

# One in every three COVID-19 reinfections result in hospitalization in the US

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Dear editor,

Sheehan and colleagues published an interesting study in the CID<sup>1</sup> aiming to document the frequency of COVID-19 reinfection in the US. Reinfection is a hot topic in COVID-19, since its occurrence ruins previous arguments favouring that post-COVID-19 'herd immunity' as a theoretical mechanism for public protection. In the study by Sheehan et al,<sup>1</sup> COVID-19 reinfection occurred at a rate of 4.9%, after 11 months of follow up. However, it is quite possible that this proportion represents underestimation, for a couple of reasons. First of all, retrospective studies may fail in documenting many of the viral exposure opportunities that patients may have had. Also, mild/asymptomatic episodes of COVID-19 may have been silent to researchers. In previous studies, the frequency of reinfection / re-positive PCR rates ranged 12.8 to 48.9%.<sup>2,3</sup> Therefore, 4.9% might just be the tip of the iceberg.

Coming back to the study by Sheehan et al,<sup>1</sup> it is not clear whether patients had a second PCR done due to symptoms or other reasons. Was there a policy in place to test asymptomatic patients? Due to the retrospective and multicenter nature of the study, probably not. If that is the case than positive PCR results would mostly represent random findings among symptomatic individuals within a community. From the medical perspective, a better clinical description of reinfections episodes would also be helpful, and a comparison of clinical findings of reinfections and first COVID-19 episodes.

We must say that we were surprised to see authors calculating,<sup>1</sup> based on their database analysis, the percentage of protection that a COVID-19 reinfection would provide. Unfortunately, protection rates cannot be determined due on the retrospective nature of their investigation, particularly due to the fact that study arms were not properly balanced. For instance, how sure can we be that patients with previous COVID-19 and those who never had the infection were equally followed, got similar viral exposure, and were equally tested for COVID-19?

And finally, even though many COVID-19 reinfections were mild<sup>1</sup> [some might actually have been asymptomatic and missed by the authors], a large proportion of episodes (29.0%) required admission to the hospital<sup>1</sup>, which is of great concern. Previous studies have also discussed that COVID-19 reinfection could result in severe disease.<sup>4</sup> We believe this should be the main message for this manuscript. In a world of fast-disseminating faking news, large-scale vaccination continues to be best strategy to protect the world population against COVID-19, while promoting 'herd immunity' from previous infections is associated with a high risk of hospitalization.

None of the authors has any potential conflicts

## References

1. Sheehan MM, Reddy AJ, Rothberg MB. Reinfection Rates among Patients who Previously Tested Positive for COVID-19: a Retrospective Cohort Study. Clin Infect Dis. 2021 Mar 15:ciab234 (in press).
2. Osman AA, Al Daajani MM, Alshafi AJ. Re-positive coronavirus disease 2019 PCR test: could it be a reinfection? New Microbes New Infect 2020; 37: 100748.
3. Korea Centres for Disease Control and Prevention. Findings from investigation and analysis of re-positive cases | Press Release | News Room: KCDC (2020). Available from: [https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030&act=view&list\\_no=367267&nPage=8](https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030&act=view&list_no=367267&nPage=8).
4. Gousseff M, Penot P, Gallay L, et al. Clinical recurrences of COVID-19 symptoms after recovery: Viral relapse, reinfection or inflammatory rebound? J Infect 2020; 81: 816-46.

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