

**ID: 88181356**

**Infectious Diseases, Infectious Diseases - Foodborne - Host Site Description**

**South Dakota Department of Health**

**Assignment Location:** Pierre, US-SD  
South Dakota Department of Health  
Division of Disease Prevention & Control

**Primary Mentor:** Josh Clayton, PhD, MPH  
State Epidemiologist  
South Dakota Department of Health

**Secondary Mentor:** Dustin Ortbahn, MPH  
Deputy State Epidemiologist  
South Dakota Department of Health

**Work Environment**

Hybrid

**Assignment Description**

The CSTE Fellow will be hosted within the Division of Disease Prevention and Control (DPC) at the South Dakota Department of Health (SD-DOH), which is responsible for statewide infectious disease surveillance, investigation, and response. DPC includes epidemiology and program staff across vaccine-preventable diseases (VPD), healthcare-associated infections (HAI), viral hepatitis, HIV, sexually transmitted infections (STI), tuberculosis (TB), vectorborne diseases (VBD), and zoonotic diseases.

South Dakota's centralized public health system provides an immersive, high-impact training environment. Because infectious disease investigations are conducted at the state level rather than by local health departments, the Fellow will gain direct, hands-on experience across all stages of outbreak detection, investigation, and response - from surveillance analysis and case investigation to partner coordination and leadership briefings.

In contrast to larger, more siloed jurisdictions, the Fellow will work closely with division and department leadership at our site, contributing meaningfully to real-time decision-making and cross-program initiatives. This structure offers broad exposure to rural and Tribal public health practice, cross-jurisdictional collaboration, and the practical application of epidemiologic findings to statewide public health action.

**Fellow's Anticipated Day-to-Day Activities:**

- Meet weekly with assigned mentors to review project progress, discuss epidemiologic methods, and receive professional development guidance.
- Serve as a primary epidemiologist for viral hepatitis surveillance, response, and control activities (including hepatitis B and C), leading case investigations, data analysis, and supporting partner coordination.
- Support VPD and enteric disease surveillance and outbreak response efforts, including measles, pertussis, and foodborne disease investigations.
- Collaborate with the eCR epidemiologist and informatics team to provide programmatic input as electronic case reporting (eCR) is implemented into the South Dakota Electronic Disease Surveillance System (SDEDSS) for viral hepatitis and VPD conditions.
- Provide consultation and technical support to Disease Intervention Specialists (DIS) regarding case investigations and public health guidance for viral hepatitis.
- Contribute to the analysis, preparation, and dissemination of the annual infectious disease epidemiology report.
- Represent SD-DOH in meetings, conferences, and multidisciplinary workgroups.

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

The CSTE Fellow will have access to robust statistical and analytic support within the Division of Disease Prevention and Control. Two staff members with advanced proficiency in SAS will provide direct mentorship and technical assistance in data management and statistical analysis. Additional expertise is available through DOH's Epi/Analytics group, which brings together epidemiologists from across the department to collaborate on analytic methods, data visualization, and interpretation. Support is also available for ESRI's ArcGIS for mapping, Microsoft Power BI for dashboards, and applied epidemiologic and biostatistical methods.

The Fellow will work directly within the South Dakota Electronic Disease Surveillance System (SDEDSS), gaining hands-on experience in data cleaning and extraction. External training opportunities will be supported, as identified, to further enhance technical skill development.

**Projects**

**Surveillance Activity Title: Implement Electronic Case Reports (eCR) into Vaccine-Preventable Disease and Viral Hepatitis Surveillance**

*Surveillance Activity Description:*

SD-DOH is implementing electronic case reporting (eCR) across all infectious disease programs to improve the timeliness and completeness of notifiable disease reporting. Currently, eCR has been implemented for five disease conditions in the South Dakota Electronic Disease Surveillance System (SDEDSS), with more than 90 additional conditions planned for implementation. The Fellow will support the implementation of eCR for vaccine-preventable diseases (VPD) and viral hepatitis. This work will include close collaboration with epidemiology and informatics staff to review and analyze incoming eCR data, ensure appropriate data mapping and integration into Maven, and incorporate eCR workflows into disease investigation policies and standard operating procedures. The Fellow will also assist with developing and delivering training for Disease Intervention Specialist (DIS) staff on the interpretation and use of eCR data during case investigations.

