

ID: 72182324

One Health, Infectious Diseases - Foodborne - Host Site Description

Oregon Health Authority

Assignment Location: Portland, US-OR
Oregon Health Authority
Acute and Communicable Disease Prevention

Primary Mentor: Rosalie Trevejo, DVM, MPVM, PhD
Enteric Disease Epidemiologist
Oregon Health Authority (Acute and Communicable Disease Prevention)

Secondary Mentor: Emilio DeBess, DVM, MPVM
Public Health Veterinarian
Oregon Health Authority

Work Environment

Hybrid

Assignment Description

This Fellowship position is based in the Acute and Communicable Disease Prevention Program. This program is responsible for surveillance of all reportable communicable diseases (with exception of syphilis, gonorrhea, chlamydia, HIV, tuberculosis, measles, mumps, rubella, and pertussis). Epidemiologists in ACDP also conduct surveillance for and investigate health care acquired Infections and respond to infectious disease-related public health emergencies. We routinely engage with and collaborate with our partners at the State Public Health Laboratory on case and outbreak investigations.

The Fellow would be an integral member of ACDP, participating in the activities that staff epidemiologists engage in. This includes participation in rotations for the on-call epidemiologist (approximately two days a month), Urgent Epidemiology Response Team (UERT) for outbreaks (approximately one week every 8 weeks), and Cluster Busters (investigate approximately one enteric disease cluster per month). They would participate in our daily end-of-day wrap sessions, perform review and analysis of our surveillance data, and work on data visualization and quality assurance. In addition, there are opportunities to work on a variety of projects: processes for using whole genome sequencing in cluster detection, analysis of the effects of culture independent diagnostic tests on enteric disease surveillance, and incorporation of spatial analysis tools. Orpheus is a centralized statewide database used for all communicable disease surveillance, as well as elevated blood lead reporting. Fellows would work across program areas since our surveillance system is fully integrated. Orpheus is a robust data source for further exploration. The Fellow will learn how to investigate outbreaks of all infectious diseases (respiratory, enteric, vaccine-preventable, etc.), gain knowledge and skills in disease surveillance, and be cross trained in emergency response.

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

The AEF Fellow will have access to our suite of in-house, FileMaker Pro-based surveillance databases. These include Orpheus (Oregon Public Health Epidemiology User System), our integrated communicable disease reporting database that houses both our communicable disease and environmental health (pesticide poisoning and elevated blood lead data) surveillance data; our outbreak surveillance system, which is linked Orpheus to allow for efficient data capture and follow up during outbreak investigations; and Oregon's Syndromic Surveillance System (ESSENCE), which contains near real-time emergency room surveillance data. Our communicable disease surveillance system offers a rich source of risk factor, laboratory, and geographic data for reportable conditions in Oregon, with data for approximately the past 20 years. In addition, the Fellow will have access to birth and death record data, All Payer All Claims data, hospital discharge

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data, and FoodNet surveillance data (we are one of 10 EIP sites conducting active surveillance for 8 enteric pathogens). Many of our staff use R studio and we have a monthly R Users group to share resources and methods with one another. Other software available for use by our staff includes SAS, SPSS, and ArcGIS Pro. We will provide software and training according to Fellow's needs and preference. The Fellow will also have access to SurveyMonkey and CDC's Secure Access Management Services Platform (includes SEDRIC and RedCap).

Projects

Surveillance Activity Title: Comparison of reported risk factors for enterotoxigenic Escherichia coli cases by international travel status

Surveillance Activity Description:

Clinicians and laboratories are required to report ETEC infections in Oregon; local public health agencies typically conduct a standard case investigation, including questions on risk factors and travel. We are participating in a CDC-convened workgroup to analyze FoodNet data from the three EIP FoodNet sites with available ETEC data (Oregon, Minnesota, and Connecticut), which includes comparison of demographic and clinical characteristics between cases by international travel status and estimation of the degree of underdetection of this pathogen by commonly used laboratory testing methods. This analysis does not include risk factor data, which are locally collected, and are not standardized among FoodNet sites. An analysis of risk factor data for Oregon cases will be valuable for providing insights into potential sources of domestically versus internationally acquired infections.

