

**ID: 34936826**

**Wastewater Surveillance, Environmental Health - Host Site Description**

**Georgia Department of Public Health**

**Assignment Location:** Atlanta, US-GA  
Georgia Department of Public Health  
Epidemiology

**Primary Mentor:** Amanda Feldpausch, DVM, MPH  
One Health Epidemiology Director/Deputy State Public Health Veterinarian/Deputy State  
Epidemiologist  
Georgia Department of Public Health

**Secondary Mentor:** Cristina Meza, MPH  
National Wastewater Surveillance System Team Lead  
Georgia Department of Public Health

**Work Environment**

Hybrid

**Assignment Description**

The CSTE Fellow will be housed in the Georgia National Wastewater Surveillance System (GA NWSS) Program, within the One Health Unit and Acute Disease Epidemiology Section (ADES). ADES is within the Epidemiology program at Georgia DPH. The Epidemiology program is directed by the Georgia State Epidemiologist, Dr. Cherie Drenzek and the GA NWSS Program is directed by the One Health Epidemiology Director, Dr. Amanda Feldpausch. ADES is one of 6 Sections in the Epidemiology Program; the others include the Chronic Disease, Healthy Behaviors, Injury Epidemiology Section, the HIV/AIDS Epidemiology Section, the Women’s Health, and the MCH Epidemiology Section. The mission of the Acute Disease Epidemiology Section (ADES) is to optimize the health of Georgians by preventing and mitigating certain communicable and/or notifiable infectious diseases. The ADES is dedicated to fulfilling its mission by using epidemiologic methods to:

- Conduct surveillance of infectious diseases (opportunity to work in many other subject areas as well)
- Identify and respond to emerging infectious disease threats and public health crises such as the opioid epidemic
- Provide support to local and district public health and private partners in identifying training and resource needs, developing guidelines for and investigating outbreaks or increases in endemic rates of disease, developing educational and training materials, and collecting and disseminating data
- Publish and disseminate public health information: statistical reports (e.g. Georgia Epidemiology Report), outbreak investigation reports, annual data summaries, and educational materials
- Participate in emergency preparedness planning, response and recovery efforts

The Acute Disease Epidemiology Section is comprised of several infectious disease-specific Surveillance Teams, including the COVID-19 team, Foodborne Disease Epidemiology and Outbreak Investigation Team, the Vaccine-Preventable Diseases Epidemiology Team, the Healthcare-Associated Infections Team, the Zoonotic and Vectorborne Disease Epidemiology Team, One Health Epidemiology Team, and the Drug Overdose Surveillance Team.

The CSTE Fellow will be primarily assigned to the NWSS team but will have a range of project opportunities in each of these areas, as needed to fulfill core competencies. The NWSS team has a rich history of engaging in fellows from other areas and is ready to support a dedicated fellow.

**ID: 34936826**

**Wastewater Surveillance, Environmental Health - Host Site Description**

**Georgia Department of Public Health**

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

ADES has access to many databases including: the State Electronic Notifiable Disease Surveillance System database (SENDSS); immunization database (GRITS); HIV databases (eHARS, MMP, CAREWare, ADAP, NHBS); EIP data; ABC and FoodNet data; HAI database (NHSN); hospital discharge data; Vital Records death certificates; the State Unintentional Drug Overdose Reporting System data; and the Prescription Drug Monitoring Program data. There is statistical and data analysis support available from many of the MPH and doctoral level epidemiologists in ADES, Chronic Disease, and HIV Epidemiology along with a growing community within DPH of persons (including other fellows) who meet regularly and discuss statistical analyses techniques and learning opportunities. The Fellow will have access to SAS, GIS, Excel, EpiInfo, ESRI training products, and more. Currently, the GA NWSS team utilizes SAS for regular data management but is in the process of transitioning to R Studio. The CSTE fellow will also have access to the GA NWSS team's Datacamp subscription, an online training platform which offer R specific classes and many additional programming languages. Additionally, CDC NWSS hosts a repository of existing code via Github so the fellow will have access to these as well as to the expertise of NWSS states who are conducting similar analyses. Lastly, GA NWSS currently submits all wastewater data to CDC via DCIPHER where there are additional data visualization tools that the CSTE fellow would have access to.

