Q&A: COVID-19 (SARS-Cov-2) Serological Testing

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What is the COVID-19 serological test?

The COVID-19 serological test (or COVID-19 serology or COVID-19 antibody test) is a test that looks for COVID-19 antibodies in the blood. If antibodies are found, that means there might have been a previous COVID-19 infection.

When should the COVID-19 serological test be used?

COVID-19 antibodies can be found in the blood starting about 1-2 weeks after the start of COVID-19 symptoms. Therefore, this test is not helpful in the early days of COVID-19 disease. It should only be used after 1-2 weeks of symptoms if the diagnosis of COVID- 19 remains in doubt. Antibodies can appear as early as 5-7 days after the start of symptoms, but they can take up to 2 weeks to appear, so the test is most sensitive after 2 weeks from onset of symptoms.

Does a positive COVID-19 serological test indicate immunity?

In the future, COVID-19 serology testing could be used to identify who has developed immunity against COVID-19 and is protected against the disease. Unfortunately, at the current state of scientific knowledge, there isn't yet evidence about whether antibodies in the blood are protective, and if so, how long the protection would last. Therefore, this test cannot determine if a patient has developed protective immunity. Thus, the results of this test should not be used to guide PPE use or adherence to physical distancing practices.

Why use COVID-19 serological test when COVID-19 PCR testing is available?

PCR testing is the best test for diagnosing COVID-19 in the early stage of the disease. However, sometimes the SARS-CoV-2 virus (the cause of COVID-19) cannot be detected by PCR after 7-10 days of illness.

Serological testing is useful to:

- Help diagnose patients who have symptoms* that could be due to COVID-19 but who have negative PCR testing, and who had onset of symptoms more than 1-2 weeks before.

- Identify potential donors of "convalescent plasma," an approach in which blood plasma containing antibodies from a recovered individual can be used as a therapy for an infected patient.

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Is COVID-19 serology accurate?

Many serological assays for COVID-19 are now commercially available and performance may vary. Some of the rapid, point-of-care options are not very accurate. The serological test offered at UI Hospitals & Clinics was chosen for its accuracy and its performance was verified in-house.

This test is sensitive, if it is done at least 2 weeks after the start of COVID-19 infection symptoms* (i.e. very good at detecting past COVID-19 infection in symptomatic individuals).

However, even a test that is very good can often give false positive tests when it is used in patients who have a very low chance of having had the disease. In most parts of the United States, less than 5% of the population has had COVID-19 infection. So even with a specificity of 98%, up to 1 in 3 positive tests in those who have no history of COVID- 19 symptoms could be false positive test results.

For the above reason, it is not recommended to use this test to detect past infection in those who do not have a recent history of symptoms* compatible with COVID-19.

Is there ever a time when a COVID-19 antibody test should be done on someone who has no history of symptoms consistent with COVID-19?

Public health surveys and research studies are now underway to test large populations at various risks for COVID-19 infection. We will be doing such surveys at UI Hospitals & Clinics, in order to learn more about the overall population rates of infection, and to learn if certain individuals are at higher risk of having had COVID-19 infection. In these public health and research surveys, statistical adjustments can be made for the chances of false positive tests.

If a patient who tested positive by COVID-19 serology is coming to UI Hospitals & Clinics for medical care, what precautions should be taken?

Follow current guidelines for symptom assessment and admission test protocols.

If an outside provider wants a patient to get a COVID-19 serological test at UI Hospitals & Clinics, who should be contacted?

COVID-19 serological testing is now available to any provider in the United States, via multiple different reference laboratories. Therefore, patients do not need to be referred to our system solely for the COVID-19 serological test.

If patients are referred into our system and require COVID-19 serological testing, the test can be ordered by any UI Hospitals & Clinics provider, including in UI Health Care—Iowa River Landing and offsite clinics.

How much will a patient be charged for COVID-19 serological testing?

The charge for this test is $125. We cannot yet determine whether (or when) third party payers will cover COVID-19 serologic testing.

What is value of testing for IgM antibodies to SARS-CoV-2?

We do not recommend using the SARS-CoV-2 IgM antibody test to diagnose COVID-19. There is not enough information yet to support its use as diagnostic test, and the results could be misleading. However, some international travel protocols now require this specific testing within a certain time before boarding airplane. The main country to which this currently applies is China, which is requiring negative COVID-19 PCR **and** IgM serology within 48 hours of boarding a direct flight to China. COVID-19 IgM serology is intended for travel screening purposes only at the current time. The patient charge for COVID-19 IgM testing is $125. For clinical serological testing, COVID-19 (Novel Coronavirus) Serology, Total Antibodies [LAB9019] is the recommended test.

What should I do if my patient has SARS-CoV-2 (COVID-19) IgM serology performed for travel purposes, and it is positive?

First check the results of the COVID-19 PCR test, which is the appropriate diagnostic test for patients with acute COVID-19. If the PCR test is negative and the patient has no symptoms, the IgM may be a false positive. The patient should be monitored for symptoms, and if symptoms of COVID-19 develop then the patient should be retested using a PCR test. If the patient remains without symptoms, you may consider performing a COVID-19 (Novel Coronavirus), Total Antibodies [LAB9019] at 1-2 weeks after the positive IgM. If that test is positive, then the patient likely had recent prior COVID-19 infection. If the follow-up total antibodies test is negative, the positive IgM test is likely to have been a false positive.

See *The Loop* for additional information on COVID-19 isolation precautions.