



Risks of separating newborns from mothers during COVID-19 Pandemic.

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ABSTRACT

The coronavirus disease 2019 (COVID-19) pandemic, resulting from infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has caused high risk and widespread illness in adults, including pregnant women, while rarely infecting neonates. An incomplete understanding of disease pathogenesis and viral spread has resulted in evolving guidelines to scale back transmission from infected mothers to neonates. Fortunately, the chance of neonatal infection via perinatal/postnatal transmission is low when recommended precautions are followed. However, the psychosocial implications of those practices and racial/ethnic disparities highlighted by this pandemic must even be addressed when caring for mothers and their newborns. This review provides a comprehensive overview of neonatal–perinatal perspectives of COVID-19, starting from the fundamental science of infection and suggestions for care of pregnant women and neonates to big psychosocial, ethical, and racial/ethnic topics emerging as a result of both the pandemic and also the response of the healthcare community to the care of infected individuals.

INTRODUCTION

Coronaviruses are an outsized family of viruses that are known to cause illness starting from the respiratory illness more severe diseases like geographic area Respiratory Syndrome (RS) and Severe Acute Respiratory Syndrome (SARS). A unique coronavirus (COVID-19) was identified in 2019 in Wuhan, China. Current guidelines around whether infected mothers with COVID-19 should be separated from their newborn infants are conflicting. While these guidelines for COVID-19 allow breastfeeding, this can be not being clearly conveyed within media. Reportedly, many US hospitals are routinely separating infected mothers from their newborns. Separation makes establishing breastfeeding difficult, whether breastfeeding is allowed and encouraged. The virus has not been found in Breast milk in limited studies of it and also the related virus that causes SARS,1 but it's not known with absolute certainty that the virus isn't transmitted through Breast milk. The March 28 announcement of the death of an Illinois infant of undisclosed age may raise anxiety.

The COVID-19 pandemic has affected every facet of life, beginning with the primary hours and

days after birth. In an attempt to “bend the curve,” some have argued that the prudent course is to isolate infants³ from mothers with suspected or confirmed COVID-19 to scale back the chance of transmission from mother to baby.

In several countries pregnant women confirmed or suspected to own COVID-19 are being required to possess Cesarean sections or be separated from their newborn babies to limit COVID-19 transmission. Such measures may help health services better manage COVID-19 caseloads, but what are the implication, and the way do these practices compare with evidence-based global recommendations for maternity care during the pandemic?

In April, a study reported a case of an uncomplicated birthing birth at an Australian hospital during a mother with COVID-19, without separation and with ongoing breastfeeding.

These examples highlight the worth of evidence based international guidance, like from the World Health Organization (WHO). Released early within the pandemic and often updated, WHO recommendations are to encourage breastfeeding and its early initiation, placing the newborn skin to skin⁴, and within the same room because the mother during hospital stay, after birth during the COVID-19 pandemic.

The WHO guidance was that new mothers and babies should be exempted from distancing or isolation, whether they're confirmed or suspected of getting COVID-19.

The guidelines state these are safe when hospitals adhere to adequate infection prevention and control measures.

These include: –

- staff wearing full personal protective equipment, including N95 masks
- mothers wearing a surgical mask during the second stage of labor
- strict handwashing procedures and use of a surgical mask round the baby.

Data are limited, and proposals for the primary days after birth differ. The globe Health Organization (WHO)¹ recommends that infants and mothers with suspected or confirmed COVID-19 “should be enabled to stay together and practice skin-to-skin contact, kangaroo care and to remain together and to practice rooming in throughout the day and night.” Breastfeeding is strongly recommended⁵, given its known lifelong importance for maternal and child health. Mothers are encouraged to clean their hands, wear a mask if they need a cough, and routinely disinfect surfaces that they need touched.

Partners shows that the COVID-19 pandemic is severely affecting the standard of care given to small and sick newborns, leading to unnecessary suffering and deaths. The critical importance of ensuring newborn babies have close contact with parents after birth, especially for those born low Birth weight & preterm. However, in many countries, if COVID-19 infections are confirmed or suspected, newborn babies are being routinely separated from their mothers, putting them at higher risk of death and lifelong health complications.

