



SMFM: Provider Considerations for Engaging in COVID-19 Vaccine Counseling With Pregnant and Lactating Patients

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SMFM recommends that pregnant and lactating people be vaccinated against COVID-19. The [Centers for Disease Control and Prevention](#) (CDC) state that “COVID-19 vaccination is recommended for all people aged 5 years and older, including people who are pregnant, lactating, trying to get pregnant now, or might become pregnant in the future.”

What should be considered when counseling a pregnant person regarding COVID-19 vaccination?

SMFM, the CDC, and [other organizations representing maternal and public health professionals](#) recommend that pregnant, postpartum, and lactating people and those considering pregnancy receive the COVID-19 vaccination. Vaccination is the best method to reduce maternal and fetal complications of SARS-CoV-2 infection. Counseling to support the recommendation for vaccination should include available data on vaccine efficacy, as well as data on vaccine safety during pregnancy and lactation. [Provider counseling has been shown to have a significant positive impact on patient vaccination.](#)

Maternal and obstetrical risk of disease

[Data](#) indicate that pregnancy is an independent risk factor for severe COVID-19 disease. Although the absolute risk of severe morbidity and mortality remains low, reports have demonstrated that pregnancy is independently associated with a 3-fold increased risk for ICU admission, a 2.4-fold increased risk for needing ECMO, and a 1.7-fold increased risk of death due to COVID-19, compared with symptomatic nonpregnant patients. Pregnant patients with comorbidities (body mass index greater than 35 kg/m², diabetes, and heart disorders) and those older than age 35 also appear to have a particularly elevated risk of adverse maternal outcomes. Other conditions the CDC has identified as increasing the risk for severe illness from SARS-CoV-2 infection include cancer, chronic kidney disease, chronic obstructive pulmonary disease, immunocompromised state (e.g., from organ transplant or medication use), sickle cell disease, and smoking. Hispanic, Latinx, and Black patients are disproportionately affected by severe maternal morbidity and mortality and have a disproportionately higher incidence of COVID-19 infection and death. These disparities, caused by social

determinants of health that act as barriers to health and well-being, have become more apparent and exaggerated during this crisis.

Data also indicate an increased rate of adverse obstetric outcomes, including cesarean delivery, preterm birth, and possibly stillbirth in pregnant patients with symptomatic SARS-CoV-2 infection.

Vaccine mechanism and administration

There are currently three COVID-19 vaccines authorized for use in the United States. Two are mRNA vaccines (Pfizer-BioNTech BNT162b2 and Moderna mRNA 1273 vaccines), and one is an adenoviral-vector vaccine (Janssen [a pharmaceutical company of Johnson & Johnson] Biotech Ad26.COV2.S). None of the currently authorized vaccines contain live virus.

The Pfizer and Moderna vaccines contain mRNA, a genetic material that encodes the SARS-CoV-2 spike S protein. Both RNA vaccines elicit neutralizing antibody responses to the S-protein. They are not live vaccines, and data suggest rapid degradation (approximately 10 to 20 days) of the mRNA by normal cellular processes. There is no risk of genetic modification to people receiving the vaccine.

The Janssen Biotech (J&J) one-dose vaccine uses an adenovirus that has been modified so that it can no longer multiply in humans and cannot cause disease to carry the gene for the coronavirus spike S protein into the host cell. Once inside the host cell, the gene harnesses the cell's machinery to produce more spike protein. The spike protein is then expressed on the host cell membrane, triggering both antibody and cell-mediated immune responses. The risk of genetic modification from adenovector vaccines is also low; viral DNA carrying the gene encoding the coronavirus spike protein enters the host nucleus to be transcribed but is not integrated into the host's DNA.

On April 13, 2021, the US FDA and CDC jointly recommended a pause to use of the Janssen Biotech (J&J) vaccine due to reports of a rare, severe type of blood clot called cerebral venous sinus thrombosis (CVST) occurring in combination with low levels of blood platelets (thrombocytopenia). At that time, the CDC and FDA concluded that the chance of developing CVST and TTS following vaccination with the Janssen Biotech (J&J) vaccine was very low and that the benefits of the vaccine outweigh the risks. Both agencies recommended that use of the Janssen Biotech (J&J) vaccine resume effective April 23, 2021.

Subsequently, on [December 16, 2021, the CDC](#) recommended a clinical preference for all individuals to receive an mRNA COVID-19 vaccine over the Janssen Biotech (J&J) COVID-19 vaccine. This recommendation was made based on the latest evidence of vaccine effectiveness, as well as further reports of TTS. The rate of TTS overall was reported as 3.8 cases per 1 million people vaccinated individuals but was slightly higher among women aged 30 to 49 (10 per 1 million vaccine recipients), with 7 of 9 TTTS-related deaths occurring among women. Given this apparent increased rate in women

of reproductive age, pregnant and lactating patients should be counseled to preferentially get mRNA vaccines. The CDC states that individuals who are unable or unwilling to receive an mRNA vaccine will continue to have access to the Janssen Biotech (J&J) COVID-19 vaccine.

