

## **YNHHS/Yale Medicine Statement on SARS-CoV-2 Antibody Testing and COVID-19 Disease**

**Summary statement:** Serologic testing can help confirm past SARS-2 infection in late complications of COVID-19 illness such as multisystem inflammatory syndrome in children (MIS-C) without prior positive PCR/RNA result, or with questionable PCR/RNA results. Large-scale test efforts may include serology for population profiling. Otherwise, as of 6/18/2020 recommendations remain against serologic testing for clinical decision-making, staff distribution, or to adjust measures aimed at reducing infectious exposure.

**Situation:** There is continuing interest in the potential role for SARS-CoV-2 serologic testing to identify immune protection from COVID-19. The concept of an “immune passport” continues to be suggested to inform decisions about social distancing measures, staff distribution, and return to work. Serology testing has been considered as part of multiple population testing plans.

Use of serology has been proposed to document past COVID-19 disease in asymptomatic and symptomatic individuals who have not had PCR/RNA testing, and suspected cases with negative PCR/RNA test results. Guidance on test indications and interpretation in light of current data is needed.

**Background:** High sensitivity and specificity for detection of SARS CoV-2 exposure by serology using commercial assays has been reported in hospitalized patients 14 days after symptom onset. Antibody rise can occur 3-28 days after exposure. Available reports suggest serology test sensitivity decreases with milder presentations. Data on *in vitro* effectiveness of detected antibodies (neutralization assays) from asymptomatic individuals is limited and suggests variable effectiveness. Unproven antibody tests marketed to public can yield inaccurate results. It is unknown how long antibody remains detectable in blood. Low prevalence can markedly reduce accuracy: e.g. prevalence 5%, sensitivity 99%, and specificity 99% = positive predictive value of 84% (16/100 would be false positives).

As a result:

1. Negative results are likely <11d after exposure.
2. Sensitivity and specificity for determination of exposure in non-hospitalized patients remains unknown.
3. It remains uncertain whether individuals with antibodies (neutralizing or total) are protected against reinfection, and if so, what antibody level is needed and for how long protection may last.

### **Assessment:**

Until more data is available, serologic testing has limited utility - it may indicate prior infection in those who were never tested or tested negative for viral RNA. Inappropriate use may create risks to those who presume they are protected and to those they interact with. Population serology testing may help inform utility.

### **Recommendations - Anti-SARS-CoV-2 antibody testing**

#### **Is likely to be useful for:**

- **Suspected late COVID-19 complications such as Multisystem Inflammatory Syndrome in Children (MIS-C) without prior positive PCR/RNA**

#### **May be informative, but not clinically actionable if:**

- **Suspected past COVID-19 with past negative or no PCR/RNA test**
- **Asymptomatic with current positive PCR/RNA test**
- **Characterizing immune response with known past positive PCR/RNA test and immunosuppressed status**

#### **Should NOT be used for:**

- **Testing for acute COVID-19 infection; PCR/RNA testing is required**
- **Determination of immunity**
- **Determination of infectivity to others if acute infection is suspected**
- **Adjustment of infection precaution measures**
- **Return to work clearance**