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## Transmission of SARS-CoV-2 from mother to baby is rare

Latest evidence looks reassuring, but data collection must continue

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Since the start of the covid-19 pandemic, healthcare professionals have struggled to provide practical evidence based guidance for pregnant women and new parents about the harms babies and young children face from infection with SARS-CoV-2. Counselling parents about what to do if they become infected and the extent to which this might put their babies at risk is particularly challenging. For new mothers, in particular, providers need to counsel appropriately on the risks associated with breastfeeding and skin-to-skin contact, and, in some circumstances, whether or not to separate mother and baby at birth.

Despite hundreds of millions of confirmed SARS-CoV-2 infections and more than five million related deaths worldwide,<sup>1</sup> major gaps remain in our knowledge about the risks to babies when their mothers are infected with SARS-CoV-2. Allotey and colleagues (doi:10.1136/bmj-2021-067696), in their work for the PregCOV-19 Living Systematic Review Consortium, help address this gap with a review of nearly 500 studies.<sup>2</sup> Their study provides vital information on mother-to-child transmission of SARS-CoV-2, including rates of positivity among babies born to mothers with the virus, the likely timing of mother-to-child transmission, clinical outcomes among babies with the virus, and whether maternal characteristics or factors associated with labour, delivery, or breastfeeding increase the risk of babies becoming infected.

Overall, findings from this review seem reassuring. Although the results indicate that mother-to-child transmission is possible in utero during the antenatal period, during labour or delivery (intrapartum), and after delivery (postpartum), rates of positivity among infants born to mothers with SARS-CoV-2 are low (<2%). They are even lower when analyses are limited to cases of likely antenatal and intrapartum exposure to the virus, such as babies testing positive in the first 24 hours after delivery (0.9%). Furthermore, in affluent world regions such as North America, SARS-CoV-2 positivity among exposed infants appears to be extremely rare (0.1%). Combined, the results suggest that when proper preventive measures are taken during intrapartum and early postpartum periods, such as consistent and appropriate use of personal protective equipment, infection of newborn babies is unlikely.

However, the grouping by the authors of in utero, intrapartum, and postpartum infections to determine positivity among exposed babies might seem confusing when interpreting risk, as the sources of exposure vary across all three periods. In utero exposure typically occurs when a pathogen—in this case SARS-CoV-2—crosses the maternal-placental

interface to infect the developing fetus. This transmission route is more characteristic of blood-borne pathogens than respiratory ones.<sup>3</sup> Case studies confirming in utero infection for seven infants, along with biomarker evidence, indicate that in utero transmission is possible but exceedingly rare. Intrapartum transmission, typically from exposure to virus in maternal blood, vaginal secretions, or faeces during the birth process, is also rare for respiratory infections,<sup>3</sup> and it was only confirmed by two (0.06%) cases in this review. Thus, vertical transmission (in utero and intrapartum) from mother to baby is unlikely—a finding that is critical to convey to new families should the mother become infected during pregnancy.

Postnatal infection of the infant can relate to a variety of exposures. These include maternal respiratory secretions, contact with infected caregivers or healthcare providers, contaminated surfaces, or, possibly, but as of yet unconfirmed, breastmilk.<sup>3</sup> In Allotey and colleagues' review, infection during the early postpartum period was defined vaguely as "infection near the time of birth" and was categorised in the results as mother-to-child transmission. It is, however, worth noting that mothers are not the only possible source of transmission to newborn babies. Hospital deliveries often put new mothers and babies in contact with dozens of people, such as family and friends; doctors, nurses, and medical assistants; receptionists and administrative assistants; custodians; and those preparing and delivering food. Precautions applied in healthcare settings have varied tremendously over the course of the pandemic, and by location. Thus, pinpointing the source of infection in newborn babies is challenging.

Findings from Allotey and colleagues' review also show no association between breastfeeding and infection in newborn babies, despite the detection of SARS-CoV-2 from a few breastmilk samples (seven positive results from 422 samples using reverse transcriptase polymerase chain reaction). Similarly, no association was observed when infections in newborn babies were compared between mothers who were separated from their babies versus those who were not. Thus, there is currently still no evidence that changes need to be made in postnatal care best practices.

Although some important conclusions can be drawn from this review, the paucity of high quality data on risks to infants from covid-19 is also highlighted. Despite hundreds of millions of infections and a review of nearly 500 studies from across the globe, sufficient data were only available for 14 518 exposed babies worldwide to determine positivity rates, with large variability in the numbers of studies, events,

and total exposed cases by world region. Furthermore, data to determine outcomes, such as death, were available from only 800 babies positive for SARS-CoV-2. Sufficient data to ascertain the timing of exposure and likelihood of infection among exposed babies were only available for 592 babies. Given that vaccines are not available for babies and young children, it is critical that better data become available to inform appropriate shared decision making on perinatal care between parents and healthcare providers.

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- 1 World Health Organization. WHO Coronavirus (COVID-19) Dashboard. <https://covid19.who.int> (accessed 20 Feb 2022).
- 2 Allotey J, Chatterjee S, Kew T, et al. SARS-CoV-2 positivity in offspring and timing of mother-to-child transmission: living systematic review and meta-analysis. *BMJ* 2022;376:e067696.
- 3 World Health Organization. Definition and categorization of the timing of mother-to-child transmission of SARS-CoV-2. COVID-19: Scientific brief. [www.who.int/publications/i/item/WHO-2019-nCoV-mother-to-child-transmission-2021.1](http://www.who.int/publications/i/item/WHO-2019-nCoV-mother-to-child-transmission-2021.1) (accessed 24 Feb 2022).

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