partners to reduce deaths and disabilities related to these conditions. This assignment provides a Fellow with the opportunity to develop applied epidemiology skills under the guidance of experienced mentors and supervisors. Through both focused and cross-cutting projects in injury epidemiology, the Fellow will also gain experience in communicable disease epidemiology, chronic disease epidemiology, maternal and child health, environmental public health, and public health preparedness.

The Injury and Violence Prevention Branch (IVPB) is dedicated to offering a comprehensive, well-rounded experience for a CSTE Applied Epidemiology Fellow. As a national leader in injury prevention and control, IVPB has a strong history of hosting CDC Prevention Specialists, UNC-Chapel Hill public health students, preventive medicine residents, student interns, Capstone project teams, and Applied Epidemiology and Informatics Fellows. All IVPB staff will provide program orientation, technical assistance, and resources to support the Fellow's learning and development. The Fellow will be placed in the Epidemiology Surveillance and Informatics (ESI) Unit within the Section and will receive administrative support from the Branch Operations Team. Located in close proximity to colleagues, the Fellow will have ample opportunities for collaboration and regular interaction or via Teams.

The Fellow's projects will include surveillance evaluations, data quality improvement, and special data studies, with a focus on cleaning, managing, linking, and analyzing injury and violence-related data sources. Responsibilities will also involve developing and evaluating case definitions, generating descriptive statistics, contributing to data modernization efforts, and communicating surveillance findings to drive public health action. Mentors will work closely with the Fellow to select projects that align with their interests, fulfill competency areas, and provide a strong foundation in applied injury or chronic disease epidemiology. These projects will engage the Fellow with colleagues across the Section, DPH, the Department, other states, and the CDC. Additionally, the Fellow will have opportunities to present at national and state conferences and potentially publish in peer-reviewed journals. Training in effective public communication will be emphasized, enabling the Fellow to present findings to diverse audiences, improve public speaking skills, and contribute to state advisory boards. The Fellow will also receive mentorship in responding to data and technical assistance requests from the public, legislators, and media. Mentors are highly supportive in helping Fellows develop projects aligned with their specific interests and facilitating collaborations with other partners. Additionally, they will highlight how epidemiologic and surveillance data can inform and support public health policies.

Day-to-day activities will vary based on the Fellow's projects, experience, and development. Initially, the Fellow will work closely with mentors to become familiar with programs and projects. As skills develop, the Fellow will take on more independent work, with continued mentorship and guidance. If new projects arise, mentors will provide orientation and check-ins to ensure progress toward competency goals. Engaging with past Fellows may provide insight into daily activities over the two-year program, and we encourage applicants to reach out to them. We can assist in facilitating these connections.

In the post-COVID-19 landscape, staff have adapted to hybrid work environments, coordinating schedules with supervisors for productivity. The Fellow will receive all necessary equipment and software to support remote work if requested and approved, including VPN access, SharePoint, Microsoft Teams, an external microphone, and/or a camera. For those working in the office, precautions are in place to ensure a socially distanced and safe workspace.

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

The Fellow will have access to key public health data sources, including the NC Violent Death Reporting System (NC-VDRS) and the NC State Unintentional Drug Overdose Reporting System (NC-SUDORS), both housed within IVPB. They will also be able to use data from the State Center for Health Statistics (SCHS), other Division programs (such as the Women's and Children's Health-Title V Office), and partner agencies like the Department of Public Instruction, Division of Medical Assistance, and Division of Mental Health/Substance Abuse/Developmental Disability.

Available datasets include BRFSS, YRBS, the Youth Tobacco Survey, NC-NPASS (Nutrition and Physical Activity Surveillance), hospital discharge and mortality data, opioid and substance use metrics, the Controlled Substances Reporting System (CSRS), NC-DETECT (emergency department data), NC EMS system data, DOT alcohol and fatal crash data, and the cancer and stroke registries. The Fellow will also have access to GIS expertise through SCHS.

