

ID: 46774711

One Health, Infectious Diseases - Foodborne - Host Site Description

Minnesota Department of Health

Assignment Location: St. Paul, US-MN
Minnesota Department of Health
Infectious Disease Epidemiology, Prevention and Control Division

Primary Mentor: Stacy Holzbauer, DVM, MPH, Diplomate ACVPM
State Public Health Veterinarian/CDC Career Epidemiology Field Officer
Minnesota Department of Health

Secondary Mentor: Malia Ireland, DVM, MPH, Diplomate ACVPM
Deputy State Public Health Veterinarian/Zoonotic Disease Unit Supervisor
Minnesota Department of Health

Work Environment

Hybrid

Assignment Description

Our Fellow will participate in the day-to-day work of the Zoonotic Diseases Unit (ZDU). They will be involved with surveillance of zoonotic diseases, outbreak investigations of zoonotic and foodborne illness, service and outreach to the public, prevention of zoonoses, and zoonotic influenza planning and response. Animal bite and rabies risk evaluation is also a major responsibility of the ZDU. While the majority of the Fellow's time would be spent in the zoonotic disease area, there will be opportunities to work in the foodborne area on foodborne illness outbreaks, healthcare associated infections are on multidrug resistant pathogens of animal concern and infection control concerns with animals in healthcare settings and a variety of projects. The Fellow will be taught a step-by-step approach to cluster/outbreak investigation of zoonotic and foodborne diseases, including questionnaire development, interviewing skills, hypothesis development, database creation, data analysis, working with outside agencies, keeping involved parties informed, interaction with the public and media, and finally, writing outbreak investigation reports. There is potential for expansion of our zoonotic disease surveillance and prevention activities depending on the Fellow's background and interests. There would also be opportunities for collaboration with the University of Minnesota, the Minnesota Board of Animal Health, the Minnesota Department of Agriculture and the Minnesota Department of Natural Resources. In addition, publication opportunities are frequent at MDH, and they will likewise be made available to our Fellow. Lastly, they will also be expected to contribute to Section-wide or Division-wide efforts, should a large public health response be needed. MDH operates as "all hands on deck" when required, which is one of the reasons we are successful in our responses.

In summary, the Fellow would function as an epidemiologist in the ZDU, assisting with some of our routine surveillance work, but also would be assigned to the unique or novel situations that arise or be able to create projects that spark their interest.

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

The Fellow will be outfitted with an MDH laptop and all the equipment and software of a regular MDH employee. If there is software needed that is not standard, MDH will provide it. Access to all surveillance systems that the Fellow is involved with will be given. Standard statistical software includes SAS and R; ArcGIS and Tableau would be available if needed. Database access will include our main infectious disease database (MEDSS), as well as REDCap, and our public health laboratory results database.

Projects

Surveillance Activity Title: Highly Pathogenic Avian Influenza/H5N1 Surveillance Project

Surveillance Activity Description:

Highly pathogenic avian influenza (H5N1) is a growing concern internationally due to the pandemic risk of the virus. As one of the top turkey producers in the nation and being location in the Mississippi Flyway, Minnesota is disproportionately impacted by H5N1. MDH is a national leader in the surveillance and monitoring of individuals exposed to H5N1-positive animals, and the Fellow would be instrumental in the surveillance of agricultural and veterinary occupational exposures to H5N1.

Surveillance Activity Objectives:

1. Support surveillance and monitoring activities to prevent HPAI/H5N1 cases in humans.
2. Analyze data collected on personal protective equipment (PPE) use and exposures to HPAI/H5N1 in occupational settings, including on farms and in veterinary practices.
3. Help develop and implement new strategies to increase the efficiency of current H5N1 occupational health surveillance systems.

Deliverable: CSTE abstract

Surveillance Activity Impact:

The surveillance activities surrounding H5N1 in Minnesota will allow the Fellow to be at the forefront of pandemic prevention and preparedness.

Surveillance System Evaluation Title: Evaluation of Minnesota Surveillance Systems for Human Prion Disease

Surveillance System Evaluation Description:

The Fellow will evaluate our surveillance systems for sporadic cases of human prion diseases including Creutzfeldt Jacob disease. While human prion diseases are well recognized and described, there has been concern that Chronic Wasting Disease (CWD) in deer may present a risk to humans especially hunters and those who consume venison. The MDH Zoonotic Diseases Unit has explored creating a hunter registry to capture possible prion related deaths to supplement existing prior disease surveillance. The Fellow would evaluate the feasibility of a hunter registry.

