



Do the COVID-19 vaccines keep working over time?

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Summary

We looked at research on how well COVID-19 vaccines stop infections, hospitalizations, and deaths when 4 months or more have passed since someone became fully vaccinated.

We found that, over time, COVID-19 vaccines continue to strongly protect people against being hospitalized and dying. However, vaccines may become less effective over time in preventing people from becoming infected with COVID-19. Consequently, we may need to keep engaging in protective measures like mask wearing until the virus is under control.

How confident are we in these findings?

Most of the studies we looked at were well conducted and of high quality. However, since research about COVID-19 vaccine effectiveness is less than a year old, there was only a small number of studies for us to review. It is possible that our conclusions may change as more studies are done around the globe and their results become available.

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

Scientists agree that COVID-19 vaccines protect people against catching COVID-19. They also agree that when a vaccinated person does catch COVID-19, their chance of being hospitalized or dying is lower than if they were not vaccinated. However, most studies have only tracked the protection given by vaccines for less than 4 months after a full vaccine schedule (e.g., 4 months after people receive the 2nd doses of a 2-dose vaccine). It is unclear whether vaccines continue to give as strong a protection for periods longer than 4 months. This is crucial information for governments to know when deciding whether: (a) we need to keep engaging in measures like physical distancing and facemask wearing; and (b) whether additional doses of the vaccine are needed to keep us protected.

What questions did we want to answer?

We wanted to answer the following questions. First, how high is the protection given by COVID-19 vaccines (against infections, hospitalizations, and deaths) 4 months or more after people complete their vaccination? Second, does the level of protection differ for some people compared to others (e.g., when comparing older adults to younger adults)? Third, does the level of protection differ between vaccines, especially between the widely used Pfizer and Moderna vaccines?

How did we answer these questions?

When scientific studies are done, their results are usually stored in “research databases”. We searched several of these databases and collected all the studies we could find on how well COVID-19 vaccines work. We then looked at work by other researchers who did the same thing, and also collected all the studies they found. Our team then singled-out all studies that: (1) compared people who were fully vaccinated to people who were unvaccinated; (2) followed these people for at least four months; and (3) looked at how often people got infected, were hospitalized, or died due to COVID-19. We then looked at data across all these studies.

What did we learn?

We learned that fully vaccinated people continue to be strongly protected against hospitalization and death due to COVID-19, 4-6 months after being vaccinated. We also found that, over time, the vaccines become less likely to prevent people from becoming infected with COVID-19. However, we do not know if this is because the vaccines become less effective over time, if preventative behaviours have reduced or notably changed (e.g., face mask wearing), or because COVID-19 variants (e.g., the Alpha, Delta, or Omicron variants) are becoming more common.

Overall, the good news is that being vaccinated continues to keep people out of hospitals and from dying, up to 6 months after vaccination, and that both the Moderna and Pfizer vaccines work well. However, the vaccines alone may not be enough to stop the virus from spreading. Other measures, like mask wearing, may still be necessary over this time, even for fully vaccinated people.

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