

SARS-CoV-2 Antibody (Serologic) Testing

Information for Healthcare Professionals

First-line testing for acutely ill patients remains the SARS-CoV-2 PCR

There are now two types of tests that can be used to evaluate patients and caregivers for SARS-CoV-2. The test most are familiar with is the PCR-based test that we have been using since March; this test is used to detect acute infection in patients that have symptoms of COVID-19. The PCR test is performed in our testing centers and drive-through sites. It detects the virus in the patient's upper respiratory tract via a nasopharyngeal swab.

This test is often positive early in the course of a patient's active infection. How long the virus remains in the nasal cavity is an area of active study. In some patients the virus can remain detectable in the nasal cavity for an extended duration despite complete clinical recovery while in others the viral may become undetectable after 7 days. If the test is positive, it means the patient is currently infected with the virus and can potentially transmit the virus to other people. Occasionally, patients can be asymptomatic and still have virus detected in their upper respiratory tract.

The PCR test should be the first-line test for all patients and caregivers with active signs and symptoms of COVID-19.

SARS-CoV-2 antibody (serologic) test now available

The new SARS-CoV-2 test is an antibody test, or serologic test. This test is a blood-based test and detects a patient's antibody response to SARS-CoV-2 infection. The tests, provided by EUROIMMUN, are processed at ARUP and have a turnaround time of approximately 48 hours.

The primary objective of SARS COV-2 antibody testing is to assess whether an individual has been previously infected with SARS-CoV-2. Generally, patients start to develop detectable antibodies 7-14 days after their symptoms have started. The test cannot differentiate very recent infection from more remote infection.

However, we do not yet know if the presence of antibodies to SARS-CoV-2 provides any level of protection against re-infection with the virus. Studies on SARS-CoV-2 have shown that a patient can also develop antibodies while remaining positive on nasopharyngeal PCR testing.

How will we use the new antibody test?

Please keep in mind that the role of antibody tests in the diagnosis of acute or previous SARS-CoV-2 infection is unclear and is subject to change given the rapidly evolving science of SARS-CoV-2 infection. Results of antibody testing should not be used as the sole basis to either diagnose acute infection or make recommendations on limiting social or environmental exposures or changes to work related policies.

Our testing capacity is limited, as such, we will prioritize antibody testing in patients where a positive result will be actionable. Antibody testing will be prioritized in the following manner:

First Priority Category:

The viral load in the upper respiratory tract in patients with COVID-19 begins to fall early in the disease course while SARS-CoV-2 antibodies are often detectable 8-14 days after symptom onset. If nasal PCR testing is performed after 8 days of symptoms, it may be negative due to decreased viral shedding and an antibody test may be helpful in diagnosing acute infection.

As such, hospitalized patients with signs and symptoms of COVID-19 for at least 8 days AND a negative nasal PCR test will be prioritized for testing. Outpatients with active signs and symptoms of COVID 19 for more than 14 days will also be prioritized for testing. If the initial serology test is negative, repeat the test in 7 days if clinical

suspicion remains high. View below an example of a completed inpatient and a completed outpatient PowerForm representing these scenarios.

Example of a completed inpatient PowerForm:

COVID-19 Screening Version 1, Revised 4/17/2020

COVID-19 Symptoms Onset	<input type="radio"/> Less than 7 days ago <input type="radio"/> Greater than 14 days ago <input checked="" type="radio"/> 8-14 days ago <input type="radio"/> Not Applicable
Symptoms of COVID-19 Infection	
Fever	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unable to obtain
New or Worsening Cough	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unable to obtain
Shortness of Breath	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown
Diarrhea	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Body Ache(s)	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Sore Throat	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Reduced Sense of Smell	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Runny or Stuffy Nose	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Undiagnosed Respiratory Illness in Past 3 Months	<input type="radio"/> Yes <input checked="" type="radio"/> No
COVID Test Performed	
Hospitalized / Admit to Hospital	<input type="radio"/> Yes <input checked="" type="radio"/> No
Healthcare Worker	<input type="radio"/> Yes <input checked="" type="radio"/> No
High Public Health Risk circumstances per Infection Disease	<input type="radio"/> Yes <input checked="" type="radio"/> No
Patient Lives in High Density Residence	
High Public Health Risk circumstances per Infection Disease	<input type="radio"/> Yes <input checked="" type="radio"/> No
Is COVID Testing Indicated	
Patient has met requirements for COVID-19 Serology testing. Click green checkmark and sign orders to complete.	

