COVID-19 Wastewater Surveillance Brings New Collaborations and Opportunities for Growth

By Lauren Wheat

In response to the COVID-19 pandemic, the Texas Department of State Health Services (DSHS) initiated a wastewater surveillance pilot project in March 2021. As part of the pilot project, DSHS began a partnership with Baylor University to track and predict potential outbreaks of COVID-19. Researchers at Baylor collect samples of wastewater at select sites in Texas, and through collaborative efforts with DSHS, have found a correlation between trends in wastewater surveillance data and trends in active cases and hospitalizations.

Victoria Salinas began working on the COVID-19 wastewater surveillance pilot as an intern in August 2022. She has continued to support this project, along with others within the Environmental Epidemiology and Disease Registries Section (EEDRS) throughout her time as a Texas Public Health Fellow and in her current role as a Medical Research Specialist. Victoria shared that her favorite part of working for DSHS and collaborating with Baylor University has been learning multifaceted approaches to plan and implement a surveillance program. "I'm grateful for the opportunity to share our work with and learn from both communities and public health researchers," stated Victoria.

The EEDRS team has utilized two fellows, including Victoria, and five interns from several Texas institutions to manage and analyze its data. Dr. Heidi Bojes, Director of the EEDRS, noted the impact of interns and fellows on the project. "We took on this pilot project with limited knowledge about wastewater surveillance and with no additional funds for DSHS staff to carry out surveillance activities" she shared. "Our interns and fellows were the backbone of the project. They kept day-to-day activities going."

This collaboration not only benefits Baylor University and DSHS, but Texas communities as well. The program is expanding to test wastewater at 16

additional sites. Dr. Bryan Brooks, Distinguished Professor and Director of the Environmental Health Science Program at Baylor University shared, "After implementing wastewater surveillance for COVID-19 in Baylor University dormitories, we are grateful to work with DSHS to extend this innovative disease surveillance approach to local communities across the State of Texas." By expanding this program, DSHS and Baylor University will continue to identify and control outbreaks and bridge gaps in vulnerable communities.

Over the past two years, the program has grown considerably. Data management and reporting have improved by automating routine tasks, adding surveillance locations, and creating a visualization interface. Both laboratories have also seen considerable growth in their capabilities since the program started. The DSHS laboratory has developed skills in genomic sequencing and bioinformatics analysis of wastewater that have helped with understanding the virus' genetic diversity throughout the pandemic. Baylor University has revised its viral extraction techniques and installed new digital droplet PCR methods, which will be used for future testing applications.

Due to the success of this program, DSHS is working with Baylor University to detect and quantify other pathogens in wastewater including influenza, mpox, and Respiratory Syncytial Virus.