COVID-19 Vaccine Frequently Asked Questions (FAQs) for Healthcare Providers and Public Health Partners

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Please Note: New or updated information appears in orange text

The purpose of this document is to provide public health partners and healthcare providers with frequently asked questions and answers that may be used to assist in responding to inquiries from their communities.

What is an mRNA vaccine?

The Pfizer-BioNTech and Moderna vaccines are the first vaccines available and authorized for use to protect people from COVID-19. These two vaccines use messenger RNA (mRNA) to create an immune response and protect a person from future infection with SARS-CoV-2 (the coronavirus which causes COVID-19).

mRNA is the genetic recipe that all organisms, including humans, use to make their proteins. These mRNA vaccines are a new approach that modify the SARS-CoV-2's mRNA so that our muscle cells can use the recipe to make a protein called the "spike protein". The spike protein is found on the surface of the SARS-CoV-2 virus and is harmless by itself. The spike protein is then seen by your immune system which in turn makes antibodies against SARS-CoV-2 to protect you from natural infection. After your muscle cells use the mRNA recipe, they quickly break it down and get rid of it. The mRNA vaccines do NOT contain live virus, and the mRNA never enters the nucleus of a person's cells where your DNA (genetic material) is kept, so the vaccine cannot cause any changes or damage to your DNA.

More information can be found at the CDC website about Understanding mRNA Vaccines.

Is this new vaccine technology safe?

Yes, the new mRNA vaccines are safe, and have been subject to the same rigorous scientific studies as other vaccines, and the vaccines have undergone scientific review by the FDA and CDC science and medical expert advisory committees to ensure that these vaccines are both safe and effective. Researchers have been studying and working with this type of vaccine for decades.

Haven't the COVID-19 vaccines been rushed into use?

The federal government has funded vaccine manufacturers to produce the vaccines while they were being studied for safety and efficacy (termed "Operation Warp Speed"). Also, one of the benefits of these new mRNA vaccines is that they can be produced more quickly than other types of vaccines. The vaccines' safety trials and the authorization process, however, is guided by science. The vaccine trials have been held to the same scientific standards as other vaccines that have been licensed for use, and the size of the vaccine studies are

similar to other vaccine trials. The U.S. Food and Drug Administration (FDA) has not lowered their standards for these vaccines. First, a science advisory committee to the FDA (the Vaccine and Related Biological Products Advisory Committee, or VRBPAC) reviews all the trial data and makes a recommendation to the FDA to authorize the vaccine for use (i.e., Emergency Use Authorization). Then a medical advisory committee to the U.S. Centers for Disease Control and Prevention (the Advisory Committee on Immunization Practices, or ACIP) provides recommendations on how to safely use any authorized vaccine. Therefore, while we do not yet have data on the long-term protection and outcomes after vaccination, the vaccines have been appropriately studied to ensure they are effective and safe to use now; the vaccine studies have so far followed participants for a median time of 2 months or longer after the second vaccination, and there have been no concerning safety issues identified with either vaccine. Scientists and researchers will continue to actively monitor the vaccines for any long-term safety concerns and to better understand how long protection lasts.

What is in the new COVID-19 vaccines?

The Pfizer-BioNTech vaccine contains the viral mRNA recipe for our cells to make the SARS-CoV-2 spike protein. The vaccine also includes the following ingredients:

- Lipids:
  - (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
- Potassium chloride
- Monobasic potassium phosphate
- Sodium chloride
- Dibasic sodium phosphate dihydrate
- Sucrose

The Moderna vaccine contains the viral mRNA recipe for our cells to make the SARS-CoV-2 spike protein. The vaccine also includes the following ingredients:

- Lipids:
  - SM-102 (proprietary to Moderna)
  - Polyethylene glycol [PEG] 2000 dimyristoyl glycerol [DMG]
  - 1,2-distearoyl-sn-glycero-3-phosphocholine [DSPC]
  - Cholesterol
- Tromethamine
- Tromethamine hydrochloride
- Acetic acid
- Sodium acetate
- Sucrose

Both vaccines contain polyethylene glycol (PEG), which is an ingredient in certain laxatives and bowel preparations before colonoscopy procedures, and an inactive ingredient in many medications. Neither vaccine contains any chemicals used as preservatives, like thimerosol. The vial stoppers from both brands/manufacturers are NOT made with natural rubber latex.