Given the subject matter area, additional support will be provided by the Vaccine-preventable Disease Epidemiologist and the Hepatitis Epidemiologist.

*Surveillance Activity Objectives:*

This project will implement eCR for selected vaccine-preventable disease and viral hepatitis conditions in the South Dakota Electronic Disease Surveillance System (SDEDSS) to improve surveillance timeliness and data quality. The Fellow will assess eCR data completeness and timeliness, establish standardized workflows for routine use in case investigations, and support staff adoption through targeted training and documentation. Deliverables include operational eCR workflows, updated investigation guidance, and training resources.

*Surveillance Activity Impact:*

This project will strengthen surveillance for VPDs and viral hepatitis by improving the timeliness, completeness, and consistency of case reporting to SD-DOH. Earlier receipt of actionable case data will support faster investigations, contact tracing, and implementation of public health control measures. By reducing reliance on manual reporting and data entry, the project will increase efficiency for both healthcare providers and DOH staff.

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**Surveillance System Evaluation Title: Evaluation of Shiga Toxin-Producing Escherichia coli (STEC) Surveillance in South Dakota**

*Surveillance System Evaluation Description:*

The incidence of STEC in South Dakota has consistently exceeded the national rate, including in 2023 (South Dakota: 12.3 cases per 100,000; United States: 5.6 cases per 100,000). As an initial project, the Fellow will conduct a systematic evaluation of STEC surveillance performance in South Dakota, with emphasis on timeliness, completeness, and effectiveness of case detection, reporting, and public health response.

The evaluation will include a structured review and analysis of STEC case data in SDEDSS to assess key surveillance indicators, as well as key informant interviews with clinical and laboratory partners to examine reporting workflows, data exchange processes, and opportunities to strengthen system performance.

Given the subject matter area, additional support will be provided by the Enteric Epidemiologist.

*Surveillance System Objectives:*

This project will assess key attributes of STEC surveillance in South Dakota, including timeliness, data completeness, and usefulness for public health action. The Fellow will analyze surveillance data to identify delays and gaps in reporting and conduct interviews with clinical and laboratory partners to better understand system strengths and challenges. Deliverables will include a written surveillance system evaluation summarizing findings and recommendations, as well as actionable strategies to improve STEC case detection, reporting timeliness, and response, with completion expected within 6-9 months of the fellowship start date.

*Surveillance System Impact:*

This evaluation will identify opportunities to strengthen STEC surveillance in South Dakota, supporting earlier case detection, faster response, and improved outbreak identification. Findings will inform targeted improvements to reporting processes and partner engagement.

**Major Project Title: Estimate Rabies Post-Exposure Prophylaxis (PEP) Use and Guideline Concordance in South Dakota**

*Major Project Description:*

Rabies remains a public health concern in South Dakota due to ongoing circulation among wildlife reservoirs (skunks and bats). Although the last human rabies case in the state occurred in 1970, animal exposures continue to require careful risk assessment and, if appropriate, administration of rabies post-exposure prophylaxis (PEP).

This project will evaluate rabies PEP use in South Dakota by assessing concordance with CDC guidance through a retrospective review of healthcare encounters associated with potential rabies exposures. Findings will identify opportunities to strengthen risk assessment practices, support evidence-based clinical decision-making, and promote appropriate and efficient use of rabies PEP statewide.

Given the subject matter area, additional support will be provided by the State Public Health Veterinarian and the Syndromic Surveillance Epidemiologist.

*Major Project Objectives:*

Using syndromic surveillance data, the Fellow will identify healthcare visits associated with potential mammalian exposures (e.g., bites, scratches, or handling) and encounters with diagnostic codes suggestive of rabies exposure. In collaboration with participating healthcare facilities, the Fellow will conduct medical record reviews of a representative sample of encounters to assess rabies PEP administration and concordance with CDC recommendations. Deliverables

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will include estimates of rabies PEP utilization, an evaluation of guideline concordance, and a summary of factors contributing to variation in practice. Findings will be used to develop targeted education and guidance for healthcare facilities aimed at improving evidence-based rabies PEP decision-making.

