

SARS-CoV-2 infection during pregnancy linked to higher risk of neurodevelopmental disorders in male infants

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New research led by investigators at Massachusetts General Hospital (MGH), a founding member of Mass General Brigham (MGB), found

that males but not females born to mothers with SARS-CoV-2 infection during pregnancy were more likely to receive a neurodevelopmental diagnosis in the first 12 months after delivery. The findings are published in [JAMA Network Open](#).

Previous studies have found associations between other infections during pregnancy and increased risk of neurodevelopmental disorders in children, such as [autism spectrum disorder](#), but it's unclear if such a link exists with SARS-CoV-2 infection during pregnancy. To investigate, scientists examined [electronic health records](#) for 18,355 [live births](#) during the COVID-19 pandemic, including 883 (4.8%) to individuals with SARS-CoV-2 positivity during pregnancy.

Of the 883 SARS-CoV-2–exposed children, 26 (3.0%) received a neurodevelopmental diagnosis during the first 12 months of life. Among the SARS-CoV-2–unexposed offspring, 317 (1.8%) received such a diagnosis.

After accounting for race, ethnicity, [insurance status](#), hospital type (academic center vs. community), [maternal age](#), and preterm status, maternal SARS-CoV-2 positivity was associated with a nearly two-fold higher odds of a neurodevelopmental diagnosis at 12 months of age among male children. Maternal SARS-CoV-2 positivity was not linked with a higher risk in female children, however.

At 18 months, the effects were more modest in males, with maternal SARS-CoV-2 positivity linked to a 42% higher odds of a neurodevelopmental diagnosis at this age. Too few of the mothers were vaccinated to determine whether vaccination changed risk.

"The neurodevelopmental risk associated with maternal SARS-CoV-2 infection was disproportionately high in male infants, consistent with the known increased vulnerability of males in the face of prenatal adverse

exposures," says co-lead author Andrea Edlow, MD MSc, an associate professor of Obstetrics, Gynecology, and Reproductive Biology, and a Maternal-Fetal Medicine specialist at MGH.

Co-lead author Roy Perlis, MD MSc, associate chief of Research in the Department of Psychiatry and director of the Center for Quantitative Health at MGH, notes that larger studies and longer follow-up will be required to reliably estimate or refute the risk observed. "We hope to continue to expand this cohort, and to follow them over time, to provide better answers about any longer-term effects," he says.

Co-authors include Victor M. Castro, MS, Lydia L. Shook, MD, Sebastien Haneuse, Ph.D., and Anjali J. Kaimal, MD, MAS.

More information: Sex-Specific Neurodevelopmental Outcomes Among Offspring of Mothers With SARS-CoV-2 Infection During Pregnancy, *JAMA Network Open* (2023). [DOI: 10.1001/jamanetworkopen.2023.4415](https://doi.org/10.1001/jamanetworkopen.2023.4415)

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