

# Duration of viral shedding in patients with mild-moderate COVID-19 disease.

Mehrab E Hossain<sup>1</sup>, David Lister<sup>1</sup>, Caroline Bartolo<sup>1</sup>, Paul Kinsella<sup>2</sup>, James Knox<sup>2</sup>, Rosemary Aldrich<sup>1</sup>, Raquel Cowan<sup>1</sup>, Robert J Commons<sup>1</sup>

1. Ballarat Health Services, Ballarat, Victoria, Australia  
2. Dorevitch Pathology, Heidelberg, Victoria, Australia

## Background

Since its identification in Wuhan, China in December 2019, the coronavirus disease-2019 (COVID-19) pandemic has led to an unprecedented global shutdown.(1) The causative organism, SARS-CoV-2, causes a spectrum of disease severity, from no symptoms to severe disease including death.(2) Relatively little is known about the duration of viral RNA shedding in patients with mild to moderate disease, and the correlation between RNA detection and symptoms. Understanding these processes is important to inform when it is safe to release patients from isolation. This retrospective cohort study aimed to explore the duration of viral shedding in COVID-19 patients with mild to moderate disease and to investigate associations with clinical symptoms.

## Methods

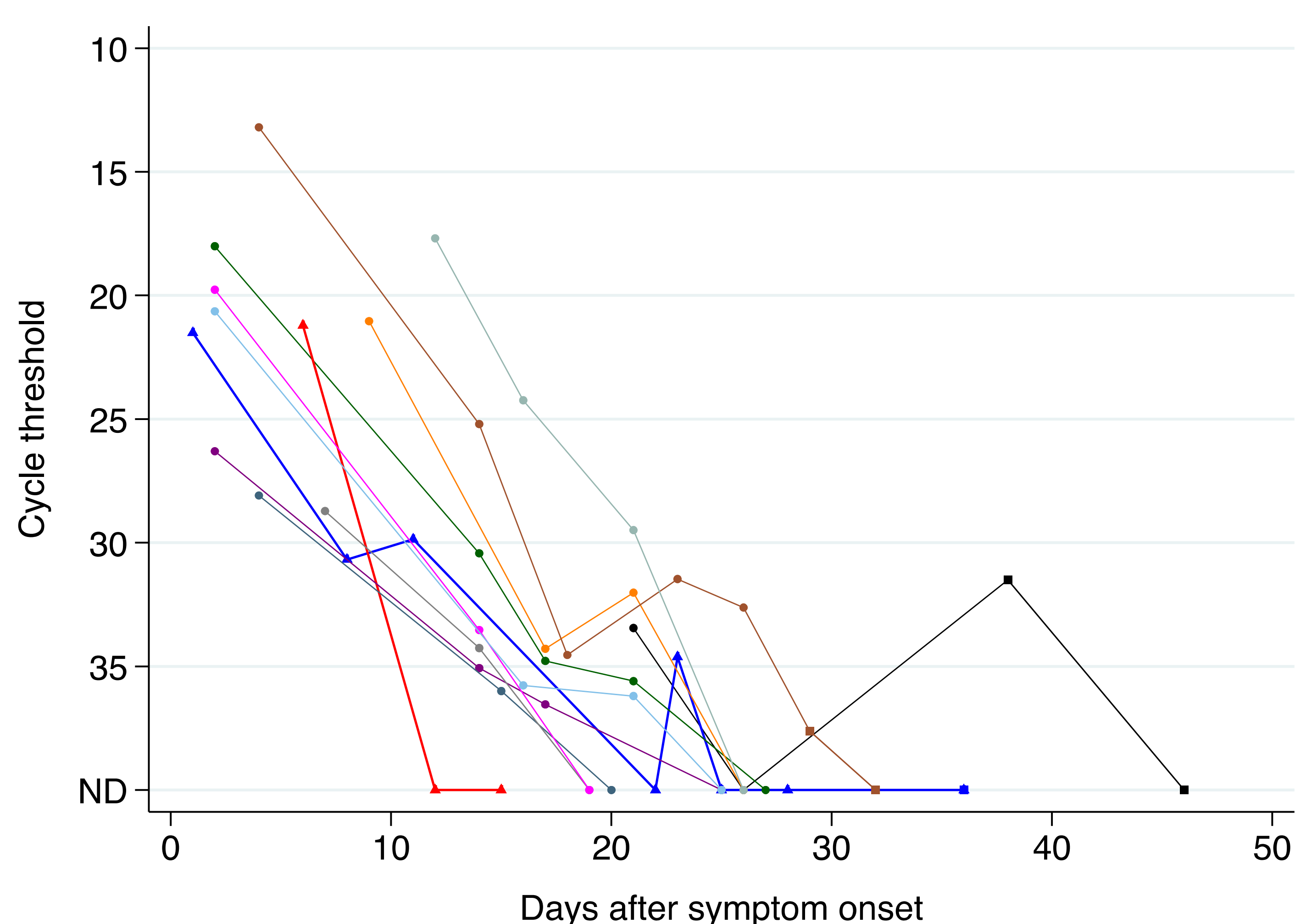
- Retrospective cohort study including patients diagnosed with COVID-19 disease using a RT-PCR SARS-CoV-2 assay from oropharyngeal and bilateral deep nasopharyngeal sampling and managed through Ballarat Health Services between March 1 and May 1, 2020.
- Patients were retested for SARS-CoV-2 if they fulfilled the following criteria: afebrile for >72 hours, resolution of clinical symptoms other than a dry cough and >14 days since symptom onset.
- If positive on retesting, patients were tested every 3 to 7 days thereafter.

## Results

- 12 patients were included with their duration of symptoms ranging from 1 to 36 days.
- Patients underwent testing a median of 4 days (range 1-12) after initial symptom onset with PCR cycle thresholds (Cts) varying from 13 to 29 (median 21).
- Positive tests were recorded up to a median of day 21 (range 6-38) after symptom onset.
- Cts were inversely correlated with time since symptom onset ( $p < 0.0001$ ).
- The median time to the first negative test was 25 days (range 12-32).
- Two patients had a first negative test before returning positive tests after this. Subsequent tests in these patients were negative.
- Two patients who had remained asymptomatic for >7 days after their initial symptom onset had recrudescence of very mild symptoms on day 13 and 14; both tested positive on follow-up tests at this time.

## Conclusions

- ❖ There is prolonged shedding of SARS-CoV-2 in patients with mild COVID-19 disease, with a rise in Ct values over time.
- ❖ Patients with mild disease can have recrudescence of symptoms a week or more after their initial symptoms resolved.
- ❖ It remains unclear when patients can be removed safely from isolation.
- ❖ Future studies that evaluate live virus or actively assess contacts are needed to better identify measures that can be used to safely release isolation requirements, including quantitative PCR levels or symptom duration.



**Figure. Cycle threshold compared to number of days since symptom onset**

Patients with moderate diseases are demonstrated by bold lines with triangles. Tests performed using the Roche cobas 6800 SARS-CoV-2 test shown by squares. All other tests performed using the TIB MolBiol LightMix® Modular E-gene kit.

## References

1. Phelan AL, Katz R, Gostin LO. The Novel Coronavirus Originating in Wuhan, China: Challenges for Global Health Governance. JAMA. 2020.
2. Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) — China, 2020. China CDC Weekly. 2020;2(8):113-22.