IT support staff are available on campus, and Fellows will have access to software including SAS, R, Epi Info, Tableau, Power BI, QGIS, ArcGIS, and the Microsoft Office suite. There are user groups for additional support with these tools. The Branch informatics team, led by Bruce, will also be available to provide direct guidance on SAS coding and analysis.

Projects

Surveillance Activity Title: Enhancing Overdose Surveillance: Addressing R99 Coding Delays for Timely and Accurate Mortality Data in North Carolina

Surveillance Activity Description:
Death certificates play a major public health surveillance role and are a main source of injury and violence data. Using WHO's International Classification of Disease (ICD) codes helps us standardize death certificate data and allow public health to provide accurate and timely data on the causes of death among our state's citizens. NC has seen a dramatic increase of R99 coding over the past few years. R99 is typically used for "ill-defined and unknown cause of mortality" or sometimes used as a placeholder for pending deaths that have not yet been assigned final coding. For example, a significant number of overdose deaths might be initially assigned an R99 code that ultimately is re-assigned as a final overdose code at some point during the investigation process by the NC OCME or NC Vital Records. Many times that final code is 12-15 months after the death. Our office has seen this trend change over time but we would like to understand this process better and its potential impact on our overdose surveillance efforts. Given that many states are seeing potential decreases of overdose deaths, we want to verify and make sure that we provide a consistent data so these trends can be comparable over time.

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We are developing a process to better estimate and provide more timely death data related to overdose deaths in NC. We have done some exploratory work combining several early indicators to provide an estimate of overdose deaths several months before they traditionally would be finalized. This process would have a tremendous benefit to our overdose fatality surveillance.

Surveillance Activity Objectives:
Objectives:

- Analyze the Use of R99 Coding - Assess trends in R99-coded deaths in North Carolina and determine their impact on public health surveillance, particularly for overdose fatalities.
- Evaluate the Reassignment Process - Examine the timeline and process by which R99-coded deaths are reassigned final ICD codes, identifying key delays and patterns.
- Develop an Early Estimation Model - Utilize early indicators to estimate overdose deaths before official coding is finalized, improving the timeliness of public health reporting.
- Ensure Data Consistency for Trend Analysis - Establish a standardized methodology to allow for consistent and comparable overdose death trends over time.
- Improve Collaboration with NC OCME and Vital Records - Strengthen partnerships with key agencies to facilitate more efficient data processing and coding.

Potential Deliverables:

- Comprehensive Analysis Report - A report detailing trends in R99 coding, the reassignment process, and its implications for overdose surveillance.
- Early Overdose Estimation Model - A methodology incorporating multiple early indicators to estimate overdose deaths before final coding.
- Revised Surveillance Workflow - A streamlined process for integrating early estimates into overdose fatality surveillance efforts.
- Technical Guidance Document - A resource outlining best practices for improving the timeliness and accuracy of mortality data.
- Stakeholder Presentation - A summary of findings and recommendations presented to public health officials, policymakers, and surveillance partners.
- Data Visualization Dashboard or Report - A tool for tracking and displaying estimated overdose deaths to improve real-time public health response.

Surveillance Activity Impact:
This initiative will enhance the accuracy and timeliness of overdose mortality data, ensuring that North Carolina's surveillance efforts provide reliable and actionable insights for public health decision-making.

Surveillance System Evaluation Title: Evaluation of NC DAVE: Strengthening Death Certificate Surveillance and Data Utility

Surveillance System Evaluation Description:
North Carolina was the last state to transition from paper-based mail-in death certificate processing to a fully electronic system, a change that occurred between 2021 and 2022 amidst the COVID-19 pandemic. The NC DAVE system has been operational for 2-3 years, and it is now time to evaluate its surveillance capabilities and identify areas for improvement. Using the CDC Surveillance System Evaluation Framework, the Applied Epidemiology Fellow (AEF) will work to identify key partners for informant interviews and develop a comprehensive plan to assess the process and the utility of the data. The AEF will track and compare metadata from previous years with data from the new system. Additionally, the Fellow will create a detailed data flow chart that outlines the process from the point of death to the point of registered death in the NC DAVE system, ensuring the system’s readiness for efficient public health surveillance.

