

Prolonged PCR positivity in health care workers with COVID-19: implications for practice guidelines

To the Editor: Health care workers are at occupational risk of contracting coronavirus disease 2019 (COVID-19) and may act as vectors of transmission. The guidelines from the Department of Health prioritise health care workers as a risk group for diagnostic testing.^{1,2} After confirmation of diagnosis, in addition to resolution of symptoms, polymerase chain reaction (PCR) negativity on at least two consecutive respiratory specimens collected 24 hours apart and at least 7 days after symptom onset was required before health care workers were permitted to return to work.^{1,2}

Since 10 March 2020, there have been 11 health care workers managed at our hospital diagnosed with mild COVID-19 not requiring hospitalisation, with repeated specimens tested by PCR (Box). All patients with COVID-19 assessed and managed at the Austin Hospital were prospectively included in a clinical database approved by the

Austin Health Human Research Ethics Committee (database reference number: CD 20002). The median time from PCR positivity to the second negative swab was 32.5 days (range, 11–53 days). None of these health care workers received any specific antiviral or immunomodulatory treatment.

Our current understanding of the viral kinetics in COVID-19 is incomplete. Pharyngeal viral shedding is very high early in the course of illness³ and may be prolonged.⁴ However, nucleic acid detection cannot differentiate between infectious and non-infectious virus. In a study of nine patients with mild COVID-19, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was not recoverable by culture after day 8 of illness despite high viral loads by PCR.³ In another contact tracing study, there were no secondary cases in the group that was exposed after 6 days.⁵ These findings suggest that infectivity and transmissibility is low after the initial illness.

In Australia, although there was allowance for the return to work of health care workers with prolonged PCR positivity, this was predicated on rounds of testing

in what was assumed to be a “small proportion of people”.^{1,2} Culture for viable virus is not readily available. The findings in our cohort indicate that persistent positivity is the norm and is in line with international studies.⁴ Current guidelines for health care workers’ return to work appear conservative, with significant workforce implications if outbreaks were to occur in health care settings. Further studies are urgently required to determine the infectivity in patients with prolonged SARS-CoV-2 viral shedding to find a balance in policy that benefits health care workers, hospitals and patients.

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Acknowledgements: We thank Jason Trubiano, Head of COVID Unit at Austin Health, for critical review of the manuscript.

Competing interests: No relevant disclosures. ■

The unedited version of this article was published as a preprint on mja.com.au on 30 July 2020.

doi: [10.5694/mja2.50809](https://doi.org/10.5694/mja2.50809)

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References are available online.

Health care workers with mild coronavirus disease 2019 (COVID-19)

Patient number	Age (years)	Sex	Duration of symptoms (days)	Number of swabs collected after first positive swab	Days between first PCR positive swab and second negative swab*
1 [†]	62	Male	10	5	42
2	20	Female	5	5	34
3	24	Female	1	5	32
4	32	Female	Patient asymptomatic	5	33
5	56	Male	23	3	na [‡]
6	26	Female	8	6	43
7 [§]	62	Female	28	7	53
8	50	Female	12	2	11
9	35	Female	11	2	13
10 [¶]	52	Female	14	3	21
11	55	Female	Unable to ascertain	2	23

na = not applicable; PCR = polymerase chain reaction. * Of two consecutive negative swabs. † Patient with asthma. ‡ The last collected specimen from patient 5 was PCR positive 11 days after initial positive specimen. The nucleic acid detection assay used was the AusDiagnostics Coronavirus Typing (8-well) assay. This is a multiplex-tandem PCR assay that employs two rounds of amplification. The cycle take-off value for the last positive specimen on patient 5 was 23 cycles in the second round of amplification. § Patient with hypertension. ¶ Patient with rheumatoid arthritis. ♦

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- 2 Victorian State Government Department of Health and Human Services. Coronavirus disease 2019 (COVID-19) — case and contact management guidelines for health services and general practitioners; version 20 (25 Apr 2020). <https://www.dhhs.vic.gov.au/health-services-and-general-practitioners-coronavirus-disease-covid-19m> (viewed May 2020).
- 3 Wölfel R, Corman VM, Guggemos W, et al. Virological assessment of hospitalized patients with COVID-2019. *Nature* 2020; 581: 465–469.
- 4 He X, Lau EHY, Wu P, et al. Temporal dynamics in viral shedding and transmissibility of COVID-19. *Nat Med* 2020; 26: 672–675.
- 5 Cheng HY, Jian SW, Liu DP, et al. Contact tracing assessment of COVID-19 transmission dynamics in Taiwan and risk at different exposure periods before and after symptom onset. *JAMA Intern Med* 2020; 180: 1156–1163. ■