



## Fertility Care During the COVID-19 Pandemic: Guiding Principles for COVID-19 Vaccination in the Fertility Patient

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There are four commercially available vaccines approved in Canada for the prevention of SARS-COV-2 and its resultant illness, known as COVID-19. On December 9th, Health Canada approved the use of the Pfizer-BioNTech COVID-19 vaccine: a lipid nanoparticle-formulated, nucleoside-modified mRNA vaccine that requires two injections, spaced 21 days apart. On December 23rd, Health Canada approved a second vaccine with a similar platform, Moderna, which is given as two injections spaced 28 days apart. Both preparations have efficacy evidence from clinical trials, each providing a 94.1 to 95 per cent ability to prevent COVID-19; neither vaccine contains live virus. In March of 2021, two other vaccines were approved by Health Canada: the AstraZeneca-Oxford vaccine; and the Johnson and Johnson Janssen vaccine. The AstraZeneca-Oxford vaccine, which also does not contain live virus, is a chimpanzee adenovirus-vectored vaccine. Clinical trials have found that this vaccine has an efficacy rate of 82.4 per cent when two doses are given 12 weeks apart. Currently, this vaccine is approved in Canada for people over 18 years of age. The Johnson and Johnson Janssen vaccine is an adenovirus-vector vaccine. This vaccine also does not contain live virus and studies show that it is 66 per cent effective in preventing symptomatic COVID-19 disease, beginning two weeks after vaccination. This vaccine is given as a single dose.

Widespread vaccination programs commenced in December 2020. Because pregnancy is a risk factor for severe COVID-19 disease, this paper specifically addresses issues regarding vaccination in the population of patients intending to conceive, or currently in active fertility treatment.

### Recommendations for Individuals Contemplating Pregnancy

1. The CFAS recommends that all individuals who are pregnant or those who intend to conceive should receive the COVID-19 vaccination: <https://www.asrm.org/news-and-publications/news-and-research/press-releases-and-bulletins/asrm-smfm-acog-issue-joint-statement-medical-experts-continue-to-assert-that-covid-vaccines-do-not-impact-fertility/>
2. The COVID-19 mRNA vaccines are not composed of live virus; therefore, they are not thought to cause an increased risk of infertility, first or second trimester loss, stillbirth, or congenital anomalies: <https://www.asrm.org/globalassets/asrm/asrm-content/news-and-publications/covid-19/covidtaskforceupdate11.pdf>
3. Preliminary data shows the presence of SARS-CoV-2 IgG antibodies in umbilical cord blood of babies born to mothers who have received the COVID-19 vaccine during pregnancy. Additionally, SARS-CoV-2 antibodies are present in human breast milk post-vaccination, suggesting that vaccination during pregnancy and the postpartum while breastfeeding can protect the fetus and newborn: [https://www.ajog.org/article/S0002-9378\(21\)00187-3/fulltext](https://www.ajog.org/article/S0002-9378(21)00187-3/fulltext)



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4. Individuals who cannot receive the vaccination, or those who choose not to receive the vaccination, should not be denied access to ART treatments. Consultation with a patient's primary physician to determine eligibility or contraindications for the COVID-19 vaccine, as well as risks and benefits of vaccination, is recommended.
5. There are currently four approved COVID-19 vaccines: Pfizer-BioNTech; Moderna; AstraZeneca-Oxford; and Johnson and Johnson Janssen. However, to date, Pfizer-BioNTech and Moderna are the two vaccine options that have been most studied in the pregnant, breastfeeding, and infertile population. Data will likely be forthcoming on the safety of the latter two vaccines in these patient populations. When deciding which vaccination products will be used in a given patient population, national and regional guidelines will prevail.

**Timing of Vaccination and Possible Side Effects**

1. Individuals receiving the first dose of the COVID-19 vaccine should receive the second dose at an appropriate interval, as specified by the manufacturer and provincial recommendations.
2. Considerations of dose delay may be given to individuals who have planned IUI or embryo transfer during the time window for the first or second vaccination dose. Depending on a patient's particular situation, postponing the start of assisted reproduction treatments (sperm collection, ovarian stimulation, embryo transfer), for at least a few days after either vaccination dose, may be considered, for the purpose of allowing time for the immune response to settle. Assisted reproduction treatments should not be started in women who have had any significant side effects from COVID-19 vaccination, such as an allergic reaction, and not until they are considered fit for pregnancy by their physician. Patients should have a discussion with their physician to clarify risks and benefits of vaccination, versus delaying fertility treatment. This is particularly relevant, as in some provinces, the interval between doses may be up to four months. In those patients who require more immediate fertility treatment; for example, due to advanced reproductive age, consideration should be given to proceed with fertility treatment sooner, as well as permissance of elective cryopreservation or pregnancy, regardless of vaccination status and timeline.
3. The COVID-19 vaccination can cause fever in some patients: up to 16 per cent of those vaccinated, typically occurring after the second dose. This risk should not be a concern when deciding whether to vaccinate a pregnant individual or a patient who is desiring pregnancy. Although fever in pregnancy, especially during the first trimester, is worrisome for patients, studies demonstrate that there is minimal risk to the fetus and that a post-vaccine fever can be treated safely with acetaminophen:<https://www.asrm.org/globalassets/asrm/asrm-content/news-and-publications/covid-19/covidtaskforceupdate11.pdf>



## References

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