TEST

COVID-19 virus test

A COVID-19 virus test checks a respiratory sample for signs of a current SARS-CoV-2 infection.

WHAT IT MEASURES
SARS-CoV-2 genetic material or viral proteins

SAMPLE
Nasal or throat swab, or saliva

FASTING NEEDED?
No, though some saliva tests restrict food and drink

HOW LONG IT TAKES
Usually under five minutes

RESULTS IN
15 minutes to several days, based on test and laboratory

USED FOR
Diagnosing current SARS-CoV-2 infection

MAIN LIMITATION
Testing too early can miss infection

Overview

A COVID-19 virus test looks for SARS-CoV-2, the virus that causes COVID-19. It helps show whether you have a current infection but cannot predict how unwell you will become or confirm whether you can still spread the virus.

There are two main types:

Molecular tests are generally better at detecting small amounts of virus. Antigen tests provide faster results but are more likely to miss an infection, especially early on.

Antibody tests examine your immune response to a past infection or vaccination. They are not normally used to diagnose a current infection.

- Molecular tests , including PCR and other nucleic acid amplification tests, look for the virus's genetic material
- Antigen tests , including most home rapid tests, look for viral proteins

Why the test is ordered

Testing can help explain symptoms such as a new cough, fever, sore throat, congestion, tiredness, or a change in smell or taste. These symptoms can also have other causes.

A test may also be requested after close contact with someone who has COVID-19, before certain medical procedures, or during an outbreak in a hospital or care setting. Requirements for travel, work, and events can change.

Who should have the test

Consider testing if you have possible COVID-19 symptoms or if public health guidance recommends it after an exposure.

Testing may be especially useful if the result could affect treatment, contact with someone at higher risk, or plans to attend a healthcare setting. People at higher risk of serious illness should seek medical advice promptly after symptoms develop because antiviral treatment, when appropriate, usually needs to start early.

Follow current local public health advice and the instructions supplied with your test.

How to prepare

Most nasal and throat tests need no special preparation. You can usually eat, drink, take prescribed medicines, and brush your teeth as normal.

Saliva tests may require you to avoid food, drinks, smoking, chewing gum, or brushing your teeth for a short period beforehand. Follow the collection instructions exactly.

Check that a home test is approved where you live and has not expired, although regulators sometimes extend expiry dates for specific batches. Store and use it within the temperature range printed on the package.

What happens during the test

For a nasal test, a soft swab is placed inside one or both nostrils and rotated against the inner surface. Some tests use the front of the nose; others require a deeper sample. Do not insert the swab farther than instructed.

A throat swab is rubbed over the back of the throat, usually around the tonsil area. A saliva test

involves spitting or drooling into a sterile container.

For a home antigen test, you mix the sample with testing liquid and place drops on a test device. Read it only within the stated time window. Samples sent to a laboratory are processed using its testing system.

Understanding your results

A positive or detected result means the test found viral genetic material or proteins. False positives can occur but are less common when the test is used correctly. A positive result does not show how severe the illness is or prove that you remain infectious.

A negative or not detected result means the test did not find enough virus to report a positive result. It does not completely rule out infection, particularly after a recent exposure or during the first days of symptoms.

An invalid , indeterminate , or inconclusive result means the test did not produce a clear answer. You will usually need another sample.

There is no universal numeric reference range. Laboratories and test brands use different methods and reporting terms.

What affects the results

Timing is one of the most important factors. Immediately after exposure, there may not be enough virus to detect. A negative result can later become positive as the amount of virus increases.

Other factors include:

Molecular tests can remain positive for weeks or longer after infection because they detect leftover genetic material. This does not necessarily mean you are still infectious.

Most medicines and factors such as exercise, age, sex, pregnancy, and kidney function do not directly distort a virus test. Nasal products or mouth treatments may interfere with certain collection methods, so follow the instructions.

- Taking too little sample or swabbing the wrong area
- Testing late, after the amount of virus has fallen
- Eating or drinking before a saliva test that restricts this
- Reading a home test too early or too late

- Using an expired, damaged, contaminated, or incorrectly stored kit
- Not following temperature or mixing instructions
- Viral changes that affect a particular test

Accuracy and limitations

No COVID-19 test is correct every time, and accuracy varies by test and situation.

Molecular tests usually miss fewer infections than antigen tests. They can still give a negative result if testing is too early, the sample is poor, or the amount of virus is low. Contamination can occasionally cause a false-positive result.

A single negative antigen test misses more infections, particularly in people without symptoms or early in an infection. Repeating it after the interval stated in the instructions can reduce this risk. A molecular test may be more suitable when a more confident answer is needed.

Performance differs by brand, sample type, viral variant, symptoms, and timing. Neither an antigen nor a molecular result can reliably show exactly when you were infected or whether you can safely be around others.

Risks and complications

A nasal or throat swab may cause brief discomfort, watering eyes, coughing, or gagging. Minor nasal bleeding can occur, especially if the nose is already irritated.

Saliva tests and correctly used front-of-nose home tests have few physical risks.

What happens next

After a positive result, follow current local advice about limiting contact with others, masking, and returning to work or school. If you are at higher risk of serious illness, contact a healthcare professional promptly to discuss whether treatment is appropriate.

After a negative result, consider the timing and type of test. If you have symptoms or a recent exposure, the instructions may advise repeating an antigen test or having a molecular test. Seek routine medical advice if symptoms continue or worsen.

Seek urgent medical advice for worsening shortness of breath, difficulty keeping fluids down, or signs of dehydration.

Call emergency services for severe trouble breathing, persistent chest pain or pressure, new confusion, inability to wake or stay awake, or pale, grey, or blue lips, skin, or nail beds. Do not wait for another test before seeking emergency help.

Common questions

Can I drink coffee before the test?

Usually yes for a nasal or throat swab. Do not drink coffee during the restricted period before a saliva test.

Does the time of day matter?

There is no standard best time. Timing in relation to exposure and symptom onset matters more than the hour.

Can I exercise beforehand?

Yes. Exercise does not usually change the result, but follow any saliva-test restrictions.

How soon after exposure should I test?

Testing immediately can be too early. Follow current public health advice and your kit instructions, particularly if you have no symptoms. Test promptly if symptoms begin.

Is PCR better than a rapid antigen test?

PCR and other molecular tests are generally better at finding small amounts of virus. Antigen tests are faster and useful at home, but a negative result may need repeating.

Can I stay positive after I feel better?

Yes. Molecular tests can detect leftover viral genetic material after recovery. Antigen tests usually become negative sooner, but neither test alone can show exactly when you are no longer infectious.

Sources

- Centers for Disease Control and Prevention: Testing for COVID-19
- Centers for Disease Control and Prevention: Overview of Testing for SARS-CoV-2
- US Food and Drug Administration: At-Home COVID-19 Antigen Tests-Take Steps to Reduce Your Risk of False Negative Results
- US Food and Drug Administration: COVID-19 Test Basics

- Infectious Diseases Society of America: Guidelines on the Diagnosis of COVID-19-Antigen Testing
- Dinnes J, Sharma P, Berhane S, and colleagues. Rapid, point-of-care antigen tests for diagnosis of SARS-CoV-2 infection . Cochrane Database of Systematic Reviews. 2022;7:CD013705.