*Major Project Impact:*

This project will provide the first systematic assessment of rabies PEP use and guideline concordance in South Dakota, supporting more consistent, evidence-based management of potential rabies exposures. Improved alignment with national guidance has the potential to reduce unnecessary PEP administration while ensuring timely prophylaxis for high-risk exposures.

**Additional Project #1 Title: Investigation of Increasing Non-Toxigenic *Corynebacterium diphtheriae* in South Dakota**

**Project #1 Type: Major Project**

*Project #1 Description:*

An increase in reported cases of non-toxigenic *Corynebacterium diphtheriae* has been observed in South Dakota, primarily among American Indians clustered geographically in the state. Genomic sequencing analysis indicates that isolates are closely related, suggesting possible localized transmission. Although non-toxigenic strains do not produce diphtheria toxin and are not prevented by diphtheria vaccination, they can cause clinically significant cutaneous and invasive disease. The epidemiology and transmission dynamics of these strains remain incompletely characterized, particularly in rural and Tribal communities.

This project will characterize the epidemiology and transmission patterns of non-toxigenic *C. diphtheriae* in collaboration with Tribal health partners, Indian Health Service facilities, regional healthcare providers, and the South Dakota Public Health Laboratory. The Fellow will conduct descriptive analyses of surveillance and laboratory data, assess temporal and geographic clustering, and review genomic sequencing results to clarify relatedness and transmission pathways. Findings will be interpreted in partnership with Tribal stakeholders to inform appropriate and locally responsive public health recommendations.

Given the subject matter area, additional support will be provided by the Vaccine-preventable Disease Epidemiologist and the Laboratorian for Whole-genome Sequencing.

*Project #1 Objectives and Expected Deliverables:*

This project will describe the epidemiology of non-toxigenic *C. diphtheriae* cases in South Dakota and assess evidence of localized transmission through epidemiologic and genomic analysis. The Fellow will analyze surveillance and laboratory data, collaborate with Tribal and healthcare partners to contextualize findings, and identify potential risk factors for transmission. Deliverables will include a written epidemiologic summary report, recommendations for surveillance and response strategies developed in partnership with affected communities, and presentation of findings to Tribal health stakeholders.

*Project #1 Impact:*

This project will improve understanding of non-toxigenic *Corynebacterium diphtheriae* transmission in communities experiencing a disproportionate burden of disease in South Dakota. By partnering with Tribal health, findings will support locally informed, culturally responsive surveillance and prevention strategies.

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

The Fellow will actively participate in public health preparedness and response efforts within the Division of Disease Prevention and Control, with particular engagement in emerging infectious disease response activities, including highly pathogenic avian influenza (H5N1).

In collaboration with epidemiology, laboratory, and preparedness staff, the Fellow will support surveillance and monitoring activities related to H5N1, including tracking human exposures to infected animals, coordinating testing recommendations, and assisting with data management and reporting. The Fellow will work closely with partners including the State Public Health Veterinarian and South Dakota Animal Industry Board to support situational awareness and coordinated response activities.

Preparedness-related activities may include development or revision of response protocols, participation in planning meetings and after-action reviews, contributing to situation reports, and supporting risk communication materials. The Fellow will gain experience in cross-sector coordination, incident response structure, and application of epidemiologic data to inform response decision-making. Estimated time allocation for these activities is approximately 10-15 hours per month.

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

The Fellow will play an active role in cluster detection and outbreak investigations, with particular emphasis on vaccine-preventable diseases such as pertussis and measles. The Fellow will contribute to all phases of outbreak response, including case verification, line list development and management, descriptive and analytic epidemiology, and implementation of control measures.

During outbreak responses, the Fellow will coordinate investigation activities across disciplines, including epidemiology, laboratory, immunization, and communications staff, as well as external partners such as healthcare providers, schools, Tribal health, Great Plains Tribal Epidemiology Center, Indian Health Services, and CDC, as appropriate. Responsibilities will include developing and updating situation reports, assisting with exposure risk assessments, supporting post-exposure prophylaxis recommendations, and contributing to public health guidance documents.

The Fellow will be expected to lead at least one outbreak or cluster investigation during the fellowship period, culminating in development of a final outbreak report and submission of an abstract or manuscript describing the investigation. Estimated time allocation for cluster and outbreak investigations is approximately 20 hours per month, with increased engagement during active response periods.