

ID: 88188443

Infectious Diseases - 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

Primary Mentor: Bryan Buss, DVM, MPH, DACVPM
CDC Career Epidemiology Field Officer (CEFO) and Nebraska State Public Health Veterinarian
Nebraska Department of Health and Human Services

Secondary Mentor: Alison Keyser Metobo, MPH
Systems Epidemiologist III
Nebraska Department of Health and Human Services

Work Environment

100% In-person

Assignment Description

Because of the tremendous public health and medical burden of infectious diseases, and because of the great potential for prevention and reduction of morbidity and mortality, Nebraska public health officials have prioritized the understanding of the epidemiology and control of infectious diseases in our population. As we increasingly focus our resources on controlling and reducing health care costs, we believe that all sectors of society will need and want a thorough understanding of the distribution and determinants of infectious diseases in our population. Our agency's goal is to be the leading provider of such information. We are extremely excited about the opportunity to supplement our respiratory, vaccine preventable disease, and hepatitis team with an Infectious Disease Epidemiology Fellow and believe that such a resource will enable us to advance this agenda. For the qualified applicant, the supervisory team will advocate for employment opportunities to be available at the completion of the fellowship.

The Nebraska Office of Epidemiology provides an ideal training opportunity for an Infectious Disease Epidemiology Fellow. This office is responsible for studying the epidemiology of reportable infectious diseases and investigating infectious disease outbreaks. The epidemiology team consists of State Epidemiologist, a CDC Career Epidemiology Field Officer (CEFO), Unit Administrator, and 28 epidemiologists (5 Epi III, 11 Epi II and 12 Epi I).

The Fellow will work as part of this team with particular focus on vaccine preventable diseases, respiratory diseases, and hepatitis. The team members are located in close proximity to each other in various parts of our integrated Health & Human Services agency. The training and skill development of the Fellow will be the primary responsibility of the primary 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, analyze, and evaluate data sets and surveillance systems in all of these areas.

The Fellow's anticipated day-to-day activities will include:

- Develop an understanding of and familiarity with respiratory, vaccine preventable disease, and hepatitis surveillance datasets
- Refine data processing and data analysis skills
- Understand how to assess surveillance systems
- Analyze and interpret data
- Prepare epidemiology reports

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

The Fellow will have access to the Nebraska Electronic Disease Surveillance System (NEDSS) where laboratories and healthcare providers throughout the state are required by rules and regulations to report cases of reportable diseases to our office by ELR; Syndromic Surveillance dataset which includes inpatient and outpatient visits; and NESIIS which contains statewide immunization records. Other datasets include vital records, an E-code database derived from the hospital discharge data, and death certificate data. The agency has a wide array of statistical software options such as SAS and R, and visualization programs such as Power BI and Arc GIS. In addition, we have close relationships with the Departments of Epidemiology and Biostatistics at the UNMC College of Public Health, Omaha, Nebraska whereby statistical support is available.

Projects

Surveillance Activity Title: Long COVID Surveillance Project

Surveillance Activity Description:

The fellow will lead efforts to establish and enhance long COVID surveillance in Nebraska using three targeted surveillance strategies. This activity will leverage existing clinical, syndromic, and population-based data systems to improve understanding of long COVID prevalence, clinical characteristics, and healthcare utilization across the state.

Firstly, the fellow will evaluate Nebraska's current long COVID survey designed during the height of the COVID pandemic. This survey was developed in REDCap but has yet to be evaluated and deployed for real world use. The target audience for this survey are physicians at long COVID clinics to capture clinical data on long COVID patients.

Secondly, the fellow will create two syndromic surveillance queries in ESSENCE that have been developed through collaborative efforts by CDC and various state health department staff. These queries will capture patient visits presenting for long COVID. Thirdly, the fellow will obtain Nebraska BRFSS data to analyze questions specific to long COVID.

Finally, the fellow will use data captured in the three previously described strategies to create a comprehensive long COVID data report. This data report will be shared with relevant stakeholders in Nebraska, including DHHS leadership, local health departments, and providers across Nebraska.

