

ID: 45379108

**Infectious Diseases - Foodborne, Infectious Diseases - COVID-19 - Host Site Description
Arizona Department of Health Services**

Assignment Location: Phoenix, US-AZ
Arizona Department of Health Services
Preparedness/Office of Infectious Disease Control

Primary Mentor: Joli Weiss, BA; MS; PhD
Food/Waterborne Disease and Wastewater Surveillance Program Manager
Arizona Department of Health Services

Secondary Mentor: Irene Ruberto, BSc; MPH; PhD
Vectorborne/Zoonotic Disease Program Manager
Arizona Department of Health Services

Work Environment

Hybrid

Assignment Description

The Applied Epidemiology Fellow (AEF) will be located in the Division of Preparedness; Bureau of Infectious Disease Services; Office of Infectious Disease Control (OIDC), under the Food/Waterborne Diseases Program. This Program is responsible for surveillance of food and waterborne diseases such as Salmonella, E. coli, Campylobacter, Botulism, Cryptosporidium, etc. as well as conducting outbreak response activities for these enteric diseases. The Program also conducts wastewater surveillance activities for SARS-CoV-2 and other pathogens of interest (such as MPox and C. Auris). The OIDC has about 20 infectious disease epidemiologists covering enteric diseases, mycoses, vaccine preventable diseases, vector-borne and zoonotic diseases, preparedness, and TB. This is a fast-paced environment with seasoned managers, ready to respond to all hazards. The OIDC is the lead Office staffing the Ops Section of our Health Emergency Operations Center (HEOC). While the HEOC is active, the AEF will be in the Ops Section to address priority tasks that vary from planning of vulnerable population testing, mitigation planning, outbreak control, contact tracing, analyzing test and tracing data, messaging and providing epidemiologic support for local and tribal health departments. Orientation will include Agency orientation classes, training on Incident Command Structure, HIPAA and data security, communicable disease surveillance protocols, MEDSIS (NEDSS), WebEOC, rules and statutes, case investigation/contact tracing, Arizona Management System and meetings with all staff members. Primary and Secondary supervisors will conduct weekly meetings to provide guidance, assist with barriers or troubleshooting, to ensure completion of the fellow's projects and learning objectives. The fellow will also be paired with an existing staff member to provide mentorship, integrate the fellow into the Office and make introductions to fellow employees.

The Fellow will primarily assist with wastewater surveillance and outbreak response activities but the Fellow's day-to-day activities will also include active participation as a team member within the Food and Waterborne Disease Program and OIDC. The Fellow will benefit from support from Office and Program mentors and staff while working on projects and investigations related to the safety and public health concerns in Arizona. These activities will include, but are not limited to:

- Conducting wastewater surveillance for SARS-CoV-2 and additional disease targets; Collecting data from stakeholders; Coordinating with the Arizona State Public Health Laboratory, utilities and municipalities to ensure specimens are collected and submitted for testing; Submitting data to CDC DCIPHER/NWSS; Updating Tableau dashboards; Maintaining data within the database; Participating on monthly Arizona wastewater community of practice calls with stakeholders as well as community of practice and monthly calls with CDC
- Monitoring enteric disease reports to identify outbreaks and risk factors for infection

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- Assisting with enteric disease outbreak investigations, by participating in study design, data collection, data analysis, and intervention recommendations
- Responding to inquiries from the local health jurisdictions, public, academic partners and health care providers in Arizona
- Developing and implementing response and prevention activities aimed at reducing transmission of pathogens in the population overall
- Communicating and coordinating with various partners (Arizona State Public Health Laboratory, local health departments, tribes, utility companies, municipalities, other states, CDC, IHS, FDA and USDA)
- Utilizing the incident command structure during public health emergencies, including widespread infectious disease outbreaks

Primary responsibilities of the Fellow will depend on chosen projects and current wastewater disease surveillance needs within the state. The Fellow will participate in weekly Food/Waterborne disease team huddles, OIIC staff meetings, monthly state laboratory and epidemiology meetings, routine calls with local health department partners, monthly Wastewater Community of Practice meetings with state and national partners, and quarterly Foodborne Disease/Food Safety Taskforce meetings with statewide partners. The Fellow will have an opportunity to help plan and participate in the annual Arizona Department of Health Services Infectious Disease Training & Exercise and will assist with developing and facilitating an outbreak tabletop exercise that is part of that event.

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

ADHS has an IT department that would be available to assist the Fellow with computer and database issues. In addition to MS Office, GIS software, and Google Suites, the Fellow would have access to SAS for statistical analysis.

Epidemiologists within the Bureau routinely use the statewide electronic disease surveillance system (MEDSYS), the state immunization registry (ASIRS), vital records datasets (birth and death data), hospital discharge database (HDD), and the National Health Safety Network (NHSN). In addition, the Fellow can request access to several other databases, including population-based survey results, such as BRFSS and HIV/STD data. The Fellow would also have the opportunity to use and be trained on Tableau and the agency provides a Tableau working group that the Fellow can participate on.

