Updates on COVID-19 and Pregnancy

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cdc.gov/coronavirus
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COVID-19 epidemiology among pregnant people
Pregnant people with laboratory-confirmed SARS-CoV-2 infection
(National COVID-19 Case Surveillance Data)*

Total: 123,633

National COVID-19 case surveillance data: Pregnant people with laboratory-confirmed SARS-CoV-2 infection,* Jan 22, 2020–Sep 13, 2021

* Based on detection of SARS-CoV-2 in a clinical specimen by molecular amplification techniques

https://covid.cdc.gov/covid-data-tracker/#pregnant-population
COVID-19 cases, ICU admission and death among pregnant people
(National COVID-19 Case Surveillance Data; Jan 22, 2020 – Sep 13, 2021)
Severe illness and adverse maternal, pregnancy, and neonatal outcomes among pregnant women with COVID-19

Compared with non-pregnant WRA* with COVID-19

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Odds Ratios [95% CI]</th>
<th>Number of events / Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU admission</td>
<td>2.13 (1.93-2.95)</td>
<td>10,184 / 601,108</td>
</tr>
<tr>
<td>Invasive ventilation</td>
<td>2.59 (2.28-2.94)</td>
<td>3,550 / 601,044</td>
</tr>
<tr>
<td>ECMO</td>
<td>2.02 (1.22-3.34)</td>
<td>137 / 461,936</td>
</tr>
</tbody>
</table>

Compared with pregnant women without COVID-19

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Odds Ratios [95% CI]</th>
<th>Number of events / Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal death</td>
<td>2.85 (1.08-7.52)</td>
<td>16 / 4,820</td>
</tr>
<tr>
<td>Preeclampsia**</td>
<td>1.33 (1.03-1.73)</td>
<td>28,326 / 424,344</td>
</tr>
<tr>
<td>Preterm birth</td>
<td>1.47 (1.14-1.91)</td>
<td>719 / 8,549</td>
</tr>
<tr>
<td>Stillbirth</td>
<td>2.84 (1.25-6.45)</td>
<td>35 / 5,794</td>
</tr>
<tr>
<td>NICU admission</td>
<td>4.89 (1.87-12.81)</td>
<td>848 / 5,873</td>
</tr>
</tbody>
</table>

Data from Allotey, J. et al. unless otherwise noted; *Women of reproductive age; ** Preeclampsia data from Wei et al.; ECMO: Extracorporeal membrane oxygenation
### Severe illness and death for symptomatic pregnant women with COVID-19 compared to symptomatic nonpregnant women

<table>
<thead>
<tr>
<th>Outcomes of Interest</th>
<th>Symptomatic Pregnant women with COVID-19 (N = 23,434)</th>
<th>Symptomatic Nonpregnant women with COVID-19 (N = 386,028)</th>
<th>Crude RR (95% CI)</th>
<th>aRR (95% CI) †</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU Admission</td>
<td>245 (1.1)</td>
<td>1,492 (0.4)</td>
<td>2.7 (2.4-3.1)</td>
<td>3.0 (2.6-3.4)</td>
</tr>
<tr>
<td>Mechanical Ventilation</td>
<td>67 (0.3)</td>
<td>412 (0.1)</td>
<td>2.7 (2.1-3.5)</td>
<td>2.9 (2.2-3.8)</td>
</tr>
<tr>
<td>ECMO§</td>
<td>17 (0.1)</td>
<td>120 (0.0)</td>
<td>2.3 (1.4-3.9)</td>
<td>2.4 (1.5-4.0)</td>
</tr>
<tr>
<td>Death</td>
<td>34 (0.2)</td>
<td>447 (0.1)</td>
<td>1.3 (0.9-1.8)</td>
<td>1.7 (1.2-2.4)</td>
</tr>
</tbody>
</table>

* Percentages calculated among total in pregnancy status group; those with missing data on outcomes were counted as not having the outcome

† Adjusted for age, race/ethnicity, and presence of underlying conditions. Nonpregnant women are the referent group.