Surveillance Activity Objectives:

The surveillance activity's objectives are: evaluate and refine an existing long COVID clinical survey to support standardized data collection from long COVID clinics in Nebraska, implement and assess syndromic surveillance queries in ESSENCE to identify healthcare visits related to long COVID, analyze BRFSS data to estimate population-level prevalence and impacts of long COVID in Nebraska, integrate clinical, syndromic, and population-based data to characterize the burden and trends of long COVID statewide, provide actionable surveillance findings to public health leadership, local health departments, and healthcare providers.

The surveillance activity deliverables are: produce an evaluated and implementation-ready long COVID clinical survey instrument in REDCap, including documentation of recommended revisions and data elements, two operational long COVID syndromic surveillance queries in ESSENCE, with summary analyses of trends and demographic patterns, analytic summaries of BRFSS long COVID data, including prevalence estimates and key population characteristics, a comprehensive long COVID surveillance report integrating findings from all three data sources.

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Surveillance Activity Impact:

This project will strengthen Nebraska's capacity to monitor, understand, and respond to long COVID by establishing a coordinated and sustainable surveillance framework. By integrating clinical, syndromic, and population-based data sources, Nebraska will gain a more complete and timely understanding of the burden, characteristics, and trends of long COVID across the state.

The evaluation and implementation of a standardized clinical survey will improve the quality and consistency of long COVID clinical data, supporting better characterization of symptoms, comorbidities, and patient needs. Syndromic surveillance using ESSENCE will enable more timely detection of healthcare utilization related to long COVID, allowing public health officials to monitor trends and identify potential disparities by geography or population. Analysis of BRFSS data will provide population-level estimates of long COVID prevalence and functional impacts, filling critical gaps not captured through healthcare-based data alone.

Surveillance System Evaluation Title: Evaluation of Electronic Case Reporting (eCR) for Notifiable Diseases to Assess Timeliness, Data Quality, and Public Health Utility

Surveillance System Evaluation Description:

Electronic Case Reporting (eCR) automates the transmission of notifiable disease reports from electronic health records (EHRs) to public health agencies and is a national priority for modernizing public health surveillance. While eCR is intended to improve reporting timeliness, data completeness, and efficiency, systematic evaluation is needed to assess real-world performance and impact on public health workflows. This project will evaluate eCR as a surveillance system to inform system optimization, guide implementation decisions, and strengthen notifiable disease surveillance.

The eCR surveillance system includes automated case report generation within EHRs, transmission through national infrastructure (e.g., APHL AIMS), and ingestion into the state or local public health surveillance system. Diseases included in eCR reporting vary by jurisdiction and are compared with traditional reporting methods such as fax, phone, and manual provider reports.

Surveillance System Objectives:

The objectives of this evaluation project are: assess the timeliness of eCR reports compared with traditional reporting methods, evaluate the completeness and quality of key epidemiologic and clinical data elements, determine the usefulness and acceptability of eCR for public health surveillance and case investigation, identify system strengths, limitations, and opportunities for improvement

The expected deliverables are: develop a comprehensive surveillance system evaluation report, develop data tables and visualizations comparing reporting methods, make recommendations to improve eCR data quality and workflow integration

Surveillance System Impact:

This project will help the eCR program improve the completeness, timeliness, and usefulness of eCR reports.

Major Project Title: Influenza Data Linkage Project: Laboratory and Vaccination Data

Major Project Description:

The fellow will complete a data linkage project using DHHS electronic laboratory reporting (ELR) data and Nebraska Immunization Registry data. ELR and vaccination data linkage will focus on data specific to influenza, providing data on how many Nebraskans who test positive for influenza are vaccinated. Additional descriptive analyses will be done using this linked data, including demographic information. The fellow will create a data report to summarize their findings and

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produce an SOP to document how they completed this project. This SOP will provide a basis for other epidemiology teams at DHHS to perform similar data linkage projects using ELR and vaccination data.