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Surveillance System Objectives:
Objectives:

- Evaluate NC DAVE System - Assess the functionality, surveillance capabilities, and data quality of the NC DAVE system since its transition to fully electronic processing.
- Identify Key Partners - Identify and engage relevant partners for key informant interviews to gather insights into the strengths and weaknesses of the NC DAVE system.
- Analyze Historical and Current Data - Track and compare metadata from previous years with the data from the newly implemented system to assess improvements or discrepancies.
- Create a Data Flow Chart - Develop a detailed data flow diagram that visualizes the journey of death certificate data from initial death reporting to final registration in the NC DAVE system.
- Recommend System Improvements - Based on evaluation findings, propose system enhancements to improve data accuracy, timeliness, and utility for public health surveillance.

Deliverables:

- Evaluation Report - A comprehensive report evaluating the current state of the NC DAVE system, including its surveillance capabilities and recommendations for improvements.
- Key Informant Interview Summary - A summary document of the findings from key informant interviews, highlighting opportunities for system enhancements and challenges in data processing.
- Metadata Comparison Analysis - A report comparing historical and current metadata to identify any discrepancies or trends in data accuracy and timeliness.
- Data Flow Chart - A visual diagram outlining the process of data collection, registration, and integration within the NC DAVE system, ready for public health surveillance use.
- Process Improvement Recommendations - A list of proposed process changes to streamline and enhance the NC DAVE system for better public health data monitoring and reporting.
- Final Presentation - A presentation to key stakeholders summarizing the evaluation process, findings, and recommendations for system improvements.

Surveillance System Impact:
This evaluation will provide critical insights into how NC DAVE supports timely and accurate mortality surveillance in North Carolina. By identifying strengths and areas for improvement, this work will contribute to optimizing data quality, enhancing surveillance capabilities, and ensuring that public health officials have reliable information to inform decision-making and policy development. Ultimately, this effort will strengthen the state's ability to monitor mortality trends, respond to emerging health threats, and improve public health outcomes.

Major Project Title: Cannabis Outlet Density Project

Major Project Description:
Intoxicating cannabis/THC products have become widely available in North Carolina with minimal restrictions or regulations, including those related to age requirements, packaging, and dosage limits. This lack of oversight raises concerns about public health impacts, particularly regarding accessibility, consumption patterns, and potential health risks. To address these concerns, the Applied Epidemiology Fellow (AEF) will apply established alcohol outlet density methodologies to assess the density and distribution of cannabis outlets across the state.

Major Project Objectives:
Objectives:

- Map and analyze the geographic distribution of cannabis outlets in North Carolina.
- Compare outlet density between cannabis, alcohol, and tobacco retailers to identify potential clustering and access patterns.

- Assess community context, examining how outlet density correlates with social determinants of health, substance use trends, and population demographics.
- Identify public health risks related to increased availability of intoxicating cannabis products, including underage access, misuse, and potential health effects.
- Provide data-driven insights to inform policymakers, public health officials, and community leaders on potential regulatory needs.

Deliverables:

- Cannabis Outlet Density Report - A comprehensive report detailing the distribution and density of cannabis outlets in North Carolina, including key findings and trends.
- Comparative Analysis - An analysis comparing cannabis outlet density with alcohol outlet density, including potential correlations and public health implications.
- Geospatial Mapping - A visual representation of cannabis outlet locations across the state, mapped with key demographic and geographic data to illustrate patterns.
- Public Health Risk Assessment - A document summarizing potential public health risks linked to cannabis outlet density and distribution, with a focus on accessibility and consumption.
- Regulatory Recommendations - Evidence-based recommendations for regulating cannabis outlets, including potential age restrictions, packaging requirements, and location-based regulations.
- Stakeholder Presentation - A presentation summarizing findings and recommendations for key public health stakeholders, policymakers, and regulatory bodies.