The COVID-19 pandemic has led to significant changes in care delivery and clinical management of pregnant women and their newborns because the availability of healthcare resources, rates of infection, and scientific data still evolve. This review provides a summary of This global literature and professional society recommendations for the management of pregnant women and neonates. Critical gaps within the literature remain, and important areas for future research are identified. The

authors performed an in depth literature review of peer-reviewed publications within Pushed and also included published professional society recommendations (last updated on 7/31/20). The topics covered include the virology of SARS-CoV-2 infection, a summary of the present data on the epidemiology, diagnosis, outcomes, and management recommendations of SARS-CoV-2 associated with pregnant women and newborns, similarly as emerging psychosocial, ethical, and racial/ethnic considerations. This review discusses pertinent topics across numerous disciplines to produce a broad understanding critical to tackling the complex landscape of the COVID-19 pandemic from a neonatal–perinatal perspective.

The advantage of separation is that it minimizes:

The risk of transmission of SARS-CoV-2 from mother to infant during the hospital stay. However, if the goal is that the health and wellbeing of mother and child within the months following birth, there are additional considerations.

(1) Separation might not prevent infection. A study published in late March reported that 3 of 33 infants born in Wuhan, China, to mothers with COVID-19 tested positive for SARS-CoV-2; the infants were born by cesarean and managed with strict isolation precautions.² whether separation prevents infection during the maternity stay, it doesn't address exposure after the infant is discharged. Especially within the context of social distancing and travel restrictions⁶, few families have the resources to isolate the infant reception, and it's highly plausible that other household members is also infected. Hospital isolation may therefore delay, but not prevent, infant infection.

(2) Interruption of skin-to-skin care disrupts newborn physiology. Infants who are separated from their mothers have higher heart rates and respiratory rates and lower glucose levels than infants who are skin-to-skin. This is true even for infants who are placed in incubators. During a randomized controlled trial for 1200- to 2199-gram newborns, among infants who were skin-to-skin, 17% of infants experienced instability, supported objective parameters, compared to 92% of the infants in conventional incubators. During a subsequent study among term infants placed skin-to-skin versus alone in a very crib, separation increased stress activity by 176%. As noted by the Royal College of Obstetricians and Gynecologists, “routine precautionary separation of a mother and a healthy baby shouldn't be undertaken lightly, given the potential detrimental effects on feeding and bonding.” Isolation may be a significant stressor for newborn infants; for those infants already infected with SARS-CoV-2, isolation could worsen the disease course.

(3) Separation stresses mothers. When mothers held their preterm infants skin-to-skin within the neonatal medical aid unit, their pulse, salivary cortisol level, and stress scores decreased. Separating mothers from their infants, especially within the context of being diagnosed with a pestilence disease, has the potential to cause significant suffering, and also the associated physiologic stress could worsen the mother's disease course.

(4) Separation interferes with provision of maternal milk to the infant, disrupting innate and specific immune protection. Breastfeeding could be a baby's first vaccine, and skin-to-skin care is vital for colonization of the infant microbiome. Antibodies specific to maternal antigen exposure begin to seem in milk within 7 days, protecting the infant from infection. Furthermore, human milk contains multiple oligosaccharides and innate immune factors that mitigate the impact of viral infections.

(5) Early separation disrupts breastfeeding, and not breastfeeding increases the danger of infant hospitalization for pneumonia. Early separation decreases breastfeeding duration compared to keeping mothers and infants together. And when infants aren't breastfed, they need 3.6 times the danger of being hospitalized for pneumonia compared to infants who are exclusively breastfed for

‡4 months. Separating mother and baby immediately after birth may make the infant more prone to severe respiratory infections, including COVID-19, within the first year of life.

(6) Separate isolation doubles the burden on the health system. Separately isolating mother and infant requires twice the resources: two hospital rooms, two provider teams, and two sets of private protective equipment (PPE) anytime a provider enters or leaves the space. Within the context of hospital overcrowding and dangerous shortages of PPE, this can be deeply problematic

What precautions should I go for attend a delivery from a mother with COVID-19?

Don a gown and gloves and use either an N95 respirator and eye protection (goggles or face shield) or an air-purifying respirator that has eye protection. This equipment protects against both maternal virus aerosols and potential newborn virus aerosols that resuscitation procedures (bag-mask ventilation, intubation, suctioning, oxygen at a flow >2 liters per minute [LPM], continuous positive airway pressure and/or mechanical ventilation) can generate.

