Establishing a statewide wastewater surveillance system in Pennsylvania

CSTE Stories FROM THE Field

CONTRIBUTOR: *Shannon McGinnis, Epidemiologist Supervisor, Pennsylvania Department of Health*

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The Pennsylvania Department of Health established the Pennsylvania Wastewater Surveillance System to adapt to changing COVID-19 surveillance needs. The program continues to expand to include new testing sites, analyze additional diseases of concern, and provide meaningful information to the public and public health partners to better inform disease prevention activities.

The "What"

As the COVID-19 pandemic has progressed, a decrease in healthcare seeking behaviors and an increase in the use of at-home tests has made it increasingly difficult for public health to gather surveillance data on COVID-19 in communities. This, along with the end of the public health emergency in May 2023, created a need for alternative methods for tracking cases of COVID-19 and emerging variants of concern. To address this, in July 2022, staff in the Division of Surveillance at the Pennsylvania Department of Health (PADOH) established the Pennsylvania Wastewater Surveillance System (PaWSS) for tracking concentrations of SARS-CoV-2 in wastewater.

PaWSS includes a network of wastewater treatment facilities across the Commonwealth that collect and submit samples of untreated wastewater to ship to partner laboratories for testing. Since the beginning of the program in July 2022, PaWSS has used Epidemiology and Laboratory Capacity for the Prevention and Control of Emerging Infectious Diseases (ELC) funding to expand collection, shipping, and analyses of wastewater samples from 21 sites. In addition, the PaWSS team receives wastewater surveillance data from another two sites who are not directly funded through PaWSS. In total, these 23 sites collect data on nearly one million residents across 17 counties.

By establishing this network and building partnerships with wastewater treatment facilities across Pennsylvania, PaWSS now provides PADOH with new opportunities to utilize wastewater data to **improve infectious disease surveillance** in the Commonwealth.

The "So What"

Data collected through PaWSS includes both concentrations of SARS-CoV-2 as well as the relative abundance of variants of concern. These data are shared back to the wastewater treatment facilities who are collecting these samples as well as internally within PADOH staff. As the team continues to collect data and conduct analyses, the PaWSS team is learning more about how best to share and present these data moving forward.

This statewide wastewater surveillance network can not only provide information on the spread of SARS-CoV-2 in communities, but may also be used to track concentrations of other pathogens or human health markers. By establishing this network and building partnerships with wastewater treatment facilities across Pennsylvania, PaWSS now provides PADOH with new opportunities to utilize wastewater data to improve infectious disease surveillance in the Commonwealth.

The "Now What"

Next steps for PaWSS will be to publish a public-facing SARS-CoV-2 wastewater dashboard to provide the public with information on COVID-19 trends in their communities. This dashboard will provide information on whether SARS-CoV-2 concentrations are increasing, decreasing, or plateaued at each site participating in PaWSS, and will provide sample-level data on how current concentrations have changed over time. In addition, the PaWSS team is currently exploring the possibility of expanding to other pathogen targets and integrating these data into the existing surveillance infrastructure. Further, PaWSS laboratory analyses are currently being transitioned from an external partner laboratory to the Bureau of Laboratories at PADOH. Through this transition, the PaWSS team hopes to make PaWSS a permanent program that can be adapted for future surveillance needs.

Key contributors to this project include Narita Loyd-Goff, Hannah Lund, and Kristina Zwolenik, all with the Pennsylvania Department of Health.

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