

Infectious Diseases-HAI

Assignment Description:

The Division of Licensing Services in the Arizona Department of Health Services protects the health and safety of Arizonans by providing information and technical assistance, establishing standards, and licensing and regulating healthcare and child care services. The Division works closely with the Office of Infectious Disease Services (OIDS) to share information about reported outbreaks and infectious disease exposures and conducts joint technical assistance with OIDS epidemiologists to ensure implementation of appropriate infection control practices and protect the health and safety of patients. Routine meetings between both groups facilitate this collaboration. Recent collaboration between OIDS and Licensing has included: Methicillin-resistant *Staphylococcus aureus* outbreak associated with a local pain management clinic, Hepatitis B exposure in a local dialysis facility, and Hepatitis C exposure in a local hospital due to drug-diverting behavior by a healthcare worker.

The Office of Infectious Disease Services (OIDS) in the Arizona Department of Health Services is responsible for monitoring, preventing and controlling diseases caused by infectious agents. It contains the following programs: Infectious Disease Epidemiology, Public Health Emergency Preparedness Epidemiology, Electronic Disease Surveillance and Reporting, and Healthcare-Associated Infections. The Office is staffed by approximately 30 individuals who provide epidemiologic, medical, infection control, entomological and veterinary public health consultation both within the Bureau of Epidemiology and Disease Control Services and to other state and local agencies, health care providers, and the general public. Each program collects, maintains, and analyzes human and animal reportable disease data, as well as vector surveillance data to monitor trends, detect outbreaks, and evaluate the impact of infectious diseases of public health importance in Arizona.

There are approximately 3 to 10 infectious disease outbreaks investigated each month in the state of Arizona. Some recent outbreaks include:

- Norovirus outbreak in a state prison
- Pertussis outbreak in a rural Northern Arizona community with low vaccination rates
- Botulism outbreak in a state prison
- Pertussis outbreak in a Native American community
- Healthcare-associated pertussis outbreak in the NICU of a local hospital
- Increase in Rocky Mountain spotted fever cases in southern Arizona tribes

Day-to-Day Activities:

The Fellow will be jointly assigned to the Division of Licensing Services and the Office of Infectious Disease Services under the supervision of the Medical Director/Assistant Director and the Office Chief. The Fellow will be involved in all phases of investigations including: initial complaint investigations, questionnaire design, database development, data collection, line-list development, analysis, and report writing. Many outbreak investigations require the participation of multi-disciplinary teams. OIDS works closely with county community health nurses, county epidemiologists, immunizations staff, and environmental health staff, as well as federal agencies. For healthcare-associated investigations, the Fellow will work closely with surveyors in the Division of Licensing Services to issue infection prevention and control recommendations and conduct technical assistance visits as necessary.

Anticipated day-to-day activities for the fellow will include:

- Monitoring disease reports to identify outbreaks and risk factors for infection;
- Monitoring Licensing databases to determine common complaints and their relatedness to gaps in infection control knowledge or best practices;

- Assisting with outbreak investigations by participating in study design, data collection, data analysis, and intervention recommendations;
- Participating in HAI Advisory Committee and statewide epidemiology meetings and calls
- Communicating and coordinating with healthcare facilities, counties, tribes, other states, CDC, IHS, FDA and USDA as well as with the Office of Border Health with cross border disease investigations;
- Responding to inquiries from the public and healthcare providers in Arizona;
- Supporting creation or update of guidelines and recommendations for HAI prevention
- Coordinating with local health departments, Arizona State Public Health Laboratory and CDC to track specimens, follow up with results, notify providers, and arrange for further testing of specimens/isolates; and
- Utilizing the incident command structure during public health emergencies including widespread infectious disease outbreaks.

Additionally, the Fellow will have the ability to cross-train in foodborne and waterborne diseases (e.g. E. coli, Salmonella, and Campylobacter); vaccine-preventable diseases (e.g. measles, rubella, pertussis and hepatitis B); HIV/AIDS; emergency preparedness; vector-borne diseases (e.g. rabies, hantavirus, plague and West Nile fever); sexually-transmitted diseases; as well as other emerging infectious diseases.

Potential Projects:

The fellow will have the unique opportunity to conduct epidemiologic studies and evaluations utilizing data from both infectious disease and licensing databases. This will allow the fellow to use survey and complaint data to identify, mitigate, and prevent healthcare-associated infections (HAIs) while also gaining experience in infectious disease epidemiology. Potential projects include:

- Compiling data from various sources (e.g. Arizona Hospital Discharge Database, NHSN, Licensing inspection databases, and reportable condition surveillance) to recommend areas for improvement in infection prevention and control.
- Participating on a multidisciplinary team to develop and deliver trainings and guidance to healthcare facilities targeting areas for improvement infection prevention and control.
- Analyzing laboratory results and medical records to establish an Arizona-specific profile of carbapenem-resistant Enterobacteriaceae.
- Evaluating healthcare worker influenza vaccination coverage before and after required reporting to the National Healthcare Safety Network (NHSN)
- Utilizing the Arizona Hospital Discharge Database to identify risk factors for hospitalization and co-morbidities associated with Salmonella infection.
- Evaluating the effectiveness of a web-based survey for Salmonella investigation.
- Analyzing the Arizona Hospital Discharge Database to identify the number of readmissions and evaluating the most common factors associated with readmission to a hospital in Arizona.
- Developing an HAI validation protocol based on those developed by other organizations to provide training to Arizona healthcare facilities wishing to self-validate their NHSN data.

While Arizona does not require public reporting of HAIs, national regulations require specified healthcare facilities to report selected HAIs to the Centers for Medicare and Medicaid Services through the National Healthcare Safety Network (NHSN) in order to receive their full payment update. ADHS has initiated a data sharing agreement with CDC, which allows CDC to share data reported to NHSN as a part of this program. The validation of these data will be necessary to establish a reliable statewide picture of HAI activity in Arizona and support appropriate HAI surveillance in healthcare settings. The Fellow could validate the data to ensure that cases reported meet NHSN criteria for infection, case information is

complete, and all reviewed cases meeting NHSN criteria for infection are actually reported. Validation of denominator data could also be incorporated into the evaluation, with the Fellow assessing consistency in methods for collecting these data.

Arizona has a robust, long-standing immunization registry, ASIIS, which requires healthcare providers to report all childhood immunization records. The registry is a valuable tool for determining the vaccine status of vaccine-preventable disease cases and contacts and has been used to evaluate community vaccination programs and uptake of new vaccines. However, a validation of ASIIS is essential to support the accuracy of data used in these vaccine evaluations. A validation would include a review of the timeliness of immunization reports, as well as a review of the representativeness of data by type of vaccine (DTaP, MMR, etc) and provider type (pediatrician, family practice, etc). In addition, the Fellow could evaluate the impact of community factors such as socioeconomic status and access to care on vaccine receipt.

Preparedness Role:

The Fellow will participate in the state's incident command structure under the Operations Section during public health emergencies, including widespread infectious disease outbreaks. During emergency responses, OIDS and Licensing staff is typically an integral part of the Operations Section. The Fellow may also have the opportunity to assist with development of the public health response task force as part of the state's emergency response plan. The fellow will also have the opportunity to participate in quarterly exercises for emergency preparedness, which includes exercises relating to patient identification and movement during an event and drills relating to nuclear releases from the state nuclear generating station.

Assignment Location:	Phoenix, Arizona
Primary Mentor:	Cara Christ, MD, MS Assistant Director Arizona Department of Health Services
Secondary Mentor:	Shoana Anderson, MPH Office Chief Arizona Department of Health Services