

ID: 45379108

Infectious Diseases - 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
Chief; Office of Infectious Disease Control
Arizona Department of Health Services

Secondary Mentor: Liam Hicks, BS; MPH
Respiratory and Vaccine-Preventable 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 (BIDS); Office of Infectious Disease Control (OIDC), under the Respiratory and Vaccine-Preventable Disease Program. This Program is responsible for surveillance of vaccine-preventable diseases, including AFM, invasive H. influenzae, hepatitis A, measles, invasive meningococcal disease, mumps, pertussis, rubella, and varicella which are reportable conditions for Arizona providers, laboratories, schools, shelters, and correctional facilities. Additionally this program is responsible for surveillance of respiratory diseases including flu, COVID-19 and RSV, which are reportable conditions for Arizona laboratories. 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 often 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. The primary supervisor 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 respiratory and vaccine-preventable outbreak response activities but the fellow's day-to-day activities will also include active participation as a team member within the Respiratory and Vaccine-Preventable 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 surveillance of respiratory and vaccine-preventable diseases listed above; Collecting data from stakeholders; Coordinating with the Arizona State Public Health Laboratory, local health departments and healthcare facilities to ensure wastewater samples are collected and submitted for testing; Submitting data to CDC; Creating, updating, and maintaining dashboards; Maintaining data processes; Participating in calls with internal and external stakeholders;

- Conducting surveillance and monitoring respiratory and vaccine-preventable disease reports to identify outbreaks and risk factors for infection;

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- Assisting with respiratory or vaccine-preventable 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, municipalities, other states, CDC, IHS, FDA and USDA); and
- 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 respiratory and vaccine -preventable disease surveillance and outbreak response needs within the state. The fellow will participate in weekly program team huddles, OIHC staff meetings, monthly state laboratory and epidemiology meetings, routine calls with local health department partners, monthly respiratory calls with local public health partners, and national CSTE/CDC calls. The fellow will have an opportunity to help plan and participate in the annual Arizona Department of Health Services Infectious Disease Training & Exercise.

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

ADHS has an IT department and Business Intelligence Office 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. Alternatively, Python and R are accessible as well. Epidemiologists within the Bureau routinely use the statewide electronic disease surveillance system (MEDSIS), the state immunization registry (ASIIS), 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 PowerBI and the Visual Analytics program provides various resources and guidance that fellows can utilize.

The fellow would also have access to and be trained on the common respiratory surveillance systems in use by the Respiratory and Vaccine-Preventable Disease Program such as the The National Respiratory and Enteric Virus Surveillance System (NREVSS), and the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) There are several epidemiologists in the Bureau who are proficient in statistical analyses using SAS, Python, and R. Informal SAS and R 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.

Projects

Surveillance Activity Title: Enhanced Pertussis Surveillance and Monitoring Initiative

Surveillance Activity Description:

Pertussis (whooping cough) remains a persistent public health concern, particularly for infants and other high-risk populations. Effective surveillance is essential for early case detection, outbreak identification, and implementation of timely control measures.

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This project will support and enhance routine pertussis surveillance within Arizona. Activities will include systematic case identification through provider and laboratory reporting, case investigation using standardized case definitions, collection of demographic and vaccination history data, and timely reporting to state and national surveillance systems. Surveillance data will be analyzed to monitor disease trends, identify high-risk populations and geographic clusters, and assess vaccination status among reported cases.

Surveillance Activity Objectives:

Objectives

- Ensure timely identification and investigation of suspected and confirmed pertussis cases.
- Monitor pertussis incidence and trends over time.
- Identify high-risk populations, geographic clusters, and potential outbreaks.
- Assess vaccination status among cases to identify immunization gaps.
- Support data-driven prevention and control strategies.

Deliverables

- Review of cases entered into MEDSIS for completeness and accuracy
- Regular surveillance summaries and trend reports
- Data analyses highlighting vaccination status and high-risk groups
- Recommendations for targeted public health interventions
- Briefings for public health leadership and community stakeholders

Surveillance Activity Impact:

This surveillance activity will improve early detection of pertussis cases and outbreaks, enabling timely public health response and control measures. By identifying trends, high-risk populations, and gaps in vaccination coverage, the project will support targeted immunization efforts and prevention strategies. Ultimately, this initiative aims to reduce pertussis transmission, prevent severe disease (especially among infants) and strengthen overall communicable disease surveillance capacity within Arizona.

Surveillance System Evaluation Title: Evaluation of the Transition from Mixed-Mode to Fully Electronic Reporting for Respiratory Disease Surveillance

Surveillance System Evaluation Description:

Respiratory Surveillance at ADHS is evaluating transitioning from a mixed reporting system using both electronic laboratory reporting (ELR) and traditional methods (fax/mail) to fully electronic reporting for respiratory diseases. This change requires onboarding reporters who previously submitted reports via fax or mail, with potential risk of reporter attrition if onboarding is unsuccessful.

This project will evaluate the impact of eliminating traditional reporting and moving to exclusively electronic reporting. The assessment will examine changes in reporting volume, reporter participation, timeliness, data completeness, and overall surveillance sensitivity and representativeness.