Should we continue delayed-cord clamping and skin-to skin care practices?

Delayed cord clamping practices and skin-to-skin care within the delivery room should continue per usual center practice. Mothers with COVID-19 should use a mask while holding their baby.

Can mother and well newborns room-in?

Yes. The evidence up to now suggests that the chance of the newborn acquiring infection during the birth hospitalization is low when precautions are consistently taken to safeguard newborns from maternal infectious respiratory secretions. Mothers and well newborns should be cared for using usual center practice, including rooming-in (couplet care). A mother who is acutely ill with COVID-19 might not be ready to look after her infant in a very safe way. During this situation, it's going to be appropriate to temporarily separate mother and newborn or to possess the newborn cared for by non-infected caregivers in mother's room.

Currently, we recommend the subsequent for care of mothers with confirmed or suspected COVID-19 and their well newborns:

- Mothers and newborns may room-in in step with usual center practice.
- During the birth hospitalization, the mother should maintain an inexpensive distance from her infant when possible. When a mother provides hands-on care to her newborn, she should wear a mask and perform hand-hygiene
- Healthcare workers should use gowns, gloves, N95 respirators and eye protection (or air-purifying respirators) when providing take care of well infants, when this care is provided within the same room as a mother with COVID-19. When supplies are adequate, healthcare workers may use N95 respirators the least bit times when caring for well infants in danger for SARS-CoV-2 infection; standard procedural masks could also be used if necessary.
- If non-infected partners or other members of the family are present during the birth hospitalization, they must use masks and hand hygiene when providing hands-on care to the infant.

Can the infant Breastfeed?

Yes. The AAP strongly supports breastfeeding because the best option for alimentation. Several published studies have detected SARS-CoV-2 in breast milk. Currently, however, viable infectious

virus has not been detected in breast milk. One study demonstrated that pasteurization methods (such as those accustomed prepare donor milk) inactivate SARS-CoV-2. Several recent studies have found antibody in human milk to specific SARS-CoV-2 antigens. Both IgA and IgG antibodies are detected in breast milk after both maternal infection and maternal vaccination against SARS-CoV-2. Given these findings, direct breastfeeding is inspired at this point.

- Infected mothers should perform hand hygiene before breastfeeding and wear a mask during breastfeeding.
- If an infected mother chooses to not nurse her newborn, she may express breast milk after appropriate hand hygiene, and this could be fed to the infant by other uninfected caregivers.
- Mothers of NICU infants may express breast milk for his or her infants during any time that their infection status prohibits their presence within the NICU. Centers should make arrangements to receive this milk from mothers until they're able to enter the NICU.

What should I do if the infant requires intensive care? Infants requiring neonatal medical care and respiratory support optimally should be admitted to one patient room with the potential for negative room pressure (or other air filtration system). If this is often not available, or if multiple COVID-exposed infants must be cohoused, there should be a minimum of 6 feet between infants and/or they must be placed in air temperature-controlled Isolates. Isolate care doesn't provide the identical environmental protection as use of negative pressure or air filtration, but can provide a further barrier against droplet transmission. Don gown and gloves and use either an N95 respirator and eye protection (or an air-purifying respirator) for care of infants requiring supplemental oxygen at a flow >2 LPM, continuous positive airway pressure, or mechanical ventilation.

For newborns who are separated from an infected mother shortly after birth and admitted on to the NICU, infection control precautions appropriate to the infant's required respiratory care should be used until the infant has negative testing within the primary 72 hours old. This testing addresses the chance that the infant has acquired the virus by vertical transmission.

For newborns who are rooming-in with an infected, presumed or known contagious mother who subsequently require admission to the NICU, infection control precautions appropriate to the infant's required respiratory care should be used until 10 days have passed since the last maternal-infant contact. Centers may determine testing supported their local resources; however, testing on admission to the NICU and at 5-7 days after last maternal contact is suggested. This testing will determine whether the infant has acquired the virus by horizontal transmission.

Should I test well newborns to see if they're infected with SARS-CoV-2? If testing capacity is obtainable, testing well newborns will facilitate plans for care after hospital discharge; will determine the requirement for ongoing precautions and use of non-public protective equipment for care of hospitalized infants; and can still contribute to our understanding of viral transmission and newborn illness

. • Infants born to mothers with confirmed or suspected COVID-19 should be bathed after birth to get rid of virus potentially present on skin surfaces.

