

ID: 33963416

Infectious Diseases, Infectious Diseases - Foodborne - Host Site Description

Oregon Health Authority

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

Primary Mentor: June Bancroft, MPH, CIC
Senior Epidemiologist, Epi and Laboratory Capacity
Oregon Public Health Division

Secondary Mentor: Michelle Barber, MS
Informatics Manager
Oregon Public Health Division

Work Environment

Hybrid

Assignment Description

The CSTE Applied Epidemiology Fellow serves as part of the Acute and Communicable Disease Prevention Program (ACDP), which works in collaboration with local public health jurisdictions to investigate most reportable communicable diseases and outbreaks. ACDP surveils for Health Care Acquired Infections and responds to infectious disease-related public health emergencies. This position serves as a staff level epidemiologist, identifying and responding to outbreaks and other areas of public health concern. They will contribute to public health emergency response as part of the all-hazards Incident Management Team that responds to all hazards that affect the health of Oregonians. The fellow would be a member of our ACDP Epidemiology Team as well as joining our Informatics Team METIS (Merging Epidemiology Technology and Information Systems). They would be expected to take day call two days a month, provide technical support for Orpheus, our web based communicable disease reporting system, and serve on the urgent epi response team one week a month. They would participate in our daily wrap sessions and perform additional analysis of our robust surveillance data as well as work on data visualization and quality assurance. In addition, there would be 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, and incorporation of spatial analysis tools. They would work across program areas (General CD, HIV, Sexually Transmitted Diseases, Tuberculosis) as our data system is fully integrated. Orpheus is a centralized statewide database used for all our reportable communicable disease surveillance, as well as elevated blood lead reporting. Orpheus is ripe with data for further exploration. Additionally, the fellow will learn how to investigate outbreaks of all infectious diseases, gain knowledge and skills in public health informatics, and be cross trained in emergency response.

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

Our main surveillance databases are all Filemaker Pro, an Apple innovation platform. These databases are supported in house and contain current and historic data on disease outbreaks, cross program communicable diseases, electronic laboratory and case reports, and elevated blood level investigations. In addition, we have an Enterprise ArcGIS license and automated processes to update a limited Orpheus data set on a daily basis for use in cluster detection and mapping. We also have access to almost real time emergency department data via our syndromic system, ESSENCE. All of these systems are maintained and supported by ACDP with hardware support from the office of information services (OIS). Specific staff also have access to a variety of local electronic medical records, electronic birth and death files as well as hospital discharge data. We use Rhapsody for data integration and GIS, Tableau and Power BI for data visualization. Oregon is a Microsoft shop for the most part, we use Outlook, and Teams. We also have access to Go to Meeting, zoom, Survey Monkey, Adobe products (Captivate) and, of course, Epi Info. Some staff use SAS and SPSS for additional analysis

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of data, many staff are transitioning to R for analysis. Other staff use STATA. A fellow would have access to whatever tools they need to do the work. Additionally, they would also have access to CDC and USDA systems including SEDRIC for use in cluster and outbreak investigations. We have an online learning center with a variety of training classes that the fellow will access and a free service of from the Oregon State Library for access to academic journals and other online trainings.

Projects

Surveillance Activity Title: Analysis of Factors Associated with Swimming Pool violations

Surveillance Activity Description:

Analyze communicable disease data from Orpheus/Outbreaks and pool inspection data from food pool and lodging program's Health Space to determine factors associated with swimming pool violations in Oregon. Write up a descriptive report to share with environmental health staff and present at a state meeting. Submit results to the national foodborne outbreak conference - InFORM or some other state/national venue.

Surveillance Activity Objectives:

1. Analyze Orpheus and Outbreak databases for factors associated with waterborne illness and outbreaks
2. Written summary of analysis - Abstract submitted to InFORM or other conference
3. Present findings to Oregon Environmental Health staff and others at an Orpheus webinar
4. Document analysis process, data cleaning and train others to analyze these data

Surveillance Activity Impact:

Increase knowledge of state and local health staff on using Health Space to guide prevention and response to pool related waterborne illness.

