COVID Q&A Vaccine

Q. Who should be vaccinated?

A. The goal is for everyone to be able to easily get vaccinated against COVID-19 as soon as large enough quantities are available. Once vaccine is widely available, the plan is to have several thousand vaccination providers offering COVID-19 vaccines in doctors' offices, retail pharmacies, hospitals, federally qualified health centers and county health departments.

Q. If kids aren't being vaccinated, what does that mean for herd immunity.

A. With COVID-19 vaccines proven to be safe and effective in most adults, Pfizer and Moderna have both begun U.S. trials for kids as young as 12. And if those trials go smoothly, the vaccines will be tested in younger and younger kids. This is typical for new vaccines: "It's called the age de-escalation strategy," Carol Kao, a pediatrician at Washington University in St. Louis, said.

There are some 70 million kids in the U.S., nearly a quarter of the country's population. Children in general are not especially vulnerable to COVID-19; most infections are mild or even asymptomatic. In some very rare cases—fewer than 0.01 percent—young patients can develop a complication called multisystem inflammatory syndrome, or MIS-C, but it is generally quite treatable in a hospital.

Q. Are COVID-19 vaccine ingredients public? Is there a way to see what they're made of?

A. Answer from infectious diseases expert David Brett-Major, MD, MPH
Yes, both Pfizer and Moderna provided detailed information about the ingredients in their COVID-19 vaccines to the U.S. Food and Drug Administration (FDA).

The most important ingredient in both the Pfizer and Moderna vaccines is mRNA. The mRNA tells your cells how to make a protein from the coronavirus. Once your body knows how to make the protein, it can recognize COVID-19 and fight it off.

The vaccines also contain various salts, fats and other ingredients to help your body use the mRNA. The full list of ingredients are included in the vaccine package inserts:

If you would like to learn more about each ingredient, the National Institutes for Health (NIH) provides a service to explain medicine ingredients called PubChem.
We've listed vaccine ingredients in the table on the following page as an example

	Pfizer-BioNTech	Moderna
Active ingredient	mRNA coding for a form of the spike protein of SARS-CoV-2	mRNA coding for a form of the spike protein of SARS-CoV-2
Lipids (fats)	(4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl)bis(2-hexyldecanoate) 2[(polyethylene glycol)-2000]- N,N-ditetradecylacetamide 1,2-distearoyl-sn-glycero-3-phosphocholine cholesterol	SM-102 polyethylene glycol [PEG] 2000 dimyristoyl glycerol [DMG] cholesterol 1,2-distearoyl-sn-glycero-3-phosphocholine [DSPC]
Salts	potassium chloride monobasic potassium phosphate sodium chloride dibasic sodium phosphate dihydrate	sodium acetate
Other	sucrose	tromethamine tromethamine hydrochloride acetic acid sucrose

These two vaccines do NOT include:

- Fetal cells
- Blood products, like red blood cells, white blood cells, plasma or platelets
- COVID-19 virus cells
- Mercury
- Egg
- Latex stoppers
- Pork products
- Preservatives
- Microchips

***Sometimes there are microchips on the outside of a syringe, so the health care professional can scan it quickly for digital records. The world's tiniest microchip is still much too big to insert into an immunization shot*

Q. Do mRNA vaccines work by altering human DNA?

A. Answer from infectious diseases expert James Lawler, MD, MPH

No, the vaccines cannot change your DNA.

The two COVID-19 vaccines approved for emergency use authorization by the U.S. Food and Drug Administration use mRNA, or messenger RNA, to instruct your body to build the coronavirus' spike protein. Your body then produces antibodies to combat the coronavirus when it encounters it later.

mRNA is very fragile, and it's very quickly degraded once inside the body. That's one of the reasons why these vaccines must be so carefully preserved at very low temperatures and why you need two doses.

Additionally, DNA is stored in the nucleus of your cells. mRNA vaccines are designed to do their work outside of the nucleus and have not been observed to interact with the nucleus.

Q. The vaccine development was rushed, and I don't think it was properly evaluated for safety.

A. No. Vaccine development has been led by the world's best scientists. One reason this came about so quickly is because the mRNA approach to creating a vaccine is highly precise. With new techniques, this sequence was developed in a matter of days. Stage 3 clinical trials testing the vaccines on tens of thousands of people have occurred. These all provide confidence in the safety and effectiveness of the vaccine.

At this time, more than 100,000 people have taken part in clinical trials for COVID-19 vaccines. There have been no deaths from the vaccine in these studies. All data continue to support the vaccine being very safe and causing only mild side effects in some people.

CDC has developed a new tool, v-safe, as an additional layer of safety monitoring to increase our ability to rapidly detect any safety issues with COVID-19 vaccines. V-safe is a new smartphone-based, after-vaccination health checker for people who receive COVID-19 vaccines.

Q. I've heard that people experience COVID-like symptoms after being vaccinated.

A. This is not unheard of. Here's why it can happen. First and foremost, remember the vaccine itself cannot cause COVID-19. A person may, however, be exposed to COVID-19 just before getting vaccinated and become infected. Also, full protection from the vaccine does not occur until about 2 weeks after the second dose. People who have received only the first dose are not yet fully protected and could be susceptible to infection. This is why practicing the pillars of infection prevention – wearing a mask, washing your hands, keeping your distance, avoiding gatherings – remains critically important.

