

Mini Review**An Update on Covid-19(SARS-CoV-2) Re-infection**

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**Abstract**

*This article explores the re-infections with Covid-19. Post coronavirus, most patients develop a degree of immunity to reinfection. But a small number of patients have developed covid-19 for a second time. We are witnessing a growing number of re-infections or re-activations, usually after at least 6 months. The most important risk factor has been the age 65 years and above. Many studies have been done in this regard. There are a few emerging variants of the virus, whose response to the current vaccines needs to be explored by further studies.*

**Keywords:** Covid-19, re-infection, risk factor, emerging variants.

**Abbreviations:** PCR: Polymerase Chain Reaction.

**Introduction**

With the growing resurgence of the *Covid-19* pandemic, several key challenges are at the forefront. Based on our experience and data stratification, we have witnessed the following categories of infections:

1. PCR positive with symptoms (mild, moderate, and severe)
2. PCR positive with no symptoms
3. PCR negative with symptoms. Considered as suspected cases only.
4. PCR negative with no symptoms
5. There is another category, which was neither tested nor symptomatic.



The last 2 categories create a dilemma for the community health workers and epidemiologists. Who are these patients? Most likely these are the ones who were exposed, either to another family member at home or a co-worker or to the environment.

## Discussion

There is a growing awareness regarding *Covid-19* re-infection. It presents a challenge to assess the accuracy and validity of data about “re-infection” based on the above categories.

Whether infection creates immunity to reinfection “is unclear,” suggested by Newcastle University academics in a paper published in the *Journal of Infection* in December 2020. (1)

In the UK, Public Health Department data has shown 83% protection against Covid-19 reinfections, over five months. Out of 6614 patients, 44 were considered to have “possible” or “probable” re-infections. (2)

Patients with severe infections are more likely to be protected, as compared to milder disease because the immunity doesn’t last long in mild cases. Therefore, reinfections are more likely to be milder in severe initial infections.

The duration of protection goes well beyond 6 months in a study done in Denmark.

So far, well over 31 confirmed cases of *Covid-19* re-infection have been reported, which may well be an underestimate. A new study published in *Lancet* has shown the risk of re-infection is highest in those above 65 years old.

A new study from China just published in March in *The Lancet* showed that 6.92% of a cross-sectional sample of the population of Wuhan developed antibodies against SARS-CoV-2, with 39.8% of this population seroconverting to have neutralizing antibodies. This data on humoral responses indicate that mass vaccination is needed to develop herd protection to prevent the resurgence of the epidemic. (3)

*The risk factors of SARS-CoV-2 re-infection* are related to the immunosuppressed status, the host factors, such as older age, gender, diabetes, cardiac disease, obesity, malignancy, and virology factors.

*Is it re-infection or re-activation:* Experts are now discussing this aspect? Research conducted at the Nuffield Department of Medicine at the University of Oxford suggests that many of the cases of reinfection may be reactivation. (4). It is very difficult to differentiate between the two because there is a possibility that a very small quantity of viral genome may remain in the body for a long period and therefore may remain undetected.

**Same virus or a different variant:**

There are 3 established SARS-CoV-2 variants, UK variant, South African variant, and Brazilian variant. Apart from these, at least 3 more emerging variants are being found in clusters in different regions. The effectiveness of current vaccines against these variants is likely to have different degrees of protection.

(5)

Further studies are required to explore all these possibilities.

**Conclusion**

*Covid-19* re-infection or reactivation is rare and highly unlikely to occur in the first 6 months of initial infection. The most important risk factor is the age above 65. The key to prevent this recurrence remains the same as for initial infection including the use of masks, hand washing, social distancing, and avoiding crowded places. With the worldwide vaccination drive, some new data has suggested that the majority of the people may need to be vaccinated to prevent any resurgence of the pandemic. It would be highly prudent, to include people aged 65 or above, as a high priority.

**Take home message:** If one has recovered from novel SARS-CoV-2 or its new variants, “it is imperative not to forget about non-pharmacological protective measures.”

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