The Fellow would also have access to and be trained on the common enteric and wastewater surveillance systems in use by the Food/Waterborne Disease Program such as the National Wastewater Surveillance System (NWSS) and the System for Enteric Disease Response, Investigation, and Coordination (SEDRIC).

There are several epidemiologists in the Bureau who are proficient in statistical analyses using SAS. Informal SAS training is provided periodically to epidemiology staff in the Bureau. The agency also has a Bioinformatics Division that provides training and resources on a variety of topics including surveillance systems, whole genome sequencing, data analysis, etc.

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Projects

Surveillance Activity Title: Wastewater surveillance of SARS-CoV-2 and additional pathogens

Surveillance Activity Description:

The Fellow will assist in surveillance of SARS-CoV-2 and additional pathogens as added for wastewater surveillance and monitor disease trends across the state. This will be accomplished by working with data received directly from partners participating in wastewater surveillance, which will be stored in ADHS's SQL database and CDC's National Wastewater Surveillance System (NWSS). The Fellow will also support the wastewater team to provide guidance and subject matter expertise, as needed, to county health departments on wastewater epidemiology and public health.

Surveillance Activity Objectives:

Improve surveillance for SARS-CoV-2 and additional pathogens tested in wastewater; Increase understanding of wastewater data for SARS-CoV-2 and additional pathogens.

Surveillance Activity Impact:

Provide early warnings to health departments and leadership for situational awareness and public health mitigation measures; Help educate the community and public about wastewater based epidemiology.

Surveillance System Evaluation Title: Evaluation of water sampling strategies and data submission

Surveillance System Evaluation Description:

The Office of Infectious Disease Control at ADHS is diligently working towards developing their wastewater surveillance program. The wastewater team, in collaboration with the information technology team, has developed a SQL database to store AZ wastewater data for internal use and analysis purposes. In addition, the Arizona State Health Laboratory is planning to start wastewater testing in 2023. With the establishment of this new database and testing, there is a need to evaluate the process for sample collection and data submission to ADHS as well as to the CDC National Wastewater Surveillance System (NWSS). The Fellow will perform evaluation of the current sampling strategies and data submission protocol to identify any gaps and to improve the data flow and frequency of data received by the ADHS wastewater team.

Surveillance System Objectives:

Identify gaps in the current wastewater sampling strategies and data submission; Improve the data flow and frequency of data submission from wastewater partners; Develop protocols and process maps for sample collection and data collection and dissemination.

Surveillance System Impact:

Guide efforts for prevention and control of SARS-CoV-2 and additional pathogens circulating within the community; Develop a robust wastewater monitoring program at the state to provide early warnings to public health partners.

Major Project Title: Outbreak Management System (OMS) Redesign and Outbreak Protocol Update

Major Project Description:

The Fellow will assist the outbreak epidemiologist to redesign the current outbreak management system (OMS), which is currently housed within MEDSIS. The Fellow will work with the outbreak epidemiologist and the MEDSIS team to develop requirements for the redesign. The Fellow will also work closely with county partners to ensure that necessary elements are included. The Fellow will present proposed changes to MEDSIS users and respond to feedback. Once the build is complete, the Fellow will participate in testing the updated system before it is deployed, including data extracts.

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In conjunction with the OMS redesign project, the Fellow will also assist with updating, restructuring, and disseminating a guidance document for state and local health departments for responding to outbreaks. Elements in the outbreak protocol will be incorporated into the OMS to ensure that the OMS also acts as a guide for outbreak investigators. This outbreak protocol is a key document used during public health department reaccreditation.

Major Project Objectives:

Writing a detailed requirements document, including elements of outbreak investigation, mapping variables from the existing data dictionary to the new data dictionary, and planning historical data handling; Updating, restructuring, and disseminating ADHS' outbreak protocol.

Major Project Impact:

Provide robust guidance and tools for state and local health departments for the enhancement and standardization of current outbreak investigation and response efforts.

Additional Project #1 Title: Enhancement of wastewater surveillance program in Arizona

Project #1 Type: Major Project

Project #1 Description:

In the year 2021, the Office of Infectious Disease Control at ADHS expanded their program to include wastewater surveillance. Testing of SARS-CoV-2 in wastewater has shown to provide early warnings on infections within a community, which has allowed public health departments to make proper public health actions. At this time, there are various laboratories conducting the wastewater testing for AZ sites and there is a need to develop a robust protocol for data dissemination, management and visualization. The Fellow will work closely with the wastewater epidemiologist to enhance the current protocol for data sharing to county health departments, data management and visualization. In addition, the Fellow will support the wastewater team in improving the collaboration and communication with utility partners and expanding wastewater testing to additional sites in AZ.