Surveillance System Objectives:

1. To identify gaps in the current surveillance system and make suggestions for improvements. Also evaluate the feasibility of establishing a hunter registry.

Deliverable: CSTE Annual Meeting Abstract

Surveillance System Impact:

Whenever a surveillance system is evaluated and the suggestions are implemented, it has a positive public health impact

Major Project Title: Blastomycosis knowledge among physicians and veterinarians

Major Project Description:

Blastomycosis is a rare but serious disease. Serious complications arise when patients are incorrectly diagnosed and treated, leading to delayed diagnosis and more severe complications from the disease. In Minnesota, there are a median of 34 human cases and 65 veterinary cases annually. Many of these cases are diagnosed in the Twin Cities metro area, despite this area not being endemic for blastomycosis. The Fellow would be responsible for designing a

ID: 46774711

One Health, Infectious Diseases - Foodborne - Host Site Description

Minnesota Department of Health

physician/veterinarian survey about blastomycosis knowledge, comparing the answers from physicians and veterinarians in endemic areas to those of these professionals in the Twin Cities.

Major Project Objectives:

1. Identify gaps in knowledge by region among physicians and veterinarians that can be targeted for continuing education.

Deliverable: Educational materials, targeted awareness campaign and published paper

Major Project Impact:

Blastomycosis has a high case fatality rate of 10%, often because of delayed diagnosis. Increasing awareness among physicians will save lives.

Additional Project #1 Title: These are some other ideas for projects that the fellow could engage in:

Project #1 Type: Major Project

Project #1 Description:

1. Drug overdose deaths have increased dramatically in light of the national opioid crisis. The Minnesota Department of Health's Unexplained Deaths Project (UNEX) works with medical examiners to investigate deaths possibly due to an infectious cause. Initial data analysis has shown an increased in infectious deaths, specifically pneumonia and sepsis, in decedents who have a history of substance abuse. The fellow would have an opportunity to describe the clinical diagnosis and etiologic agents detected and review the trends over time.
2. Blastomyces dermatitidis and B. gilchristii the causative agents of blastomycosis, are endemic in Northern Minnesota and along the St. Croix River on the state's eastern border. Approximately 70% of sporadic cases are male with a median age of 44 years. The gender and age distribution of outbreak-associated cases vary depending on the situation. Our fellow could choose to do an age, gender, and telephone prefix matched case-control study to identify gender-specific risk factors for sporadic infections.
3. A CSTE Fellow would have the opportunity to work on developing outreach and health promotion message for endemic mycoses in Minnesota. Specifically, this project would entail using results of spatial and temporal mapping of cases of blastomycosis and histoplasmosis to determine which areas of the state to target with messaging, as well as descriptive epidemiology results to target populations that may be at higher risk. The fellow would work fungal disease epidemiologist to develop messaging and methods of delivery.
4. Approximately 3-4% of the bats tested at MDH for rabies are positive; these bats generally have had encounters with humans or are behaving strangely. This project would involve a descriptive epidemiology and nested case-control study involving all people who submit bats for rabies testing, regardless of the final test result. The objective is to identify risk factors for submission of bats that test positive for rabies and to identify behaviors that increase the risk of being bitten by a bat. In addition, the Fellow could develop an educational campaign to prevent bat-transmitted rabies
5. Using prospectively collected MDH enteric disease data from the Upper Midwest Agricultural Safety and Health Center project, the fellow would characterize cases associated with food animal contact for Campylobacter, Cryptosporidium, Salmonella or Shiga toxin-producing E. coli infections. These data include detailed information about type of exposures, PPE used, farm management, and knowledge and attitudes of cases.

