

# Preterm Birth Less Common in COVID-Negative Patients

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Previous studies have shown that pregnant women with COVID-19 are at greater risk of having a premature birth than those without COVID-19.<sup>1</sup> We previously studied neonatal outcomes related to COVID-19.<sup>2</sup> Now that more time has passed and more COVID-19 positive women have given birth, we re-examined neonatal outcomes of babies who were born during the pandemic.

Our data include 228,265 women who gave birth between March 15, 2020 and March 26, 2021. Of these, 39,973 (17.5%) tested negative for COVID-19, 6,308 (2.8%) tested positive for or were diagnosed with COVID-19, and 181,984 (79.7%) were untested. 10.5% of babies born to COVID-19 positive mothers (positive test during any trimester) were preterm compared to 6.8% of babies born to COVID-19 negative mothers. 7.1% of babies born to COVID-19 positive mothers had low birth weight compared to 5.8% of babies born to COVID-19 negative mothers. Babies born to mothers who were not tested for COVID-19 had a similar rate of being born preterm (10.0%) and with low birth weight (7.6%) to babies born to COVID-19 positive mothers.

## COVID-19 in Pregnancy: Birth and Infant Outcomes

|                                    | Number of Pregnant Women | Preterm<br>(95% Confidence Interval) | Low Birth Weight<br>(95% Confidence Interval) |
|------------------------------------|--------------------------|--------------------------------------|---|
| 1 <sup>st</sup> Trimester Positive | 551                      | 53<br>9.6%<br>(7.4 - 12.4%)          | 31<br>5.6%<br>(4.0 - 7.9%)                    |
| 2 <sup>nd</sup> Trimester Positive | 2,001                    | 213<br>10.6%<br>(9.4 - 12.1%)        | 155<br>7.7%<br>(6.7 - 9.0%)                   |
| 3 <sup>rd</sup> Trimester Positive | 3,756                    | 397<br>10.6%<br>(9.6 - 11.6%)        | 260<br>6.9%<br>(6.2 - 7.8%)                   |
| Negative                           | 39,973                   | 2,725<br>6.8%<br>(6.6 - 7.1%)        | 2,305<br>5.8%<br>(5.5 - 6.0%)                 |
| Untested                           | 181,984                  | 18,222<br>10.0%<br>(9.9 - 10.2%)     | 13,897<br>7.6%<br>(7.5 - 7.8%)                |

“COVID-19 During Pregnancy: Birth and Infant Outcomes,” 2021.  
 Epic Health Research Network (EHRN.org)

Figure 1: Rates of preterm birth and low birth weight by trimester and by COVID-19 status of the mother. Trimester is defined using the gestational age of the mother at time of COVID-19 diagnosis and/or positive test. Births were recorded from March 15, 2020 through March 26, 2021.

Based on previous studies, we expected to see higher rates of preterm birth and low birth weight in COVID-19 positive mothers. However, we did not expect the untested mothers to have similar rates to those who tested positive. The difference in rates between negative and untested mothers suggest other factors may contribute to the difference in outcomes. Tested patients may have gotten prenatal care more frequently, may have had easier access to testing, or may have been more closely monitored than those who were not tested. Untested mothers may have refused testing as well as other medical advice.

The data in this study are from Cosmos, a HIPAA-limited data set of patient information from more than 107 million patients contributed by Epic customers. Data are pooled from 90 healthcare organizations from 44 states, representing 271 hospitals and 4,803 clinics. Our sample includes 228,265 births with documented gestational age and birthweight between March 15, 2020 and March 26, 2021.

| Term                            | Definition  |
|---------------------------------|---|
| <b>SARS-CoV-2 test</b>          | A final result for any SARS-CoV-2 test in the patient’s record  |
| <b>COVID-19 diagnosis</b>       | Diagnosis Code U07.1 (ICD-10-CM) or 840539006 (SNOMED-CT)   |
| <b>COVID-19 positive mother</b> | Receiving a COVID-19 diagnosis or SARS-CoV-2 test with a “positive” value at a healthcare facility during their pregnancy, prior to their labor admission. We use the word mother to include any person who gave birth, regardless of their gender identity. We included only singleton births. |
| <b>Preterm birth</b>            | 21 days or more before estimated due date   |
| <b>Low birth weight</b>         | Birthweight of 2,499 grams or less  |

## References

1. Villar J, Ariff S, Gunier RB, et al. Maternal and Neonatal Morbidity and Mortality Among Pregnant Women With and Without COVID-19 Infection: The INTERCOVID Multinational Cohort Study. *JAMA Pediatrics*. <https://jamanetwork.com/journals/jamapediatrics/fullarticle/2779182>. Published April 22, 2021. Accessed May 24, 2021.
2. Gerhart J, Fallahian S, et al. COVID-19 During Pregnancy: Birth and Infant Outcomes. *EHRN.org*. Published Feb 25, 2021. Accessed May 24, 2021.