

Here are the most important questions about the COVID vaccine

Manila Bulletin · 10 May 2021 · 7 · DR. ESEL SALVANA DR. ESEL SALVANA

Vaccines save millions of lives every year. Prevention of deadly and debilitating illnesses, such as yellow fever, measles, and polio accounts for an unimaginable number of people who would have otherwise died or would have been disabled for life. Since vaccines worked so well, people soon forgot how scary these diseases were. Prior to the pandemic, antivaccine propaganda was already causing many problems. Misinformation resulted in preventable outbreaks of measles, mumps, and polio in areas that previously achieved herd immunity. In the Philippines, the impact of the Dengvaxia scandal was far-reaching, with outbreaks of many vaccinepreventable diseases occurring as a direct result of the drop in vaccine confidence.

The COVID-19 pandemic has shown us what can happen if there is no vaccine for a highly contagious and deadly disease. Over three million people have died, and hundreds of millions have been sickened. The global economy has been severely affected, and many people are jobless and going hungry. Despite the quick development of highly effective and safe COVID-19 vaccines, the initial enthusiasm for this tremendous achievement has been tempered by supply issues and misinformation. Many people continue to hesitate to get vaccinated due to rampant fake news and antivaxer misinformation. Aside from an efficient and equitable rollout of safe and effective vaccines, a strong education and information campaign needs to be mounted to maximize uptake.

A lot of confusion remains on the objectives of vaccination, the efficacy of the available vaccines, and the risk of side effects.

It is important to address these questions because vaccines are the fastest way out of this pandemic and they will enable us to go back to living our lives without fear of contagion. What is the best vaccine, and what accounts for the differences between vaccine brands? COVID-19 vaccines work in three possible ways: prevent severe disease (and death), prevent symptoms, and prevent infection.

Preventing any kind of infection is the most desirable but hardest to achieve trait for a vaccine. This is called “sterilizing immunity.” This kind of vaccine elicits a very strong immune response with very high levels of neutralizing antibodies in the blood. If the virus invades, the antibodies are ready and immediately neutralize and kill it. This is also the hardest vaccine to make and study because people who have sterilizing immunity never show any signs or symptoms of infection. The infections in people who got the vaccine would have to be compared to a control group who are unvaccinated. All study subjects need to be tested at regular intervals for any kind of infection, including asymptomatic infections. Since a significant number of COVID-19 infections are asymptomatic, the only way to detect asymptomatic infections is by swabbing each subject periodically, some-

times weekly or daily. This is a huge logistical challenge, and clinical trials examining this aspect of vaccine protection are still ongoing.

In contrast, checking people who develop symptoms of COVID-19 during clinical trials is more straightforward. A daily symptom survey is done. If someone develops symptoms, the subject is immediately tested. The symptoms can be characterized as mild, moderate, or severe. This approach is the most practical when time is of the essence. This study design can quickly determine how useful a vaccine can be.

When COVID-19 vaccines were being conceptualized last year, the World Health Organization and other scientific bodies decided that first generation vaccines needed to be evaluated in a short period of time. The faster a vaccine is deployed, the more deaths will be prevented. The fastest way to prove that a vaccine works is by seeing if it prevents clinical disease, especially severe disease.

As the clinical trial results from different manufacturers came in, a plethora of vaccine efficacy results were seen. The WHO minimum requirement for a good COVID-19 vaccine is 50 percent efficacy. This means that if someone is vaccinated with a vaccine with 50 percent clinical efficacy, the risk of developing clinical disease after exposure is 50 percent less compared to someone who is not vaccinated. It does not mean that someone who is vaccinated has a 50 percent chance of getting COVID-19, which is a common misconception. It also does not mean the person cannot get asymptomatic disease.

The clinical efficacy for preventing at least mild disease for some of the different vaccine brands is as follows: Pfizer 95 percent, Moderna 94 percent, Astra 62-90 percent, Sinovac 50 to 91 percent, J&J 66 percent, Gamaleya 91.6 percent, Novovax 89 percent, and Sinopharm 86 percent. The range of efficacies seen for some of the vaccines represent different populations being tested, from the highly exposed (healthcare workers on the frontline) to the general population.

Despite these differences, the most important finding for all these vaccines is that every single one prevents severe disease at a very high rate. The bottom line is that if we deploy these vaccines that prevent severe disease among the vulnerable populations, we can decrease deaths from COVID-19 by more than 90 percent. It would be nice to not get a cold, but between waiting for a “better” vaccine and taking an available vaccine, vulnerable populations should take the first available vaccine. The elderly, front liners, and those with comorbidities have a 10 percent or more chance of dying if they contract COVID19, and so they may not survive to see a “better” vaccine.

Can we mix vaccines or get revaccinated with a “better” vaccine later?

Mixing vaccines is still experimental but the studies are ongoing. This is something that works for pneumonia vaccines where one kind of vaccine is used as a first dose (PCV13) followed by a second kind after one year (PPSV23). The sequence and types of COVID-19 vaccines to mix are still unknown and need careful study. If not done properly, this may have consequences on vaccine safety and efficacy.

There is still a lot of uncertainty on how long protection lasts for any of our current vaccines. The participants from the original clinical trials are still being followed, and the available data is only up to six to eight months so far. Fortunately, at this point it seems that most vaccines continue to have durable immunity. Chances are this will carry over for

at least a year. If vaccine protection does not last a lifetime, boosters can be given but the timing is uncertain for now. A second type of vaccine could potentially be used, but there are no studies available to support this at this time. There is still a severe shortage of vaccines globally and so it may not be equitable to get a second series when many people have not yet gotten vaccinated.

What happens if my second dose is delayed? Do I have to start over?

A delay in the second dose of any vaccine (not just COVID-19) is not a big deal. Catch up immunizations are done all the time. What is not advisable is getting the second dose too early. For instance, Sinovac at a two-week interval in healthcare workers was about 50 percent effective in at least mild disease, but this went up to 70 percent when given at four-week interval. Astra works better if the second dose is given at 12 weeks compared to four weeks. Dosing intervals for vaccines are constantly adjusted as more data is gathered. What about untoward side effects? We have heard of blood clots from the vaccines.

There is a potential link between two of the COVID-19 vaccines—J&J and Astra—with blood clots. The excess risk, however, is on the order of one to 10 out of a million doses given. In contrast, the risk of dying from COVID-19 for people above 60 years old is one out of 10. The pauses in administration are to identify remedial measures to further lower risk, especially in people who may be predisposed to clots. Nevertheless, the benefit of getting vaccinated, especially for vulnerable populations overwhelmingly favors benefit over risk. The reviews and pauses are part of the safety mechanisms and shows that these safeguards are working and, as of this writing, Astra vaccine is again being given to all eligible populations in the Philippines.

Vaccines represent the latest and greatest hope for getting out of this pandemic. Each new vaccine that is proven to work is another nail in the coffin of the SARS-CoV-2 virus. How fast we can bury it depends on the willingness of each one of us to protect each other.