How is the Pfizer-BioNTech vaccine prepared and administered?

The Pfizer-BioNTech vaccine is supplied frozen between -80°C to -60°C in multi-dose vials. Undiluted vials can be stored in the refrigerator (2°C to 8°C) for up to 5 days (120 hours); undiluted vials may be stored at room temperature for no more than 2 hours.

To use the vaccine, first the vaccine is thawed from the ultra-low storage temperatures to room temperature. After the vial reaches room temperature, it is then diluted in its original vial with 1.8 mL of sterile 0.9% Sodium Chloride Injection, USP (use ONLY this formulation of Sodium Chloride as a diluent). After dilution, the vial contains about 5-6 doses of vaccine (0.3 mL per dose) and must be stored between 2°C to 25°C and administered within 6 hours from the time of dilution. Unused vaccine must be discarded after 6 hours and cannot be refrozen. Whether a 6th dose can be obtained from a vial depends on the type of syringe used – syringes/needles with lower dead-space volume produce less vaccine wastage and allow for a possible 6th dose; if standard syringes or needles are used, 6 doses may not be able to be extracted from a single vial. If the amount of vaccine remaining in a vial cannot provide a full dose of 0.3 mL, discard the vial and any excess volume; do NOT pool excess vaccine from multiple vials.

The Pfizer-BioNTech vaccine is administered intramuscularly (IM) as a series of two 30 mcg doses (0.3 mL each after dilution) given 21 days apart. Both doses are necessary for full protection. If the second dose of the vaccine is given 17-21 days after the first dose, it is still considered valid (i.e., there is a 4-day "grace period"). If more than 21 days has gone by since the first dose, then the second should be given as soon as possible, but no doses need to be repeated.

Vaccines may not be interchanged. So a person who gets their first vaccination with the Pfizer-BioNTech vaccine must get their second dose with the Pfizer-BioNTech vaccine to complete the series. Providers should refer to the FDA's Fact Sheet for Healthcare Providers Administering Vaccine (for Pfizer-BioNTech) for detailed guidance and information BEFORE administering any vaccine. See also CDC's summary of vaccine preparation and administration for the Pfizer-BioNTech COVID-19 Vaccine.

How is the Moderna vaccine prepared and administered?

The Moderna vaccine is supplied frozen between -25°C to -15°C in multi-dose vials (do NOT store on dry ice or below -40°C). Vials can be stored refrigerated between 2°C to 8°C for up to 30 days prior to first use. Unpunctured vials may be stored between 8°C to 25°C for up to 12 hours. Do NOT refreeze once thawed.

To use the vaccine, the vial must first be thawed and reach room temperature. Do NOT dilute the vaccine; vaccine should be gently swirled after thawing and between each withdrawal (do NOT shake). The vial contains about 10 doses of vaccine (0.5 mL per dose). After the first dose has been withdrawn, the vial should be held between 2°C to 25°C and the vial (and any unused vaccine) must be discarded after 6 hours. Do NOT refreeze.

The Moderna vaccine is administered intramuscularly (IM) as a series of two 100 mcg doses (0.5 mL each) given 28 days apart. Both doses are necessary for full protection. If the second dose of the vaccine is given 24-28 days after the first dose, it is still considered valid (i.e., there is a 4-day "grace period"). If more than 28 days has gone by since the first dose, then the second should be given as soon as possible, but no doses need to be repeated.

