

ID: 35040237

Environmental Health - Host Site Description
Nebraska Department of Health and Human Services

Assignment Location: Lincoln, US-NE
Nebraska Department of Health and Human Services
Division of Public Health, Epidemiology Unit

Primary Mentor: Buss Bryan, DVM, MPH, DACVPM
Nebraska State Public Health Veterinarian & CDC Career Epidemiology Field Officer (CEFO) -
Senior level epidemiologist
Nebraska DHHS

Secondary Mentor: Derry Stover, MPH
Epidemiologist
Nebraska DHHS

Work Environment

Hybrid

Assignment Description

The environment where we live, work, and play can affect our health. Nebraska public health officials are committed to exploring the connection between the environment and health. Our goal is to use applied epidemiologic approaches and data surveillance systems to inform public health actions, with the ultimate goal of reducing the burden of environmentally related health conditions.

The NDHHS Epidemiology Unit provides an ideal training opportunity to an Applied Epidemiology Fellow. The Unit is responsible for studying the epidemiology of infectious diseases, non-infectious diseases, and environmental data. It also investigates disease outbreaks and exposures to support public health actions and policies to improve the health and safety of Nebraskans. The epidemiology team consists of State Epidemiologist, a CDC Career Epidemiology Field Officer (CEFO, Primary Supervisor), EIS Officer, and 15 other program-specific epidemiologists.

The Fellow will work as part of this team with particular focus on environmental and occupational health. The Fellow will primarily work with programs for Environmental Public Health Tracking, Childhood Lead Poisoning Prevention, Occupational Health Surveillance, and Wastewater Surveillance. The Fellow will also work alongside and on collaborative projects with infectious disease programs such as foodborne disease surveillance, vector-borne, and zoonotic diseases. The Fellow will also work with teams at the University of Nebraska Medical Center College of Public Health to study climate and health, environmental exposures, and water/air quality.

The training and skill development of the Fellow will be the primary responsibility of the CDC CEFO and secondary mentor. All team members will be at the disposal of the Fellow to provide expertise in selected aspects of epidemiology and programmatic activities. The Fellow will be authorized to access and analyze data sets/surveillance systems in all of these areas.

The Fellow will be involved with several day-to-day activities, including:

- 1) Develop an understanding of and familiarity with environmental health surveillance concepts and datasets
- 2) Refine data processing and data management skills
- 3) Learn and understand how to assess and evaluate surveillance systems
- 4) Analyze and interpret data
- 5) Prepare epidemiology reports
- 6) Designing and planning environmental health surveillance programming

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7) Developing protocols, guidance documents, work plans for environmental health surveillance.

The training goals for the Fellow will be defined by Centers for Disease Control and Prevention (CDC)/Council of State and Territorial Epidemiologists (CSTE) Applied Epidemiology Competencies (AECs). At the completion of the fellowship, the Fellow will function as a well-qualified Tier 2, midlevel epidemiologist and will be highly employable in a wide range of public health settings.

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

The Epidemiology Fellow's work space will include a cubicle equipped with a desktop/laptop PCs with Microsoft Office, Outlook Email, R, SAS, EpiInfo 7, Tableau, ArcGIS, and other data software as needed. Databases include reportable disease and laboratory data, hospital discharge data, birth and death certificate/registries, workers' compensation data, poison center data, air and water quality data, environmental data, and other data sources. Because of the organizational structure of the agency, the Fellow will have ready access to personnel and data in the Epidemiology Unit and other programs related to other areas of public health, including chronic disease epidemiology, maternal and child health epidemiology, data from other state agencies. In addition, NDHHS Epidemiology Unit has a unique working environment where epidemiology, health statistics and public health informatics are under the same group that always provide tremendous technical and support to the Fellow.

Projects

Surveillance Activity Title: Surveillance and Investigation of Reportable Poisonings and Chemical Exposures

Surveillance Activity Description:

Each year, hundreds of Nebraskans experience poisoning and illnesses due to exposures environmental contaminants and chemicals. Nebraska reportable disease regulations require healthcare provider and laboratory reporting of lead poisoning, carbon monoxide poisoning, and poisonings or illnesses due to pesticides, heavy metals, and other industrial chemicals. However, there is little capacity and several unknowns related to how environmental exposures impact human health in our state. This project will expose the Fellow to various exposure and poisoning data sources including laboratory reports, hospitalizations and emergency department visits, deaths, syndromic surveillance, and poison center reports. The Fellow will review incoming surveillance data and will be involved in the epidemiological investigation for occupational and non-occupational poisonings and chemical exposure reports. The fellow will also assist the Nebraska lead poisoning and occupational health surveillance programs in investigating and studying childhood and adult lead exposures from blood lead level reports. The Fellow will access several data systems to analyze poisoning data and develop surveillance reports to describe the burden and trends of environmental illnesses and poisoning in Nebraska. The Fellow will also assist the DHHS team in the investigation of infectious diseases attributed to environmental factors as needed, such as waterborne disease outbreaks. Activities may include interviewing patients, contacting health care providers, working with local health departments and other agencies in response to case reports.

