

Clinical Pearl: Long COVID in Infants Born to Women with COVID-19 Infection during Pregnancy

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Long COVID is a prolonged, debilitating illness which is seen in 10% of severe acute respiratory virus syndrome coronavirus 2 (SARS-CoV-2) (1). In children and adults, more than 200 symptoms involving multiple organ systems have been identified, with an estimated 65 million people worldwide having long COVID (1). The vast majority of children and adults with Long COVID are aged 15-19 years (1). There have been a number of studies in newborns born to pregnant mother with SARS-CoV-2 infection who, in general, have done well over the short term (2,3). However, a recent retrospective cohort study by Edlow and colleagues examined the neurodevelopmental outcomes at 12 months of age of 222 births to SARS-CoV-2 positive (PCR positive) mothers compared with 7466 pregnant mothers not SARS-CoV-2 exposed (4). Maternal SARS-CoV-2 positivity during pregnancy, especially during the third trimester, was associated with a greater rate of neurodevelopmental diagnoses in their infants in unadjusted as well as adjusted models (Odds Ratios: 2.17 and 1.86; $p < 0.003$ and $p < 0.06$ respectively) (4). The specific neurodevelopmental diagnoses included pervasive and specific developmental disorders: developmental disorders of speech and language; specific developmental disorders of scholastic skills; specific developmental disorder of motor function; pervasive developmental disorders; other/unspecific disorder of psychological development, and intellectual disabilities (4). The specific ICD-10 codes are listed in the body of the paper (4).

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In addition, preterm delivery was more frequent among SARS-CoV-2 exposed mothers (14.4% vs. 8.7%, ($p < 0.003$)) which is consistent with previous studies (2-4).

It is important to remember that this study is preliminary with follow-up only up to 12 months of age and longer follow-up studies are necessary to confirm these associations (4).

Long COVID, also known as post-acute sequelae of SARS-CoV-2 infection (PASC), has become a significant concern among pediatric

patients. While children generally experience milder symptoms than adults, a growing body of evidence suggests that they are not immune to the long-term effects of COVID-19. As a physician, it is crucial to effectively communicate the risks associated with long COVID to parents, ensure the protection of fragile infants, and advocate for vaccination among mothers and co-workers.

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Explaining Risks to Parents:

When discussing the risks of long COVID with parents, it is crucial to maintain open and honest communication while providing reassurance. Here are some key strategies to consider:

- Accurate Information:** Present accurate and up-to-date information about the potential long-term consequences of COVID-19 in children. Even though most children recover from acute COVID-19, a small percentage may experience prolonged symptoms or develop post-acute sequelae.
- Individual Risk Assessment:** Assess the child's specific risk factors, such as any pre-existing medical conditions, to determine the likelihood of long COVID. Emphasize that while the overall risk is low, it is not negligible.
- Symptom Recognition:** Educate parents about the signs and symptoms of long COVID in children, such as persistent fatigue, cognitive difficulties, and respiratory issues. Encourage them to monitor their child's health and seek necessary medical attention.
- Supportive Care:** Explain that even if a child develops long COVID, supportive care and symptom management can significantly improve their quality of life. Offer guidance on managing symptoms, accessing appropriate resources, and advocating for their child's needs.

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Protecting Fragile Infants:

Infants, particularly those born prematurely or with underlying health conditions, may be more vulnerable to severe COVID-19 illness and long COVID. To protect these fragile infants, physi-

cians should consider the following measures:

- a. **Vaccination of Caregivers:** Encourage parents, immediate family members, and caregivers to get vaccinated against COVID-19. Vaccination reduces the risk of household transmission, providing indirect protection to vulnerable infants.
- b. **Strict Hygiene Practices:** Emphasize the importance of hand hygiene, respiratory etiquette, and regular disinfection of frequently-touched surfaces within the home. These measures can help reduce the risk of exposure to the virus.
- c. **Limiting Visitors:** Advise parents to limit the number of visitors, particularly those who are unvaccinated or have a higher risk of COVID-19 exposure. Encourage the use of virtual interactions as an alternative to in-person gatherings.

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- d. **Medical Follow-up:** Ensure regular follow-up appointments for infants with a history of COVID-19 or those at higher risk for long COVID. Monitor their development closely and promptly address any concerns that may arise.

Vaccination Advice for Mothers and Co-workers:

To protect pediatric patients from long COVID, physicians should advocate for the vaccination of mothers and co-workers. Consider the following recommendations:

- a. **Maternal Vaccination:** Encourage pregnant and breastfeeding women to get vaccinated against COVID-19. Studies have shown that vaccination during pregnancy can protect both the mother and the baby, reducing the risk of severe illness and potential transmission.

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- b. **Co-worker Vaccination:** Advocate for COVID-19 vaccination among healthcare workers, educators, and other individuals who interact closely with children. Ensuring a vaccinated environment can significantly reduce the risk of COVID-19 transmission to vulnerable pediatric patients.

- c. **Education and Awareness:** Provide evidence-based information about COVID-19 vaccines to address any concerns or

misconceptions among mothers and co-workers. Promote vaccine confidence through open dialogue, sharing reputable resources, and addressing individual concerns.

Conclusion:

Long COVID is an emerging concern in pediatric patients, necessitating proactive measures from physicians. By effectively explaining the risks to parents, protecting fragile infants through various strategies, and encouraging vaccination among mothers and co-workers, healthcare providers can play a vital role in mitigating the long-term impacts of COVID-19 on children. Through collaboration and informed decision-making, we can strive to ensure the health and well-being of pediatric patients in the face of this pandemic.

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