ID: 75628503
Infectious Diseases, Environmental Health - Host Site Description
Wayne County Department of Health

Assignment Location: Detroit, US-MI
Wayne County
Wayne County Department of Health, Human & Veterans Services

Primary Mentor: Katerina: Stylianou, PhD, MPH
Chief Epidemiologist and Data Officer
Wayne County Department of Health, Human and Veterans Services

Secondary Mentor: Lukas Ayers, MPH, CPH
Quantitative Specialist III - Epidemiology, Communicable Disease Lead Epidemiologist
Wayne County Department of Health, Human and Veterans Services

Work Environment
Hybrid

Assignment Description

Fellows will be placed in Central Administration under the Epidemiology, Population Insights and Quantitative (EPIQ) Unit at the Wayne County Department of Health, Human, and Veteran's Services. The EPIQ Unit is responsible for the surveillance of communicable and chronic diseases, behavior health conditions, and assessment of the community health status within the Wayne County local health jurisdiction (Wayne County excluding Detroit). The unit currently consists of nine members (one director, two managers, two quantitative specialists, three epidemiologists, and a data science intern). Most of the unit members currently conduct data management and analytics tasks, generating routine and ad-hoc surveillance reports. Sometimes the unit supports disease outbreak response by leading case investigations and supporting contact investigations. Some members of the unit focus on automating reports as well as developing internal and external facing surveillance dashboards.

While there are concentrations within the team, (Epidemiology - Communicable Diseases, Epidemiology - Chronic Disease and Behavior Health, Health Informatics), we often work in inter-concentration groups for various projects and initiatives.

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

All databases, software and surveillance systems available to the whole team will be available to the AEF fellows. The team utilizes numerous state databases and surveillance systems that all AEF fellows will be trained on. Additionally, the team utilizes R, Tableau, and Power BI for statistical analysis and data visualization. The team includes a Health Informatics lead that offers software training to all newcomers. Additionally, our team participates in regular R trainings offered quarterly from UM-Ann Arbor researchers tailors to applied epidemiologists. Finally, monthly internal training is available to all team members in the form of a lunch and learn for cross training in different disciplines (such as statistics, qualitative analysis, surveys, and project management).

ID: 75628503
Infectious Diseases, Environmental Health - Host Site Description
Wayne County Department of Health

<div align="center">

Projects

</div>

Surveillance Activity Title: Sexually Transmitted Infection (STI) Disease Surveillance Initiative in Wayne County

Surveillance Activity Description:
This project aims to enhance sexually transmitted infection (STI) surveillance in Wayne County, MI by implementing a comprehensive system to track, analyze, and respond to STI trends, ultimately improving public health outcomes.

Surveillance Activity Objectives:
Project objectives

Data Analysis:
- Conduct regular analysis of STI data to identify trends, patterns, and high-risk populations.
- Develop a system for monitoring STI trends and identifying outbreaks.
- Develop reports and presentations to communicate findings to stakeholders
- Utilize GIS mapping to visualize STI data and identify geographic clusters

Response and Intervention:
- In partnership with the Chief Medical Officer and the Communicable Disease leadership team, assist in the development and implementation of targeted interventions to address high-risk populations and emerging STI trends.
- Provide education and outreach to promote STI prevention and healthy sexual practices.

Collaboration and Communication:
- Develop a public dashboard to share with the public and other stakeholders STI trends and patterns
- Assist with communication efforts to share STI data and information with the public and stakeholders.
- Participate in regional and national STI surveillance efforts

Expected deliverables:
- STI Trend Analysis Report
- STI Surveillance Dashboard
- Public and Stakeholder Communication Materials

Surveillance Activity Impact:
Enhanced understanding of STI trends and patterns in Wayne County, MI.; Improved public health interventions and prevention strategies; Reduced STI incidence and prevalence in Wayne County, MI.; Increased awareness of STIs and healthy sexual practices among residents of Wayne County, MI.

