Jackson County Department of Public Health

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Jackson County Pilot Contributes to CDC's National Wastewater Surveillance System

A public-private partnership in Jackson County, N.C. that has helped public health authorities anticipate changing trends in COVID-19 infections is now contributing to a federal initiative to support similar ongoing infectious disease surveillance across the country.

The Centers for Disease Control and Prevention (CDC) and the U.S. Department of Health and Human Services have initiated a National Wastewater Surveillance System, which can help public health officials better understand the extent of COVID-19 infections in communities. State, tribal, local, and territorial health departments can submit wastewater testing data into a national database, which would allow public officials to compare the presence of COVID-19 across jurisdictions over time.

As of early June, wastewater data from Jackson County is now being collected, analyzed, and shared with the CDC through a collaboration between the North Carolina Department of Health and Human Services, the Jackson County Department of Public Health, the Tuckaseigee Water & Sewer Authority, the McLellan Lab at the University of Wisconsin-Milwaukee, Dogwood Health Trust, and the private data analytics firm Mathematica. So far, 31 states, three cities, and two territories are participating in the CDC pilot.

"Our pilot project started due to an interest in furthering this research as another tool for public health in determining the spread of illness in order to make appropriate public health decisions," says Shelley Carraway, Director of Jackson County Department of Public Health. "We are so proud that Jackson County's leadership in pioneering new methods of detecting COVID-19 are now informing a national initiative by the CDC."

Last year, results from a four-week pilot study conducted in Jackson County suggested that officials could identify rising or falling infections up to nine days before individual testing would reflect such trends. Dogwood Health Trust, which supported the original study, funded an extension of the COVID-19 wastewater testing in Jackson County and an expansion of wastewater testing in neighboring Haywood County. In both counties, data from December 2020 through April 2021 show the same general trend of a spike in viral loads in sewage samples collected in late December and early January, followed by a steady decline in the ensuing months.

"With wastewater surveillance in place, we're essentially able to anonymously test and re-test 30 percent of the population every week, and for a fraction of the cost of clinical testing," says

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Aparna Keshaviah, a senior statistician at Mathematica who lives in Haywood county and is leading the surveillance in Western North Carolina. "This approach even captures asymptomatic infections and could sound an early alarm when more dangerous viral variants enter into the community—something we've fortunately not detected to date."

Insights from the pilot studies in the two Western North Carolina counties are informing discussions about the use of wastewater testing elsewhere. The counties appeared as case studies in a recent presentation about translating wastewater data for policymaking at a national workshop convened by the U.S. Department of Homeland Security and the National Institute of Standards and Technology. Lessons from Jackson County's experience with wastewater testing for COVID-19 also appeared in a recent journal article about how to develop a national wastewater surveillance system that could detect a rise in infectious disease or illicit drug use in a community.

North Carolina has developed a statewide dashboard to report all data from multiple sites across the state that are utilizing this approach. Jackson County data will soon be included as part of the dashboard. With the increasing prevalence of the Delta variant, having access to this data will enable health experts to make informed decisions on appropriate COVID-19 response.

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