Vaccines may not be interchanged. So a person who gets their first vaccination with the Moderna vaccine must get their second dose with the Moderna vaccine to complete the series. Providers should refer to the FDA's Fact Sheet for Healthcare Providers Administering Vaccine (for Moderna) for detailed guidance and information BEFORE administering any vaccine. See also CDC's summary of vaccine preparation and administration for the Moderna COVID-19 Vaccine.

Can either COVID-19 vaccine be given with other vaccines?

No. The Pfizer-BioNTech or the Moderna COVID-19 vaccine should be administered alone with at least 14 days of separation before or after any other vaccine is given. This is because there is no information on the safety and efficacy of the COVID-19 vaccines when administered at the same time with other vaccines. However, if one of the COVID-19 vaccines is accidentally administered within 14 days of another vaccine, there is no need for either vaccine to be repeated.

Does the COVID-19 vaccine affect when tuberculosis (TB) testing can be performed?

Inactive vaccines, like the Pfizer-BioNTech and Moderna vaccines, should not interfere with TB test results, including both the tuberculin skin test (TST) and the interferon gamma release assay (IGRA). So there is no biologic reason that either a TST or IGRA test would affect the safety or effectiveness of the mRNA COVID-19 vaccines. There is, however, no data to inform the impact of the COVID-19 mRNA vaccines on either the TST or IGRA. Therefore, the CDC has recommended that for baseline TB testing either a TST or an IGRA blood draw should occur prior to COVID-19 vaccination (and then COVID-19 vaccine can be given, even during the same visit). If a COVID-19 vaccine has already been given, then baseline TB testing (either the TST or IGRA) should be deferred until 4 weeks after completing the 2-dose COVID-19 vaccine series. See CDC's Interim Clinical Considerations for Use of mRNA COVID-19 Vaccines for more details.

How effective are the new COVID-19 vaccines?

The Pfizer-BioNTech and Moderna vaccines are very effective at preventing COVID-19. After two doses of vaccine, both the Pfizer-BioNTech and Moderna vaccines prevented symptomatic confirmed COVID-19 about

94-95% of the time. In the Pfizer-BioNTech vaccine study, only 8 people who received the vaccine developed COVID-19 compared to 162 people who received the placebo. In the Moderna vaccine study only 11 people who received the vaccine developed COVID-19 compared to 185 people who received the placebo. High vaccine efficacy was observed across age groups, race/ethnicities and in people chronic medical conditions (including obesity, diabetes, hypertension, and chronic cardiopulmonary disease). Neither study, however, studied young children to know if the vaccines are effective in the younger pediatric age population. The Pfizer-BioNTech vaccine is only authorized to be used in people as young as 16 years of age (the Moderna vaccine is authorized for use in people 18 years of age and older). The number of people studied who were immunocompromised (e.g., those with HIV/AIDS) was also too small to evaluate efficacy in this population.

The Moderna vaccine has shown effectiveness at preventing severe COVID-19 – zero people who got the vaccine developed severe COVID-19 compared to 30 people who got the placebo (fake vaccine); one PCR-positive case of severe COVID-19 in a vaccine recipient was awaiting adjudication at the time of the analysis. The Pfizer-BioNTech vaccine may also protect against developing severe COVID-19, but the number of people that got the vaccine and were subsequently infected and develop severe COVID-19 was a very small number, so it is hard to know for sure.

Is this vaccine effective in older adults?

Yes. About 21% and 25% of vaccine study participants in the Pfizer-BioNTech and Moderna studies, respectively, were 65 years of age or older. In this age group, vaccine efficacy at preventing COVID-19 was estimated to be 95% in the Pfizer-BioNTech study (only a single infection was identified in Pfizer-BioNTech vaccine recipients compared to 19 individuals who received the placebo), and 86% in the Moderna study (only four infections were identified in people who got the Moderna vaccine compared to 29 people who received the placebo).

Do the vaccines prevent asymptomatic infection and spread of COVID-19 from one person to another?

