



Do COVID-19 vaccines keep working over time?

Summary of Findings up to March 2023

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Why do we need to know if COVID-19 vaccines keep working over time?

Scientific studies have shown that getting the COVID-19 vaccine makes you less likely to become infected. These studies also show that vaccination also makes you less likely to be hospitalized or die due to COVID-19. But how long do these effects last? The answer to this question can help people decide when they might need booster doses. It can also help them decide if they need to keep wearing masks.

What questions did we want to answer?

We wanted to answer two questions:

- 1) How well do the first two doses of the vaccines work 4+ months after getting them?
- 2) How well do booster doses work 3+ months after getting them?

For each question, we looked at people's risk of getting COVID-19, being hospitalized, or dying due to COVID-19 after being vaccinated and/or boosted. We looked only at vaccines used in Canada.

How did we answer these questions?

When studies are done, their results are stored in databases. We searched several of these for all the studies we could find on how well COVID-19 vaccines work. Our team focused on studies that:

- 1) Compared people who got COVID-19 vaccines with people who did not;
- 2) Followed these people for at least 3 to 4 months; and
- 3) Looked at who were infected, hospitalized, or died due to COVID-19.

We then combined data across all these studies to see what was going on.

What did we learn?

For infections: The first two doses work very well against infections in the first four months. They work a lot less well after that. Getting a booster dose works well in the first four months too. But after that they work less well.

For hospitalisations and deaths: The first two doses also work very well against hospitalisations and deaths for at least 6 to 8 months. They only begin to work less well after that. Getting a booster dose also works well against hospitalization and deaths but starts to work less well after several months.

What about Omicron? The first two doses help against infections and hospitalizations due to Omicron, but not as well as we would like. How well they work also drops quickly over time. Getting boosters work better than the first two doses for Omicron, but they start to work less well over time.

Our take away: Vaccines work well to protect us against hospitalizations and deaths. Getting a booster can help keep us even safer, especially against Omicron. But vaccines don't work as well over longer periods of time and don't protect as well against infections. That being so, wearing a mask, washing one's hands, and staying at home when sick are all still good things to do.

How certain are we about these findings?

Based on how well the studies were run and the results they found, we are quite sure that the vaccines work well against hospitalizations. We are also quite sure that the vaccines work well against infections in the short term. Yet it also looks clear to us that the vaccines work less well over time and less well against Omicron in general. We can be certain about all this because many studies share the same results.

But there are also things we are less sure about. We are not quite sure about how quickly vaccines start working less because different studies showed different results. We also did not find as many studies on how well the vaccines protect against death. We think the protection against death is similar to the protection against hospitalizations. What we think could change, though, because more research is still being done about how well vaccines protect against infection, hospitalization, and death.

This summary is based on a larger report that can be found at:

https://www.mcmasterforum.org/docs/default-source/product-documents/living-evidence-syntheses/covid-19-living-evidence-synthesis-10.9---what-is-the-long-term-effectiveness-of-available-covid-19-vaccines-for-adults.pdf?sfvrsn=50b24945_3

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