6. Salmonella in Pocket Pets Project: Although most human Salmonella infections are acquired through consumption of contaminated food, many cases are associated with contact with animals or their environments. Recently, contact with hedgehogs has been associated with outbreaks of salmonellosis in humans. The extent of the problem in the pet industry, or what might be described as the background rate of salmonellosis in retail pocket pets is currently unknown. The objective of this project would be to estimate the baseline prevalence of Salmonella enterica in rodents on display for retail sale in pet stores in the Minneapolis-St. Paul metropolitan area. Background research on the pocket pet supply industry would also be performed and incorporated into the study results.
7. Despite regulations prohibiting them, some Minnesota home daycares have been given variances by their licensors to keep reptile pets in the home. This project would involve educating licensors, and creating educational materials for daycare providers on what pets are allowed and on safe interactions with animals.
8. Every spring in Minnesota, there are salmonellosis cases associated with contact with chicks from mail order hatcheries. This project would include a survey of feed mills and agricultural stores that sell chicks to evaluate their level of awareness regarding the issue and to characterize any educational materials they provide to consumers. In addition, the Fellow could develop an educational campaign designed specifically for these venues.
9. The Fellow would characterize petting zoo outbreaks in Minnesota, including epidemiology of human cases, pathogens, source of the animals, species on display, illness history, and veterinary care.
10. The Veterinary Occupational Health and Infection Control Project (VOHICA) is a unique pilot project designed by ZDU to help veterinary clinics, hospitals, and shelters in Minnesota improve their infection control and occupational health practices. A fellow could be involved in facility staff training and materials development, and extract, clean and analyze data from the first year of the project.
11. Trichinosis is a parasitic disease caused by eating raw or undercooked pork or wild game infected with Trichinella spiralis. Trichinosis is a rare disease, with an average of 11 cases seen nationally each year. The Fellow would interview chefs in Twin Cities restaurants about the source of their pork products on the menu (including wild boar) and cooking temperature practices to see if they are following the recommendations from the USDA.
12. A dog and cat breeder bill was passed into law in Minnesota in 2014 that requires regulation and inspection of these facilities by the Minnesota Board of Animal Health (BAH). Included in the law is a requirement that adult dogs be tested for Brucella canis prior to sale. Currently, although B. canis infection is reportable in dogs, there are no specific regulations covering handling of B. canis infected kennels in Minnesota. In collaboration with the BAH, the Fellow would conduct a survey of knowledge, attitudes and practices of licensed dog breeders in Minnesota regarding canine brucellosis.
13. Rabies post-exposure prophylaxis (PEP) is not reportable in Minnesota and therefore MDH is not aware of how many people receive rabies PEP each year or able to easily estimate the costs associated with rabies PEP. A previous CSTE fellow conducted a PEP cost project in 2018 that established estimates of cost based on type of healthcare facility. The Fellow could utilize the previous methods in addition to all claims databases and the Minnesota immunization registry to provide an updated cost estimate with the goal of publishing a manuscript.

ID: 46774711

One Health, Infectious Diseases - Foodborne - Host Site Description

Minnesota Department of Health

14. In collaboration with the University of Minnesota, a survey to assess an algorithm on Carbapenem-resistant organisms (CRO) detection in veterinary settings and the collaborative response between veterinary teams and local, regional, or state public health partners was recently sent out. The fellow could be involved in analyzing the survey results and assist in the implementation of the algorithm and engagement of the necessary partners to ensure its success.

Project #1 Objectives and Expected Deliverables:

See above

Project #1 Impact:

See above

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

Working with the bioterrorism epidemiologist and/or the Office of Emergency Preparedness, the Fellow will participate in bioterrorism and emergency preparedness and response activities, including case investigation of zoonotic diseases associated with bioterrorism, and ongoing swine and avian influenza planning activities. Working with the State Public Health Veterinarian, who serve as a liaison between MDH and Minnesota's animal health agencies, the Fellow will participate in zoonotic infectious disease planning including but not limited planning for response to H5N1 introduction into swine operations.

For the current high path avian influenza outbreak in Minnesota poultry, the ZDU is monitoring the health of poultry workers in contact with infected flocks. Since 2022, we monitored over 2000 workers for respiratory symptoms and tested ~100 symptomatic people who were exposed to positive poultry, cattle and companion animals. To date, no cases of H5N1 were identified. The fellow would be involved with this response.

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

The fellow will be taught the step-wise logical approach in outbreak investigation that Minnesota Department of Health is known for, and will lead several cluster and outbreak investigations themselves (with support).