Surveillance System Evaluation Title: Evaluating the Wayne County Air Quality Monitoring Network and Its Association with Health Outcomes

Surveillance System Evaluation Description:
Air pollution is a well-documented environmental health risk associated with respiratory and cardiovascular diseases. Wayne County has historically experienced poor air quality, disproportionately affecting vulnerable populations, including low-income and minority communities. To enhance air quality monitoring, Wayne County has deployed a hyperlocal air quality network consisting of 100 stationary monitors. This network provides real-time air quality data at a granular level, offering an opportunity to evaluate its effectiveness in informing public health interventions.

ID: 75628503
Infectious Diseases, Environmental Health - Host Site Description
Wayne County Department of Health

This project aims to evaluate the Wayne County Air Quality Monitoring Network and its association with health outcomes, assessing the networks data quality, spatial coverage, and its ability to detect associations between air quality and health outcomes.

Surveillance System Objectives:
Objectives:
- Assess the data quality, completeness, and accuracy of the Wayne County Air Quality Monitoring Network by conducting a surveillance system evaluation using CDC guidelines, focusing on data validity, timeliness, representativeness, and sensitivity.
- Evaluate the spatial and temporal coverage of the network through geospatial analysis using GIS tools to assess pollution exposure distribution and overlap with high-risk populations.
- Analyze the association between ambient air quality and health outcomes, including asthma-related emergency department visits, hospitalizations, and cardiovascular diseases, using time-series and spatial epidemiological methods while adjusting for confounders such as weather, demographic, and socioeconomic factors.
- Identify gaps and areas for improving data integration and public health utility by linking air quality data with hospital and emergency department records and analyzing patterns in environmental exposures and health impacts.
- Develop recommendations for enhancing the surveillance system's ability to detect and respond to air pollution-related health threats, including defining key air quality thresholds and health impact metrics to guide public health responses and intervention planning.
- Establish a standardized surveillance protocol with defined benchmarks and response strategies to improve the system's effectiveness in public health decision-making and intervention efforts.

Expected Deliverables:
- A comprehensive evaluation report on the strengths and limitations of the air quality surveillance system.
- Evidence-based report detailing insights on how air pollution affects health in Wayne County.
- Enhanced surveillance methodologies that improve the system's capacity to detect early warning signals of deteriorating air quality and associated health risks.
- Development and implementation of a standardized surveillance protocol with defined benchmarks and response strategies to improve the system's effectiveness in public health decision-making.

Surveillance System Impact:
This project will enhance the utility of air quality data for public health action in Wayne County, enabling Wayne County Health Department, local environmental justice advocates, and the public to make informed decisions as well as support data-driven advocacy on pollution control and health interventions. The findings will also support policy development to protect at-risk communities and improve environmental health equity in Wayne County.

Major Project Title: County Health Rankings for Out-Wayne County

Major Project Description:
The annual County Health Rankings (CHR) report, a collaboration between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute, ranks U.S. counties on various health outcomes, health factors, social and economic conditions, and the physical environment. However, the report does not provide jurisdiction-specific level data, limiting its usefulness for local public health planning and intervention strategies. Additionally, the funding for the CHR projects is expected to expire in 2026 and it is uncertain whether it will be renewed.

This project aims to address these gaps by identifying key indicators from the County Health Rankings model and using similar definitions and analytically calculating localized estimates for Out-Wayne County (Wayne County, excluding

Detroit). Additionally, out-Wayne County indicators will be ranked when possible. When ranking would be limited due to data availability, a comparison with national benchmarks will be implemented.

Major Project Objectives:
Project Objectives:

- Compile and analyze data from various sources to measure the health of Out-Wayne County (Wayne County excluding Detroit) following the County Health Rankings Model
- Develop estimates for indicators included in the County Health Rankings & Roadmaps report for Out-Wayne County (Wayne County excluding Detroit) using available data.
- Apply comparable methodologies and indicator definitions as used in the County Health Rankings & Roadmaps report to rank Out-Wayne County indicators, when possible, and compare with regional and national averages
- Identify areas of significant health disparities to inform targeted public health interventions.