Clinicians should have a high degree of suspicion of TTS in pregnant people who report central nervous system symptoms or who have signs of VTE or thrombocytopenia within 30 days of vaccination with the Janssen Biotech (J&J) vaccine. In this setting, immediate evaluation with a complete blood count and imaging (tailored based on symptoms) is recommended, with additional evaluation pending results of the initial clinical evaluation. Heparin (unfractionated or low molecular weight) must be avoided.

SMFM recommends following the [CDC guidelines for vaccine administration](#). Vaccination should be offered regardless of history of prior symptomatic or asymptomatic SARS-CoV-2 infection. Viral or serologic testing for acute or prior infection, respectively, is not recommended for the purpose of vaccine decision-making. Vaccination should not be given if the recipient is acutely ill.

A pregnancy test prior to vaccination is not recommended. Available data also do not indicate the need to delay attempting pregnancy following vaccination. There are no data to guide timing of vaccination during pregnancy; therefore, the vaccine should be offered independent of trimester.

Efficacy of vaccine

Data based on results from clinical trials indicate that the efficacy of the Pfizer vaccine after the second dose is 95.0% (95% CI, 90.3%–97.6%), and the efficacy of the Moderna vaccine after the second dose is 94.1% (95% CI, 89.3%–96.8%). Available data demonstrate that both mRNA COVID-19 vaccines (Pfizer and Moderna) are highly effective in producing vaccine-induced antibody titers in pregnant and lactating women. [Observational data](#) demonstrate that the clinical effectiveness of mRNA vaccines in pregnant people is high, with an adjusted hazard ratio of 0.22 (95% CI 0.11-0.43). Patients should be counseled about the importance of completing the 2-dose series for optimal protection. It takes 2 weeks following the second dose to be considered fully vaccinated.

Data based on clinical trials indicate that the Janssen (J&J) one-dose vaccine is 72% (95% CI) effective at preventing moderate to severe disease, 85% effective in preventing severe disease, and 100% effective in preventing COVID-19–related hospitalization and death 28 days after vaccination.

The data regarding the vaccine's effectiveness against SARS-CoV-2 mutations ([variants](#)) is ongoing. SMFM encourages all providers to review [CDC](#) and [FDA](#) guidance regarding vaccination, booster dose, masks, and physical distancing as this situation evolves.

Table 1. Authorized and Approved Vaccines

	Age	Primary series	Technology	Third dose as part of primary series	Booster Dose
Pfizer- BioNTech/ Comirnaty	<p>≥12 years</p> <p>≥5-11 years</p>	<p>2 doses/ 21 days</p> <p>2 doses/ 21 days (reduced dose)</p>	mRNA	For moderately to severely immunocompromised individuals	Everyone ages 12 years and older at least 5 months after the primary series has been received
Moderna - NIAID	≥18 years	2 doses/ 28 days	mRNA	For moderately to severely immunocompromised individuals	Everyone ages 18 years and older at least 5 months after the primary series has been received; administered as a half dose
Johnson & Johnson – (Janssen)*	≥18 years	1 dose	Adenovector	N/A	1 dose of J&J; or a mRNA COVID-19 booster at least 2 months after the vaccine has been received

*The CDC currently recommends a clinical preference for individuals to receive an mRNA COVID-19 vaccine over J&J's COVID-19 vaccine.

Boosters

SMFM and ACOG recommend that pregnant people receive a COVID-19 booster shot **5 months after their primary series for mRNA-based vaccines (ie, Pfizer or Moderna)** and at least 2 months after their primary vaccination for the Janssen vaccination. As with the primary series, the booster dose should be given at any stage during pregnancy and postpartum.

[The CDC is currently recommending](#) that everyone ages 12 or older should get a booster shot.

COVID-19 booster doses, along with the original series of vaccine doses, can be administered along with other vaccines.

Fetal considerations

Counseling should weigh the risks of disease, the theoretical risk of harm, and the potential benefits to the fetus. Available safety data for mRNA vaccines in pregnancy include Developmental and Reproductive Toxicology (DART) data from Pfizer and Moderna, limited data from pregnant persons inadvertently enrolled in clinical trials, and data collected from the CDC's v-safe program. None of the data have indicated safety concerns or risks to pregnancy.