Major Project Objectives:

The major project objectives are: link ELR influenza testing data with Nebraska Immunization Registry records to determine vaccination status among laboratory-confirmed influenza cases, assess data quality, completeness, and match rates between ELR and immunization registry datasets, conduct descriptive analyses of linked influenza and vaccination data by demographic characteristics, generate surveillance findings to inform influenza prevention and immunization strategies in Nebraska, and develop standardized documentation to support future ELR-Immunization data linkage projects within DHHS.

The major project deliverables are: create a linked ELR-Immunization Registry dataset for influenza surveillance, including documentation of linkage methods and data quality assessments, develop descriptive analytic summaries of influenza vaccination status among laboratory-confirmed cases, including demographic breakdowns, produce a written influenza data report summarizing key findings and public health implications, develop a standardized operating procedure (SOP) detailing the ELR-Immunization data linkage process for use by other DHHS epidemiology teams, and disseminate findings to relevant DHHS programs, including immunization and communicable disease teams.

Major Project Impact:

This project will enhance Nebraska's ability to evaluate influenza vaccination effectiveness and identify gaps in vaccine coverage by linking electronic laboratory reporting (ELR) data with the Nebraska Immunization Registry. By quantifying the proportion of individuals who test positive for influenza and are vaccinated, the project will provide actionable insights into vaccination patterns among laboratory-confirmed influenza cases.

The linked dataset will enable more detailed descriptive analyses by demographic characteristics, supporting identification of populations at higher risk for influenza infection despite vaccination or with lower vaccine uptake. These findings will inform targeted prevention strategies, communication efforts, and vaccination campaigns, particularly for populations disproportionately affected by influenza.

Additional Project #1 Title: Updating Public Health Response Plans

Project #1 Type: Surveillance Activity

Project #1 Description:

This project will ensure that public health response plans remain current, evidence-based, and operationally relevant. Up-to-date response plans are essential for effective outbreak management, emergency preparedness, and continuity of operations during public health emergencies. At the beginning of the fellowship the fellow will familiarize themselves with and review existing response plans. Mid-fellowship the fellow will independently update sections of response plans, incorporating lessons learned from outbreak investigations and coordinating stakeholder feedback under supervision, and will lead the revision and finalization of one or more response plans. By the end of the fellowship the fellow will develop implementation tools such as job aids or flowcharts, and support trainings or tabletop exercises to ensure operational readiness.

Project #1 Objectives and Expected Deliverables:

Project objectives are: review existing outbreak and emergency response plans for priority diseases and hazards, compare current plans with updated guidance from CDC, CSTE, and state health authorities, incorporate lessons learned from recent outbreak responses and after-action reports, engage internal stakeholders to clarify roles, responsibilities, and workflows, update protocols related to surveillance, investigation, communication, and documentation, and assist with development of job aids, flowcharts, or checklists to support plan implementation.

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Project deliverables are: develop revised and updated response plans ready for implementation, improved clarity of outbreak response roles and procedures, increased organizational preparedness and response efficiency, develop sustainable tools to support future outbreak responses

Project #1 Impact:

This project strengthens public health preparedness by ensuring that response plans remain current, evidence-based, and operationally relevant. Maintaining up-to-date response plans supports effective outbreak management, emergency preparedness, and continuity of operations during public health emergencies. As a result, public health agencies are better equipped to respond rapidly and consistently to emerging threats, minimize service disruptions, and protect community health during crises.

Additional Project #2 Title: Participation in the Outbreak Response Team

Project #2 Type: Surveillance Activity

Project #2 Description:

This project will immerse the fellow in real-time outbreak detection, investigation, and response across multiple disease areas. Participation on the outbreak response team will strengthen applied epidemiologic skills essential to protecting community health, including rapid data analysis, interagency coordination, and evidence-based decision-making.

