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Role of maternal COVID-19 vaccination in providing immunological protection to the newborn.

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Pregnant and postpartum individuals are known to have an elevated risk of severe COVID-19 compared with their non-pregnant counterparts. Vaccination is the most important intervention to protect these populations from COVID-19-related morbidity and mortality. An added benefit of maternal COVID-19 vaccination is transfer of maternal immunity to newborns and infants, for whom a vaccine is not (yet) approved. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)-specific binding and neutralizing antibodies are present in infant cord blood and breast milk following natural maternal infection and transfer of maternal immunity following COVID-19 vaccination is an area of active research.
In this review, we synthesize the available research, discuss knowledge gaps, and outline factors that should be evaluated and reported when studying the transfer of maternal immunity following COVID-19 vaccination. The data reviewed herein suggest that maternal SARS-CoV-2-specific binding antibodies are efficiently transferred via the placenta and breast milk following maternal mRNA COVID-19 vaccination. Moreover, antibodies retain strong neutralizing capacity.
Antibody concentrations appear to be at least as high in infant cord blood as in the maternal serum, but lower in breast milk. Breast milk IgA rises rapidly following maternal vaccination, whereas IgG rises later but may persist longer.
At least two COVID-19 vaccine doses appear to be required to reach maximal antibody concentrations in cord blood and breast milk. There is no indication

that infants consuming breast milk from vaccinated mothers experience serious
adverse effects, although follow-up is limited. No clear pattern has emerged
regarding changes in milk supply following maternal vaccination. The
heterogeneity in important methodological aspects of reviewed studies
underscores the need to establish standard best practices related to research on
the transfer of maternal COVID-19 vaccine-induced immunity.

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