

**ID: 58888462**

**Wastewater Surveillance, Infectious Diseases - Host Site Description**

**Washington State Department of Health**

**Assignment Location:** Olympia, US-WA  
Washington State Department of Health  
Environmental Health

**Primary Mentor:** Rachel Amiya, PhD  
Assessment Unit Manager/ Senior Epidemiologist, Office of Infectious Disease  
Washington State Department of Health

**Secondary Mentor:** Breanna McArdle, MPH  
Washington Wastewater Based Epidemiology Program Supervisory Epidemiologist  
Washington State Department of Health

**Work Environment**

100% Virtual

**Assignment Description**

This assignment is in the Office of Environmental Public Health Sciences (OEPHS) of the Environmental Public Health (EPH) Division. EPH is part of the Executive Office of Prevention, Safety and Health, one of seven Executive Offices at the Washington State Department of Health.

OEPHS serves to assure environmental public health programs and policies are based in sound science through five programmatic sections: Climate and Health, Environmental Epidemiology, Site Assessment and Toxicology, Healthy Homes and Communities, and Built Environment. The Office also supports the cross-Agency Environmental Justice Council. A highly interdisciplinary office, OEPHS provides cross-cutting and technical advice to regulatory programs within EPH and DOH, and at other state agencies, such as the Washington State Department of Ecology.

In this assignment the CSTE fellow would provide epidemiology support to Washington's Wastewater-based Epidemiology Program (WAWBE), which is housed in the Built Environment Section. The Built Environment Section and WAWBE work hard to advance Office efforts to provide scientifically sound, actionable public health data. The WAWBE Team consists of one epidemiologist supervisor (Epi 3), one data analysis epidemiologist, and one data systems epidemiologist, and will be recruiting a spatial epidemiologist within the next 3 months. The Built Environment Section is led by a Senior Epidemiologist and will be recruiting additional epidemiologists in the next two years to support other programs within the Section. The Built Environment Section (BES) meets the mission of the Office of Environmental Public Health Sciences (OEPHS) by ensuring a sound scientific and public health approach to policies and planning practices for building the neighborhoods and communities where we live, work, play, and pray. The Section covers varying aspects of environmental health issues related to identifying potential health effects of new building projects; providing support for conducting health impact and other assessments; supporting a community health approach for addressing homelessness; and monitoring wastewater for pathogens and toxic substances in communities. The Section provides a public health voice in cross-sector collaborations with transportation, ecology, fish and wildlife, and commerce, recognizing the interconnectedness between our physical environment - buildings, infrastructure, land use - and health, and working on upstream factors such as planning and zoning measures to reduce health disparities.

Day-to-day activities of the AEF Fellow will include a mix of meetings with relevant public health partners and focused time for data work. Most of the fellow's time would be spent working on their projects. The fellow will meet with internal and external partners whose relevant experience and could help the fellow make progress on their projects. The fellow would attend weekly 1:1 meetings with both primary and secondary supervisors as well as weekly and bimonthly meetings with the Washington Wastewater Based Epidemiology team and Built Environment Section, respectively. The

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fellow would be encouraged to set up meetings with all staff in each of these sections to learn more about their work and continue conversations with the staff that have specific related project experience. The Fellow will be invited to all Office and Division meetings and gatherings, including daily morning Office huddles, quarterly Division and Office all-staff meetings, and our annual OEPHS summer picnic. There would be collaborations with staff working in other DOH Departments and the fellow will meet with these collaborators as needed. The fellow will work closely with local health jurisdictions, regularly attending monthly WAWBE external partner meetings to provide updates on project process.

Previous CSTE Epidemiology Fellows in Washington State have attended and been encouraged to present talks at training meetings for local health jurisdictions, and the state's Washington State Public Health Association or Environmental Health Association conferences.

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

The fellow would have access to their statistical software of choice. OEPHS currently has 20 epidemiologists that have experience using R, SAS, STATA and Python who would be a resource to the fellow for statistical and data analysis support. In addition to the epidemiologists in our office, the Washington State Department of Health has a biostatistician that is available for consultation, if needed. The fellow would have access to surveillance systems needed to perform their projects including all wastewater surveillance data, notifiable conditions, syndromic surveillance data, geospatial data, and hospital discharge data. The fellow would also have access to geospatial resources and software through the Agency's GeoHub portal, in collaboration with Esri. Data visualization tools are available through both Tableau and Microsoft Power BI.

