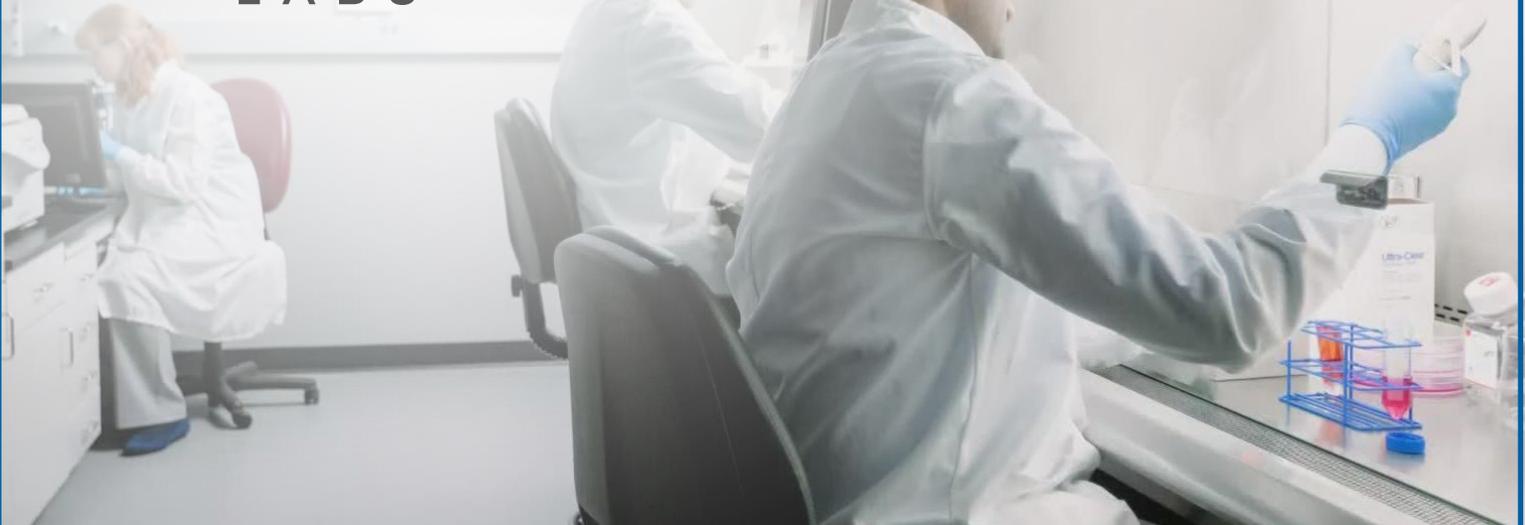




NORTH WEST
LABS



Covid-19 Neutralizing Antibody Titer Testing

Neutralizing Antibody Explained:

As more and more people in the United States get vaccinated against COVID-19, the number of new cases is falling each day. However, these vaccines are not 100% effective. The Pfizer-BioNTech and Moderna vaccines have efficacy rates of 94%-95%, which, while very high, still leads to the implication that, out of every 100,000 persons receiving these vaccines, 5,000 – 6,000 people will not be protected from COVID-19. This means that some individuals who receive the vaccine may be unaware they've failed to develop COVID-19 immunity.

The goal of the vaccines is to train the body to evoke adaptive immune response which typically produces virus specific neutralizing antibodies and T-cells. The neutralizing antibodies have been shown in the scientific literature to be able to block the virus entry and prevent infection and are expected to be good biomarker for immunity. If the antibodies are present and in large quantities, then they will bind to the virus's Spike protein and will have a higher chance of preventing the virus from entering the cell. If the antibodies are not present, then there is a higher risk of infection occurring.

How Neutralizing Antibody Tests Work?

Neutralizing antibody tests are performed by collecting blood samples via blood draw, followed by running those samples through an ELISA based test that detects antibodies. There are two proteins that the antibodies target on the virus: the Spike protein and the Nucleocapsid protein. Antibodies for the Spike protein are more important, however, as they are indicative of the body's ability to resist and defeat infection.

When an individual's antibody levels (known as titers) for the Spike protein are high, they are indicative that the person's immune system has developed a strong response to the COVID-19 vaccine or the virus infection itself. Higher levels also indicate a higher chance for the body to fight off the infection.

Practical Applications and Reopening

As stated previously, higher levels of neutralizing antibodies in the blood will provide a higher level of protection from infection. Antibody levels will vary from person to person. However, these tests can provide people with insight into their own personal immune response and resistance to the SARS-CoV-2 virus infection. Testing for neutralizing antibodies can also provide insight into the length of time someone is resistant to the virus. This, in turn, can assist with the process of reopening, especially when used in conjunction with surveillance testing by schools, workplaces, and communities.

Admittedly, while most surveillance testing programs to this point have been established to assess COVID-19 infection rates, communities and businesses should keep in mind they can also test for neutralizing antibodies through their surveillance programs in order to gauge immunity levels and inform decision making.

In summary, while surveillance testing is a valuable way to guide the process of reopening on a larger scale, neutralizing antibody testing is a useful resource for individuals wanting to know about their immunity response to guide their decisions about going back to the office or socializing with others.



Covid-19 Neutralizing Antibody Titer Testing

What are the basic principles of the test?

- The test is designed for detection of circulating SARS-CoV-2 neutralizing antibodies of all immunoglobulin (Ig) classes in serum or plasma capable of binding to the receptor-binding domain (RBD) and neutralizing or blocking the interaction between the RBD and the angiotensin-converting enzyme 2 (ACE2) receptor.
- The test is a solid phase enzyme-linked immunosorbent assay (ELISA) using a chromogenic enzyme substrate as an indicator.

Why is this test important?

- Detects neutralizing antibodies without the need for live virus or advanced biosafety containment laboratories.
- Detects neutralizing antibodies of all immunoglobulin classes.
- This test detects antibodies that have blocking or neutralizing function, and have the ability to block virus entry.

What is the difference between this test and other COVID-19 antibody tests?

- COVID-19 antibody tests evaluate antibodies that bind to various parts of the SARS-CoV-2 virus and are total antibody or immunoglobulin specific, IgM and/or IgG. These antibody tests do not specifically detect the key protective neutralizing antibodies representing a fraction of the total binding antibody response to infection or vaccination.
- A positive IgG binding antibody response does not necessarily equate to the presence of neutralizing antibodies.
- This test detects antibodies that have blocking or neutralizing function, and have the ability to block from entering and destroying the epithelial cells that line the lungs and thus inhibit the propagation of infection.

Can this test be used to detect acute infection?

- No, this serology test is used to detect neutralizing antibodies in a patient plasma or serum. This test is not used to diagnose acute SARS-CoV-2 infection.