Project Deliverables:

- A comprehensive report detailing the Out-Wayne level health indicators, their comparison to national benchmarks and discussing identifying disparities.
- Development of SOP documentation outlining the methodologies, data sources, and definitions used in the analysis.
- Presentation and briefing materials for dissemination of results, findings and recommendations to stakeholders.

Major Project Impact:
This project has a significant public health impact by providing localized health data with granular understanding of health disparities within out-Wayne County, enabling data-driven decision-making, targeted interventions, and equitable resource allocation. Identifying health disparities at local health department jurisdiction level will enable public health officials, policymakers, community organizations and other stakeholders to implement evidence-based strategies to improve health outcomes, enhance healthcare access, and address social determinants of health in Wayne County. Ultimately, this project contributes to reducing health inequities, promoting healthier communities, and strengthening the overall public health infrastructure in Wayne County.

Additional Project #1 Title: Congenital Syphilis Case Review for Wayne County
Project #1 Type: Surveillance Activity

Project #1 Description:
Congenital syphilis (CS) is a preventable yet increasing public health concern. While CS cases remain relatively low in Wayne County, the incident rate has doubled in the last 5 years. Infection occurs when Treponema pallidum, the bacterium responsible for syphilis, is transmitted from an infected mother to her infant during pregnancy and can result in severe health outcomes, including stillbirth, neonatal death, and lifelong disabilities.

By conducting a detailed epidemiologic revie and analysis of CS cases, the aim of this project is to identify missed opportunities for prevention, gaps in healthcare services, and systemic barriers contributing to the occurrence of CS cases.

Project #1 Objectives and Expected Deliverables:
Objectives

- Conduct a detailed retrospective review of CS cases in out-Wayne County (Wayne County, excluding Detroit) from the past 5 years (assess maternal risk factors, prenatal care history, and timing of syphilis testing and treatment).
- Identify and evaluate missed opportunities and barriers in prevention and care among pregnant individuals.

ID: 75628503
Infectious Diseases, Environmental Health - Host Site Description
Wayne County Department of Health

- Analyze epidemiologic trends and geographic distribution of CS cases to identify disparities and areas with high CS burden and ident
- Develop evidence-based policy recommendations to improve syphilis screening and treatment efforts, while strengthening collaborations with stakeholders.

Expected deliverables:
- A detailed epidemiologic report highlighting factors contributing to congenital syphilis cases.
- Identification of priority areas for targeted interventions (e.g., enhanced prenatal screening policies, provider training, community outreach).
- Policy and program recommendations to reduce congenital syphilis incidence and improve maternal and infant health outcomes.
- Presentation and briefing materials for dissemination of results, findings and recommendations to stakeholders.

Project #1 Impact:
The overall impacts of this project is to develop a data-driven intervention by conducting a comprehensive case review of CS cases in Wayne County to reduce congenital syphilis rates, protect infant health, and improve maternal care systems within the community.

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

In the event of an emergency, fellows are expected to participate in response/outbreak investigations. Our unit typically supports such activities in partnership with the Communicable Disease Team. In the past two years, partnerships mainly included case and contact investigations for MPOX, HPAI, and Measles. In the case of outbreaks, all fellows will be trained on related procedures, SOPs, forms, and systems. Specific activities might include:
- Conducting case/contact interviews
- Documenting and maintaining interview information and activities
- Provide disease prevention or related education
- Actively or passively monitor contacts for symptoms
- Prepare outbreak reports

Expected time allocation depends on the outbreak situation, likely will range from 1-4 hrs./day. Emergency preparedness and response efforts are not the main task for the fellows, but they would be expected to participate if the need arises.

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

Fellows are expected to serve as Case Investigators and/or Contact Investigators.

Specific activities might include:
- Conducting case/contact interviews
- Documenting and maintaining interview information and activities
- Provide disease prevention or related education
- Actively or passively monitor contacts for symptoms
- Prepare outbreak reports

Expected time allocation depends on the outbreak situation, likely will range from 1-4 hrs./day