**Projects**

**Surveillance Activity Title: National Wastewater Surveillance System**

*Surveillance Activity Description:*

DPH was awarded funding to participate in the National Wastewater Surveillance System (NWSS) in 2021. The team has been and will continue to be partnering with educational/research partners and local utilities/extension services to develop and expand the program for tracking wastewater surveillance of SARS-CoV-2 with planned expansion to other priority public health targets in future grant years within the program. In the interim, the NWSS team is working with both academic and program partners to utilize wastewater results for mpox, influenza, and RSV along with DPH-held surveillance case data to inform decision making and public health action. This includes combining wastewater detection results with geocoded case and vaccine data to identify trends and actionable results through this novel surveillance system with an ultimate goal of supporting development and analysis of an enhanced molecular surveillance system for COVID-19 and other pathogens. With weekly program activities and processes well established, the GA NWSS team is now looking for new and innovative ways to share and present data, conduct equitable recruitment of facilities, and overall gain a better understanding of environmental factors that may impact the validity and quality of wastewater surveillance data.

*Surveillance Activity Objectives:*

- Enhancement of existing internal and external surveillance reports to support appropriate and accurate data dissemination to partners
- Presentation to internal subject matter expert epidemiologists on NWSS surveillance and progress on future priority items
- Perform data cleaning and basic descriptive statistics utilizing preliminary NWSS data using statistical software such as GIS, R, SAS, and more
- Participation in monthly CDC NWSS meetings and calls regarding NWSS training, program updates, and partner presentations
- Gain understanding of and participate in the NWSS data pipeline from raw data to analysis, to data dissemination

**ID: 34936826**

**Wastewater Surveillance, Environmental Health - Host Site Description**

**Georgia Department of Public Health**

- Gain understanding of and participate in NWSS program management and planning including but not limited to tracking grant deliverables, communicating with internal and external partners, conducting wastewater treatment facility site visits, etc.
- Coordination and presentation to GA NWSS partners such as wastewater treatment facilities (WWTF), local public health, academic partners, etc.

*Surveillance Activity Impact:*

By completing these deliverables, the fellow will assist in the overall development and improvement of NWSS in Georgia. Because this is a new program in the state, the fellow's work on identifying priority targets and gaining knowledge on interpretation of wastewater data on these will create a greater understanding and awareness of wastewater surveillance to both internal and external partners. In addition, depending on fellow interests, they will also have opportunity to engage directly with WWTF partners whether through site visits, one-on-one onboarding calls, or assisting the NWSS team lead plan and conduct the quarterly partner town hall. Overall, the fellow would contribute to the growing body of science in wastewater surveillance and its use in public health as well as to the overall data quality of the program.

**Surveillance System Evaluation Title: Surveillance Evaluation - Wastewater Surveillance or fellow-lead option**

*Surveillance System Evaluation Description:*

The GA NWSS team engaged with a fellow in 2023 (DGMQ/DPH shared fellow) to perform a surveillance evaluation of the first 2 years of the program. This resulted in actionable items for partner engagement, data communication, and facility onboarding. The NWSS team is currently developing the infrastructure for Flu and RSV wastewater testing with collaboration between Epidemiology, Laboratory, private, and academic partners. The team will conduct internal data validation to compare case and wastewater data and would benefit from additional feedback on the system as it continues to expand to new targets. This is a surveillance system evaluation option for the fellow, but the NWSS team will be flexible to this competency being filled through a fellow interest-lead project as they will have many other NWSS project options.

Opportunities exist in many areas of epidemiology, including expanding areas at DPH that include Environmental Health Epidemiology and cross-cutting opportunities with divisions like STI, HIV, and TB. If not related to NWSS, the individual surveillance system evaluation will depend on the fellow's interests and may include a desk- or field-based evaluation depending on the project chosen. Examples of surveillance system that need to be evaluated and have support in place to conduct an evaluation include evaluation of:

- Non-COVID-19 notifiable disease surveillance to determine the impact of COVID-19 on timeliness and completeness of reporting.
- Ebola Active Monitoring System (EAMS) - this system was used in 2014-2016, 2021, and now in 2022 for the monitoring of travelers returning to Georgia from Ebola affected areas. This system is to be used in the development of other emerging health threat monitoring systems; review of the system would inform these activities.
- New occupational health variables have been added to Georgia's notifiable disease surveillance core variables as of October 2022, evaluation of the use of these variables would inform messaging and next steps for these new surveillance variables.
- Evaluate the new HIV molecular surveillance system designed to quickly identify areas where HIV may be spreading and provide prevention and treatment services, breaking the chain of transmission.

