No link between COVID-19 vaccination in pregnancy and higher risk of preterm birth or stillbirth

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Vaccination against COVID-19 during pregnancy is not associated with a higher risk of preterm birth, small for gestational age at birth, or

stillbirth, concludes a large study from Canada published by *The BMJ* today.

These findings can help inform evidence based decision making about the risks and benefits of COVID-19 vaccination during pregnancy, say the researchers.

COVID-19 infection during pregnancy has been associated with higher risks of complications, including admission to hospital and death for pregnant individuals, as well as preterm birth and stillbirth.

COVID-19 vaccination during pregnancy has been shown to be effective against COVID-19 in pregnant individuals as well as their newborns, but evidence about pregnancy outcomes after COVID-19 vaccination during pregnancy from large studies is limited.

To address this, researchers set out to assess the risk of preterm birth, small for gestational age at birth, and stillbirth after COVID-19 vaccination during pregnancy.

They used a population-based birth registry to identify all liveborn and stillborn infants with a gestational age of at least 20 weeks or birth weight of at least 500g in Ontario, Canada between 1 May and 31 December 2021.

This information was then linked to the database that captures all COVID-19 immunizations in the province.

A wide range of potentially influential factors were taken into account. These included mother's age at delivery, pre-pregnancy body mass index, reported smoking or substance use during pregnancy, pre-existing health conditions, number of previous live births and stillbirths, area of residence and income.

Of 85,162 births, 43,099 occurred in individuals who received one dose or more of a COVID-19 vaccine during pregnancy—42, 979 (99.7%) received an mRNA vaccine, mainly Pfizer-BioNTech or Moderna.

The researchers found that vaccination during pregnancy was not associated with any increased risk of overall preterm birth (6.5% among vaccinated v 6.9% among unvaccinated), spontaneous preterm birth (3.7% v 4.4%), or very preterm birth (0.59% v 0.89%)

No increase was found in risk of small for gestational age at birth (9.1% v 9.2%) or stillbirth (0.25% v 0.44%).

Findings were similar irrespective of what stage (trimester) of pregnancy vaccination was given, number of doses received during pregnancy, or which mRNA vaccine product.

This is an observational study, so can't establish cause and the researchers point to some limitations, such as being unable to assess COVID-19 vaccination before pregnancy or around the time of conception and being limited to assessment of mRNA vaccine products.

However, results remained unchanged in additional sensitivity analyses designed to assess the impact of different methodological approaches, suggesting that they are likely to be robust.

As such, the researchers say that "our findings—along with extant evidence that vaccination during pregnancy is effective against COVID-19 for pregnant individuals and their newborns, and that COVID-19 during pregnancy is associated with increased risks of adverse maternal, fetal, and neonatal outcomes—can inform evidence based decision making about COVID-19 vaccination during pregnancy."

"Future studies to assess similar outcomes after immunization with non-

mRNA COVID-19 vaccine types during pregnancy should be a research priority," they add.

More information: Risk of preterm birth, small for gestational age at birth, and stillbirth after covid-19 vaccination during pregnancy: population based retrospective cohort study, *The BMJ* (2022). DOI: 10.1136/bmj-2022-071416

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