





AMPATHCHAT

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A QUICK GUIDE TO COVID-19 TESTS

The repertoire of laboratory tests related to COVID-19 has expanded since the first appearance of SARS-CoV-2 in December 2019. This guide provides an update on the latest Ampath COVID-19 tests (as of March 2021), including the appropriate indications for use.

	DIRECT METHODS TO DETECT VIRUS ITSELF		INDIRECT METHODS TO DETECT IMMUNE RESPONSE TO VIRUS		
TEST METHODS	SARS-CoV-2 RT-PCR	SARS-CoV-2 Antigen	SARS-CoV-2 Antibody		
WHAT IS DETECTED	Detects viral genetic material (RNA)	Detects viral antigens (proteins)	Detect antibodies that are formed as part of the immune response to the virus		
TEST SUBTYPES			SARS-CoV-2 Nucleocapsid(N) protein IgG antibody	SARS-CoV-2 Spike(S)-protein IgG antibody	SARS-CoV-2 IgM antibody
MNEMONIC	COVID19PCR	COVID19AG	COVID19AB	COVID19SAB	COVID19M
SPECIMEN TYPE	Nasopharyngeal swab Other respiratory samples: Oropharyngeal swab, nasal swab, nasal mid-turbinate swab, sputum, nasopharyngeal aspirate, tracheal aspirate, bronchoalveolar lavage	Nasopharyngeal swab 	Blood - SST tube 	Blood - SST tube 	Blood - SST tube 
INDICATIONS	Gold standard for diagnosis of suspected acute COVID-19 ¹ . International travel testing. Pre-admission and return-to-work screening.	To test for COVID-19 where RT-PCR is unavailable, or where TAT precludes clinical utility, e.g. triaging. ²	Qualitative assay to determine prior exposure to COVID-19. ³ A small percentage of people with COVID-19 mount no detectable antibodies.	To determine antibody response following COVID-19 vaccination. Current COVID-19 vaccines only contain spike proteins, thus vaccine recipients will test negative on N-protein IgG assays.	Indicated for travel purposes to China only. Can only be ordered together with the COVID 19 PCR test for travel to China. Use the China Travel request forms.

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ADDITIONAL REMARKS			Unknown facts surrounding immunity: whether nucleocapsid antibodies correlate with protective immunity, and the duration of protection.	Recommend minimum delay of 14 to 21 days post vaccination. Batched test, done once-weekly. Current assay is qualitative only. Correlates of immune protection are still being established for COVID-19. Quantitative assays are underdergoing regulatory review.	

COVID-19 tests: Advantages and disadvantages

TEST METHODS	SARS-CoV-2 RT-PCR	SARS-CoV-2 Antigen	SARS-CoV-2 Antibody
ADVANTAGES	Highly accurate. Most sensitive test available.	Less expensive than PCR. Faster turnaround time than PCR. May potentially be used close to the point of care.	Provide clues to previous exposure, and potentially immunity.
DISADVANTAGES	Unable to detect past infection. More expensive than other tests. Test takes longer to perform than antigen. Laboratory facilities required.	Lower sensitivity than RT-PCR, for negative results recommend confirmation by RT-PCR if patient symptomatic. Manual processing, not well suited for mass testing.	Less reliable in first 14 days of illness, not for diagnosis of current infection.

References

1. Department of Health & National Institute for Communicable Diseases (NICD). Clinical management of suspected or confirmed Covid-19 disease. 24 August 2020, Version 5. Available from : <https://www.nicd.ac.za/wp-content/uploads/2020/08/Clinical-management-of-suspected-or-confirmed-COVID-19-V5-24-August-2020.pdf>.
2. National Pathology Group (NPG). SARS-CoV-2 Antigen Test Protocol and Guidance. 21 December 2021.
3. SAHPRA. MD021: MD021: Regulatory requirements for the use of SARS-CoV-2 antibody tests in line with the National Department of Health guidance on the use of SARS-CoV-2 antibody tests. 20 August 2020. Available from: <https://www.sahpra.org.za/wp-content/uploads/2020/08/MD021-Use-SARS-CoV-2-Antibody-Tests-NDOH-Guidance-v1-20082020.pdf>.