

SARS-CoV-2: Laboratory Perspective on Discontinuation of Isolation

The Centers for Disease Control and Prevention (CDC) recommendations for discontinuing isolation in COVID-19 infected persons could, in some circumstances, differ from the recommendations for terminating the quarantine period for persons with known exposure to COVID-19. The CDC recommends a 14-day quarantine after COVID-19 exposure based on the maximum incubation time it takes to develop the illness if infected. However, it is possible for a person with a confirmed COVID-19 infection to leave isolation earlier, once they become asymptomatic and have two consecutive negative RT-PCR tests (**Figure 1**).

The incubation period for COVID-19 may be as long as 14 days following exposure; however, the majority of cases occur at four to five days (**Figure 1**) [1-2]. One study of confirmed COVID-19 patients estimated that symptoms develop within 2.2 to 11.5 days of exposure. Of those who will become symptomatic, 2.5% do so within 2.2 days, while 97.5% of those who develop symptoms will do so within 11.5 days, with a median incubation period of 5.1 days [3].

Although infected individuals will develop antibodies to SARS-CoV-2, the specific antibody response pattern is still unknown. Preliminary evidence suggests that some of these antibodies may be protective. Moreover, it is unknown whether or not all infected patients will mount a protective immune response and how long any protective effect will last.

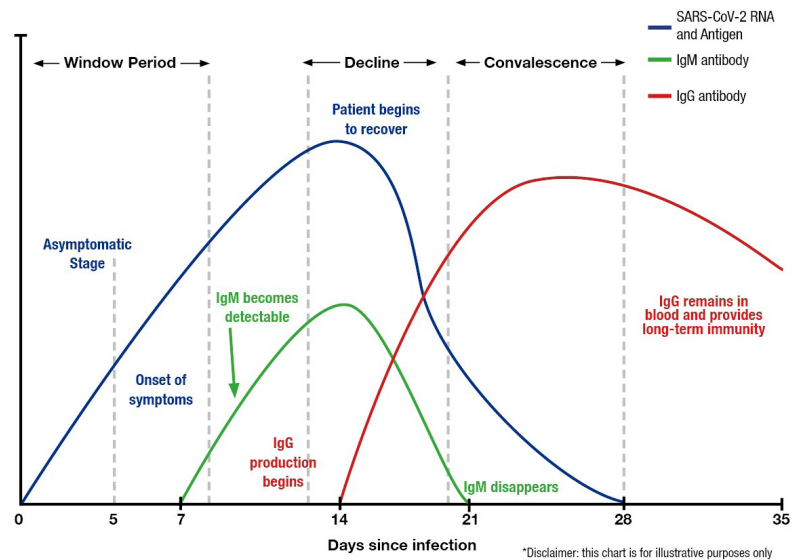


Figure 1. The Typical kinetics of COVID-19 RT-PCR, IgG, and IgM (<http://www.diazyme.com/covid-19-antibody-tests>).

Data on protective immunity following a COVID-19 infection is still emerging [4-6]. A case series evaluating convalescent plasma for the treatment of COVID-19 identified neutralizing activity in the plasma of recovered patients that appeared to transfer to recipients following plasma infusion [6]. Similarly, in another study of 23 COVID-19 recovered patients, antibodies to the receptor-binding domain of the spike protein, and the nucleocapsid protein were detected by enzyme-linked immunosorbent assay (ELISA) in most patients by 14 days following the onset of symptoms. In this study, ELISA antibody titers correlated with neutralizing activity [4]. In summary, a positive antibody result may well be a superior indicator than a negative RT-PCR test to determine if patients can safely be released from quarantine and social distancing and be able to return to work and their families.

References:

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COVID-19 Triage

Decision to Discontinue Isolation

Individual with positive
COVID-19 RT-PCR



- A. Resolution of fever without the use of fever-reducing medications
- B. Improvement in respiratory symptoms (cough, shortness of breath)
- C. Negative COVID-19 RT-PCR from at least 2 nasopharyngeal swab specimens collected at least 24 hours apart



Seroconversion Assay – serology test (IgG/IgM):

- A. Serology testing is recommended during RT-PCR positive period
- B. Perform IgG/IgM ELISA test on a weekly basis until the patient seroconverts

Individuals in isolation:

Negative COVID-19 RT-PCR
Were exposed to a COVID-19 positive individual



Seroconversion Assay – serology test (IgG/IgM):

Perform IgG/IgM ELISA test on a weekly basis until the patient seroconverts



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