MH Laboratory Testing for COVID Frequently Asked Questions

Definitions

COVID-19/SARS CoV-2: These terms are often used interchangeably. COVID-19 refers to the syndrome caused by the novel coronavirus identified in 2019. Severe acute respiratory syndrome coronavirus 2 (SARS CoV-2) is the name of the novel coronavirus that causes COVID-19.

RT-PCR (Real Time Polymerase Chain Reaction) testing: A technique used to "amplify" small amounts of nucleic acid (DNA or RNA). Rapidly makes millions of copies of a specific DNA/RNA target sequence present in a sample.

Antigen testing: Immunoassays that detect the presence of a specific viral antigen (protein), which implies current viral infection.

Nasopharyngeal collection: A swab specimen collected by a trained healthcare personnel which samples the posterior nasopharynx (back part of the nose/throat).

Pooling procedure: Combining samples from several people and conducting one laboratory test on the combined pool of samples.

Qualitative test: A test that provides a "yes or no" answer (i.e. a virus is detected vs. not detected in a sample).

Quantitative test: A test that provides a numerical value related to amount of an analyte present in a sample (i.e. HIV viral load)

Cycle Threshold (Ct): The number of cycles of amplification (using RT-PCR) required for the fluorescence of a PCR product to be detected crossing a threshold, which is above the background signal. Generally, the more cycles needed to detect the target, the less target is present in the sample.

Q: What is the difference between RT-PCR vs antigen testing for COVID?

A: Both types of tests are diagnostic tests.

RT-PCR is considered the gold standard for detection of active COVID infection and is the most sensitive method available. Due to ongoing supply issues throughout the pandemic, most laboratories in the US have had difficulty in obtaining enough RT-PCR tests/supplies to meet all testing needs.

Antigen tests also look for active infection, but instead of looking for DNA/RNA, they target viral antigens (proteins). These types of tests are generally less sensitive, but may be less expensive, faster, and more

readily available than RT-PCR tests. Depending on the clinical situation, some antigen test results may need to be confirmed by RT-PCR (i.e. if the antigen test result does not fit with the clinical picture).

Q: What is SARS CoV-2 antibody testing used for?
A: An antibody test looks for antibodies that are made by your immune system in response to a threat, such as a specific virus. Antibodies take several days or weeks to develop after you have the infection and may stay in your blood for several weeks or more. Because of this, antibody testing should NOT be routinely used to diagnose acute COVID-19 infection.

Q: What platforms are available at Methodist laboratories?
A: Currently, all SARS CoV-2 testing performed at the Methodist laboratories is by RT-PCR. SARS CoV-2 PCR may be performed as part of a panel (with flu or other respiratory pathogens) or as a standalone test. SARS CoV-2 antigen testing is not currently being performed at Methodist, but is anticipated to be made available in the next few weeks. STAT RT-PCR testing is currently being performed at the Methodist Main laboratory, Methodist Women's laboratory, Fremont laboratory, and Jennie Ed. laboratory for inpatients and ED patients who are being admitted. All other samples are tested at Methodist Main laboratory or sent out to a reference lab depending on current testing supplies.

Q: With limited supplies, how are other area institutions able to test all patients on admission or prior to procedures?
A: Allocations for testing resources have widely varied across institutions in the region. Also, some of the large academic centers in the region had several high-throughput molecular platforms already in place prior to COVID, which enabled them to scale up testing early on. Some facilities have been pooling samples which allows more patients to be tested with less supplies being used.

Q: Is there any way to determine viral load or infectiousness based on SARS CoV-2 test results?
A: The currently available RT-PCR tests are qualitative, not quantitative tests. Although Ct values may roughly correlate to the level of virus present in a sample, the laboratory does not routinely report those values because there is insufficient data to support doing so and it constitutes an "off label" use.