Q. If I get the vaccination, will I become a false positive for the COVID-19 testing (e.g., PCR test, antigen test or antibody test)?

A. Answered by infectious diseases expert Angela Hewlett, MD, MS

Receiving the COVID-19 vaccine will not affect the PCR or antigen test results since these tests check for active disease, not immunity. There is no virus present in the mRNA COVID-19 vaccine.

The vaccine is intended to induce an immune response, so the serology test (antibody test) may be positive in someone who has been vaccinated.

Q. Does the vaccine cause infertility?

A. Answer from infectious diseases expert David Brett-Major, MD, MPH:

The COVID-19 mRNA vaccines now have been in tens of thousands of people and infertility has not been a problem for men or women.

Twenty-three women became pregnant after participating in Pfizer's mRNA vaccine clinical trial. Pfizer reported one poor pregnancy outcome in someone in the control/placebo group – meaning they had not received the vaccine.

There is a rumor that antibodies against the spike protein will also target a protein in the placenta of pregnant mothers, syncytin-1. There is no data suggesting that these antibodies will affect syncytin-1, as they are different proteins.

Q. I'm pregnant, planning to become pregnant, or breast feeding and am concerned about taking the vaccine.

A. The American College of Obstetricians and Gynecologists has reported that pregnancy, lactation or the desire to become pregnant are not in themselves reasons to decide against taking the vaccine. It is highly recommended that women who fall into these categories strongly consider getting the vaccine, as long as they meet other eligibility criteria. They are encouraged to talk with their doctors about any concerns.

The V-safe smartphone-based tool is used for reporting any side effects from the COVID-19 vaccination. As the 20 million frontline healthcare workers in the first phase to receive the vaccine – and invited to register for V-safe – includes 10s of thousands of pregnant women, there will soon be more data available to assess for any concerns about COVID-19 vaccination during pregnancy. In the first week of vaccine availability, more than 500 pregnant women signed up for V-safe. Additional data is coming quickly.

Q. Do I need to be vaccinated if I've already had COVID-19?

A. It is recommended individuals who have had and recovered from COVID-19 also should be vaccinated

Q. I've heard that Bill Gates has been involved in vaccine development and distribution. Is Microsoft secretly embedding tracking devices in the vaccines?

A. No. The coronavirus vaccine does not contain a microchip, contrary to a widely-shared conspiracy theory. The false claim that says Bill Gates is plotting to use the vaccine to track people via microchip may have come from a Facebook video containing altered and out-of-context interviews.

Q. I've taken care of so many sick COVID-19 patients and not gotten sick. I think I have immunity and don't need to be vaccinated.

A. Many people with COVID show few or no symptoms. It is possible to carry and transmit the disease without ever knowing you were infected. At this time, experts do not know how long someone is protected from getting sick again after recovering from COVID-19. The immunity someone gains from having an infection, called natural immunity, varies from person to person. Some early evidence suggests natural immunity may not last very long.

Q. I'll let others go first and wait a few years until some long-term studies show this is safe.

A. That still leaves more than a third of the population vowing to either never get the shot or delaying their opportunity to be vaccinated when it becomes available — impacting herd immunity. Experts believe herd immunity could be reached by June, but if not enough people get the vaccine, the epidemic "could go on and on and on".

Q. I want to know how long this vaccine lasts before I decide to get my first dose. Is it a year? Two years? Lifetime?

A. The current thinking is that the COVID-19 vaccine will be an annual shot or shots.

Q. COVID-19 isn't any more dangerous than the flu. And I never get the flu vaccine therefore don't believe I should be vaccinated against COVID-19.

A. Many more people are susceptible to COVID-19 because there is little preexisting immunity to the virus that causes it—SARS-CoV-2. Through vaccinations and previous infections, a portion of the population has some immunity to influenza, which helps limit the number of cases we see each year.

There is a lot of similarity between how the two viruses are spread, but the number of susceptible people is really what allows SARS-CoV-2 to spread so easily.

COVID-19 has a higher severe disease and mortality rate than influenza in all age groups, except perhaps children under the age of 12.

Q. Are the Videos on social media and web showing horrible reactions true?

A. Please be sure to seek official sources of information rather than relying solely on social media and 2nd hand information. While it's a useful tool for researching health-related issues, the Internet does not replace a discussion with a healthcare professional.

Before considering vaccine information on the Internet, check that the information comes from a credible source and is updated on a regular basis.

CDC's vaccines and immunization web content is researched, written and approved by subject matter experts, including physicians, researchers, epidemiologists, and analysts. Content is based on peer-reviewed science. CDC leadership makes the final decision on the words, images and links to best serve the information needs of the public as well as healthcare providers, public health professionals, partners, educators, and researchers. Science and public health data are frequently updated. Most pages are reviewed yearly.

As you surf for vaccine information, consider guidance from these sources:

The Immunization Action Coalition suggests questions you should ask.

- The National Network for Immunization Information (NNii)external icon suggests questions to ask when evaluating information.
- The University of California San Francisco's Evaluating Health Information page lists "Red Flags" every consumer needs to know.
- The Medical Library Association translates medical jargon (Medspeak) into language everyone can understand.