Example of a completed outpatient PowerForm:

COVID-19 Screening Version 1, Revised 4/17/2020

COVID-19 Symptoms Onset	<input type="radio"/> Less than 7 days ago <input checked="" type="radio"/> Greater than 14 days ago <input type="radio"/> 8-14 days ago <input type="radio"/> Not Applicable
Symptoms of COVID-19 Infection	
Fever	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unable to obtain
New or Worsening Cough	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Shortness of Breath	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown
Diarrhea	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Body Ache(s)	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Sore Throat	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Reduced Sense of Smell	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Runny or Stuffy Nose	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Undiagnosed Respiratory Illness in Past 3 Months	<input type="radio"/> Yes <input checked="" type="radio"/> No
COVID Test Performed	
Hospitalized / Admit to Hospital	<input type="radio"/> Yes <input checked="" type="radio"/> No
Healthcare Worker	<input type="radio"/> Yes <input checked="" type="radio"/> No
High Public Health Risk circumstances per Infection Disease	<input type="radio"/> Yes <input checked="" type="radio"/> No
Patient Lives in High Density Residence	
High Public Health Risk circumstances per Infection Disease	<input type="radio"/> Yes <input checked="" type="radio"/> No
Infectious Disease Provider Approver	<input type="checkbox"/>
High Density Residence Location	
<input type="radio"/> SNF <input type="radio"/> Jail or correctional facility <input type="radio"/> Shelter <input type="radio"/> Other <input type="radio"/> Behavioral Health	
Is COVID Testing Indicated	
Patient has met requirements for COVID-19 Serology testing. Click green checkmark and sign orders to complete.	

Please keep in mind: results of antibody testing should not be used to guide recommendations on social or environmental exposures or changes to work-related policies.

Second Priority Categories:

Asymptomatic patients and healthcare workers with high-risk, unprotected exposures to known COVID-19 patients also qualify for testing. To ensure adequate time has elapsed since exposure for antibody development, testing should not be performed in the first 7 days after exposure. It is preferable to wait 14 days from exposure to assess for antibody development. A household contact of a COVID-19-infected patient is an example of an asymptomatic, high-risk exposure. Intermountain caregivers with a high-risk, unprotected COVID-19 exposure are asked to contact ASK HR immediately after the exposure to discuss testing with Employee Health.

Example of a completed asymptomatic, exposed patient PowerForm:

COVID-19 Screening Version 1, Revised 4/17/2020

COVID-19 Symptoms Onset	
<input type="radio"/> Less than 7 days ago	<input type="radio"/> Greater than 14 days ago
<input checked="" type="radio"/> 8-14 days ago	<input type="radio"/> Not Applicable
Symptoms of COVID-19 Infection	
Fever	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
New or Worsening Cough	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Shortness of Breath	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown
Diarrhea	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Body Ache(s)	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Sore Throat	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Reduced Sense of Smell	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Runny or Stuffy Nose	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Undiagnosed Respiratory Illness in Past 3 Months	
<input type="radio"/> Yes	<input checked="" type="radio"/> No
COVID Test Performed	
<input type="radio"/> Yes, positive result	<input type="radio"/> Yes, negative result
<input type="radio"/> Yes, unknown	<input checked="" type="radio"/> No
Hospitalized / Admit to Hospital	
<input type="radio"/> Yes	<input checked="" type="radio"/> No
Healthcare Worker	
<input type="radio"/> Yes	<input type="radio"/> Unknown
<input checked="" type="radio"/> No	<input type="radio"/> Yes <input checked="" type="radio"/> No
Close Contact with a Confirmed COVID-19 Case more than 14 days ago	
High Public Health Risk circumstances per Infection Disease	
<input type="radio"/> Yes	<input checked="" type="radio"/> No
Patient Lives in High Density Residence	
<input type="radio"/> Yes	<input checked="" type="radio"/> No