We don't yet know if the vaccines prevent asymptomatic infection or prevent transmission of SARS-CoV-2 from individuals who were vaccinated but develop infection anyway. It is possible that people who have been vaccinated can still get asymptomatic infection and spread COVID-19, but that likely occurs less for people who have been vaccinated. We need more studies about whether the vaccines prevent viral shedding and transmission, especially in people who develop asymptomatic infection.

Do the vaccines provide long-term protection and immunity?

We don't know yet how long a person's protection lasts after vaccination. Both the Pfizer-BioNTech and Moderna vaccine studies are following participants for up to 2 years after the second dose of the vaccine so we can learn more.

Given the limited supply of the vaccine, should we only be giving one dose to people to maximize the number of people with at least some level of protection?

No. People should get 2 doses of either the Pfizer-BioNTech or Moderna vaccine (the vaccines are not interchangeable). The Pfizer-BioNTech vaccine study showed that after a single dose of vaccine (but before the second dose was given) the vaccine reduced the number of infections by about 52% – far less than the 95% after two doses. The Moderna vaccine study found that one dose of their vaccine reduced the number of infections by about 80% but there was only a short median follow-up time of 28 days. However, neither vaccine study was designed to only evaluate the effectiveness of a single dose of the vaccine. So while there is some protection after one dose, it is less than after two doses and may not last as long. Therefore, people should receive two doses of the same vaccine with doses appropriately spaced apart.

What are the most common symptoms I might experience after receiving the vaccine?

The Pfizer-BioNTech vaccine was studied in more than 43,000 people (including more than 21,000 people who got the vaccine and more than 21,000 people who got a placebo). The Moderna vaccine was studied in more than 30,000 people (including more than 15,000 people who got the vaccine and more than 15,000 people who got a placebo).

The most common adverse reactions in the Pfizer-BioNTech vaccine study were:

- Localized injection site reactions, including pain (84.1%), swelling (10.5%), and redness (9.5%).
- Systemic reactions including fatigue (62.9%), headache (55.1%), muscle pain (38.3%), chills (31.9%), joint pain (23.6%), fever (14.2%)

The most common adverse reactions in the Moderna vaccine study were:

- Localized injection site reactions, including pain (92.0%), swelling (14.7%), and redness (10.0%). There was also a significant number who developed arm pit (axillary) swelling and tenderness in the vaccination arm (19.8%).
- Systemic reactions including fatigue (70.0%), headache (64.7%), muscle pain (61.5%), joint pain (46.4%), chills (45.4%), nausea/vomiting (23.0%), and fever (15.5%).

Both localized and systemic reactions were more common in the younger aged participant cohort compared to older individuals, and were more common after the second dose of the vaccine. Localized and systemic reactions were mostly mild-to-moderate in severity and occurred within 1 to 2 days after vaccination.

Side effects with both vaccines are similar. The Moderna vaccine study, however, showed a higher percentage of participants with side effects, and about 20% of participants who got the Moderna vaccine also experienced axillary (arm pit) swelling and tenderness in the vaccination arm and more nausea/vomiting after vaccination. Lymph node swelling (lymphadenopathy) was also seen in vaccine recipients in the Pfizer-BioNTech vaccine

study (reported in 64 vaccine recipients vs. 6 individuals in the placebo group). Finally, Bell's Palsy was rarely observed in both vaccine studies (reported in 4 vaccine recipients vs. none in the placebo group in the Pfizer-BioNTech study, and in 3 vaccine recipients vs. 1 in the placebo group in the Moderna study), although the rate of Bell's palsy in the vaccine groups were similar to the expected background rate in the general population, so it is not clear that the vaccines caused the very small number of Bell's palsy cases.

There were no specific safety concerns identified in either the Pfizer-BioNTech or Moderna vaccine studies. There is currently insufficient data to make conclusions about the safety of the vaccine in certain groups, such as children less than 16 years of age, pregnant and lactating women, and immunocompromised individuals.

Did people who got the vaccines have serious adverse reactions?