**Projects**

**Surveillance Activity Title: Understanding inequities in wastewater-based surveillance coverage.**

*Surveillance Activity Description:*

Within DOH, OID is responsible for assessing the prevalence and incidence of sexually transmitted infections (STIs), HIV/AIDS, adult viral hepatitis, and mpox within the state of Washington. The 2020 COVID-19 pandemic impacted the surveillance of these conditions due to interruptions in health care and potentially delayed or no diagnosis of cases. The fellow will work with OID to gain understanding of HIV, STIs, and adult viral hepatitis case reporting infrastructure. Using Washington Disease Reporting System (WDRS) and Public Health Issue Management-STD (PHIMS-STD) surveillance data, census data, and geographic information collected from wastewater treatment plants, the fellow will obtain case rates for OID's reportable conditions at the wastewater treatment plant sewershed level. With a health equity lens, the fellow will evaluate the quality of the coverage of WAWBE's current geographic coverage given historical OID case data.

*Surveillance Activity Objectives:*

Project objectives include gaining an understanding of working with wastewater data, geographic analyses, and state-level reportable conditions surveillance data. Deliverables include a report and presentation to the program, local health, and academic partners; potential for presentation at professional conference; potential for peer-reviewed publication.

*Surveillance Activity Impact:*

Using OID reportable conditions as a case study, this project will advance our understanding of health inequities between communities covered and not covered by WAWBE, and data inequities which may be inherent to surveillance limited to wastewater treatment plants. Understanding differences between covered and uncovered communities in a wastewater based surveillance system is vital to interpretation of wastewater trends and generalizability of trends from

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catchment areas to the state as a whole. Prioritization decisions on expansion of the system can be made to focus on reducing data inequities.

**Surveillance System Evaluation Title: Evaluation of wastewater surveillance of chlamydia and gonorrhea in Washington state.**

*Surveillance System Evaluation Description:*

The fellow would apply CDC's Updated Guidance for Evaluating Public Health Surveillance Systems to assess the hypothetical application of wastewater surveillance for OID's reportable condition surveillance activity in Washington. This evaluation will expand and update a previous version completed by the state's EIS Officer in 2020, specifically for wastewater surveillance of COVID-19. The fellow will use results from the surveillance activity described above in addition to collaborations with local health jurisdictions, health care clinics, community-based organizations, and other important stakeholders.

*Surveillance System Objectives:*

The evaluation will help WAWBE understand benefits and limitations of wastewater surveillance for sexually transmitted infections (STIs), HIV, and adult viral hepatitis. Expected deliverables will include written report summarizing information gained during and final conclusions from the evaluation process.

*Surveillance System Impact:*

Local and state public health professionals expressed interest in Washington expanding the WAWBE program to include more sexually transmitted diseases. Given operation and funding constraints, this evaluation will support WAWBE in assessing the priority and feasibility of expanding monitoring to include OID reportable conditions.

**Major Project Title: Prioritized pathogens and health concerns for inclusion in Washington Wastewater-Based Epidemiology Program.**

*Major Project Description:*

Wastewater surveillance has increased exponentially in popularity as a public health tool. WAWBE currently has no official process to respond to requests to expand to additional pathogen or health concerns. Building off established resources, such as NASEM's Wastewater-based Disease Surveillance for Public Health Action (2023) study report and the modeling framework published by William Chen and Kyle Bibby, the fellow will develop and propose a framework for evaluating new program targets. The process should address considerations such as 1) community consent and privacy, 2) laboratory method availability and applicability 3) potential public health and health equity impact and 4) local health jurisdiction needs and priorities.

*Major Project Objectives:*

The objective of this major project is to formalize the framework for deciding target expansion for WAWBE. Deliverables will include formal documentation of the proposed framework and presentations to leadership.

*Major Project Impact:*

The fellow's proposed process for identifying new targets will be invaluable for the WAWBE program as it focuses on ensuring efficient and equitable use of increased funding and scientific advancements for wastewater surveillance.

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**Additional Project #1 Title: Feasibility of expanding to additional targets for wastewater testing in Washington**

**Project #1 Type: Major project**

*Project #1 Description:*

Fellow will expand on knowledge gained from Surveillance Activity to explore the feasibility of additional targets for wastewater surveillance in Washington state, depending on the fellow's interest and expertise.