Surveillance System Evaluation Title: Evaluate the regional framework for outbreak response and local health department support for general CD

Surveillance System Evaluation Description:

As we transitioned from an Incident Management Team structure to a divisional one, we developed and implemented a new system to provide state support to local public health activities. The regional approach includes epidemiology, testing, public health emergency response, case investigation, outbreak response and contract tracing. The fellow will devise and implement a public health evaluation to identify the effectiveness and limitations of the approach. They will learn how to design and develop an online survey (we have REDCap, Epi Info, or Survey Monkey). They will then present findings to Council of Local Health Officials and the Directors Office.

Surveillance System Objectives:

1. Review CDC's surveillance system evaluation framework - written methodology of evaluation criteria specific to the regional framework
2. Design, develop and distribute an online survey
3. Present methodology to key informants at the Council of Local Health Officials, long term care facilities, and Infection Preventionists - obtain feedback and revise as appropriate
4. Compare timeliness and quality of case investigations by regional epidemiologists versus local communicable disease investigators
5. Document satisfaction by those involved in using the regional approach

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Surveillance System Impact:

Increase the effectiveness, efficiency and acceptance a regional approach to respond to a communicable disease cases and outbreaks. Recommendations from this evaluation will be used to improve the next response to an outbreak.

Major Project Title: Tableau Data Visualization of Exposure Data for Salmonella and Shiga toxin-producing E. coli

Major Project Description:

While we have a visualization dashboard for communicable disease, we have yet to build visualizations for our shotgun database, or for any exposure data in general. The Shotgun database contains exposure data from the Oregon developed hypothesis generating questionnaire as early as 2004. Although some basic static reports exist, using the binomial probability statistic and the FoodNET population data, they would benefit from a more interactive dashboard. Outcome includes documentation and training materials for using the new dashboard for Salmonella and Shiga toxin-producing E.coli. Time permitting the fellow could apply their skills and knowledge to analysis of general exposure data housed in Orpheus.

Major Project Objectives:

1. Determine what data fields in the shotgun database are useful to visualize interactively. - List of fields for use on an exposure/risk dashboard
2. Learn how to design data dashboards - sketch of dashboard with filters, charts, graphs and text to review with stakeholders
3. Learn how to engage communicable disease investigators and other epidemiologists in a design process - convene a group of users, determine meeting frequency, schedule meetings, develop an agenda, facilitate discussion
4. Develop dashboard using Tableau - a functioning tableau dashboard of Oregon exposure data

Major Project Impact:

Exposure data will be more accessible to users and for use in prevention activities. Additional analysis and visualization will help target disease prevention and education.

Additional Project #1 Title: Design and Develop a reporting template for County Health Equity Profiles

Project #1 Type: Surveillance Activity

Project #1 Description:

Currently we are collecting more granular data on race, language, ethnicity, disability (REALD) and sexual orientation/gender identity (SOGI). Assist staff in the Data and for Health Equity workgroup to build county level infographics for use in education and training. The fellow would increase knowledge and awareness of health equity metrics through research and data exploration. They would work with our health equity workgroup to identify priorities for developing reports and survey communities to understand the types of data and information of interest to them.

Project #1 Objectives and Expected Deliverables:

1. Increase information sharing on reportable communicable diseases - design a template for sharing information on REALD data in Oregon
2. Understand population characteristics by census tract and county to determine where there are issues with small sample size - Document of REALD and SOGI populations by census tract and County level
3. Share infographics with local health counties for use in training and education - Present template and design to Orpheus User Group for feedback

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Project #1 Impact:

More granular data on REALD and SOGI will be available for use in public health actions to reduce or identify health disparities.

Additional Project #2 Title: Implementation of a geographical information system (GIS) portal for communicable disease

Project #2 Type: Surveillance Activity

Project #2 Description:

We are building out a GIS portal for viewing communicable disease data and detecting clusters. The fellow will work with Ms Bancroft and a GIS contractor to enhance this mapping application to integrate into case investigation and outbreak response. This will involve data exploration and research on different diseases and appropriate parameters for detecting clusters. The fellow would coordinate feedback from state epidemiologists and local communicable disease investigators on the mapping application. We would like to overlay vaccine information in the portal, but there are issues and limitations to doing that based on how vaccination data are collected and stored. Explore use of vaccination information with mapping applications and summarize the findings.