Major Project Impact:
This assessment will provide critical evidence on how the growing availability of cannabis products intersects with other substance retail environments, potentially influencing consumption behaviors, public safety, and community well-being. By understanding outlet distribution and accessibility, public health officials can develop targeted prevention, education, and policy strategies to mitigate risks and promote responsible regulation of cannabis sales in North Carolina.

Additional Project #1 Title: Enhancing Data Modernization for Injury and Violence Surveillance
Project #1 Type: Surveillance Activity

Project #1 Description:
Effective injury and violence prevention relies on high-quality, standardized data from multiple sources. Our Epidemiology Surveillance and Informatics (ESI) team has worked extensively to integrate diverse data streams, and this project will accelerate and enhance these efforts. A key focus will be streamlining and standardizing data pipelines for the Injury Indicator Project, ensuring seamless import, processing, and analysis of both fatal and nonfatal injury data (including deaths, hospitalizations, and emergency department visits). By harmonizing variables across sources and incorporating population data for rate calculations, this initiative will improve data consistency, accuracy, and usability for public health surveillance.

Project #1 Objectives and Expected Deliverables:
Objectives:

- Optimize data pipeline processes to improve efficiency in data ingestion and integration.
- Standardize key variables across injury surveillance data sources to enhance comparability.
- Develop automated processes for summarizing fatal and nonfatal injury data.
- Incorporate population data for accurate rate calculations and trend analysis.
- Enhance accessibility and usability of injury surveillance data for public health action.

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Deliverables:

- Comprehensive Data Pipeline Framework - A structured and documented process for importing and managing injury surveillance data.
- Standardized Injury Surveillance Dataset - A harmonized dataset integrating multiple sources with uniform variables and definitions.
- Automated Data Processing Scripts - Code or tools to facilitate efficient data cleaning, transformation, and analysis.
- Injury Indicator Dashboard or Report - A user-friendly visualization or summary report displaying trends in fatal and nonfatal injuries.
- Methodology Guide and Documentation - A detailed report outlining data processing methods, variable standardization, and analytical approaches.
- Presentation of Findings - A final presentation summarizing key insights and recommendations for public health stakeholders.

Project #1 Impact:
By modernizing and streamlining injury surveillance data, this project will improve the timeliness, accuracy, and accessibility of critical public health information. These enhancements will enable faster identification of injury trends, support data-driven decision-making, and strengthen prevention efforts at the state and local levels. Ultimately, this work will contribute to reducing injury-related morbidity and mortality through more effective public health responses.

Additional Project #2 Title: Evaluating NC-VDRS and CDC NVDRS Flat Files for Enhanced Violent Death Surveillance
Project #2 Type: Major Project

Project #2 Description:
Since its inception, the North Carolina Violent Death Reporting System (NC-VDRS) has maintained an annual flat file of data, which serves as the primary resource for violent death surveillance, data analysis, and data product creation in the state. Additionally, the CDC NVDRS provides an annual flat file to each participating state. However, because the NC-VDRS flat file is available before the CDC file, it has traditionally been the preferred source for analysis in North Carolina. This project aims to systematically evaluate and compare the NC-VDRS and CDC NVDRS flat files to identify key differences, including variable availability, timeliness, and discrepancies in assigned circumstances. Understanding these differences is crucial for improving the accuracy, consistency, and reliability of violent death data in North Carolina.

Project #2 Objectives and Expected Deliverables:
Objectives:

- Compare the NC-VDRS and CDC NVDRS flat files to identify differences in structure, available variables, and coding practices.
- Assess the timeliness and completeness of each dataset, evaluating how data availability impacts surveillance and reporting.
- Analyze discrepancies in assigned circumstances and their effect on historical counts of violent deaths in North Carolina.
- Engage key partners and stakeholders to review findings and determine best practices for integrating the most accurate data source into ongoing surveillance efforts.
- Develop and implement standardized processes to incorporate the preferred data source into existing statistical code for surveillance and data product creation.