Surveillance Activity Objectives:

The goal of this analysis is to analyze the surveillance data for Oregon ETEC cases to identify differences in reported risk factors between domestically and internationally acquired ETEC infections. The Fellow will export and prepare data for analysis, conduct the analysis, and summarize findings in written form (ideally for publication) to share with health care providers and public health professions (e.g., public health conferences, medical association meeting). We will collaborate with the other two FoodNet sites (MN and CT) with available ETEC data to identify risk factor variables that are comparable across sites to potentially expand the analysis to include data from multiple sites.

Surveillance Activity Impact:

Findings from this analysis will inform health education efforts to prevent ETEC infection in domestic and international settings. These results will also be valuable for health care providers when evaluating pretest probability of ETEC infection and utility of testing in patients according to their travel history. Lastly, the results will aid in the evaluation of the completeness and quality of the risk factor data currently included in the standard case investigation for this condition.

Surveillance System Evaluation Title: Evaluation of Foodborne Outbreak Surveillance System

Surveillance System Evaluation Description:

Foodborne outbreaks are reportable in Oregon and are defined as an incident in which two or more persons from different households experience a similar illness resulting from ingestion of a common food. Local public health agencies in Oregon are required to initiate an investigation and report the outbreak to Oregon Health Authority within 24 hours of initial notification. Epidemiologists in ACDP rotate as lead for Urgent Epidemiology Response Team on a weekly basis, during which time they serve as the subject matter expert for local public health agencies that are investigating local outbreaks and state lead for multijurisdictional outbreaks. An outbreak record is created at the time of report to OHA and standard fields are updated with clinical, risk, laboratory, and other information as the investigation progresses; outbreak records are typically closed out and submitted 30 days after the last onset date. Given the multiple types of data collected, potential need for weeks or months of outbreak follow up, and coordination among various

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stakeholders, an evaluation of this system will be informative in optimizing the user experience with the investigation process and the quality of the data yielded.

Surveillance System Objectives:

The objective of this project is to assess the Data Quality, Acceptability, and Timeliness of the surveillance system. The Fellow will analyze the outbreak data, engage with stakeholders, and perform a literature review. The deliverable will be for the Fellow to provide an objective assessment of the strengths and limitations of the surveillance system, culminating in the development of actionable recommendations to improve its utility. This analysis will focus on pre-pandemic (2018-2019) and post-pandemic (2023-2024) periods, given the disruption to foodborne outbreak investigation activity during the COVID-19 pandemic. A second deliverable is for the Fellow to submit a summary of their findings for consideration as a presentation at CSTE conference.

Surveillance System Impact:

This activity will have the Fellow engage with multiple stakeholders involved in foodborne outbreak investigation to streamline and optimize foodborne outbreak surveillance activity going forward, with the goal of ensuring usefulness and quality of the data for targeting disease prevention and public health education efforts.

Major Project Title: Case control study: comparison of people with backyard poultry-associated salmonellosis with non-ill poultry owners

Major Project Description:

This project will consist of two components. The initial focus for the Fellow will be to conduct a descriptive analysis of outbreak surveillance data from animal associated outbreaks, most of which are due to salmonellosis from backyard poultry. This objective of this analysis will be to describe overall characteristics of these outbreaks (e.g., pathogens, animal species, seasonality, setting, scope, clinical outcomes). Case demographics will be compared with census data to identify populations disproportionately impacted (e.g., age groups, race/ethnicity, region). The role of animal testing will also be evaluated (e.g., frequency and where it was performed). The second focus of this project will be for the Fellow to conduct a case-control study to compare backyard poultry-associated salmonellosis cases with non-ill poultry owners from the FoodNet population survey to identify demographic and sociodemographic characteristics associated with being an outbreak-related case.

Major Project Objectives:

The Fellow will write a summary (brief report), ideally for publication, and present the findings to local and state public health partners, veterinarians, and other health professionals (e.g., OR-Epi Meeting, CE offerings for veterinarians and clinicians).

Major Project Impact:

These results will help with informing public health messaging and prevention activities regarding animal-associated outbreaks for health care providers, veterinary professionals, and the public.

