

For COVID-19 survivors: just one dose of vaccine is enough

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A study shows that in people who have been previously exposed to the coronavirus responsible for Covid-19, a single dose of the messenger RNA vaccine is sufficient to achieve maximum immunity.

There have been just over 340,000 confirmed cases of COVID-19 in Quebec since the start of the pandemic, and there is no doubt that the number of actual cases is much higher given the high proportion (approximately 50%) of asymptomatic infections.

Data collected so far from COVID-19 survivors indicates that, in the majority of cases, the infection has elicited a very good natural immune response and that this protection against the virus should be maintained for at least a few years (1).

On the other hand, it is difficult to assess exactly this degree of protection, because the immune response is extremely variable from one person to another depending on age, general state of health, certain genetic factors or even the quantity of virus to which immunity has been exposed.

Vaccines help reduce this inter-individual variability because everyone receives the same dose and the vaccine formulation is calibrated to induce an optimal immune response.

For example, volunteers who received a messenger RNA vaccine (Moderna) have been observed to have higher blood levels of antibodies than those who were infected with the virus (2).

It is therefore likely that even for COVID-19 survivors, vaccination may provide more optimal protection against the virus than that offered by natural infection.

ONE DOSE IS SUFFICIENT

To answer this question, researchers compared the immune responses generated by messenger RNA-based vaccines (Pfizer and Moderna) between people who had not been infected with the coronavirus and those who had contracted COVID-19 in the last 2 to 4 months (3).

In accordance with clinical data published by the manufacturers of these vaccines, they found that in people who have never been exposed to the virus, an optimal immune response requires the administration of two doses of these vaccines.

The second dose seems particularly important for generating an immune memory capable of neutralizing the B.1.351 (South African) variant, which confirms the importance of completing the immunization protocol with two doses of mRNA vaccines.

Until now, the urgency to halt the spread of the virus as quickly as possible has forced authorities to use available doses to vaccinate as many people as possible, even delaying the administration of the second dose.



However, these results remind us that this second dose is necessary for optimal protection against the virus and its variants.

The results are somewhat different for people who had already been infected with the coronavirus before being vaccinated.

In these people, the presence of an immune memory of the infection caused a very high production of antibodies after the administration of the first dose of vaccine, but this response was already reaching its maximum and was not significantly increased by a second dose.

Vaccination of COVID-19 survivors may therefore improve their immunity to the virus, but this protection only requires a single dose of mRNA vaccine.

This finding could prove to be significant should we ever face vaccine supply issues over the next few months: given the large number of people who have been infected with the virus in the past year, the second doses not needed for this population could then be used to supplement the immunization protocol for individuals who require both doses of vaccine.

- (1) Dan JM et al. Immunological memory to SARS-CoV-2 assessed for up to 8 months after infection. *Science* 2021; 371: eabf4063.
- (2) Widge AT et al. Durability of responses after SARS-CoV-2 mRNA-1273 vaccination. *N. Engl. J. Med.* 2021; 384: 80-82.
- (3) Goel RR et al. Distinct antibody and memory B cell responses in SARS-CoV-2 naïve and recovered individuals following mRNA vaccination. *Science Immunology*, 2021, 6(58):eabi6950