COVID-19 Symptoms
 New or Worsening Cough: No (04/21/20 15:55:00)
 Shortness of Breath - New or Worsening: No (04/21/20 15:55:00)
 Body Ache(s): No (04/21/20 15:55:00)
 COVID Screen Decreased Smell or Taste: No (04/21/20 15:55:00)
 COVID Screen Sore Throat: No (04/21/20 15:55:00)
 Diarrhea: No (04/21/20 15:55:00)
 COVID Screen Runny Nose: No (04/21/20 15:55:00)

COVID-19 Testing Results
 *Note: Tests not resulted in an Intermountain Facility may NOT display here

Covid Test Results in the Last 3 Months
 No Result Found for Covid Test

Is COVID Testing Indicated
 Patient has met requirements for COVID-19 Serology testing.
 Click green checkmark and sign orders to complete.

Example of asymptomatic, exposed healthcare worker PowerForm (to be completed by Employee Health only):

COVID-19 Screening Version 1, Revised 4/17/2020

COVID-19 Symptoms Onset	
<input type="radio"/> Less than 7 days ago	<input type="radio"/> Greater than 14 days ago
<input checked="" type="radio"/> 8-14 days ago	<input type="radio"/> Not Applicable
Symptoms of COVID-19 Infection	
Fever	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
New or Worsening Cough	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Shortness of Breath	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown
Diarrhea	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Body Ache(s)	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Sore Throat	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Reduced Sense of Smell	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Runny or Stuffy Nose	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Undiagnosed Respiratory Illness in Past 3 Months	
<input type="radio"/> Yes	<input checked="" type="radio"/> No
COVID Test Performed	
<input type="radio"/> Yes, positive result	<input type="radio"/> Yes, negative result
<input type="radio"/> Yes, unknown	<input checked="" type="radio"/> No
Hospitalized / Admit to Hospital	
<input type="radio"/> Yes	<input checked="" type="radio"/> No
Healthcare Worker	
<input checked="" type="radio"/> Yes	<input type="radio"/> Unknown
<input type="radio"/> No	<input type="radio"/> Yes <input checked="" type="radio"/> No
Close Contact with a Confirmed COVID-19 Case more than 14 days ago	
High Public Health Risk circumstances per Infection Disease	
<input type="radio"/> Yes	<input checked="" type="radio"/> No
Patient Lives in High Density Residence	
<input type="radio"/> Yes	<input checked="" type="radio"/> No

COVID-19 Symptoms
 New or Worsening Cough: No (04/21/20 15:55:00)
 Shortness of Breath - New or Worsening: No (04/21/20 15:55:00)
 Body Ache(s): No (04/21/20 15:55:00)
 COVID Screen Decreased Smell or Taste: No (04/21/20 15:55:00)
 COVID Screen Sore Throat: No (04/21/20 15:55:00)
 Diarrhea: No (04/21/20 15:55:00)
 COVID Screen Runny Nose: No (04/21/20 15:55:00)

COVID-19 Testing Results
 *Note: Tests not resulted in an Intermountain Facility may NOT display here

Covid Test Results in the Last 3 Months
 No Result Found for Covid Test

Is COVID Testing Indicated
 Patient has met requirements for COVID-19 Serology testing.
 Click green checkmark and sign orders to complete.

Routine screening of asymptomatic, unexposed healthcare workers for SARS-COV-2 antibodies is not recommended at this time.

Patients or healthcare workers who had a respiratory tract infection consistent with COVID-19 after December 1, 2019 that was previously undiagnosed qualify for testing in this second category as well if, in the opinion of the ordering clinician, it will alter clinical management of the tested individual.

Please keep in mind, results of antibody testing should not be used to guide recommendations on social or environmental exposures or changes to work-related policies. Individuals must have resolution of respiratory tract symptoms for at least 14 days prior to serology testing.