**ID: 34936826**

**Wastewater Surveillance, Environmental Health - Host Site Description**

**Georgia Department of Public Health**

*Surveillance System Objectives:*

The fellow should follow CDC's guidance on evaluating public health surveillance systems. The fellow will conduct a thorough literature review of the area they chose to evaluate, they will work within that DPH team to thoroughly understand how the surveillance system works, evaluate it, and then provide suggested improvements and help implement those improvements.

*Surveillance System Impact:*

An evaluation of any of the listed projects as well as how to improve these projects after evaluation will lead to improvements to DPH's response to these public health concerns.

**Major Project Title: Wastewater Surveillance Pathogen Prioritization**

*Major Project Description:*

CDC NWSS was initially developed as a response to the COVID-19 pandemic. As the GA NWSS program continues to expand, there will be need for a systematic approach to pathogen/target prioritization. CDC NWSS has developed a list of priority pathogens as guidance for states as they continue to develop their wastewater surveillance programs. While DPH has begun the initial phase of adding Flu/RSV to GA NWSS testing, there is interest at the national level in testing for other enteric pathogens and multidrug resistant organisms (MDRO). Currently, the GA NWSS team meets with the corresponding subject matter experts/epidemiologists (e.g., state outbreak coordinator, healthcare associated infections epidemiologists, etc.) regarding the potential addition of any new target to determine the public health impact that may result from using wastewater as an additional surveillance tool. The goal of this project is to develop a resource for DPH to utilize when considering the addition of new pathogens for wastewater testing. This may include activities such as literature reviews, exploratory analyses of existing surveillance and case data, meetings with external and national wastewater surveillance program partners, spatial analyses, and more. During the mpox response in Georgia, these methods were used real-time to assess the feasibility and utility of using wastewater as an additional surveillance tool. The fellow would assist in building long-term capacity for the consideration of wastewater surveillance as new and emerging public health threats arise.

*Major Project Objectives:*

The fellow will assist DPH staff in developing a guide/resource to be used when considering the addition of new pathogens in GA NWSS testing. As part of this project, the fellow will meet with various internal partners as well as national wastewater surveillance partners to review and understand current surveillance activities. Once completed, the fellow will have the opportunity to present to state and local public health staff. If needed in an active response, the fellow may utilize information in this resource to create one-pagers and overall assist DPH staff with communication and guidance in the use of wastewater as an additional surveillance tool.

*Major Project Impact:*

As the field of wastewater-based epidemiology (WBE) continues to expand, the opportunity for its use in active public health response will continue to present itself. This project would assist DPH staff with response capacity and overall contribute to the field of WBE.

**Additional Project #1 Title: Analysis of Environmental Factors Associated with Wastewater Surveillance Data**

**Project #1 Type: Surveillance Activity**

*Project #1 Description:*

DPH initiated active wastewater sampling in April 2022 and the GA NWSS program has now grown from 5 WWTFs to 17 in January 2024. While the GA NWSS team continues to build and strengthen infrastructure, DPH continues to research and adopt new methods and approaches to interpreting and sharing wastewater data. Currently, the GA NWSS program

**ID: 34936826**

**Wastewater Surveillance, Environmental Health - Host Site Description**

**Georgia Department of Public Health**

reports normalized SARS-CoV-2 concentrations primarily as trends over time. While information on the correlation between COVID-19 case data and SARS-CoV-2 concentrations continues to grow, less is known about how environmental factors may impact this relationship. Because wastewater is such a complex matrix, the GA NWSS team is interested in conducting a retrospective analysis to better understand how factors such as rain events, population density, presence of contamination from industrial or agricultural sources, or pH impact reliability and interpretation of wastewater data. To complete this project, the fellow would work closely with the GA NWSS team and laboratory staff and would also have support from biostatisticians and epidemiologists as needed.

*Project #1 Objectives and Expected Deliverables:*

In working on this project, the fellow will conduct various exploratory analyses and gain experience working with multiple different data sources. This may include activities such as data linking, data cleaning and transformation, and results communication for various audiences. Depending on interests, the fellow will also have opportunity to present findings to internal staff and GA NWSS partners. Additional deliverables will vary and depend on variables of interest within the analysis but may include utilizing software such as ArcGIS, Rstudio, Tableau, and more.

*Project #1 Impact:*

This project will have a direct impact on how DPH and GA NWSS staff interpret and communicate wastewater surveillance data to partners such as local public health and WWTFs. Additionally, as WBE is a fairly new and growing field, the exploration of existing data will allow for a richer understanding of its potential strengths and limitations. The contextual information that this type of analysis will provide may guide future interpretation of wastewater data as the program expands to additional pathogens beyond SARS-CoV-2.

