Children's Hospital of Philadelphia℠
Vaccine Education Center

Dec. 6, 2023, Vaccine Update Webinar Q&A

General questions

Where can I obtain the slides for this presentation?
The slides are available in the "resources" section of the console when you watch the event or on the webinar archive page of our site, https://www.chop.edu/pages/vaccine-webinar-archive.

Coronavirus-related questions

Could you explain why Covid vaccine is still under EUA licensure since "pandemic" declaration is over?
Some versions are licensed, but others are still under "emergency use authorization" (EUA) for some age groups, but for practical purposes the status of licensure doesn't matter. The steps taken during COVID-19 vaccine development and the contents of the vials are the same regardless of whether they are labeled as EUA or licensed products. Unfortunately from a communication standpoint, "emergency use authorization" sounds scarier than licensure. People can be reassured by the knowledge that the while the timeline was shorter, the usual steps were taken to reach the endpoint. Indeed, the size of the clinical trials for both Moderna's and Pfizer's mRNA vaccines were typical of any adult or pediatric vaccine trial. And, in addition to authorizing the final product, the FDA also had to authorize the process by which the vaccines were made and the building in which the products were manufactured.

Do you have any information on why it is so hard to get the current boosters? It is not as easy to get as previous ones even while the companies are advertising the need for people to get boosted.
We don't know for sure why this is happening, but it is most likely related to the transition from government to insurance company payment.

Could you please comment on the article reporting that emerging evidence suggests increased IgG4 levels detected after repeated vaccination with the mRNA vaccines that may not be protective, but rather could constitute an immune tolerance mechanism that could promote unopposed SARS-CoV-2 infection and replication by suppressing natural antiviral responses?
While some studies have observed this phenomenon, there has yet to be a clinical correlation. Said another way, booster dosing has consistently been shown to increase protective efficacy without any evidence for tolerance.

Any concern about recent article by David Speicher related to DNA fragments detected in monovalent and bivalent mRNA COVID-19 vaccines?
The process of making mRNA vaccines begins with producing DNA for the SARS-CoV-2 spike protein in DNA-based plasmids. The plasmids are put in bacterial cells, so they reproduce as the bacteria reproduce. The plasmids are then isolated, broken open, and the DNA for the spike protein collected. This DNA is then used to make mRNA and treated with an enzyme to break the DNA into small fragments. The mRNA is then purified for use in the vaccine. As with any purification process, there may be small amounts (i.e., billionths of a gram) of fragmented DNA that remain, but the quantities are so limited and the DNA, so fragmented, that it would not be able to cause any damage.

Two additional pieces of information should offer further reassurance:

1. Our DNA is housed in the nucleus of cells. Like a moat around a castle, it is difficult for any other DNA to enter the nucleus, especially when the cell is not replicating, and the cells that process the vaccine are non-replicating cells.
2. Our cells have mechanisms to prevent foreign DNA from accessing or changing our DNA because we are exposed to DNA from external sources all the time, such as from foods we eat and from bacteria and viruses that infect us. Indeed, we have more bacteria in our bodies than cells, so we have to be able to protect ourselves from external sources of DNA.

For more information about this topic, check out Dr. Offit's substack, "Beyond the Noise." The Dec. 18, 2023, post will address this issue in detail. Haven't subscribed yet? Sign up today.

Are there any data on the ability of the protein-based vaccine to induce memory T cell responses?
Yes, Zhang and colleagues compared immune responses to the two mRNA vaccines, the adenovirus vector vaccine, and the protein-based vaccine. All vaccines induced T cell responses detectable at least six months after vaccination. The protein-based vaccine led to lower levels of CD8+ T cells, but that response was variable among recipients of that vaccine.

T cell immunity typically reduces disease severity, protecting against hospitalization and death. How do you propose measuring efficacy in a clinical trial (or benefit to addition of NP antigens), given the number and severity of COVID infections today?
Vaccine efficacy studies would be difficult to do at this point, given the high level of population immunity. However, studies could measure relative levels of serum antibodies and T cell responses that would be most likely to correlate with protective efficacy.

I have heard from a physical therapist and home health nurse that they are caring for patients with ambulatory issues after receiving the latest COVID vaccine. Is this expected?
We are unaware of any side effects of this type following COVID-19 vaccine. If people are experiencing side effects, they should report them to VAERS, so if something new has developed, it can be detected and looked into in the Vaccine Safety DataLink (VSD) system.

Can you review the last slide - the summary - again as to why we might get to a universal vaccine for SARS CoV2. Thanks.
Given that protective memory T cells are directed toward the SARS-CoV-2 nucleoprotein (rather than the spike protein) and that the nucleoprotein does not change as frequently as the spike protein, we could potentially create a COVID-19 vaccine that also includes mRNA coding for the nucleoprotein, thereby protecting against several variants and removing the need to keep updating the spike protein component.

Why the universal recommendation (age 6 months and up) for the newest vaccine if many people have significant T-cell protection?
We have wondered that as well. While some of the most at-risk people (the elderly, those with compromised immunity, those with certain chronic conditions, and pregnant people) can benefit from replenished circulating neutralizing antibodies (resulting from a recent dose of vaccine) to decrease their chance of having any infection, most people have immunologic memory that will protect them against severe disease, which is the goal of this vaccine.

If we have a long-acting vaccine, would it be given annually like a flu shot, or would it be a single dose that would last years, like a Tdap? Thanks!
We anticipate that most people would not need annual vaccination. Even with current vaccines, some groups benefit from vaccination more than others. But this would need to be studied in groups representing different ages, different comorbidities, and different levels of previous exposure to vaccines and natural infection. Some may need to get a booster every year; others, every few years or longer.