

Rapid tests (also known as 'Rapid CoVID Tests') that detect COVID-19 infection represent another powerful tool to reduce the spread of COVID-19. By detecting COVID-19 infection during the early stages of infection, when a person is first infectious but may not yet be symptomatic, rapid tests can help reduce transmission of the virus.

While rapid tests do not replace other public health measures, such as vaccination and physical distancing, they remain a powerful tool when used in certain situations. Understanding the benefits, limitations and intended use for rapid tests is important in ensuring that they are used effectively.

WHAT ARE COVID-19 RAPID TESTS?

Rapid tests are simple, easy-to-use, and bundled in kits that include everything needed to test in one box. The main components of a rapid test kit include a nasal swab, a buffer, and a test cassette. The basic steps of the test are to conduct a nasal swab, place the swab into the buffer, and then drop the buffer solution onto the test cassette.

The test cassette has two lines, one is the control line (an indication that the test is working) and the other is the positive test line. The test line detects surface viral proteins for COVID-19.

WHAT ARE THE BENEFITS OF COVID-19 RAPID TESTS?

COVID-19 rapid tests can be administered anywhere, are simple enough for the average person to conduct, are less expensive than PCR tests, and the results are available within 15 minutes.

HOW ACCURATE (SPECIFIC AND SENSITIVE) ARE RAPID TESTS?

Rapid tests for COVID-19 specifically detect the presence of the nucleocapsid protein in the virus that causes COVID-19. As the protein composition is specific to this virus, the chance of a false positive (i.e., a positive test in the absence of infection) is estimated to be less than 1%. Therefore, it can be said that COVID-19 rapid tests for COVID-19 are very specific (i.e. a positive test is considered diagnostic).

Conversely, COVID-19 rapid tests are not highly sensitive. This means that everyone who is infected with

the virus may not test positive on a rapid test. This is due to several factors, including the inability of the test to detect low viral numbers, testing either too early or too late during infection when viral numbers are below the threshold of detection within the nasal passages, and human error during the testing process.

The bottom line is that COVID-19 rapid tests are very good at ruling in the disease but perform less well to rule it out. Serial testing (i.e., testing every 48-72 hours) can improve the sensitivity in symptomatic individuals.

1 Dinnes J, et al. Rapid, point-of care antigen and molecular-based tests for diagnosis of SARS-CoV-2 infection. Cochrane Database of Systematic Reviews March 24 2021.

DO RAPID TESTS DETECT WHEN SOMEONE HAS BEEN VACCINATED?

No. Rapid tests against COVID-19 detect the nucleocapsid protein of the virus. All Health Canada-approved COVID-19 vaccines encode the spike protein of the virus, which is not able to be detected by rapid tests. Therefore, vaccination will not impact the outcome of a COVID-19 rapid test.

DO RAPID TESTS DETECT THE NEW OMICRON VARIANT?

Yes, but the sensitivity of the tests may be reduced. This means that individuals infected with the omicron variant could be more likely to have a false negative test (i.e., a negative test result despite being infected). While rapid tests still are a valuable diagnostic tool in the fight against COVID-19, it is important that individuals continue to adhere to public health protocols to curb viral transmission.

CAN RAPID TESTS BE USED WHEN AN INDIVIDUAL IS SYMPTOMATIC FOR COVID-19?

Yes, but with a caveat. Rapid tests have a COVID-19 detection window of approximately 2 days before and 3-4 days after symptom onset. If an individual tests outside of this window, they may test negative while still having an active COVID-19 infection. For these reasons, it is recommended that rapid tests be used in asymptomatic individuals or those early in infection for the most accurate results.

PCR testing for COVID-19 is the most sensitive test for COVID-19. It is considered as the 'Gold Standard' for diagnosis as it can detect virus early after exposure and weeks after symptoms have abated. Therefore, PCR tests are recommended over rapid tests for symptomatic individuals.

IF AN INDIVIDUAL TESTS NEGATIVE ON A RAPID TEST, CAN THEY ASSUME THAT THEY DO NOT HAVE COVID?

No. There is a short window during the infectious period where a rapid test will accurately identify a COVID-19 infection. This period is typically about two days prior to the onset of symptoms and three to four days after symptoms begin. As the amount of virus produced during infection is variable, a negative test does not indicate lack of COVID-19 infection. It is possible that one can have a negative rapid test result but still be producing virus at concentrations that are below the threshold of detection by a rapid test.

If you have a negative rapid test, you can continue to enter the workplace/school, but it is important that other public health measures are adhered to (i.e., masking, hand hygiene) to reduce the risk of transmission. Serial testing (i.e., testing every 48-72 hours) can improve the sensitivity in symptomatic individuals.

⚠ Do not enter the workplace if you have symptoms of COVID-19, regardless of the test result.

HOW SHOULD RAPID TESTS BE USED IN DIFFERENT ENVIRONMENTS/SITUATIONS?

Workplace/school/communal living

Rapid tests are a powerful tool to reduce the risk of transmission of COVID-19 in workplaces, schools, and communal living arrangements (i.e., student residences). In these situations, rapid tests should be administered at frequent intervals. Studies have shown that testing at 72-hour intervals is as effective at reducing transmission compared to testing on a daily basis. Therefore, in these settings, it is recommended that serial tests be administered every 3 days (i.e., 2-3 times per week for a typical employee).

Events

To reduce the risk that individuals attend events while infectious, it is recommended that rapid tests are administered on the day of the event. For multi-day events, individuals who attend on consecutive days should test every 72 hours.

WHAT SHOULD I DO IF I TEST POSITIVE ON A RAPID TEST?

For fully vaccinated individuals

- Self-isolate for **5 days** from the date of a positive COVID-19 test or 24 hours since your fever has resolved, without the aid of fever-reducing medications and all other symptoms have been improving for at least 48 hours, whichever is later.
- Notify close contacts. Close contacts must isolate for **10 days** and seek testing unless they are fully vaccinated and do not have symptoms.
- Inform your supervisor.

For unvaccinated or partially vaccinated individuals

- Regardless of symptoms, self-isolate for **10 days** from the onset of symptoms; or **10 days** from date of the positive test if you do not have symptoms, **whichever is later**.
- Notify close contacts. Close contacts must isolate for **10 days** and seek testing unless they are fully vaccinated and do not have symptoms.
- Inform your supervisor.