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## Short Communication

## Uninformative and unuseful: why it is necessary to actively challenge COVID-19 antibody testing postvaccination

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## ABSTRACT

**Objectives:** We aimed to assess the evidence on the usefulness of postvaccination testing of COVID-19 antibodies.**Study design:** We used a descriptive analytical approach.**Methods:** We synthesized insights of studies on the immunological responses to SARS-CoV-2 after natural infection or vaccination and recommendations by regulatory institutions, such as the Food and Drug Administration and the Centers for Disease Control and Prevention in the United States.**Results:** Based on the multiple humoral and cellular responses elicited by either the virus or the vaccines, the high variability of antibodies in blood, and the lack of correlation between the presence of antibodies and active cellular immunity against SARS-CoV-2, there has been explicit advice against assessing immunological status postvaccination.**Conclusions:** Postvaccination antibody testing is not warranted to assess immunity status for COVID-19. Patients may misinterpret results, leading to the spread of misinformation regarding vaccine efficacy or the need to continue self-protection or the protection of others. Therefore, public health authorities should actively challenge the promotion and commercialization of this type of tests.

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In countries highly impacted by the COVID-19 pandemic, slow vaccine rollout has been met with offers to get tested for antibodies after being vaccinated against SARS-CoV-2. Prices may vary from £49 in England<sup>1</sup> and £43 (€50) in Spain<sup>2</sup> to £14 (US\$ 20) in Ecuador.<sup>3</sup> We examine here the evidence for the usefulness of postvaccination testing of COVID-19 antibodies and, accordingly, for the potential need to limit the promotion and commercialization of this type of tests.

Through clinical trials, we know that vaccines against COVID-19 act in the human body to impede the clinical progression of the disease into a severe case, including death.<sup>4</sup> Evidence is based on observed decreases in morbidity, mortality, and potential transmission of COVID-19 on vaccinated individuals.<sup>5</sup> However, the presence of antibodies has not yet been measured systematically.

Studies assessing COVID-19 immunological responses are crucial because these dynamics offer key insights into the control of the pandemic. After vaccination, we can expect the presence of

antibodies against the spike protein responsible for SARS-CoV-2 cell invasion in a blood sample (e.g. receptor binding domain immunoglobulin G). Nevertheless, science has yet to determine the threshold of either optimal or negligible immunological antibody response, which means that neither a positive result is automatically equivalent to immunity nor a negative result is equivalent to lack thereof.<sup>6,7</sup> This is why regulatory institutions such as the Food and Drug Administration and the Centers for Disease Control and Prevention in the United States have explicitly advised against postvaccination testing of SARS-CoV-2 antibodies.<sup>8,9</sup>

Studies show that antibody presence is highly variable.<sup>10</sup> A potentially negative or low antibody test result does not automatically translate into a diminished immunological status for two main reasons. First, the test might be failing to detect the number of antibodies due to lower sensitivity (i.e. ~80%<sup>11</sup>). Second, vaccines also elicit immune responses (Fig. 1), which play an important role in early virus clearance via T-cells (i.e. CD4+ and CD8+) and long-lasting protection via memory B cells (Fig. 1).<sup>6,7,12</sup> Testing for antibodies does not assess cellular response, but, more importantly, titers of antibodies in blood may correlate poorly with the presence of an active cellular immunity against SARS-CoV-2 (Fig. 1).<sup>6,12</sup> To be

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