

PCR or Antibody Testing

Our country and communities have been stricken by the Corona Virus (COVID-19) Pandemic. Coronaviruses are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Severe Acute Respiratory Syndrome (SARS). During this global crisis, there have been many organizations working towards making tests widely available to the public. These tests have various levels of accuracy and serve different purposes within the diagnostic pathway for confirming exposure and diagnosis.

The first test which is serology testing, also called antibody testing, analyzes the serum in a blood samples provided from an individual, and evaluates the presence of the COVID-19 antibody. A positive result indicates that an individual has likely produced an immune response to the virus, meaning they had exposure or potential immunity to the virus. A negative result indicates that an individual did not have a detectable amount of antibody at the time of the test. A negative result, however, does not necessarily mean the individual has not been exposed or does not presently have the virus. Several factors could be the cause of a false negative result such as a low immune response, testing too early in the individual, or treatments that may suppress a person's immune function.

The second test which is part of the diagnostic pathway, is RNA viral detection, through a molecular technique such as PCR analysis. This type of testing will provide confirmation of viral presence within a person. In most cases, this type of testing can only be performed with the order of a physician. However with the current circumstances, some communities are offering free PCR testing to the public to detect viral infection. This PCR test is only effective within the first few days of exposure and takes several days to obtain results. Within this detection window, a positive result would likely be seen within an individual who has not had any symptoms develop yet. In most situations, an antibody test and RNA viral test will be used in combination as well as a clinical evaluation by a physician to confirm the diagnosis of the COVID-19 infection.

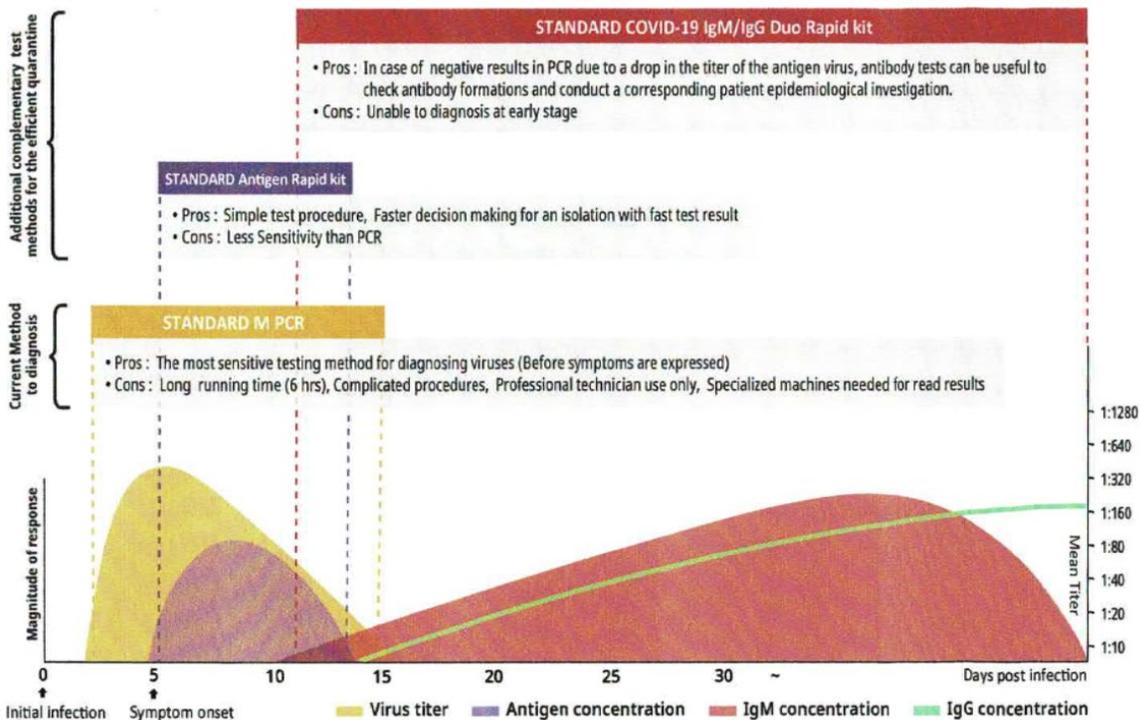
Antibody testing is becoming widely available from kit manufacturers for healthcare providers and specialty laboratories to use. In cases of negative results from PCR, which can be caused by a drop in viral antigens present, antibody tests can be useful to check for additional signs of infection. These tests may focus on all or different antibodies present such as IgG, IgA, and IgM. Knowing the details of each of these immunoglobulins can help tell the story of a patient's infectious history and tell the progress within the individual. IgM is usually the first antibody type produced by the immune system



when a virus is present. A positive IgM result means you have been infected recently and may still be infected and contagious to others around you or you may have just recently recovered. IgG antibodies develop within patients roughly 7 or more days after COVID-19 symptoms begin. IgG antibodies are the antibodies most of us are familiar with, as they are the type that remains in the body after the infection to help with future infections. The presence of IgG without IgM may suggest that the infection happened weeks to months in the past. It also suggests that you may no longer be infectious to others. See Figure 1 to better understand the timeline of antibody presence. Using the understanding of the different immunoglobulins and credible test kits made by kit manufacturers, it is helpful for employers to know if their staff is safe to return to work.

Assurance laboratories is, as healthcare workers, offering elective antibody testing for employees to provide peace of mind when returning to the workplace. We are using a kit that looks at both IgM and IgG antibodies. You do not need a physician's order for this test. We offer this service on-site at your facility by way of finger prick or phlebotomy. If you are interested in this service, please contact us to learn more and schedule an on-site service day.

Figure 1



*Graph provided by Henry Schein. Reference: 1.ChenJ. lau YI, Ilmlrande EW, Paddock CD, BardenJH, Zakl SR, Subbarao K. Cellular Immune responses to severe acute respiratory syndrome coronavirus (SARS-CoV) Infection In senesant 8A18/c mk; CO4 ♦ T cellsart Important In control of SAJIS.CoV Infection. J Vrol. 2010 ftb;84(381211).lO1. doi: IO. I 128/JVI.012B1-09. Epub 2009 Nov 11. 2. Hsueh PR, Huang IM, Ch+n PJ, Kao CL Yang PC. Chronolgkal tvOiution ofIgM, IgA, tgG and neutrallsaUon antibodies after Infe«lon with SARS-associatoo coronavirus. aln Microbiol Infect 2004 De<;10(12i106H.