Surveillance System Objectives:

Objectives

- Compare case reporting volume before and after transition to fully electronic reporting.
- Assess onboarding success and retention of previously traditional reporters.
- Evaluate changes in timeliness, data completeness, and data quality.
- Identify any loss of surveillance sensitivity or representativeness.
- Assess operational efficiencies gained through full electronic reporting.

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Deliverables

- A surveillance system evaluation report summarizing findings
- Comparative analyses of key performance indicators (pre- and post-transition)
- Reporter onboarding and participation analysis

Surveillance System Impact:

This evaluation will ensure that modernization to fully electronic reporting improves efficiency and data quality without reducing case detection or reporter participation. Findings will support a more timely, complete, and sustainable respiratory disease surveillance system, strengthening the health department's ability to detect and respond to outbreaks.

Major Project Title: Evaluation of Surveillance Systems for Estimating Vaccination Coverage: A Comparison of State Immunization Registry Data and School Exemption Reports

Major Project Description:

Accurate vaccination coverage estimates are essential for monitoring population immunity and guiding public health action. This project will evaluate and compare coverage estimates within a defined geographic area using two data sources: the state Immunization Information System (IIS) and the Immunization Data Report (IDR). The IDR is an annual, state level, self-reported survey about routine childhood immunizations. The evaluation will assess agreement between systems, examine discrepancies in reported coverage, and evaluate surveillance attributes such as data completeness, timeliness, representativeness, and usefulness. Findings will clarify the strengths and limitations of each system for monitoring immunization coverage.

Major Project Objectives:

Objectives

- Estimate vaccination coverage using IIS and compare it to the IDR.
- Compare coverage rates by age group and vaccine type.
- Identify discrepancies and assess contributing factors (e.g., denominators, exemption classifications, reporting practices).
- Evaluate key surveillance system attributes using established guidelines.
- Provide recommendations to improve data interpretation and system performance.

Deliverables

- A surveillance system evaluation report with findings and recommendations
- Comparative tables/figures of coverage estimates
- An executive summary for public health leadership

Major Project Impact:

This project will improve understanding of how different surveillance systems influence vaccination coverage estimates. Results will support more accurate identification of under-immunized populations, better-informed public health decision-making, and strengthened immunization surveillance to enhance outbreak prevention and community protection.

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Additional Project #1 Title: Evaluation of RSV Outcomes Following Introduction of RSV Vaccine and Monoclonal Antibody Prevention

Project #1 Type: Surveillance System Evaluation

Project #1 Description:

Respiratory syncytial virus (RSV) is a major cause of hospitalization and severe respiratory illness among infants and older adults. With the introduction of RSV vaccines and monoclonal antibody (mAb) prevention products, there is an opportunity to reduce disease burden.

This project will evaluate whether RSV-related outcomes have declined following implementation of vaccination and mAb programs. Using surveillance, hospitalization, and immunization data, the evaluation will compare rates of RSV-associated hospitalizations, severe outcomes, and mortality before and after product availability, with attention to eligible populations.

Project #1 Objectives and Expected Deliverables:

Objectives

- Compare RSV hospitalization and severe outcome rates pre- and post-implementation.
- Assess outcomes among vaccine- and mAb-eligible populations.
- Identify trends and disparities by age or geography.
- Evaluate overall impact on healthcare burden.

Deliverables

- An evaluation report summarizing findings
- Trend analyses and data visualizations
- Summary brief for leadership
- Recommendations to guide RSV prevention strategies

Project #1 Impact:

This project will provide evidence on whether RSV vaccination and mAb prevention reduce severe disease and hospitalization. Findings will inform immunization policy, improve targeting of prevention efforts, and support strategies to reduce RSV-related morbidity and healthcare burden.

Additional Project #2 Title: Comprehensive Analysis of Measles Data to Inform Future Public Health Responses

Project #2 Type: Surveillance Activity

Project #2 Description:

This project will analyze measles outbreak data, including case, demographic, vaccination, clinical, laboratory, and genomic information. The analysis will characterize outbreak magnitude, transmission patterns, affected populations, and disease severity. Integration of epidemiologic and genomic data will support assessment of transmission chains and potential sources of introduction.

Project #2 Objectives and Expected Deliverables:

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; Entering outbreak information into the statewide outbreak management system (MEDSIS OBM) as well as into the national outbreak response system (SEDRIC); Informing the local health departments of the relevant outbreaks and available epidemiology data; Participate in local/state/national outbreak conference calls.

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Project #2 Impact:

Objectives

- Describe outbreak epidemiology
- Use laboratory and genomic data to evaluate transmission patterns.

Deliverables

- A concise outbreak analysis report
- Integrated epidemiologic-genomic findings
- Recommendations to strengthen future prevention and response efforts

Findings will strengthen preparedness for future measles outbreaks, ultimately reducing transmission and protecting vulnerable populations.

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 respiratory and vaccine-preventable disease program is currently responding to an active multijurisdictional measles response that has been ongoing since August, 2025. If still ongoing, the fellow will be integrated into this operations section of the response. 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. The fellow will likely spend about 20% of their time on preparedness activities.

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 Respiratory and Vaccine-Preventable Disease Program where they will have the opportunity to work on disease surveillance and outbreak response. The fellow will be trained on outbreak response actions and will be integrated into team responsibilities. The fellow will assist with entering outbreak information into the statewide outbreak management system, provide updates/communication to the local jurisdictions, review whole genome sequencing data, review case 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.