Surveillance Activity Objectives:

The main objective is to use surveillance data to increase our understanding of the trends and burden of chemical poisonings in Nebraska. Deliverables will include completed investigations, a data report summarizing occupational and non-occupational poisonings, and a poster or a abstract submission.

Surveillance Activity Impact:

Through investigations and analysis of surveillance data, public health recommendations and interventions can be developed to prevent future illnesses to environmental contaminants.

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Surveillance System Evaluation Title: Evaluation of Nebraska Blood Lead Surveillance System

Surveillance System Evaluation Description:

Lead poisoning and exposure is still a public health problem across the U.S., and results in impacts to child health and development. Nebraska's surveillance system for lead poisoning involves the collection of blood lead level laboratory results. All blood lead tests performed in Nebraska are required to be reported to Nebraska DHHS. The Fellow will have the opportunity to conduct a surveillance system evaluation of Nebraska's lead poisoning surveillance system using CDC's Updated Guidelines for Evaluating Public Health Surveillance Systems. The Fellow will 1) engage with stakeholders to participate in the evaluation, 2) describe the surveillance system, 3) design the evaluation, and 4) gather credible evidence of the surveillance system including the data quality, simplicity, representativeness, and timeliness. The Fellow will write a report summarizing the findings of the evaluation. Additionally, the Fellow will work with lead poisoning prevention staff to develop and calculate performance measures as it relates to CDC lead poisoning prevention program grant requirements.

Surveillance System Objectives:

The objective is to evaluate and enhance the blood lead surveillance system. The Fellow will write a report summarizing the findings of the evaluation and will develop performance measures. The Fellow will present findings to the team and will work with staff to incorporate recommendations and make changes to the surveillance system.

Surveillance System Impact:

Through evaluation and recommendations, the evaluation will help Nebraska DHHS take measures to enhance the surveillance system. When complete, this work will help public health identify and respond to children and families with lead exposure.

Major Project Title: Assessing the Burden and Trends of Asthma in Nebraska

Major Project Description:

The disease of asthma is linked with environmental factors, and the prevalence of asthma in Nebraska is high. Nebraska DHHS has robust data sources to assess the epidemiology of asthma in Nebraska. The Fellow will identify, access, and assess the quality of surveillance data to lead a project describing the burden, trends, and epidemiology of Asthma in Nebraska. The Fellow will analyze and interpret data for asthma-related deaths, hospitalizations, emergency department visits, and self-reported prevalence from the BRFSS. This project will also expose the Fellow to syndromic surveillance data, in which real-time emergency department data can be assessed and compared to air quality data to detect geographic and temporal trends and predictors of negative respiratory health outcomes. The Fellow will develop an asthma surveillance report that summarizes the descriptive epidemiology of burden and trends. The Fellow will be the agency's main asthma point of contact and will worked with community-based organizations.

Major Project Objectives:

The Fellow will develop an asthma surveillance report that summarizes the descriptive epidemiology of burden and trends. The Fellow will be the agency's main asthma point of contact and will present findings to community-based organizations and doctors interested in asthma.

Major Project Impact:

The project will benefit public health by increasing our understanding of the burden of asthma. Government and community organizations will be able to use the data summarized by the Fellow to develop strategies for prevention, such as developing priorities based on geographic regions, apply for funding, and work to inform the public on risks and public health actions.

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Additional Project #1 Title: Plan and Design a CASPER Community Assessment in Nebraska

Project #1 Type: Major Project

Project #1 Description:

The Community Assessment for Public Health Emergency Response (CASPER) is designed to provide public health leaders and emergency managers information about a community so they can make informed decisions. It uses a valid sampling methodology to collect information at the household level and can be used in disaster or non-disaster settings. This project would involve helping DHHS prepare for conducting a CASPER. The AEF would receive training on CASPER, work with Emergency Preparedness to conduct an assessment of emergency response capacity, and collaborate with a local health department to design and perform a mock or pilot CASPER. The Fellow would use statistical sampling strategies and methodologies, coordinate with GIS program, and design data collection forms.

