

SYNOPSIS

03/02/2020

Review of “Positive RT-PCR test results in patients recovered from COVID-19”

Article citation: Lan L, Xu D, Ye G, Xia C, Wang S, Li Y, et al. Positive RT-PCR test results in patients recovered from COVID-19. JAMA. 2020 Feb 27 [Epub ahead of print]. Available from:

<https://jamanetwork.com/journals/jama/fullarticle/2762452>

One-Minute Summary

- The authors report on follow-up testing with real-time **PCR in four patients** (diagnosed between January 1 – February 15, 2020) **who recovered from coronavirus disease 2019 (COVID-19)** in Wuhan, China.
 - Patients were two males and two females; age range 30–36 years. All were healthcare workers reportedly exposed to COVID-19 through their work.
 - Three patients had initial symptoms of fever and/or cough, and one patient was initially asymptomatic; however, all patients had evidence of pneumonia on chest computed tomography (CT). Severity of disease was mild to moderate. The time from symptom onset to recovery ranged from 12–32 days. One patient was hospitalized and three self-isolated.
- All patients met criteria for hospital discharge or discontinuation of isolation (absence of fever for >3 days, resolution of respiratory symptoms and radiological abnormalities and two consecutively negative real-time PCR tests taken at least one day apart), but were asked to continue to self-isolate at home for an additional five days.
- **Follow-up real-time PCR tests** were repeated five to 13 days after discharge or discontinuation of isolation and all tested **positive**.
- All patients had **additional three repeat tests each** over the next four to five days and all tested **positive**.
- All patients **remained asymptomatic**. **CT images showed no change** from previous images.
- The authors suggest that a proportion of recovered patients may still be virus carriers.

Additional Information

- Real-time PCR was performed on throat swabs using the test recommended by the Chinese Center for Disease Control and Prevention.
- All patients were treated with the antiviral oseltamivir.
- After recovery, one patient showed delicate patches of ground-glass opacity on chest CT.
- Follow-up testing post-recovery was done as a return-to-work measure.
- Patients did not report contact after recovery with any person with respiratory symptoms and no family members were infected.

PHO Reviewer's Comments

- RNA levels (Cycle threshold (Ct) values) were not reported, so it is unclear what the viral loads in the recovered patients were. If a person is shedding a very low quantity of virus (represented by a high Ct value), this could result in a negative test result. When tested at different time points, or on re-testing the same sample with the same or a different assay, results can switch between negative and positive when the viral quantity is at the threshold of detection.
- Specimen quality can also affect test positivity. A person may be negative on an initial collection and then positive at a later time point if re-tested. This can be due to differing quality of specimen collection at each time point.
- Real-time PCR detects viral RNA and it is not yet known how this correlates with infectivity for COVID-19, as the presence of RNA does not always indicate live virus.
- Results were confirmed using another real-time PCR kit from a different manufacturer; however, it is not stated whether this kit detected the same or different COVID-19 targets.
- Due to the lack of isolated virus and genomic investigation, the possibility of reinfection cannot be ruled out.

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Review of “Positive RT-PCR test results in patients recovered from COVID-19”. Toronto, ON: Queen’s Printer for Ontario; 2020.

Disclaimer

This document was developed by Public Health Ontario (PHO). PHO provides scientific and technical advice to Ontario’s government, public health organizations and health care providers. PHO’s work is guided by the current best available evidence at the time of publication.

The application and use of this document is the responsibility of the user. PHO assumes no liability resulting from any such application or use.

This document may be reproduced without permission for non-commercial purposes only and provided that appropriate credit is given to PHO. No changes and/or modifications may be made to this document without express written permission from PHO.

Public Health Ontario

Public Health Ontario is a Crown corporation dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world.

For more information about PHO, visit publichealthontario.ca.

