

Questions continue to arise regarding adding serologic testing to our capability, both for patients and, increasingly, for physicians, AHPs, and other providers. Understanding the limitations of serologic testing is critical to understanding its proper role in the COVID-19 pandemic, which per the FDA, WHO, and others is solely for population prevalence studies.

- Serologic testing generally evaluates IgM, IgG, and/or IgA antibodies. For COVID-19, tests that have been developed evaluate IgM, IgG, or both.
- IgM antibodies rise somewhere between five and 10 days after infection, with IgG antibodies starting to rise around 10 days into infection.
- As per multiple professional organizations, at present **serologic testing is useful only for population-wide studies of prevalence**, because there is a substantial error rate, and because the peculiarities of serologic testing do not allow for any patient-specific decisions to be made based on the results (see below).
- Because IgM antibody does not begin to rise for at least five days based on available COVID-19 literature, **a negative antibody test does not rule out the presence of disease or active viral shedding. Furthermore, direct study has shown that a patient can still actively shed virus while the IgM antibody is positive.**
- IgG antibodies can be falsely positive in patients who have had other coronaviruses, of which four are commonly present in the US (causing common URI symptoms). Thus, a positive IgG does not mean that a patient has been previously exposed to COVID-19.
- Current IgG testing does not differentiate between neutralizing antibodies, which have the capability of suppressing viral growth, versus non-neutralizing antibodies. Therefore, **a positive IgG does not provide any indication about a patient's potential immunity to COVID-19 disease.**
- Even if antibody test were developed that did strictly detect neutralizing antibodies, the duration of immunity and degree of immunity is not yet known in COVID-19, and it is therefore not indicative of protection from the disease.

In summary, antibody/serologic testing:

- If negative, can't rule out the presence of COVID-19 disease
- If positive, can't prove someone has or has had COVID-19 disease as long as cross-reactivity with other coronaviruses is an issue
- Doesn't establish immunity from the disease.
- If a clinician obtains serologic testing which is negative, the clinician will assume they have not had COVID-19, and will utilize all necessary precautions.
- If a clinician obtains serologic testing which is positive, recognizing the potential for a false positive, the clinician must still act as if they have not had COVID-19, and utilize all necessary precautions.
- Thus, the result of testing, positive or negative, should not make any difference in a clinician's behavior or precautions.

In addition, giving someone their "result" for a positive Antibody test could give them a false sense that they can't get COVID again which is untrue, and even give them false courage that they longer need to maintain social distancing, also of high concern.

To paraphrase a wise colleague: Serologic testing for COVID-19 is thus far incapable of answering any meaningful clinical question regarding an individual patient/subject.

What will it make sense for us to embark upon serologic testing?

- Most crucially, the availability of an antibody test that is demonstrably specific to SARS-CoV-2 (without cross-reactivity to the 4 common coronaviruses that cause the common cold)
- Demonstration that the presence of the IgG antibody confers immunity (without this, the antibody test will only tell us that the individual has had prior exposure, but will not allow any specific decision-making with regard to isolation, cohorting with COVID-positive patients, risk of recurrent disease, etc.)