

UW Madison: New statewide data show evidence of increase in past COVID-19 infections, impact of vaccine uptake and need for continued vaccination efforts

Posted on Tuesday, Jun 8, 2021

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June 8, 2021

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New statewide data show evidence of increase in past COVID-19 infections, impact of vaccine uptake and need for continued vaccination efforts

MADISON, Wis. – The third and final wave of a University of Wisconsin School of Medicine and Public Health survey estimated more than 11% of participants had a positive COVID-19 antibody test due to infection with the virus that causes the disease – a two-fold increase from the second set of results in December.

Last June, the Wisconsin Department of Health Services (DHS) partnered with the school's Survey of the Health of Wisconsin (SHOW) program and the Wisconsin State Laboratory of Hygiene (WSLH) to launch the surveillance study, the Past Antibody COVID-19 Community Survey (PACCS). The study has tracked the prevalence of past COVID-19 infections across Wisconsin over the previous year by looking for the presence of antibodies that indicate if a person has been infected with COVID-19 in the recent past, even if they did not experience symptoms.

The antibody tests used measure only N-protein antibodies, which are produced specifically after infection. COVID-19 vaccinations help the human body create protective S-protein antibodies but currently available vaccines in the United States do not affect N-protein antibody level. Measuring N-protein antibodies allows researchers to assess past viral infections regardless of study participants' immunization status at the time of testing. The technique does not give information about when past infection occurred relative to vaccination.

The latest round of testing of SHOW participants included more than 1,000 people. The study has seen steadily increasing numbers of participants who have evidence of infection-specific antibodies for COVID-19. Testing in July through early August 2020 found 1.6% of survey participants had evidence of these antibodies. Between October and December of 2020, the number rose to 6.8%. In March through April of 2021, the number nearly doubled to 11.4% in a pattern that was relatively consistent across the state, according to Kristen Malecki, PhD, MPH, director, SHOW and associate professor, population health sciences, UW School of Medicine and Public Health.

"This is different from when we began the study in summer of 2020 when very few individuals tested positive in the north and northeastern regions," she said. "Over time, we saw antibodies from participants from across the entire state."

This is consistent with how patterns of cases evolved over time across the state, she said.

This spring, the western region saw the greatest increase from 3.9% in the fall to 11.6% of participants testing positive for antibodies. Overall, prevalence of antibodies varied by region ranging from 9.4% in the south to 13% in the north and northeast regions, according to the latest findings.

All participants were asked if they had received a COVID-19 vaccination prior to

taking part in testing. A majority of participants (63.4%) reported having received a COVID-19 vaccination. Individuals who were 65 years of age or older, who self-reported as white or multiracial, and who received a vaccine against influenza within the last 12 months were more likely to report having been vaccinated against COVID-19.

How long antibodies from viral infection persist

Most of the participants in this third wave of testing had also been tested over last summer and in the fall. Of those who tested positive in the fall, 62% tested positive for N-protein antibodies again in the spring. The study also found 38% of participants had a negative test in the spring but had a positive test in the fall.

These N-protein antibodies appear within two to three weeks after infection and evidence suggests that they may be undetectable within three to six months after infection. Therefore, the antibodies measured reflect infections that occurred at least one month before participation in the study.

It is important that people get vaccinated, even if they've had COVID-19, according to Ajay Sethi, PhD, MPH, associate professor of population health sciences, UW School of Medicine and Public Health.

"Studies suggest that vaccines may provide longer lasting protection than immunity created by COVID-19 infections," he said. "The vaccines also work better against different variants. For example, unvaccinated people who had COVID-19 may not be protected against the gamma variant, also known as P.1."

The survey was designed to test a statewide, representative group of people three times. The same group of individuals was invited to participate in all three waves, including those who had already been tested in past waves. These preliminary results reflect the pattern of infections that have occurred over the last year. As long as vaccination rates continue to increase, we would expect rates of new infection to go down across the state and the nation, Malecki said.

"While there is still much to learn about the long-term effects of COVID infection, these numbers are helpful for state and local health officials working hard to reduce the impact of COVID-19 across the entire state," Malecki said.

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