The frequency of serious adverse events overall was low (~0.5% in the Pfizer-BioNTech study, and 1.0% in the Moderna study) without significant differences between people who did and didn't get the vaccine. People who got the vaccine were also NOT more likely to die compared to those who didn't get the vaccine.

Do the COVID-19 vaccines cause serious allergic reactions?

Any medicine or vaccine can cause an allergic reaction, including severe reactions like anaphylaxis. The rate of overall allergic reactions in the vaccine studies were low for people that got the vaccine, although slightly higher than compared to the group that didn't receive the vaccine (0.63% of people who got the Pfizer-BioNTech vaccine had an allergic reaction compared to 0.51% in the placebo group; 1.5% of people who got the Moderna vaccine had an allergic reaction compared to 1.1% in the placebo group).

There have been rare anecdotal reports of severe allergic reactions in people receiving the mRNA COVID-19 vaccines during mass vaccination events outside of clinical trials. To be cautious, the CDC has recommended that people with certain past allergic reactions to a previous dose of a COVID-19 vaccine, ingredients in these COVID-19 vaccines, or to polysorbate (due to possible cross-reactivity to polyethylene glycol) should not get either the Pfizer-BioNTech or Moderna COVID-19 vaccines because of the unclear risks of allergic reaction – see below for more details on who should not get these COVID-19 vaccines. Everybody who is able to receive one of the COVID-19 vaccines should be monitored for at least 15 minutes after vaccination, and certain people with other allergy histories should be monitored for 30 minutes after being vaccinated. See CDC's Interim Clinical Considerations for Use of mRNA COVID-19 Vaccines for more details on vaccine contraindications and precautions.

Is it possible that people who get the vaccine can get more severe COVID-19 if infected later after vaccination ("vaccine-enhanced disease")?

Available data do NOT indicate a risk of vaccine-enhanced disease. Rather, data suggests the vaccine is effective at preventing severe disease.

If I have symptoms that I think might be a vaccine reaction, do I need COVID-19 testing?

If you develop symptoms consistent with COVID-19 after receiving a COVID-19 vaccine, you should contact your healthcare provider for further evaluation and report those symptoms through CDC's "v-safe" program. V-safe is a new smartphone-based tool that uses text messaging and web surveys to check in with vaccinated individuals for adverse events after a COVID-19 vaccination.

It is certainly possible for a person to be vaccinated and then develop COVID-19 from natural infection (from an exposure either before or soon after receiving the vaccine, before it has had a chance to work). The only way to tell the difference between symptoms from a vaccine reaction from symptoms of COVID-19 is to be tested. Any localized injection site reactions (redness, pain, swelling at the site of vaccination) that resolve on their own does not need further medical evaluation nor testing for COVID-19 because such localized symptoms are not consistent with COVID-19. However, if you develop systemic symptoms after vaccination (e.g., fatigue, headache, muscle pains, fever, chills), you should seek medical attention for evaluation and consideration for testing for COVID-19.

If a person's symptoms are the typical ones associated with the vaccine, occur within 1-2 days after vaccination, quickly resolve without medical intervention, and the person doesn't have any identified high-risk COVID-19 exposures in the previous 14 days, then the person may not need further testing for COVID-19 (note: respiratory symptoms or loss of taste and smell are NOT related to a vaccine reaction). But that person should not return to work until they are fever-free for at least 24 hours (off any fever reducing medications) and other symptoms are improving. If, however, a person's symptoms are severe, persist, or progress, then the symptomatic person should be tested for COVID-19. Also, any person who has had an identified exposure to somebody with COVID-19 in the previous 14 days but still receives the vaccine and then develops symptoms of COVID-19 should be excluded from work, isolate at home, and be tested for COVID-19.

