

## Statement on Timing of Repeat SARS-CoV-2 Testing in Individuals Who Have Recovered from COVID-19 Illness

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At this time, little is known about the likelihood of, and timing for, possible re-infection with SARS-CoV-2. Based upon the published evidence around the topic of re-infection with the other human coronaviruses, including common cold coronaviruses (229E, OC43, NL63, and HKU1) and novel coronaviruses (SARS-CoV and MERS-CoV), we anticipate that reinfection with SARS-CoV-2 may occur at some point after initial infection and recovery.

To date, 11 months since the first known human case of COVID-19 illness, there have been only 4 confirmed re-infections with SARS-CoV-2 reported in peer-reviewed publications. The first published case report<sup>1</sup> describes an individual who had confirmed acute COVID-19 illness in Hong Kong in March 2020. This person subsequently traveled in Europe during July-August 2020, returning to Hong Kong in August. Although completely asymptomatic, the patient underwent mandatory testing for SARS-CoV-2 upon return from European travel. The August test for SARS CoV-2 was also positive, 142 days after the initial positive test, and infectious virus was isolated. The March and August viral genomes were compared, and were found to belong to two distinct clades of SARS CoV-2. The second publication<sup>2</sup> is a letter to the editor describing 2 healthcare workers in India. Each was asymptomatic and tested positive in May 2020, and tested positive again, while asymptomatic, in late August/early September. Time between these asymptomatic infections were between 107-110 days. Viral genome sequencing confirmed distinctly different viruses in each infection event. Notably, the authors did not attempt to demonstrate whether infectious virus was present. A fourth case from Belgium has been published as a letter to the editor<sup>3</sup> and describes re-infection 94 days after first infection with a distinct viral strain. Again there was no attempt to demonstrate whether infectious virus was present.

A possible re-infection event was announced in a non-peer-reviewed report from Nevada. To date, however, this report has not been confirmed, and has not been published.

These isolated reports confirm that re-infection with SARS-CoV-2 is possible. However, they do not answer many important questions surrounding the topic of re-infection, including:

- How long does protective immunity last after recovery from infection?
- What is the overall frequency of re-infection?
- Are re-infected individuals more, less, or equally capable of transmitting the virus to others?
- Is there something unique about these individuals/their immune systems or response to the original infection, that makes these events not broadly applicable?

Although many questions remain, given the report of re-infection within the time frame described, and evidence of re-infection with other human coronaviruses, the Penn Medicine Healthcare Epidemiologist group is recommending the following for patients who have recovered from COVID-19:

- No retesting for SARS-CoV-2 for the purposes of **asymptomatic screening, universal screening for hospital admission, or pre-procedure testing\*** until at least **6 months** have passed from the initial infection/test date.
- No retesting of SARS-CoV-2 in the setting of a **new compatible clinical illness** (influenza-like illness/ILI) until at least **3 months** have passed from the initial infection/test date.

**These recommendations will be subject to review and updates as more scientific data become available.**

*\* This recommendation does not apply at Princeton Medical Center because New Jersey Executive Directive 20-018 requires retesting each previously infected patient pre-procedure (specimen collected and result received) once 6 weeks have passed from the initial test date.*

**References:**

1. To KKW, et al. COVID-19 re-infection by a phylogenetically distinct SARS-coronavirus-2 strain confirmed by whole genome sequencing. *Clinical Infectious Diseases*, <https://doi.org/10.1093/cid/ciaa1275> Published: 25 August 2020.
2. Gupta V, et al. Asymptomatic reinfection in two healthcare workers from India with genetically distinct SARS-CoV-2. *Clinical Infectious Diseases*, <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1458/59010388> Published: 28 September 2020.
3. Elsanje JV, et al. Symptomatic SARS-CoV-2 reinfection by phylogenetically distinct strain. *Clinical Infectious Diseases*, <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1330/5901661> Published 1 October 2020.