

Vaccination with Pfizer-BioNTech and Moderna COVID-19 Vaccines in Pregnancy

What are the risks associated with COVID-19 infection during pregnancy?

Pregnant individuals who get infected with SARS-CoV-2 (COVID-19) are at an increased risk of severe disease and death. International and Canadian large-scale studies indicate that the risk of hospitalization is 7-11%, and the rate of intensive care admission is 1-4%, both of which are much higher when compared to non-pregnant patients. Infection with COVID-19 during pregnancy is associated with an increased risk of preeclampsia, eclampsia, invasive ventilation, maternal death, preterm birth, and fetal death.

Vaccination has shown to reduce the rates of severe disease. Given the increased risk in pregnant patients, the Society of Obstetricians and Gynecologists of Canada recommends vaccination against COVID-19 during pregnancy and breastfeeding.

Are the COVID vaccines safe in pregnancy and during breastfeeding?

International studies have shown no increased risk of spontaneous abortion, still birth, or pregnancy-related complications after receiving either the Pfizer-BioNTech or Moderna vaccine in pregnancy. Data from 39,385 pregnant individuals vaccinated with at least one dose of either Pfizer-BioNTech or Moderna between December 2020 and June 2021 in Ontario suggests no increased risk for either preterm birth or small for gestational age. There have been no adverse effects of the vaccines on fertility rates.

How does the vaccine work?

The predominant vaccines used in Canada are messenger RNA (mRNA) vaccines, such as Pfizer-BioNTech and Moderna. Traditionally, most vaccines work by showing the immune cells in the body a weakened or dead germ. As a result, the immune system learns how to recognize it and is prepared to ward it off when the body is exposed to the real thing. Instead of showing the body a weakened germ, mRNA vaccines give the body instructions to make the SARS-CoV-2 spike protein (or part of it) used by the virus to bind to human cells. When the muscle cells in the arm make that protein, they display it on their surface, and immune cells react to it leading to antibody production. This teaches the body how to react to COVID-19, so if the body is exposed to the virus in the future, the immune system is already prepared. The mRNA does not enter the nucleus (where human DNA is stored) and does not interact with or change our DNA. Our cells break down the mRNA within a few days of vaccination.

What are the side effects of vaccination?

The most commonly reported side effects of mRNA COVID-19 vaccination are pain at the injection site, fatigue, and headache. Data from the United States found that pregnant women, when compared to non-pregnancy women, were more likely to report pain at the injection site following vaccination, but less likely to report headache, aches, chills, and fever. Acetaminophen is safe in pregnancy and is the recommended treatment for pregnant individuals who experience a fever following vaccination.

Are there other risks of vaccination?

Rare reactions including myocarditis, pericarditis, and Bell's palsy have been reported following vaccination with an mRNA COVID-19 vaccine. In Canada, rare reactions are reported to Health Canada and monitored. There is no evidence suggesting that these reactions are more likely to occur during pregnancy.

Does vaccination during pregnancy provide immunity to the baby?

Recent studies have shown that protective antibodies cross the placenta and are detected in breastmilk of women vaccinated during pregnancy for up to six weeks after their first dose. This suggests that fetal and neonatal protection might occur, however, we don't have enough research yet to know how much antibody is needed to cross the placenta or be present in breastmilk to adequately protect the fetus or neonate from SARS-CoV-2 infection.

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