*Project #1 Objectives and Expected Deliverables:*

A major project objective will be to identify targets of interest to different stakeholders including within the Agency as well as at local health jurisdictions, and feasibility of adding these to the WAWBE portfolio. This project will contribute efforts to formalize the framework for deciding target expansion for WAWBE. Deliverables will include formal documentation of the proposed framework and presentations to leadership.

*Project #1 Impact:*

Information gained from this project will be invaluable for the WAWBE program as it focuses on ensuring efficient and equitable use of increased funding and scientific advancements for wastewater surveillance, while balancing stakeholder needs and requests.

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

Washington State experiences a variety of environment-related emergencies. In 2021, a heat dome led to the death of over 100 people and in 2020, there were very large late season wildfire events that caused significant deteriorations in air quality across the state. The state also experiences drought, mudslides, floods, and harmful algal bloom events. Having a single point of contact for the surveillance and quantification of these risks and providing quick and accurate epidemiological data to our communications staff and public health partners has been lacking and would potentially be filled by this fellow.

The fellow would also have the opportunity to observe and participate in efforts currently underway within the Office of Infectious Disease to revamp our syphilis outbreak detection and response plan, in collaboration with prevention and field services program colleagues within the office. This is a cross-sectional effort that will also involve an element of local health and tribal partner engagement, affording the fellow a unique insight into different dimensions of preparedness and response efforts taking place at WA DOH.

The fellow may also be activated into the agency's Incident Command Team structure. The fellow would be expected to provide information for daily briefings, summarize surveillance data, and make recommendations. The fellow would work closely with communications, emergency preparedness and response, and others to develop messages and response plans and activities. The fellow's work will develop WA DOH's preparedness and response capabilities, and intelligence related to climate disasters and inform Washington Tracking Network tools to be developed in the future responses. The time allocation will be dependent on the length of the climate disaster and need for response, but would be no more than 5-7% of the Fellow's time.

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

The fellow would have the opportunity to engage in a variety of climate and infectious-disease related cluster or outbreak investigations. HIV cluster detection and response activities in the Office of Infectious Disease, for example, represent a cross-program/cross-office effort and integrate a variety of epidemiologic tools in which the fellow would

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have opportunity to gain exposure, including provider and public health staff engagement, time-space methods, and molecular analysis. Depending on capacity, the Fellow could be involved in case ascertainment, data collection, data analysis, and public health partner engagement activities. It is expected this could take 5% of the Fellow's total time.

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

WA DOH is no longer in a formal "response" position for COVID-19, as many activities have been enveloped in daily operations of employees and positions. Wastewater is currently used to monitor community levels of COVID-19. It is expected that the Fellow would learn processes currently in place for analyzing and messaging COVID-19 data for their own projects.

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

Both OEPHS and OID emphasize equity and justice in our approach. OEPHS is fortunate to provide staff support to the state's Environmental Justice Council and has several positions specifically centering justice in our work, including a Climate Justice Coordinator and an Environmental Justice Coordinator. Both EJC managers are part of the Office Management Team, and interact directly with the Built Environment Section Manager, identifying areas of overlap and opportunities for collaboration. The OEPHS Deputy Director is tasked with leading equity and anti-racism efforts within the office to increase awareness, create a more inclusive work environment, and support staff to enhance equity and justice into their projects. The EPH division has an Equity and Social Justice Manager to support similar efforts throughout the division. This position works with a peer group of Equity and Social Justice Managers throughout the agency and the Center for Public Affairs Community Relations and Equity team. Similarly, within OID, the management team is committed to centering equity and anti-racism in all aspects of our work and strategic vision, particularly given the traditionally underserved communities we serve and the inequities observed in health outcomes associated with the conditions we cover. This work is bolstered by epidemiologic support provided by the OID Health Equity and Syndemic Senior Epidemiologist and supporting assessment staff. The fellow will have access to work with, learn from, and collaborate with these various positions in their role. The fellow will also be expected to participate in office, division, and agency efforts and learning opportunities involving equity and justice. The fellow will be expected to, and be supported in, considering equity and justice in their work through engaging with experts, communities, and partners. The diverse policy, data, and process related equity work within OEPHS will provide the fellow opportunities to share their experiences and develop in this area. Staff and the fellow also have access to an anti-racism resource library and are encouraged to draw from and discuss on their own and as part of learning communities. The Fellow will be welcomed to join Section and Office discussions on the shared equity and inclusion text, as well as state Agency trainings.