

COVID-19 – INTERPRETING VACCINE EFFICACY

Scientists use the term vaccine efficacy to describe how well a vaccine reduces the risk of infection in a controlled environment like a clinical trial. In the real-world setting of a vaccination campaign, the term vaccine effectiveness is used to account for real world factors – for instance, when some people skip their second dose of vaccine.

A common misunderstanding is that that vaccine efficacy represents the percentage of people who will be protected if vaccinated. But in reality, this number represents something else: how much less likely someone is to be infected as a result of vaccination if exposed to the virus that cause COVID-19.

For example, the Novavax vaccine was found to be 90% efficacious against COVID-19 infection. In clinical trials, those who received the vaccine were 90% less likely to become infected with COVID-19 than those who received a placebo.

Let's estimate how this might translate into a real-world setting by using the proportion of Californians with a documented case of COVID-19 this past year – or 9%.

Using that as a baseline risk for COVID-19 and the vaccine efficacy of 90%, we can say that the risk of someone experiencing a COVID-19 infection after vaccination is 0.9% per year*. (The incorrect interpretation of 90% efficacy is that the vaccinated person still has a 10% chance of getting COVID.)

Remember that an exposure to COVID-19 may or may not lead to an infection and an infection may or may not lead to illness, and that an illness may or may not be severe. Vaccines reduce the chance of infection, illness and severe illness, but they reduce the odds of severe illness more than any other outcome, making severe illness or hospitalization extremely rare if someone is fully vaccinated.

More good news:

All of the vaccines were 100% efficacious against COVID-19 related deaths and hospitalizations in the trials (as measured two weeks after the last dose of Novavax, Pfizer, or Moderna or 28 days after the single Johnson & Johnson dose).

*Assuming vaccine immunity lasts a year or longer, something that is still being researched.