In a [recent cohort study](#), maternal antibodies to SARS-CoV-2 were found to have crossed the placenta after infection during pregnancy, and cord blood antibody concentrations correlated with maternal antibody concentrations. These findings, which have been replicated in other cohorts, demonstrate the potential for maternal antibodies to transfer to the fetus and provide neonatal protection. They also suggest the need for further data to determine if SARS-CoV-2 antibodies are protective against newborn infection, the concentration needed to achieve protection, and whether vaccine-elicited antibodies are similar to naturally acquired antibodies.

Another [recent study](#) showed the transfer of vaccine-induced IgG to the neonate, with higher umbilical cord blood titers achieved with longer intervals from vaccination. Boosting following the second vaccine dose resulted in augmented IgG levels in the cord blood. These findings point to the ability of maternal mRNA vaccination to induce immunologic protection to neonates through antibody transfer in utero and during lactation.

What safety data are available about the vaccines and pregnancy?

Despite SMFM's advocacy efforts, pregnant and lactating people have been excluded in the recent vaccine trials; therefore, there are no clinical trial data on the safety of the COVID-19 vaccines in pregnant people. The CDC's Advisory Committee on Immunization Practices (ACIP) reports that preclinical studies have been reassuring. Individual decision-making needs to balance these theoretical risks with the risks associated with delayed vaccination and the possibility of maternal SARS-CoV-2 infection.

To date, more than 180,000 pregnant people have self-reported within the [CDC v-safe program](#), and the types and frequency of self-reported acute side effects do not appear to differ from those in the general population. Moreover, more than 8700 of these individuals have been followed longitudinally in a registry devoted specifically to pregnancy outcomes, such as miscarriage and stillbirth, pregnancy complications, maternal ICU admission, adverse birth complications, neonatal death, infant hospitalizations, and birth defects.

[Published](#) findings indicate that more than 35,000 participants (aged 16 to 54 years) in the CDC v-safe program (the v-safe surveillance system, the v-safe Vaccine Pregnancy

Registry, and VAERS) identified as pregnant from December 14, 2020 to February 28, 2021 and received an mRNA COVID-19 vaccine. Over 3,900 participants have been enrolled in the specific v-safe Vaccine Pregnancy Registry, with 827 completed pregnancies registered. Vaccine reactions were similar among pregnant individuals compared with nonpregnant women. Adverse pregnancy outcomes of completed pregnancies (including spontaneous abortion, stillbirth, preterm birth, small size for gestational age, congenital anomalies, and neonatal death) all fell within the normative ranges expected based on the medical literature and background rates.

A [recent study](#) of 2,456 pregnant people enrolled in the CDC v-safe pregnancy registry who were vaccinated preconception or before 20 weeks of gestation shows that miscarriage rates following vaccination were similar to the background incidence of miscarriage.

A [recent study](#) of over 40,000 pregnant people who were vaccinated during pregnancy showed no association with preterm birth or small-for-gestational-age at birth overall, compared with unvaccinated pregnant people. The study accounted for timing of vaccination and the number of vaccine doses received.

Available data from the Janssen Biotech (J&J) vaccine also include developmental and reproductive toxicity (DART) data and 8 pregnancies inadvertently enrolled in clinical trials. Further, previous vaccine trials using adenovirus vectors in pregnant patients, eg, Ebola vaccine, have not demonstrated adverse pregnancy outcomes.

Safety monitoring in pregnant people is ongoing, and the Janssen Biotech (J&J) vaccine will be included in future vaccine safety surveillance activities. [Pfizer](#) and Janssen are planning clinical trials in pregnant volunteers.

What are the expected side effects, and are they harmful?

Postvaccination signs and symptoms are typically mild to moderate in severity and occur within the first 3 days of vaccination (the day of vaccination and the following two days, with most occurring the day after vaccination) and resolve within 1 to 2 days. More frequent and severe signs and symptoms follow the second dose. Pregnant patients who experience fever following vaccination should be counseled to take acetaminophen.

Allergic reactions, including anaphylaxis, have been reported but are rare (4.7 per million for Pfizer-BioNTech and 2.5 per million for Moderna) following COVID-19 vaccination in nonpregnant individuals. Management of anaphylaxis in pregnant individuals is the same as in nonpregnant individuals. For more information on the management of anaphylaxis after COVID-19 vaccination, see the [CDC website](#).

The vaccines may be administered to persons with underlying medical conditions who have no contraindications to vaccination. Persons with HIV infection, other immunocompromising conditions, or who take immunosuppressive medications or

therapies might be at increased risk for severe COVID-19. These individuals may still receive the vaccines unless otherwise contraindicated. For more information on vaccination in persons with underlying medical conditions, [see the CDC website](#).

CDC Resources

Healthcare workers:

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/vaccination.html>

Safety monitoring:

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety.html>

CDC vaccine guidance:

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations-process.html#groups-considered>

<https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html#pregnant>

CDC v-safe:

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafe.html>