Project #1 Objectives and Expected Deliverables:

- Learn CASPER methodology and principles.
- Develop a flow-chart and/or other processes for conducting a CASPER in Nebraska.
- Design data collection forms.
- Assist state and local health department with designing a methodology and plan for conducting a CASPER in Nebraska.

Project #1 Impact:

Collecting information in a community during an emergency or non-emergency situation is an important aspect of public health. The recent train derailment and chemical spill in Ohio signifies the need to have the right tools for responding to community environmental health disasters. In Nebraska, no CASPERs have been performed. This project would help DHHS build the capacity to respond to a disaster or other event so that policy leaders and emergency managers have a process built for a future disaster or public health emergency.

Additional Project #2 Title: Investigate Observed Increase in Annual Number of Reported Histoplasmosis and Other Mycotics Cases

Project #2 Type: Surveillance Activity

Project #2 Description:

Histoplasmosis is an infection caused by a fungus that lives in soil. Nebraska has seen an increase in reports of histoplasmosis over the past 5 years. Limited resources are currently available to thoroughly investigate. The CSTE Fellow will continue department work by studying this observed rise in mycotic (fungal) diseases reported cases using existing NEDSS investigation data and augment with medical chart review as necessary. Further, the Fellow will compile and analyze risk factor data including environmental and occupational risks if appropriate to identify possible explanations for the observed increases to improve efforts for prevention.

Project #2 Objectives and Expected Deliverables:

- Design data collection and/or chart abstract forms
- Conduct investigation interviews with patients and health care providers
- Conduct descriptive statistical analysis and surveillance report
- Draft guidance or education for patients and health care providers

Project #2 Impact:

Analysis of these data will help better define the timing and distribution of cases throughout the state to determine if undetected clusters or outbreaks might have occurred or if the increases are the result of recent changes in laboratory

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diagnostics or reporting. Improving our understanding of the rise in histoplasmosis and other fungal disease cases will help DHHS develop strategies for disease control and prevention.

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

The Fellow will be expected to respond to acute and emergent problems related to environmental and occupational health events, including emergency response activities related to naturally occurring and intentional events which have actual or potential impact on citizens, workers' and responders' morbidity/mortality. Nebraska's Bioterrorism Preparedness Program offers training and exercises to ensure Nebraska's preparedness in the event of an incident or attack involving biological, chemical, radiological or other agents of bioterrorism. The Fellow will access this training and participate in such exercises as needed.

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

In the past decade, several major disease outbreaks have an environmental source or related to environmental/occupational exposure. It is anticipated that the Fellow will collaborate and participate in outbreak and cluster investigations that are related to environmental health. These could be environmental contaminants like chemicals, heavy metals, or pesticides. This work will also include supporting our waterborne disease, foodborne disease, and other infectious disease programs during outbreaks that are environmentally or occupationally related, including infectious agents like legionella and waterborne enteric agents like campylobacter and cryptosporidiosis.

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

The Fellow will have opportunity to work with COVID-19 Wastewater Surveillance program, learn about how the program works, and assist our team in using wastewater data to inform public health actions. Additionally, many COVID-19 outbreaks are associated with occupational or workplace exposures. The Fellow will be asked to participate in occupational COVID-19 investigations and outbreaks that are the result of occupational exposures. The fellow may also assist the Nebraska DHHS Occupational Health Surveillance Program in analyzing occupational-related COVID-19 case data.

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

Nebraska DHHS has a mission to promote and support the advancement of health equity in Nebraska using data, partnerships, funding, training and technical assistance. Racial ethnic minorities experience environmental health disparities. For example, lead poisoning in children disproportionately affects Black, minority, and refugees populations. Using best practices and collaborating at the community and regional level brings multiple resources together to address the needs of racial ethnic minorities, American Indians, refugees and immigrants. Raising awareness of disparities and health equity is accomplished through data, reports, and training, which also influences health outcomes.

The Fellow will work on the collection, exploration, visualization, and analysis of public health data to identify specific populations most at-risk for environmental health concerns. The Fellow will have the opportunity to work with the NDHHS Office of Health Disparities and Health Equity to help understand how underserved populations, including tribal, disabled, and English speakers of other languages, as well as other populations, are impacted by the environment. The Fellow will work to identify populations experiencing disparities in health due to environmental conditions, and once populations and disparities are identified, can develop actions to address the problem.