If it is unclear whether symptoms might be related to a vaccine reaction vs. COVID-19, then providers and employers should err on the side of caution and test the symptomatic person, especially if that person works with vulnerable patients/populations or works in a congregate living setting. Antigen testing can be used in these situations to provide rapid turn-around of results and minimize duration a person is out of work. Even with a negative test, however, a person should not return to work until they are fever free for at least 24 hours (off any fever reducing medications) and other symptoms are improving.

Will the COVID-19 vaccines cause me to test positive for SARS-CoV-2 infection (by PCR or antigen testing) even if I'm not really infected?

No, the COVID-19 vaccines will not cause a person to test positive for active SARS-CoV-2 infection by either PCR or antigen tests.

If I recently received an antibody therapy as treatment for COVID-19, when can I be vaccinated?

CDC recommends that a COVID-19 vaccine should not be given for at least 90 days after a person receives antibody therapy as treatment for COVID-19 (i.e., convalescent plasma or monoclonal antibodies) to avoid the possibility that the COVID-19 specific antibody therapy might interfere with the body's immune response to the vaccine; this recommendation is based on the half-life of antibody therapies and evidence suggesting that re-infection is uncommon within 90 days after an initial infection. For other types of antibody therapies not related to treating COVID-19 (e.g., intravenous immunoglobulin or RhoGAM), there is no recommendation to delay COVID-19 vaccination after a person receives these non-COVID-19 antibody therapies.

If I have previously been diagnosed with COVID-19, should I still get the vaccine?

Yes. We know that people who have been previously infected with the SARS-CoV-2 coronavirus can be infected again. Previously infected individuals may receive additional protection from receiving the vaccine. Vaccination should not be given until a person recovers from COVID-19 (i.e., meets criteria for discontinuing isolation), but otherwise there is no minimum interval recommended between infection and vaccination. Healthcare organizations, however, can consider prioritizing those highest risk front-line health workers for vaccination who have NOT had a previous infection in the prior 90 days. Additionally, if someone gets one dose of the COVID-19 vaccine and then naturally develops SARS-CoV-2 infection before their scheduled second dose, that person should still get the second dose of the vaccine at the appropriate time once they have met criteria for discontinuing isolation; if a person misses their scheduled second dose because they are on isolation (or quarantine), they should get the dose as soon as possible after coming off isolation (or quarantine).

Why can't I get the vaccine if I'm having symptoms of COVID-19?

Anybody who is having any new or unexplained symptoms of COVID-19, even mild upper respiratory symptoms of a cold, needs to isolate themselves at home, and seek testing for COVID-19 (and only go out for testing or necessary medical care). It is not appropriate for a person who might have COVID-19 to go into public locations and potentially expose other people to the virus, such as the COVID-19 vaccination clinic staff.

Additionally, people who are sick are typically recommended to defer any vaccination until they feel better in case the person has an adverse reaction to the vaccine, and so that symptoms can be clearly attributed to infection vs. vaccination.

Why shouldn't I get the vaccine if I don't have symptoms of COVID-19, but I'm supposed to be quarantining (from travel or exposure to another person with COVID-19)?

About 40-50% of people infected with the SARS-CoV-2 virus will be asymptomatic (infected but not showing symptoms of COVID-19), but they are still able to spread their infection to others. In order to protect the public

and the vaccination clinic staff, people with a risk factor for COVID-19 who are supposed to be staying home and out of public places should not put others at risk by breaking quarantine to receive the COVID-19 vaccine (unless allowed to work under public health critical infrastructure worker guidance).

Additionally, if someone does develop symptoms of COVID-19, that person will need to be tested for COVID-19, and it is important to not confuse symptoms of COVID-19 with a potential vaccine reaction. A person, for example, with COVID-19 who thinks their symptoms are because of a vaccine reaction may go on to spread infection to others, and reduce public confidence in the vaccine.

In contrast, residents of long-term care facilities (LTCFs) or other congregate living settings experiencing outbreaks may be vaccinated. This is because the vaccine will offer protection to this vulnerable population, and the vaccination campaign can be done in a controlled way that is unlikely to result in additional exposures, as long as vaccination staff use appropriate infection prevention and control measures, including PPE recommended in outbreak settings.

