

# New study finds that the best time for COVID-19 vaccination during your pregnancy may be now

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COVID-19 vaccination of expectant mothers elicits levels of antibodies to the SARS-CoV-2 outer "spike" protein at the time of delivery that

don't vary dramatically with the timing of vaccination during pregnancy and thus don't justify delaying vaccination, according to a study from researchers at Weill Cornell Medicine and New York-Presbyterian.

The researchers, whose study was published Dec. 28 in *Obstetrics & Gynecology*, analyzed how anti-spike antibody levels in the mother's blood and baby's umbilical cord blood at delivery varied with the timing of prior vaccination in nearly 1,400 [women](#) and their babies.

They found that the levels of these antibodies at delivery tended to be higher when the initial vaccination course occurred in the third trimester. However, they also found that antibody levels at delivery are still comparably high, and probably still protective, when vaccination occurs in early pregnancy or even a few weeks before pregnancy—and a booster shot late in pregnancy can make those antibody levels much higher.

"Women often ask what is the best vaccination timing for the baby—our data suggest that it's now," said Dr. Malavika Prabhu, assistant professor of obstetrics and gynecology at Weill Cornell Medicine and an obstetrician and gynecologist at New York-Presbyterian/Weill Cornell Medical Center.

The U.S. Centers for Disease Control and Prevention recommends COVID-19 vaccination for pregnant women. Prior studies suggest that COVID-19 tends to be more severe for women when they are pregnant, and increases the risks of preterm birth, stillbirth and other adverse outcomes for their babies. COVID-19 vaccination protects pregnant women from severe COVID-19, and elicits antibodies that cross the placenta to circulate in their babies' blood after delivery. Studies of the commonly used vaccines so far have found no increased rate of adverse side effects for mothers or their babies.

Dr. Prabhu and her colleagues set up the new study to address the question of the best timing for COVID-19 vaccination during pregnancy. The analysis covered 1,359 pregnant women who reported vaccination against COVID-19, during or up to six weeks before pregnancy, and gave birth at New York-Presbyterian/Alexandra Cohen Hospital for Women and Newborns after 34 or more weeks of gestation.

They found that anti-spike antibodies were generally detectable at delivery, in maternal and cord blood, among all the fully vaccinated women, regardless of the timing of their first vaccine dose. Among women with no history of SARS-CoV-2 infection who received the two-dose Pfizer or Moderna mRNA vaccine, the levels of antibodies at delivery were lowest after pre-pregnancy or first trimester vaccination and highest after third trimester vaccination; however, the difference wasn't large. There was no significant difference in anti-spike antibody levels by timing of vaccination among the relatively small number of women who received the Johnson and Johnson (J&J) single-dose vaccine.

Among vaccinated women who had a prior history of COVID-19 infection, anti-spike antibody levels at delivery in maternal and cord blood were moderately higher on average, and showed even less of a decline with earlier vaccination timing.

Twenty of the women reported having a booster dose in the third trimester, and they on average had still higher levels of anti-spike antibodies in maternal blood and in cord blood.

In women that did not receive a complete course of vaccination by time of birth, the levels of anti-spike [antibodies](#) in maternal blood and in cord [blood](#) were significantly lower than all other cohorts including the earliest vaccinated cohort.

The findings suggest that [pregnant women](#) should not delay COVID-19 vaccination until late pregnancy.

"The message here is that you can get vaccinated at any point during pregnancy and it is likely going to be beneficial to you and your baby at the time of birth—and of course by getting vaccinated early you will be protecting yourself and your baby throughout the pregnancy," said first author Dr. Yawei Jenny Yang, assistant professor of pathology and laboratory medicine at Weill Cornell Medicine and a pathologist at New York-Presbyterian/Weill Cornell Medical Center.

"These study results are consistent with what we see with other maternal vaccines such as flu and Tdap, which, when given during [pregnancy](#), protect the mother and baby," said senior author Dr. Laura Riley, chair of the Department of Obstetrics and Gynecology at Weill Cornell Medicine and obstetrician and gynecologist-in-chief at New York-Presbyterian/Weill Cornell Medical Center.

The researchers now plan further studies to examine [vaccine](#) and booster effects under different maternal conditions, and in the context of the spread of the new Omicron variant of SARS-CoV-2.

**More information:** Yawei J. Yang et al, Association of Gestational Age at Coronavirus Disease 2019 (COVID-19) Vaccination, History of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection, and a Vaccine Booster Dose With Maternal and Umbilical Cord Antibody Levels at Delivery, *Obstetrics & Gynecology* (2021). [DOI: 10.1097/AOG.0000000000004693](https://doi.org/10.1097/AOG.0000000000004693)

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