**SARS-CoV-2 Serology Testing at Michigan Medicine FAQ**

**Q: What is the difference between the current SARS-CoV-2 serology tests offered by Michigan Medicine?**

A: The two SARS-CoV-2 antibody tests performed by the Clinical Laboratories at Michigan Medicine detect different antigenic targets: Spike protein (RBD) and Nucleocapsid protein. Differential reactivity of Spike and Nucleocapsid specific antibodies might be utilized to help differentiate previous infection from vaccination, particularly for vaccines that produce antibodies against Spike protein only.

**Q: Why is Michigan Medicine adding a SARS-CoV-2 Nucleocapsid Antibody test?**

A: Nucleocapsid antibodies do not develop as a result of currently distributed COVID-19 vaccines (e.g., Pfizer, Moderna, Johnson & Johnson). Nucleocapsid antibody testing can aid in the identification of individuals with previous or recent natural exposure to SARS-CoV-2 regardless of the vaccination status. Positive Nucleocapsid antibody results are only expected in individuals with previous or recent exposure to SARS-CoV-2. Conversely, both natural infection to SARS-CoV-2 and vaccination will yield positive Spike antibody test results.

**Q:** **What serology test should be ordered to assess presence of an adaptive immune response to SARS-CoV-2?**

A: Natural infection with SARS-CoV-2 and vaccination both generate antibodies to Spike protein. A serology test that detects the presence of Spike protein (S1, RBD) antibodies is the recommended first line of testing.

**Q: What test should be ordered to assess presence of an adaptive immune response to SARS-CoV-2 in a vaccinated**

 **individual?**

A: Antibody testing is not currently recommended to assess immunity to SARS-CoV-2 following vaccination or to assess the need for vaccination in an unvaccinated person. However, vaccines approved and distributed in United States are expected to induce antibodies against Spike protein. Positive results for Spike antibodies using the current clinical test have been detected as early as 10 days following the first dose of vaccine, with most individuals having positive test results within three weeks following vaccination.

**Q: How long do SARS-CoV-2 Nucleocapsid and Spike antibodies persist?**

A: The exact time that anti-SARS-CoV-2 antibodies (Spike or Nucleocapsid) persist after infection or vaccination remains unknown. Current studies suggest that antibodies persist at least several months after exposure in most persons. Seroreversion has been reported among individuals with mild COVID-19 disease.

**Q: Does presence of SARS-CoV-2 Nucleocapsid and/or Spike antibodies equal immunity?**

A: Our understanding of the immune response to SARS-CoV-2 is incomplete but rapidly advancing. Current data suggests that development of antibody can result in some level of protection against SARS-CoV-2 reinfection. The durability of this immunity has yet to be determined.

**Q: Why are SARS-CoV-2 Serology assays at Michigan Medicine not quantitative?**

A: Only serologic tests yielding qualitative and semi-quantitative results have been issued EUAs (CDC website accessed 3/23/2021). According to CDC interim guidelines for COVID-19 antibody testing, there is currently no recognized public health or clinical indication for preferential use of semi-quantitative tests over qualitative SARS-CoV-2 serology tests.

Additional information and expected test results in different clinical scenarios can be found at: <https://www.pathology.med.umich.edu/covid-19-resources> . For more information regarding up-to-date guidelines for SARS-CoV-2 Serology testing please visit CDC website: [Interim Guidelines for COVID-19 Antibody Testing | CDC](https://www.cdc.gov/coronavirus/2019-ncov/lab/resources/antibody-tests-guidelines.html)