Project #1 Objectives and Expected Deliverables:

Enhance protocol for data submission, dissemination, management, and visualization; Improve participation and engagement of utility partners; Expand wastewater testing to additional sites in AZ.

Project #1 Impact:

Provide tools that can be utilized by the public health partners as an aid in decision making, in particular for public health mitigation measures.

Additional Project #2 Title: Outbreak Investigation and Response

Project #2 Type: Surveillance Activity

Project #2 Description:

The food and waterborne team at ADHS closely monitors and investigates food and waterborne-related outbreaks and clusters. As needed, the Fellow will participate in these outbreak and cluster investigations. The Fellow will initially serve in a support capacity, but after gaining experience may lead an investigation later in their Fellowship. This will allow for hands-on experience; activities may include designing questionnaires, performing interviews, analyzing data, developing outreach materials and presentations.

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Project #2 Objectives and Expected Deliverables:

Conduct surveillance for potential outbreaks; analyzing exposure data of cases linked to the outbreak; performing interviews, designing questionnaires, and developing outbreak materials and presentations as needed. Review whole genome sequencing data and enter outbreak information into the statewide outbreak management system (MEDSIS OBM) as well as into the national outbreak response system (SEDRIC). Inform the local health departments of the relevant outbreaks and available epidemiology data and participate on local/state/national outbreak conference calls.

Project #2 Impact:

Ensure local and state health departments respond to outbreaks in a timely manner and make informed public health decisions, when/where necessary. Ensure necessary mitigation measures are put into place to prevent further cases/outbreaks.

Additional Project #3 Title: Evaluation of enteric disease CANVAS training courses and materials:

Project #3 Type: Surveillance System Evaluation

Project #3 Description:

The food and waterborne team at ADHS developed training courses and materials to assist investigators in conducting enteric disease case investigations. The Fellow will conduct the evaluation of currently established CANVAS training courses and materials. Through this opportunity, the Fellow will gain experience in evaluating established materials and incorporating their feedback and thoughts in enhancement of these materials, as needed.

Project #3 Objectives and Expected Deliverables:

Evaluate established CANVAS training courses and materials for enteric disease investigations; Provide feedback and suggestions for enhancement of these training courses and materials. Redesign or develop new training courses for county and state case investigators.

Project #3 Impact:

Standardize case investigation practices across Arizona. Ensure state and local health departments have tools and resources to conduct case investigations and collect robust epidemiological data and make informed public health decisions, when/where necessary.

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

The Fellow will have multiple opportunities to participate in preparedness activities. The Fellow will be included into the state's incident command structure during public health emergencies, including widespread infectious disease outbreaks or during disaster drills such as the annual exercise in response to a release of radiation at the Palo Verde Nuclear Power Generating Station. During emergency responses, Office staff are typically an integral part of the Operations Section. The Fellow will have an opportunity to participate in emergency preparedness tabletop exercises, developing emergency response and outbreak response plans, creating educational resources and materials for biological, chemical and/or radiological emergencies, and responding to public health emergencies. The Fellow will also have the opportunity to conduct after hours drills with the local health departments that include a high impact infectious disease scenario. Participation in these activities will likely take up approximately 20% of the fellow's time.

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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 incorporated into the Food and Waterborne Disease Program where they will have the opportunity to work on disease surveillance and outbreak response. There are currently 3 epidemiologists within the program that work on outbreaks on a rotating basis as outbreaks are reported. The Fellow will be trained on outbreak response actions and will be worked into the rotation. The Fellow will assist with entering outbreak information into the statewide outbreak management system (MEDSIS OBM) as well as into the national outbreak response system (SEDRIC), provide updates/communication to the local jurisdictions, review whole genome sequencing data, review interview data for commonalities, provide outbreak stats and create epi-curves, and participate on county/state/national outbreak calls. The fellow will likely spend about 30% of their time assisting with outbreak response.

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

The Fellow will be assisting with SARS-CoV-2 surveillance in wastewater for the State of Arizona. The fellow will likely spend a majority of time (~50%) on wastewater surveillance activities. The agency has stood down the COVID Health Emergency Operation Center (HEOC) and COVID response activities have shifted to normal operations. The Vaccine Preventable Disease Program has main responsibility for conducting general COVID surveillance and response activities. If COVID were to surge again and require a more robust response including activation of the HEOC, the Fellow would be included in the HEOC Ops structure.

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

ADHS has a new Office devoted to Health Equity to support efforts in reducing health disparities and health inequities. The Fellow will be required to complete health equity training modules. In addition, the Fellow will participate in any meetings and activities organized by the Office of Health Equity. The Fellow will contribute to improve health disparities within AZ through their involvement in the wastewater surveillance program. The enhancement and expansion of wastewater surveillance prioritizes focus on higher risk communities for COVID-19, such as communities with low vaccination rates, as well as older and underserved populations. Performing wastewater monitoring in higher risk communities will assist in identifying gaps as well as areas where services and resources need to be directed.