§ Extracorporeal membrane oxygenation


DOI: [http://dx.doi.org/10.15585/mmwr.mm6944e3external icon](http://dx.doi.org/10.15585/mmwr.mm6944e3external icon)
Perinatal infection among neonates born to pregnant women with SARS-CoV-2 infection

- 25,896 live born infants had ≥1 neonatal SARS-CoV-2 PCR test; 3,381 (13%) underwent PCR testing during the perinatal period
- 136 (4%) of those tested were PCR-positive
  - Nearly all were born to mothers with infection close to delivery (<14 days)
  - Positivity higher among those born preterm
- Other cohorts have estimated perinatal positivity to be 1-2%

1. Data from Surveillance for Emerging Threats to Mothers and Babies Network [https://www.researchsquare.com/article/rs-491688/v1](https://www.researchsquare.com/article/rs-491688/v1)
COVID-19 vaccine effectiveness in pregnancy
Early data suggest receiving an mRNA COVID-19 vaccine during pregnancy reduces the risk for infection

- **Two Recent Studies from Israel**
  - **Objective:** Assess the association between receipt of mRNA COVID-19 vaccine and risk of infection among pregnant people

- **Methods:**
  - Retrospective cohort studies leveraging large state-mandated health care organizations
  - Vaccinated pregnant people were 1:1 matched to unvaccinated pregnant people by demographic and clinical characteristics

https://jamanetwork.com/journals/jama/fullarticle/2782047
https://www.nature.com/articles/s41591-021-01490-8
Early data suggest receiving an mRNA COVID-19 vaccine (BNT162b2) during pregnancy reduces the risk for infection

Goldshtein et al.

- 7,530 vaccinated pregnant people and 7,530 unvaccinated pregnant people
- Vaccination with mRNA COVID-19 vaccines lowered the risk of infection among pregnant people

https://jamanetwork.com/journals/jama/fullarticle/2782047
Receipt of an mRNA COVID-19 vaccine (BNT162b2) during pregnancy reduces the risk for infection

Dagan et al.

- Observational cohort: 10,861 vaccinated pregnant people and 10,861 unvaccinated pregnant people matched 1:1
- Vaccination with mRNA COVID-19 vaccines lowered the risk of infection among pregnant people

https://www.nature.com/articles/s41591-021-01490-8
Vaccination during pregnancy: Studying protective effects on neonates

National Institutes of Health begins study of COVID-19 vaccination during pregnancy and postpartum: MOMI-VAX

Researchers will evaluate antibody responses in vaccinated participants and their infants

- COVID-19 mRNA vaccination generated robust humoral immunity in pregnant and lactating women
- Immunogenicity and reactogenicity similar to that observed in nonpregnant women
- Vaccine-induced immune response were significantly greater than the response to natural infection
- Immune transfer to neonates occurred via placenta and breastmilk

COVID-19 vaccination in pregnancy: Updated clinical considerations
Updated clinical considerations: COVID-19 vaccination during pregnancy and lactation

- COVID-19 vaccination is recommended for all people aged 12 years and older, including people who are pregnant, breastfeeding, or who trying to get pregnant now or might become pregnant in the future.
- Consistent with recommendations from professional medical organizations

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html#pregnant
Summary: Evidence indicates benefits of COVID-19 vaccination during pregnancy outweigh potential risks

Pregnancy increases the risk for severe illness and death from COVID-19 and COVID-19 is associated with adverse maternal, pregnancy and neonatal outcomes.

Data on the safety of receiving mRNA COVID-19 vaccine during pregnancy are reassuring.

Receipt of an mRNA COVID-19 vaccine during pregnancy reduces the risk for infection.

Vaccination during pregnancy results in maternal antibodies that have been detected in infant cord blood.

Vaccination coverage for pregnant people is low.

COVID-19 vaccination coverage among pregnant people

Percent of pregnant people aged 18–49 years fully vaccinated with COVID-19 vaccine prior to and during pregnancy, by timing of vaccination and date reported to CDC—Vaccine Safety Datalink, United States, December 14, 2020–September 11, 2021

Overall coverage: 30.1%

COVID-19 vaccines available to all individuals 16+ years

Updated ACOG/SMFM Guidance

Updated CDC Clinical Considerations

CDC efforts to improve vaccination coverage for pregnant people

• Monitor and display trends
• Assess reasons for vaccine hesitancy and share personal stories
• Disseminate safety information
• Work with clinical organizations and encourage more clinicians to become a vaccine provider*
• Provide resources to assist with vaccine discussions
• Ensure consistent messaging about COVID-19 vaccination for pregnant people
• Dispel myths about vaccine

*Resources to enroll as a vaccine provider: https://www.cdc.gov/vaccines/covid-19/provider-enrollment.html
Acknowledgments

- Kara Polen
- CDC’s COVID-19 Response:
  - Maternal Immunization Team
  - Pregnancy and Infant Linked Outcomes Team
  - Vaccine Task Force
- Advisory Committee on Immunization Practices
- CDC’s National Center on Birth Defects and Developmental Disabilities
- CDC’s Division of Reproductive Health
- CDC’s National Center on Immunization and Respiratory Diseases
- State and Local Jurisdictions
- Clinical and Public Health Partners
- Healthcare Providers and Pregnant Persons
For more information, contact CDC
1-800-CDC-INFO (232-4636)

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