

Coronavirus: Stanford deploys new test that tells healthcare workers if they've been exposed

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Stanford Health Care is offering a new test to its doctors, nurses and other health care workers to learn who has been infected with COVID-19 – and might now carry antibodies that could protect them from re-infection.

“The test will enable us to determine which health care workers might be at low risk for working with COVID-19 patients, as well as understanding disease prevalence in our communities,” said Stanford Health Care spokesperson Lisa Kim.

The blood test detects protective antibodies to the virus rather than the virus itself.

Health care workers confront the aerosolized COVID-19 pathogen when clearing a patient’s airway, performing tracheal intubation to help a patient breathe or providing other care.

For now, the test is only offered to Stanford doctors, nurses and other workers at potential risk, Stanford announced on Wednesday night. But it presages the day – ideally, not far off – when a test might be available to the broader general community.

Such tests have many advantages: they're fast and affordable, they're portable, and they don't require the long process of lab analyses needed for other methods.

Because the COVID-19 virus may cause few or no symptoms, many people don't know they've been infected. Or perhaps they were mildly ill before COVID-19 made headlines, and simply dismissed it as a cold or flu.

The news follows last week's launch of a Stanford research project using the same approach. That effort, which invited 2,500 members of the general community to get their blood tested for antibodies, was the first large scale study of its type in the U.S. It was coordinated with the Santa Clara County Department of Public Health to learn more about the virus's presence in the county.

Such blood tests find antibodies in the blood — molecules made by the immune system — in response to a viral attack. Even though the pathogen is brand new, scientists have already discovered the two antibodies — called IgM and IgG — that are triggered by infection. A test detects their unique signature.

But there are important limitations to this method. Antibodies offer evidence — but they're only fingerprints left behind by the culprit. A person whose blood contains coronavirus antibodies could still be sick, or could feel well but still be contagious.

It can take up to two weeks for a person's immune system to develop antibodies to coronavirus, so even if their blood isn't showing it, they could currently be fighting the infection.

To know for certain if someone is infected with coronavirus still requires using genetic tools to detect the presence of the virus's RNA — a more expensive and time-consuming process that is currently used in testing around the country. Those tests require the use of nasal swabs, not needle sticks for blood.

Because they're fast and more affordable, blood tests will be an important tool moving forward.

Other antibody tests are under development by different teams around the world, including scientists at UC San Francisco and the San Francisco Vitalant Research Institute.

One test, produced by the Research Triangle Park, N.C., company Cellex, is already being rolled out for use in select groups, such as residents of pandemic "hot spots" in New York, according to the medical journalism website [STAT](#).

The medical technology company BD and clinical diagnostic company BioMedomics have a test approved for “surveillance” use only — meaning their test can be used for research purposes, but the results can’t be returned to patients.

The Los Angeles-based Scanwell Health has teamed up with an online medication delivery company called Lemonaid to create an at-home rapid diagnostic test. The goal is to easily upload results via a mobile device to assess whether a patient has antibodies, indicating they were or are currently infected. They’re expecting approval of their test in mid-May.

Approval of many more antibody tests are expected in the coming weeks under the U.S. Food and Drug Administration’s “Emergency Use Authorization,” which speeds up the process of approving new methods for testing for COVID-19. This includes new, faster ways of testing nose and throat swabs, as well as blood tests for antibodies.

There are three different approaches that require timelines ranging from half an hour to a number of days. The quickest test, called a rapid diagnostic test, takes only 10-30 minutes. It works similarly to a pregnancy test, showing readable lines that indicate positive or negative results.

Assuming long-term immunity occurs after someone is infected, the antibodies could indicate that a person won’t get sick if they encounter the virus again.

This will allow people like Stanford Health Care workers to care for patients without fear of re-infection.

It could also ease the minds of people who are caring for sick family members, or allow them to return to essential jobs earlier, or safely exit quarantine once their symptoms have abated. They will likely be widely used in the future to assess future “herd immunity,” when so many people in a community have been exposed that the virus no longer spreads.
