

# Dr. Delgado COVID-19 Update 4-3-20

## IgM & IgG(IgA)

Exposure to a virus and if a subsequent infection ensues leads to an immune response by your body. The acute immunologic response is characterized by the appearance of neutralizing antibodies of the IgM subclass which are often interpreted as an indicator of an acute infection. However, false-positive IgM results are common, as a result of possible cross reactivity with IgM antibodies to other, closely related microorganisms or other interfering substances. Additionally, IgM antibodies may remain detectable for 2-4 months (or longer) following disease resolution; therefore, a positive IgM result may not necessarily indicate “acute” infection.

Development of a detectable antibody response in your serum (blood) for many infections peaks 5-7 days post infection, and therefore, initial IgM test results may be negative if samples are collected prior to antibody development. Additionally, immunosuppressed patients may remain seronegative (no detectable antibodies) as they may not be able to muster an immune response.

Antibody-producing cells undergo a process of differentiation over time such that the antibodies produced start as IgM and then switch to IgG (in the serum) and IgA (in your secretions) as the concentration of infectious antigen changes and the cells differentiate.

As the IgM level (primary response) begins its decline, the rise of IgG followed by IgA (major antibody response) levels specific to the invading pathogen rapidly begin to increase around day 14 with a general peak noted around the 21-day mark. Thereafter, those levels (IgG/IgA) slowly decline, but remain detectable and available to act as sentinels to help formulate a rapid antibody response when infection occurs with the same or a similar virus in the future (secondary antibody response).

## SEROLOGIC TESTING 2.0

Serologic testing to measure this antibody cascade is just starting to deploy and will eventually help scientists assess potential immunity, answer epidemiological questions about the full scope of the pandemic, spearhead novel treatments and might even steer an inoculation strategy should a vaccine make it to market.

Because of this being a novel virus, we cannot yet insure that an initial infection guarantees lasting protection. But based on the experience with other viruses, including other

coronaviruses, they expect that people infected will be shielded for perhaps at least a year or two, and from there the immunity might start to wane, and hopefully not disappear.

I have started, with the assistance from my peers, vetting some of the available serologic options and will likely procure some testing kits for my clientele in the very near future.

I am well aware that the current timeline is pressing to all of us, but choosing any serological test for the sake of expediency won't just do. A test's methodology needs to be considered. Moreover, its probability of yielding accurate results is critical as to the confidence with which any clinical recommendations the results may generate.

The benefits of the new test kits are multifactorial. Foremost, some of these kits are testing for both IgM and IgG antibodies which significantly improves their yield. This duality in testing confers the ability to detect antibodies earlier (via IgM) if the infection is in the acute phase and will also detect the primary IgG response which may indicate immunity. Second, this will allow testing to be processed at our office directly and avoid incurring more risk of infection by venturing to the hospital or large scale clinic. Third, some tests appear to provide results in minutes to hours. Fourth, the sample will likely involve whole blood testing, via a simple finger stick, and not a traditional blood draw. This would improve the false negative rates related to the inconsistent quality of respiratory swab samples that are currently used. Lastly, the price point appears reasonable to promote accessibility to the masses.

I am looking to finalize my final decision as to which company would best address all of the factors above in the next few days. It is my hope that I can then provide this testing to you over the next several weeks. More information and updates will be forthcoming on this topic as they become available.

## TREATMENT UPDATES

New studies are underway involving a type of therapy called convalescent plasma where antibodies are taken from patients that have recovered and injecting them into those acutely ill from the virus.

This is performed by first assessing those that meet a threshold criteria and show a robust antibody response to the virus. Their blood is then drawn and fraction-ated to leave only the serum which contains the antibodies in hopes it offers assistance in fighting the infection. Blood types need to match and this remains experimental, but it appears some tangible data may be available in 4-6 weeks. While we hope for a potential cure, that is very premature at this point.

Currently, most trials are only assessing if it can aid in shortening ventilator dependency times for those that are critically ill.

#### OFFICE UPDATE

The rate of infection in our community appears to remain in the acute or acceleration phase as of today. Continuing social isolation remains paramount and we all need to remain steadfast.

With these current local conditions, it remains unsafe and sensical for our office to remain closed. The risks to my staff and you, the patients, is just too great at any volume. I continue to reassess this decision on a daily basis and look forward to welcoming all of you back in the near future. As previously noted, my staff & I remain available to provide the best care and support possible during these unprecedented times.

R. Delgado, MD & Staff