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## Correspondence/Letter to the Editor

# Serological assessment is advisable before COVID-19 vaccination



Dear Editor,

We read with interest the article of Joshi et al.,<sup>1</sup> who reported that previously infected healthcare workers receiving coronavirus disease 2019 (COVID-19) vaccination experienced a higher incidence of adverse events following immunization (AEFI). This important finding provides substantial support to the previous evidence that vaccine reactogenicity, along with the consequent risk of developing local or systemic reactions, is magnified in subjects who recovered from a previous severe acute respiratory disease coronavirus 2 (SARS-CoV-2) infection, either symptomatic or asymptomatic.<sup>2</sup>

The rate of asymptomatic SARS-CoV-2 infections varies widely according to population characteristics but has been reported to be as high as 80% in certain studies.<sup>3</sup> This vast number of subjects with a previous asymptomatic SARS-CoV-2 infection should be accurately identified before undergoing COVID-19 vaccination for at least two clinical and epidemiological motivations. The first reason is for preventing the high risk of developing AEFI in these subjects, as clearly evidenced by Joshi et al. in their study.<sup>1</sup> The second important aspect is that we and others have shown that the humoral response developing after COVID-19 vaccination is orders of magnitude higher in healthcare workers with previous SARS-CoV-2 infection than in those without,<sup>4,5</sup> such that a dose reduction (i.e., lowering the dosage of single-administration vaccines or averting the booster in two-dose vaccine recipients) may be advisable. This will contribute to optimize vaccine usage and reduce their worldwide shortage, especially in more vulnerable countries, including India.<sup>6</sup>

The measurement of anti-SARS-CoV-2 neutralizing antibodies via fully automated, fast, high-throughput, and relatively inexpensive immunoassays is now possible and should thus be widely encouraged before COVID-19 vaccination. Their post-vaccine assessment may also help to solve the dilemma raised by Bobdey et al.<sup>7</sup> on the optimal dose interval of COVID-19 vaccine administration since the period from the first vaccine dose to the booster could be specifically tailored according to the serum levels of anti-SARS-CoV-2 neutralizing antibodies, while consideration of administering a third dose could be made in older and/or immunocompromised subjects, who

often display insufficient serologic response to the administration of the first two doses.<sup>8</sup>

## Conflicts of interest

The authors have none to declare.

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### Reply to 'Serological assessment before and after COVID-19 vaccination in India'

Dear Editor,

We thank authors<sup>1</sup> for their interest in our paper<sup>2</sup> and highlighting the important issue of vaccination of COVID recovered individuals. We agree that policy of vaccinating previously diagnosed COVID individuals needs to be reconsidered, primarily based on evidence of protective immunity provided by natural infection over time and availability of vaccines. In case there is a shortage of vaccines, priority should be given to vulnerable population rather than vaccinating individuals, who are already immune after natural infection. However, an increase in the risk of adverse events following immunisation (AEFI) in COVID recovered persons is not a sufficient reason for denying vaccines to these individuals, as AEFI reported among them in various studies<sup>2-5</sup> are mild only. No study has documented higher risk of serious AEFI in COVID recovered cases.

Serological assessment prior to COVID vaccination would be a deterrent in mass vaccination campaign in the country with limited health resources and a very large population. Moreover, at individual level the presence of antibodies may not provide definite evidence regarding protection against COVID infection in future. A study by Harvey et al<sup>6</sup> has reported that among antibody positive individuals, 15% became antibody negative and around 2.7% tested positive for COVID infection after 1-2 months. Furthermore, additional assay would be required to ascertain the neutralizing nature of these antibodies. With the emergence of so many different SARS-CoV-2 variants in the past one year, a need for pseudovirus neutralization assay against variants would make the issue complicated. At present around 5 million persons are being vaccinated every day in India<sup>7</sup> and testing pre-vaccination or post vaccination antibody levels of these individuals, as suggested by Lippi G et al suggested by Lippi et al<sup>1</sup> will be an improbable task due to infrastructure, financial and administrative challenges.

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