• Obtain one swab of the nasopharynx and submit for one test. The specifics of testing will rely upon the necessities of local testing platforms. Some centers have transitioned to swabs of the anterior nares.

• Healthy newborns should be tested a minimum of once before hospital discharge. The test should be done as near discharge as is practical, to supply the foremost accurate family guidance. However,

to facilitate use of precautions and protective equipment, centers can choose to test first at approximately 24 hours old and again at approximately 48 hours old. Some infants have had a negative test at 24 hours only to possess a positive test at a later time, particularly when rooming-in with a contagious mother.

- For infants who are positive on their initial testing, consider follow-up testing at 48-72 hour intervals until two consecutive negative tests are obtained to determine that the infant has cleared the virus from mucosal sites. This is often most significant for infants cared for within the neonatal medical care unit and far less so for those discharged to home.
- For infants who require ongoing medical care, caregivers should still use appropriate personal protective equipment until discharge, or until the infant has two consecutive negative tests collected ≥ 24 hours apart. This stringent PCR test-based approach is also optimal for sick and premature newborns because the duration of shedding infectious virus has not been established for such infants

What do I do when the infant is prepared for hospital discharge? Discharge newborns supported your center's usual criteria. There's no specific benefit for infants born to mothers with COVID-19 that results from discharge prior usual center practice.

If infant SARS-CoV-2 testing is positive, but the infant has no signs of COVID-19, plan for frequent outpatient follow-up (either by phone, telemedicine, or in-office) through 14 days after birth. During this era, take precautions to stop spread from infant to caregivers by using masks, gloves (as available) and hand hygiene within the home environment and by healthcare staff within the outpatient office practice.

In most cases, the infant SARS-CoV-2 testing are going to be negative, and infants are going to be discharged to families where other caregivers are exposed to and will have acquired COVID-19 infection. Every effort should be taken to supply infection-prevention education to any or all caregivers of the infant, which incorporates not only written education but also verbal education face to face, via telephone or virtually. Interpreter services should be utilized where appropriate. While challenging within the home environment, mother should use a mask and hand-hygiene when directly caring for the infant, until:

- she has been afebrile for twenty-four hours without use of antipyretic
- at least 10 days have passed since her symptoms first appeared (or, within the case of asymptomatic women identified only by obstetric screening tests, a minimum of 10 days have passed since the positive test), and
- symptoms have improved. Other caregivers within the home should use masks and hand hygiene before and after contact with the infant until their status is resolved.

If the infant can't be tested, then treat the infant as if virus-positive for the 14-day period of observation. Mother should still maintain precautions until she meets the standards for noninfectivity as above.

When am i able to let the mother and her partner visit their newborn if the infant is within the NICU? During the COVID-19 pandemic, most NICUs have appropriately limited parent presence and non-parent visitation. Such restrictions minimize the likelihood that vulnerable infants within the NICU will acquire an infection from a visitor with asymptomatic or symptomatic COVID-19. Additionally, such policies protect the health and integrity of the specialized NICU workforce. Mothers and partners who are COVID-19 persons under investigation (PUIs) mustn't enter the

NICU until their status is resolved. Mothers and partners who are fully vaccinated (that is, 2 weeks have elapsed since their last dose of vaccine) who then have an exposure to COVID-19 mustn't be excluded from the NICU unless they develop symptoms in step with SARS-CoV-2 infection. Mothers (and partners) with confirmed COVID-19 shouldn't visit NICU infants while able to transmit SARS-CoV-2.

Immunocompetent persons is also considered non-infectious if

- (a) afebrile for twenty-four hours without use of antipyretic
- (b) a minimum of 10 days have passed since symptoms first appeared (or, within the case of asymptomatic women identified only by obstetric screening tests, a minimum of 10 days have passed since the positive test), and
- (c) symptoms have improved. Persons who are severely or critically ill with COVID-19 mustn't enter the NICU until a minimum of 20 days have passed since symptoms first appeared or first positive test. For persons who are severely immunocompromised and infected with SARS-CoV-2, we recommend consultation along with your local communicable disease specialists for specific case management. Because of the vulnerable health of NICU infants; the open-bay structure of the many NICUs and since of concerns around protecting personnel who support the critical infrastructure of NICU centers may value more highly to extend the amount of your time that ought to pass before parents with prior COVID-19 infection may safely enter the NICU. However, because recovered COVID-19 patients may have very prolonged (weeks to months) positive macromolecule tests without evidence that such persons remain infectious, centers mustn't require infected parents to own negative PCR-based testing before entry into the NICU.