Who are these vaccines recommended for?

The Pfizer-BioNTech vaccine is authorized to be used in people 16 years of age and older who have no contraindication to vaccination. The Moderna vaccine is authorized to be used in people 18 years of age and older who have no contraindication to vaccination.

Who is NOT able to get the vaccine?

The following individuals should NOT get either the Pfizer-BioNTech or Moderna COVID-19 vaccines:

1. People with a history of a severe allergic reaction (e.g., anaphylaxis) to a previous dose of an mRNA COVID-19 vaccine, or any vaccine ingredient.
2. People with an immediate allergic reaction of any severity (reaction within 4 hours) after receiving a previous dose of an mRNA COVID-19 vaccine or any vaccine ingredient.
3. People with an immediate allergic reaction of any severity (reaction within 4 hours) after receiving polysorbate – polysorbate is structurally similar to polyethylene glycol (PEG), which is an ingredient in both mRNA vaccines, so an allergic reaction to polysorbate could increase risk of an allergic reaction to both the mRNA vaccines.

Please see CDC's Interim Clinical Considerations for Use of mRNA COVID-19 Vaccines for more details about who should not get the COVID-19 vaccines, including a table (Appendix C) for how to differentiate "immediate allergic reactions" from vasovagal reactions (e.g., fainting after vaccination) from routine/expected local and systemic vaccine side effects. For people who have an identified contraindication to vaccination, other COVID-19 vaccines may be available soon and able to be given depending on the allergy.

People with severe allergies to other medicines, foods, chemicals, environmental exposures, etc., or people who had an immediate allergic reaction of any severity (reaction within 4 hours) after receiving another vaccine or injectable medical therapy (intravenous, intramuscular, or subcutaneous injections) can still receive

the COVID-19 vaccine, but because there have been rare reports of severe allergic reactions during mass COVID-19 vaccination clinics, CDC recommends that people with these types of identified allergy histories should be observed for at least 30 minutes after vaccination (instead of the usual 15 minutes of observation). We also recommend that people with these more concerning allergy histories talk with their primary care provider about their allergy history and the risks and benefits of COVID-19 vaccination before receiving the vaccine.

Can pregnant or breastfeeding women be vaccinated?

Yes. Either the Pfizer-BioNTech or Moderna COVID-19 vaccine can be administered to women who are pregnant or breastfeeding as long as the woman does not have another reason that they cannot be vaccinated (see above), and they are included in the populations prioritized for vaccination. Pregnant women, however, are encouraged to first discuss any questions or concerns and the risks and benefits of vaccination with their primary pregnancy provider. The American College of Obstetricians and Gynecologists (ACOG) has also released a Practice Advisory about vaccinating pregnant and lactating women against COVID-19, and the CDC has released COVID-19 vaccination considerations for people who are pregnant or breastfeeding.

There is no data on the safety of COVID-19 vaccines in pregnant and lactating women because the vaccines were not studied in these women. However, the mRNA vaccines are NOT live virus vaccines, and the modified viral mRNA quickly breaks down after use, so there is not a clear biological reason why a developing fetus or breastfed baby would be harmed by the vaccine. Additionally, the Moderna vaccine underwent a developmental toxicity study in rats and no vaccine-related adverse events were seen on female fertility, fetal development, or postnatal development reported in the study.

We do know, however, that pregnant women are at increased risk of severe COVID-19, and natural infection might increase risk of adverse pregnancy outcomes due to COVID-19. So benefits of vaccination might outweigh any hypothetical risks from the vaccine. For this reason, pregnant and lactating women should discuss with their provider and their baby's pediatrician before vaccination.

Pregnant women who are vaccinated and experience a fever after vaccination should be counseled to take acetaminophen because fever can contribute to poor pregnancy outcomes.

Routine testing for pregnancy prior to COVID-19 vaccination is not recommended.