

Diagnostic testing for SARS-CoV-2

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■ Cite as: *CMAJ* 2020 June 29;192:E713. doi: 10.1503/cmaj.200858; early-released June 3, 2020

1 Test sensitivity depends on timing of sample collection

Testing for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) relies on reverse transcription polymerase chain reaction (RT-PCR), which amplifies SARS-CoV-2 genetic material.¹ Nasopharyngeal or oropharyngeal RT-PCR sensitivity is highest when performed early after symptom onset.²⁻⁴

2 Test sensitivity varies according to specimen type and disease severity

In patients who progress to have lower respiratory tract disease, the sensitivity of nasopharyngeal and oropharyngeal RT-PCR declines and the yield from lower respiratory tract samples, such as samples taken from sputum, endotracheal tube and bronchoalveolar lavage, increases.⁴ Lower respiratory tract samples may reveal a positive result when nasopharyngeal and oropharyngeal sampling has not.

3 Test positivity does not always entail infectivity

Although RT-PCR viral loads slowly decline as patients recover, laboratories report a “yes/no” result and do not regularly report viral load. Results of RT-PCR may remain positive for many weeks after the clinical disease has resolved. These late positive results, after symptom resolution and 10 days or more after symptom onset, are unlikely to be associated with replicating virus on cell culture and are unlikely to be infectious.⁴

4 Point-of-care testing provides rapid diagnosis but is limited by “low throughput”

Health Canada has approved certain point-of-care testing platforms, and many others remain under regulatory review.⁵ Current point-of-care testing has decreased turnaround time (< 1 hr) but is limited by its inability to test many samples simultaneously, a phenomenon known as “low throughput.”

5 Positive serology does not equate with lifelong immunity

Serologic tests measure immunoglobulin antibodies, showing previous exposure to a pathogen or its genetic kin. Although serology is often used as an imperfect surrogate of immunity, serology does not directly assess a patient’s ability to neutralize a pathogen.⁴ Also, the duration of antibody response to SARS-CoV-2 remains unknown. Widespread serologic testing may assess seroprevalence but will not provide a clear determination of long-standing immunity.

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Competing interests: None declared.

This article has been peer reviewed.

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