Coronavirus Antibody Tests Could Be a Game Changer

Tests like the one approved this week can show who is likely to be immune, but it's not yet clear how long such immunity lasts.

April 3, 2020 By Liz Highleyman

On April 1, the Food and Drug Administration (FDA) granted its first emergency use authorization for a test that detects antibodies against the new coronavirus that causes the respiratory illness known as COVID-19. This type of test is already being used in other countries.

Unlike the tests now in use in the United States, which detect current active infection, antibody tests reveal whether someone has ever contracted the coronavirus (officially known as SARS-CoV-2), including those who have recovered. It could potentially be used to show who is now immune and therefore can safely let up on social distancing.

The FDA previously authorized several PCR RNA tests, which detect genetic material from the virus in a nasal swab sample. These are similar to the viral load tests used to show whether HIV or hepatitis C treatment is working, though those tests use a blood sample.

People with the coronavirus test positive for viral RNA very soon after infection—even before symptoms appear—but once they recover, the test becomes negative. Because PCR testing has been delayed in the United States and is still not readily available in many areas, some people recover before they ever get tested, and there is no way to tell whether they had a past infection using this type of test.

The newly approved test from Cellex, known as the qSARS-CoV-2 IgG/IgM Rapid Test, detects two types of antibodies made by the immune system to fight the coronavirus. The test uses a drop of blood from a finger prick, similar to a blood glucose test, and returns results in about 15 minutes.

The Cellex test should be available within weeks. Several other companies and academic institutions, including the large medical technology company BD and the Mayo Clinic, have also developed antibody tests that are not yet FDA-certified. Widespread rollout will require the efforts of multiple companies and commercial labs nationwide. A home test could become available in the future.

It takes several days for the body to produce enough antibodies to show up on the test, but after

that, an individual will continue to test positive even after recovery. More research is underway to determine how long these antibodies last and whether they do in fact provide immunity.

The FDA cautions that the test "should not be used as the sole basis for diagnosis." Importantly, people who recently acquired the virus can pass it on to others before they have symptoms and before an antibody test is positive.

Antibody tests (also known as serology tests) have several advantages over PCR tests, according to National Institute of Allergy and Infectious Diseases director Anthony Fauci, MD, one of the leading voices in the federal COVID-19 response. "It's much quicker, it's much easier and it's much cheaper," Fauci told Golden State Warriors star Steph Curry in a recent Instagram Live chat.

Although much remains to be learned about the new coronavirus, experts expect that the presence of antibodies will confer some degree of protection against future infection. Fauci told The Daily Show host Trevor Noah that he's "willing to bet anything that people who recover are really protected against reinfection."

In the case of coronaviruses that cause the common cold, antibody levels wane in several months to a couple of years, leaving people susceptible to repeat infections. But with the coronavirus that caused the 2003 SARS epidemic, which is more closely related to the new SARS-CoV-2, recovered patients still have measurable antibodies nearly two decades later, NPR reports. However, because the SARS outbreak petered out after about a year, scientists never learned whether these antibodies actually protect against reinfection.

If SARS-CoV-2 antibodies are protective, antibody testing could show whether health care workers have already had the coronavirus and are now immune. This could help determine which workers can safely care for patients with COVID-19 and which ones should take greater precautions or be given other assignments.

Widespread antibody testing could help experts get a better handle on the disease. Knowing the size of the total pool of people who have ever had the virus will allow epidemiologists to accurately calculate mortality rates. Plus, antibody-rich plasma from people who have recovered can be used as an emergency treatment for patients with severe COVID-19.

What's more, knowing how many people have some degree of immunity can guide officials as they make evolving decisions about social distancing and stay-at-home policies. Typically, once enough people have developed antibodies, so-called herd immunity emerges and transmission slows down, making it easier to contain small outbreaks as they arise.

Antibody testing could enable people who have developed immunity to resume work, school and social lives. But this has civil rights implications if those who are not immune are required to remain isolated.

Cities in China, where the pandemic emerged in late 2019, assign residents a green, yellow or red code based on their health status that is displayed on their smart phones and used to determine

whether they can move about freely, according to The Guardian. Some British politicians have proposed the idea of "immunity passports" to get people who have already had the coronavirus back to work.

But a two-tiered society based on immunity could be rife with inequities and unintended consequences. People could face discrimination based on their status, economically disadvantaged individuals might have less access to tests, there could be incentives for fraudulent tests and some people might even try to get infected on purpose in order to regain their freedom of movement.

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http://beta.docker.poz.com/article/fda-approves-first-us-coronavirus-antibody-test