The considerations that healthcare providers should visit each family facing this decision include: Mothers who room-in with their infants can more easily learn and answer their feeding cues, which helps establish breastfeeding. Breastfeeding reduces morbidity and mortality for both mothers and their infants. Mothers who favor to breastfeed should take measures, including wearing a mask and practicing hand hygiene, to reduce the chance of virus transmission while feeding. Additional information for healthcare providers on breastfeeding within the context of COVID-19 is accessible. Mother-infant bonding is facilitated by keeping the neonate with its mother. Rooming-in promotes family-centered care and may allow parent education about newborn care and infection prevention and control practices. Mothers with suspected or confirmed SARS-CoV-2 infection shouldn't be considered as posing a possible risk of virus transmission to their neonates if they need met the standards for discontinuing isolation and precautions: At least 10 days have passed since their symptoms first appeared (up to twenty days if they need more severe to critical illness or are severely immunocompromised), and At least 24 hours have passed since their last fever without the employment of antipyretic, and Their other symptoms have improved. Mothers who haven't met these criteria may prefer to temporarily break away their neonates in effort to cut back the chance of virus transmission. However, if after discharge they're going to not be able to maintain separation from their neonate until they meet the factors, it's unclear whether temporary separation while within the hospital would ultimately prevent SARS-CoV-2 transmission to the neonate, given the potential for exposure from the mother after discharge. Separation is also necessary for mothers who are too ill to worry about his or her infants or who need higher levels of care. Separation is also necessary for neonates at higher risk for severe illness (e.g., preterm infants¹⁵, infants with underlying medical conditions, infants needing higher levels of care). Separation to cut back the chance of transmission from a mother with suspected or confirmed SARS-CoV-2 to her neonate might not be necessary if the neonate tests positive for SARS-CoV-2.

The AAP provided this summary of its related guidance for newborn care during the pandemic: Mothers with COVID-19 and newborn infants may room-in per usual center practice. During the birth hospitalization, the mother should maintain an affordable distance from her infant when possible. When mother provides hands-on care to her infant, she should wear a mask and perform hand-hygiene. Health care workers should use gowns, gloves, standard procedural masks, and eye protection (face shields or goggles) when providing take care of well infants. If non-infected partners or other members of the family are present during the birth hospitalization, they must use masks and hand hygiene when providing hands-on care to the infant.

CONCLUSION

According to the existing knowledge, it is still unclear why silent hypoxia occurs in a COVID-19 patient. The available data suggest that the virus may be affecting the brain and nervous system, or there might be a lack of hypoxic vasoconstriction in such patients. Some studies suggest that hyperfusion and normal carbon dioxide level even at the time of low oxygen saturation could be potential reasons behind this phenomenon. The clinicians are working to draw a solid conclusion on this matter.⁹In COVID-19 patients with comorbidity, the absence of shortness of breath should not be considered as a good sign of well-being. In these patients, pulse oximetry is an important mean to predict the outcome along with LDCT scanner (low-dose computed tomography).⁵The key factor to prevent complication is to detect this initial drop in oxygen saturation levels to prevent the lungs from deteriorating further.⁸Understanding of silent hypoxemia and its pathology would help the health care team including nurses to do meticulous monitoring of respiratory rate, signs of hyperventilation, oxygen saturation. Early detection of COVID-19 pneumonia can prevent patients from having to be treated with highly invasive procedures such as intubation and mechanical ventilation, a procedure which currently results in an 80% mortality rate for COVID-19 patients.⁸

COVID-19 patients should be educated to regularly check their oxygen levels using an oximeter and be responsive to immediately track any variation. If value drops below 94 per cent, immediate hospitalization with oxygen administration is critical to forestall further complications. This unusual clinical picture of hypoxia out of proportion to the respiratory distress should be discussed with the health care team so that they can identify the subtle clinical signs in the community¹⁰. Nurses, being the front-line health workers can educate the public regarding symptoms of happy hypoxia and save the life of people.

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