Deliverables:

- Comparative Analysis Report - A detailed report summarizing differences between NC-VDRS and CDC NVDRS flat files, including variable discrepancies, timeliness assessments, and circumstance assignment variations.

- Data Integration Strategy - A documented plan outlining how to incorporate the most accurate data source into routine surveillance processes.
- Revised Statistical Code - Updated code that integrates the preferred dataset for improved surveillance and reporting.
- Stakeholder Presentation - A presentation of key findings and recommendations to public health partners, including data analysts and policymakers.
- Guidance Document - A best practices manual for using the most reliable violent death data source moving forward.

Project #2 Impact:
By conducting this evaluation, the project will enhance the accuracy, reliability, and usability of violent death data in North Carolina. Improved data integration will allow for more precise tracking of violent death trends, enabling better-informed policy decisions and prevention efforts. Ultimately, this work will support stronger public health interventions aimed at reducing violent deaths and improving community safety across the state.

This project will help explore the differences between the NC-VDRS flat file and CDC NVDRS flatfile. Analyses of these data will help to better understand any considerations that should be made in our utilization of the more timely NC-VDRS flat file.

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

Like all NC Public Health employees, the Fellow will be trained on Incident Command using the federal FEMA curriculum. If the Public Health Command Center is opened, based on need, requests will be made throughout DPH for volunteers to help manage the situation. Staff with specialized skills might be sought to help provide expertise for specific operations. The Fellow will take the DPH-required public health preparedness classes. Some potential public health preparedness projects include analyzing data from post-hurricane community assessments to identify effects on acute injuries and chronic disease, and opportunities for involvement in response to emergency events like hurricanes. The Branch and the Chronic Disease and Injury Section maintain a strong relationship with the Office of Public Health Preparedness and Response with the Epidemiology Section, who are leading the State's COVID-19 response and other response efforts (hurricanes) and will help ensure the Fellow will be afforded an opportunity to engage in response efforts.

ESI epidemiologists, including CSTE fellows, have helped during hurricanes, floods, H1N1, food-borne outbreaks, injury outbreaks (contaminated heroin) and other disaster events. The past 12 NC CSTE Fellows have all worked short-term details and had positive experiences. In fact, Nicole (Standberry) Lee was detailed to help with H1N1 for a brief period in spring 2008, which led to a full-time position after her Fellowship and she is current the Food-Borne Outbreak Epidemiologist. More recently, Dana Dandeneau and Molly Hoffman helped monitor the aftermath from hurricanes Florence and Michael in 2018 and both played significant roles in the state's response to E-cigarette or Vaping Use-Associated Lung Injury (EVALI) in 2019; Molly Hoffman and Kendell Knuth were deployed for COVID-19 response and served as the lead on several activities, including the development of protocols, reporting templates, guidance for contact tracers, and communications materials for facilities and staff engaging in patient follow; and current fellow, Ty Lautenschlager assisted with developing an internal Tableau dashboard to facilitate data sharing as part of the NC Monkeypox response.

Roles, tasks, and length of detail will be negotiated with the Fellow, mentors and response team. We will ensure that while the Fellow has the opportunity to gain experience from and contribute to important response efforts that serve as a once in a career opportunity, that their primary focus is on injury and that they will be given the time needed to work on their identified projects in addition to participating in response efforts.

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

Leadership within the Branch and Section maintain a strong relationship with the Epidemiology Section and will ensure the Fellow will engage in at least one field investigation with the Communicable Disease Branch. Other opportunities for cluster and outbreak investigations will also be explored. Previous fellows have helped to review data on potential overdose clusters using NC DETECT syndromic surveillance data. Mary Beth Cox, Substance Use Epidemiologist and Scott Proescholdbell, ESI Unit Manger have been actively involved in Department efforts to establish a framework to respond to overdose and suicide clusters, as well as other types of injury events. Formal training in outbreak investigation is also available.