**Additional Project #2 Title: One Health projects**

**Project #2 Type: Surveillance Activity**

*Project #2 Description:*

DPH has been committed to expanding One Health activities through building capacity in human resources and developing/fostering collaborative relationships within the agency and with external partners related to the human-animal-environment interface. The fellow will have the opportunity to work with the One Health Epidemiology Director and One Health Epidemiologist 2, and other subject matter epidemiologists on a variety of One Health projects. A specific need lies with better organizing a systematic approach to surveillance surrounding One Health investigations. These include domestic and companion animal investigations, zoo and aquaria, and wildlife. The fellow would work with external partners in agriculture, wildlife, education, and industrial settings as well as internal partners in case management, sequencing, and surveillance teams. In the past 3 years, these investigations have primarily centered around SARS-CoV-2, including small companion animals in shelter and household settings, Asian Small-clawed Otters in an Aquarium setting, Western Lowland Gorillas in Zoo setting, among others, but have also included other focus such as Highly Pathogenic Avian Influenza and Swine Variant Flu. Developing more systematic and consistent plans and methods for documentation and reporting for these investigations will be a goal of this project.

*Project #2 Objectives and Expected Deliverables:*

The fellow will assist DPH staff in developing systematic plans for surveillance at the human-animal-environment interface. This will include organization and documentation of legislative information surrounding testing and reporting in animals of specific infectious agents. Collaborating with external and internal partners to help develop an SOP for approach to investigations, documentation, and information sharing. The fellow will assist with data collection in One Health investigations and in timely reporting to CDC through HHS Protect.

**ID: 34936826**

**Wastewater Surveillance, Environmental Health - Host Site Description  
Georgia Department of Public Health**

*Project #2 Impact:*

One Health approach supports public health in all areas by increasing communication, collaboration, and coordination at the human-animal-environment interface. Contributing to this project will help lay the foundation for systematic use.

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

There are many opportunities for involvement with epidemiologic emergency preparedness including: participating in active emergency responses (ex. mpox, HPAI, Ebola active monitoring, etc); developing a plan to implement the ICS command structure for disease outbreak investigations; developing a plan for DPH first responder pre-deployment and just-in-time training as well as deployment and post-deployment health and safety monitoring; and developing standard operating procedures for responding to zoonotic disease outbreaks that affect the human and veterinary community in collaboration with other state and federal partners.

In the past, NWSS has been a new and exciting component of response efforts, including in the 2022 mpox outbreak. The NWSS team was able to present some of their work in this response at the annual CSTE conference in 2023.

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

Our fellows are directly included in many cluster and outbreak investigations, there are many in Georgia and specific involvement may be led by the fellow's interests and other priority projects. Activities may include creating notifiable disease surveys and helping to create and provide disease guidance to our local health districts, partners and the public. They will work closely with our local health districts and may help conduct case investigations and assist in control activities. A fellow would be offered a leadership role in an aspect of the cluster or outbreak investigation that fits their skills and availability at the time. This might include overseeing monitoring for close contacts or managing a small team of individuals performing enrollment interviews.

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

DPH is currently leading the response to the COVID-19 pandemic in Georgia. This response is extensive and involves many different efforts including disease prevention and community mitigation, healthcare facility preparedness, outbreak response and more. This has taken significant person power and collaboration among the departments within DPH and those agencies outside of DPH. DPH has worked closely with CDC, GEMA, GDA and more as this pandemic has unfolded. This response is ongoing and will continue to evolve daily. The CSTE Fellow will most likely be involved in this response in some capacity depending on the needs when the fellow begins at DPH and their interest in the COVID-19 response as a whole. Dr. Feldpausch, the primary mentor, oversees the Respiratory Disease Epi Unit which includes COVID, so the fellow will be integrated into this team.

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

Diversity, equity, and inclusion (DEI) is a priority and growing focus at DPH. DPH has working groups currently focusing on DEI within the department, and in the work that we do. Epidemiology has stood up a working group across subject areas to develop common goals and vision about how to improve, analyze, and present our data in order to affect health equity. This effort is new but has a great cross-cutting membership from all groups at DPH. This will be a great opportunity for a fellow to get involved and help shape the future of health equity at DPH in Georgia. A fellow would have the opportunity to join and have leadership roles in subgroups within the DEI framework - there they will

**ID: 34936826**

**Wastewater Surveillance, Environmental Health - Host Site Description**

**Georgia Department of Public Health**

contribute to innovative approaches to improving DEI in the workplace (from data models to identifying appropriate trainings and opportunities for knowledge building).