At the beginning of the fellowship the fellow will participate in outbreak investigations under close supervision, assisting with case interviews, line list development, descriptive analyses, and surveillance review while learning investigation workflows and incident command structures. Mid-fellowship the fellow will independently manage assigned components of outbreak investigations, including data analysis, exposure assessment, and drafting investigation summaries, while serving as a primary epidemiology contact for selected outbreaks with supervisor oversight. By the end of the fellowship the fellow will lead routine or low-to-moderate complexity outbreak investigations, coordinate with laboratory, environmental health, and communications partners, and contribute to after-action reviews to identify system improvements.

Project #2 Objectives and Expected Deliverables:

The project objectives are: participate in surveillance review and identification of potential outbreaks using routine and enhanced surveillance systems, assist with outbreak investigations, including case definition development, line list creation, descriptive epidemiology, and hypothesis generation, conduct data analysis to identify trends, risk factors, and transmission patterns. support implementation and evaluation of control and prevention measures, collaborate with laboratorians, environmental health, infection preventionists, and communications staff, and contribute to drafting situation reports, investigation summaries, and public health recommendations.

The project deliverables are: descriptive epidemiologic analysis, surveillance system reviews, lead outbreak investigation reports, present finding to leadership and stakeholders.

Project #2 Impact:

Participation in the Outbreak Response Team directly strengthens the public health system's ability to rapidly detect, investigate, and control infectious disease threats. By supporting real-time outbreak surveillance, data analysis, and response activities across multiple disease areas, this project contributes to faster identification of emerging risks and timelier implementation of control measures, reducing illness, hospitalization, and potential mortality in affected communities. The fellow's involvement enhances interagency coordination and evidence-based decision-making, improving the efficiency and effectiveness of outbreak responses. Collectively, these activities build workforce capacity and resilience, helping protect population health and improve preparedness for future public health emergencies.

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Additional Project #3 Title: Hepatitis Surveillance and Monitoring

Project #3 Type: Surveillance Activity

Project #3 Description:

This project will focus on strengthening viral hepatitis surveillance, with an emphasis on identifying healthcare-associated outbreaks and improving situational awareness through data visualization. Robust hepatitis surveillance is critical for early outbreak detection, prevention of transmission, and targeting public health interventions.

At the beginning of the fellowship the fellow will learn hepatitis surveillance systems, reporting requirements, and case definitions, and reviewing existing surveillance products. Mid-fellowship the fellow will assume primary responsibility for identification of facility-associated clusters and collaborate with our healthcare associated infectious team. By the end of their fellowship the fellow will present findings from any facility outbreak to leadership and partners, recommend data-driven prevention strategies, and document workflows to ensure sustainability beyond the fellowship.

Project #3 Objectives and Expected Deliverables:

The objectives of this project are: conduct routine surveillance of hepatitis A, B, and C cases using state and local surveillance systems, review laboratory reports and case data to identify potential facility-associated clusters or outbreaks and collaborate with healthcare facilities and infection prevention staff during outbreak investigations.

The project deliverables are: develop an updated hepatitis surveillance dashboard for facility outbreaks, improve detection of facility-associated hepatitis outbreaks, and implement enhanced data-driven decision-making for hepatitis prevention activities

Project #3 Impact:

This project enhances public health capacity by strengthening viral hepatitis surveillance, with a focus on detecting healthcare-associated outbreaks and improving situational awareness through data visualization. Robust surveillance enables earlier identification of outbreaks, supports timely interventions to prevent further transmission, and informs targeted public health strategies. By improving the collection, analysis, and communication of hepatitis data, this project directly contributes to reducing morbidity, protecting vulnerable populations, and guiding evidence-based prevention efforts.

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 infectious disease epidemiology, including emergency response activities related to naturally occurring or intentional events which have actual or potential impact on infectious disease morbidity/mortality. Nebraska’s Public Health 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 can access this training and participate in such exercises.

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

The Fellow will assist with vaccine preventable disease, respiratory disease, and hepatitis investigations. Depending on the number and frequency, there will likely be opportunity for the Fellow to take the lead on an outbreak investigation which includes case identification, interviewing cases, data analysis, and writing reports.