Project #2 Objectives and Expected Deliverables:

1. Obtain feedback on mapping portal from state and local staff - documentation of features and enhancements
2. Become familiar with using ESRI's GIS mapping application - proficiency in using ESRI's GIS application
3. Identify additional communicable disease data to be included in the mapping portal - a list of fields to add to the Portal application
4. Understand issues and limitations of spatially enabled vaccination data - document outlining recommendations and best practices for use of vaccine information in a mapping application
5. Identify other spatially enabled data to layer with communicable disease data for identifying areas of high risk - Identified spatial data added to the GIS portal

Project #2 Impact:

Earlier detection of outbreaks and ability to monitor disease spread using spatial data and analysis. Other spatially enabled data added to the portal will assist in identifying areas with high or low burdens of illness to guide targeted prevention activities.

Additional Project #3 Title: Compare accuracy of three different address datasets for geocoding enteric case data

Project #3 Type: Surveillance Activity

Project #3 Description:

We adopted a new geocoding engine in August of 2024. Compare the results of this geocoder to the old geocoder using a static dataset of enteric pathogens. Determine if the new geocoder is more accurate than the old geocoder based on set of records. Additionally, we have access to the Enterprise GIS mapping application built by ESRI, the leader in the field. Compare results of a group of records using these three different geocoding engines.

Project #3 Objectives and Expected Deliverables:

1. Determine a group of records to be compared - clean the address data for these records based on review.
2. Run set of records through three different geocoding engines to compare performance
3. Summarize the findings based on location (rural vs urban)

Project #3 Impact:

Better quality data to be used in spatial analysis and detection of clusters.

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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)

Michelle Barber, one of the mentors was the Interoperability Director for the COVID response. She is trained in Incident Management and directs the data aspects of a response. The public health emergency has ended in Oregon, and we now treat COVID as a viral respiratory pathogen and use sentinel surveillance of hospitalized patients as well as wastewater to understand the disease burden and transmission. The fellow would work our Public Health Preparedness Program on any responses requiring action. This program is in ACDP and therefore a fellow would be included in any training opportunities for emergency response. Our current fellow participated in both the mpox and Ebola 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 participate on the Urgent Epi response Team (UERT) and Cluster Busters. The former are rotating two person teams who investigate and respond to outbreaks of any general communicable disease (not HIV, STD or TB). Cluster Busters are ACDP epidemiologists and fellows who investigate clusters of enteric pathogens identified by genetic sequencing. The Cluster Buster team meets monthly to review clusters, update protocols and discuss investigations. Clusters are assigned on a rotating basis. Staff are assigned to UERT one week a month. Training for both duties is done through shadowing more experienced staff. Ms Bancroft is the main trainer of Epi staff and teaches an 8 hour course on Outbreak Essentials - CD303. She is also an Epi Ready Trainer.

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

We have moved away from case based surveillance for COVID and are treating this pathogen in the same manner as influenza and respiratory syncytial virus. This includes using Wastewater to understand burden as well as variant type as well as chart review for persons hospitalized in the Portland Metro area. If they chose to learn or participate in surveillance for respiratory pathogens, we are happy to support that. Oregon ended the public health emergency for COVID in spring of 2022. Although we still respond to and document outbreaks, this is something done by the ACDP based regional epidemiologists in conjunction with local public health. If desired, the fellow could assist with this work.

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

Oregon's goal is to eliminate health inequities by 2030. As outlined in our application the fellow would be part of the data for health equity team that Ms Bancroft leads. This is a working group of a larger ACDP Health Equity workgroup. Subgroups meet every other week, the larger group once a month. Resources and updates are shared to promote tools and data for health equity in communicable disease. One of the projects is creating a communicable disease focused infographic on health equity metrics - housing status, additional more granular race, language and disability (REALD) and sexual orientation and gender identity data. Additionally, the GIS project will layer other social determinants of health data on communicable disease data to identify pockets of need and populations at risk. Oregon also has multiple conferences and venues that provide trainings and presentations on diversity, equity and inclusion. The public health division's values are Service excellence, leadership, integrity, partnership, innovation and health equity.