Example of a completed previous, consistent-COVID-19 syndrome PowerForm:

COVID-19 Screening Version 1, Revised 4/17/2020

COVID-19 Symptoms Onset	<input type="radio"/> Less than 7 days ago <input type="radio"/> 8-14 days ago <input checked="" type="radio"/> Not Applicable
Symptoms of COVID-19 Infection	
Fever	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
New or Worsening Cough	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Shortness of Breath	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown
Diarrhea	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Body Ache(s)	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Sore Throat	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Reduced Sense of Smell	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Runny or Stuffy Nose	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unable to obtain
Undiagnosed Respiratory Illness in Past 3 Months	<input checked="" type="radio"/> Yes <input type="radio"/> No
Hospitalized / Admit to Hospital	<input type="radio"/> Yes <input checked="" type="radio"/> No
Healthcare Worker	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown
High Public Health Risk circumstances per Infection Disease	<input type="radio"/> Yes <input checked="" type="radio"/> No
COVID Test Performed	
<input type="radio"/> Yes, positive result <input type="radio"/> Yes, negative result <input type="radio"/> Yes, unknown <input checked="" type="radio"/> No	
Close Contact with a Confirmed COVID-19 Case more than 14 days ago	
<input type="radio"/> Yes <input checked="" type="radio"/> No	
Patient Lives in High Density Residence	
<input type="radio"/> Yes <input checked="" type="radio"/> No	
Is COVID Testing Indicated	
Patient has met requirements for COVID-19 Serology testing. Click green checkmark and sign orders to complete. 	

Population-based studies of asymptomatic persons to evaluate disease prevalence and PPE efficacy in a coordinated and structured manner would be performed in consultation with the Utah Department of Health, the Centers for Disease Control and Prevention, Intermountain's Infectious Diseases and Epidemiology Division, and Intermountain Researchers. Please do not order antibody tests for this indication.

Please keep in mind: results of antibody testing should not be used to guide recommendations on social or environmental exposures or changes to work-related policies.

What a positive test means:

- Demonstrates likely prior infection with SARS COV-2.
- The body has produced a measurable antibody response to SARS COV-2.
- In some cases, a positive test can represent a “false positive”, especially in individuals without a history of a COVID like syndrome.

CAUTION!

- A positive test should not provide assurance that a patient is immune to SARS-CoV-2. A positive test means a person was infected with SARS-CoV-2 and their immune system has reacted to it. At this point, we do not know if a positive antibody test provides any protective immunity against repeat SARS-CoV-2 infection.

- A positive test does not mean a caregiver can work without PPE or with modified PPE.
- A positive antibody test in someone that still has symptoms does not mean that SARS-CoV-2 is no longer active or spreadable to others.
- A positive test does not allow normal movement in the community without masking.
- A positive test does not say where the infection occurred (i.e., the community or in a healthcare setting).
- A positive test does not imply PPE failure. A caregiver is also a member of the community with exposures to family members, grocery stores, and other community members. A positive test could indicate an infection acquired in your community.

What a negative test means:

- No evidence of prior SARS-CoV-2 infection. However, if symptoms have only been present for less than 14 days it may be too early for the body to have mounted a detectable antibody response.
- Cannot be used to rule out acute or asymptomatic infection. It is unclear if asymptotically infected individuals mount an immune response with a detectable antibody.
- Immunocompromised individuals may not create adequate or detectable antibody response.

Frequently Asked Questions**1. If I have had a high risk, unprotected exposure to a COVID 19 patient, how do I get an antibody test ordered?**

- Immediately after the high-risk exposure call ASK HR at 801-442-7547 or email them at ASKHR@mail.org to discuss the exposure with Employee Health. Then:
 - An Employee Health nurse will talk with you and take down your information and exposure details
 - The Employee Health nurse will inform you that you have been placed on an antibody testing list
 - Infectious Disease physicians regularly review this antibody testing list to prioritize tests (from our limited test capacity) for those individuals whose care and treatment decisions would benefit from knowing the results of this test
 - You will be notified within 5 business days when your order will be placed
- Your primary care provider can also order an antibody test if you meet the above criteria.

2. How do I order the SARS-CoV-2 antibody test for a patient?

- Search for 'SARS-CoV-2 IgG Antibody' in iCentra
- Fill out PowerForm – see example screen shots above

3. How are positive tests reported to the state health department?

- Positive tests will be routed to the state health department from ARUP.
- Negative tests will not be routed to the state health department.

4. How will I be notified of antibody results?

- Results of antibody tests will be routed back to the ordering provider via iCentra Messenger. Positive results will not be called directly to the ordering clinician.
- The COVID remote patient monitoring program will NOT be monitoring results.

5. Will the COVID Call Center order SARS-CoV-2 antibody tests?

- No. Patients calling with requests for an antibody test will be referred to primary care.