Additional Project #1 Title: Evaluation of rabies risk from animal bites in Oregon residents

Project #1 Type: Surveillance Activity

Project #1 Description:

Animal bites and rabies are reportable conditions in Oregon. For this project the Fellow will analyze our surveillance data to describe the epidemiology of animal bites (e.g., species involved, case demographics, seasonality, circumstances of bite, outcomes) and rabies testing data (species tested and frequency of positive results). The Fellow will use our state immunization database (ALERT data) to identify rabies vaccination status of persons bitten by animals and use these

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data to estimate the frequency of and factors associated with rabies post-exposure prophylaxis. This project will entail collaboration with subject matter experts in ACDP and Immunization Programs.

Project #1 Objectives and Expected Deliverables:

Animal bites and rabies are among the most common concerns of callers to our on-call epidemiologist line. The objective of this analysis is to provide a data summary to our local public health and healthcare partners to aid in risk assessment for animal bites. The Fellow will prepare a written summary for publication as a CD Summary article (distributed by ACDP to public health and health care providers). The Fellow will also present these results to local and state public health partners, such as at one of our monthly training series provided for local and state public health epidemiologists and communicable disease investigators.

Project #1 Impact:

Our local public health partners and health care providers frequently deal with animal bite scenarios. Having a current and comprehensive summary of the surveillance data will be helpful to our partners in assessing risk among patients with animal bites. This information will also be helpful for informing health education and prevention efforts regarding animal bites in Oregon.

Additional Project #2 Title: Assess physician testing practices for enteric disease

Project #2 Type: Major Project

Project #2 Description:

For this analytic project, the Fellow will use Oregon all payer all claims (APAC) data to assess physician testing practices for enteric disease (e.g., frequency of testing for enteric pathogens among patients presenting with acute gastrointestinal illness). This project opportunity offers an opportunity for Fellow to gain experience in analyzing a robust large dataset that uses relational data tables and ICD-10 codes. The Fellow will use diagnostic and procedure data to estimate incidence of gastrointestinal illness among patients that receive testing; these estimates will be compared with those obtained by passive surveillance data. Testing practices among subpopulations (e.g., age group, region, race, ethnicity) will also be evaluated. This project offers the potential for the Fellow to collaborate with CDC and other FoodNet site partners to evaluate data from sites in other states.

Project #2 Objectives and Expected Deliverables:

The results of these analyses will provide an estimate of the degree of underreporting of enteric pathogens as well as any gaps in testing. This ties in with key objectives of the EIP FoodNet program, to determine the burden of foodborne illness and to monitor trends. The results of this analysis will culminate in a written report, ideally for publication. The results will also be submitted for presentation at a conference, such as CSTE or West Coast Epi.

Project #2 Impact:

These findings will provide valuable insight into the extent of underreporting and underdiagnosis of certain enteric diseases. This information will be valuable in targeted messaging to health care providers on testing approaches for enteric disease and ensuring that all populations have similar access to testing.

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 trained in the Incident Command System and will collaborate with the Preparedness, Surveillance, and Epidemiology Team (PSET) on emergency response efforts. Current Fellows and trainees have participated in responses to large measles outbreak and adverse health effects associated consumption of nationally distributed products containing psychoactive mushroom extracts. PSET also plays a role in HPAI response activities (testing and

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surveillance) that the Fellow could participate in. The Fellow will also have opportunity to provide input on the evaluation and development of surveillance plans for health events associated with natural hazards, e.g., wildfires and winter storms. The time allocation for these activities is approximately 5%.

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

The Fellow will serve on our "Urgent Epidemiology Response Team", taking a one-week rotation approximately every eight weeks. For outbreaks that occur during their rotation, the epidemiologist serves as the primary subject matter expert for local health agencies and as the lead investigator for multijurisdictional outbreaks. The Fellow will also join the "Cluster Busters" rotation, in which epidemiologists rotate on taking lead for investigation of enteric disease clusters (approximately one per month) as they are identified by whole genome sequencing at the State Public Health Laboratory. Additionally, the Fellow will have the opportunity to join other epidemiologists in cluster and outbreak investigations that require a larger response outside of their "Urgent Epidemiology Response Team" and "Cluster Buster" assignments. The time allocation for these activities is estimated at 10-15%.