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Lab-based PCR and Rapid PCR for COVID-19 testing: get the facts

There are two types of PCR technologies to detect SARS-CoV-2 viral RNA: lab-based PCR and rapid PCR.

What's the difference?

Lab-based PCR

"Lab-based PCR" molecular diagnostic testing uses well-established lab processes that are run in a laboratory by trained technicians.

Rapid PCR

"Rapid PCR" tests use relatively new technology that simplifies the testing process by allowing it to be performed at the site of sample collection, or point of care (POC).

How **accurate** are PCR tests?

Accuracy of a PCR test takes into account the **sensitivity** and **specificity** of how correctly the test can identify whether a sample is infected with SARS-CoV-2 viral RNA. Both lab-based and rapid PCR tests have high sensitivity and high specificity,* meaning that either test will correctly detect the presence of SARS-CoV-2 RNA in samples from patients who have COVID-19.

Diagnostic PCR tests are considered the gold standard for viral detection and provide **accurate** results with **high confidence**.

What is the **turnaround time** for each type of PCR test?

Lab-based PCR

While the test can often be completed in **less than 3 hours** once the sample is recieved in the lab, the time to recieve results typically takes 1–3 days due to the logistics of sending a sample to a lab for processing.

Rapid PCR

Samples can be run at the site of sample collection, by individuals trained on test manufacturers' protocols. Results are often available in **less than 1 hour**.

How many samples can be tested at the same time (**sample throughput**)?

Lab-based PCR

Most lab-based PCR tests can accommodate **96 to 384 samples** (including controls) simultaniously on a single test plate, which is considered **high throughput**.

Rapid PCR

Most rapid PCR tests can process **one sample** at a time, which is considered **low throughput**. The number of patient samples that can be run simultaniously is determined by the availability of instruments and staff at the testing site.

When to use lab-based PCR or rapid PCR?

Lab-based PCR

Lab-based PCR tests are ideal for **high-volume processing**, supporting local- and national-level testing such as schools and corporations.

Rapid PCR

Rapid PCR POC tests are ideal for evaluating **high-risk congregate settings** such as emergency rooms, clinics, hospitals, and nursing homes.

*cdc.gov/coronavirus/2019-ncov/hcp/testing-overview.html

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