

Delivery room considerations for infants born to mothers with suspected or confirmed COVID-19

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Background: COVID-19

Beginning in December 2019, people began presenting with pneumonia of unknown etiology in Wuhan, Hubei province, China. The virus causing this disease (named 'coronavirus disease 2019' or COVID-19) was identified as a novel coronavirus (SARS-CoV-2), and the World Health Organization (WHO) declared a pandemic on March 11, 2020. Study data continue to show that COVID-19 is not commonly transmitted to neonates by mothers infected by COVID during pregnancy, and that when newborns do have COVID at birth, most are asymptomatic or experience mild or moderate disease [1]. This practice point addresses risk for vertical transmission of COVID-19 and the delivery room care of newborns and mothers with suspected or confirmed infection.

Risk for vertical transmission

Recent reviews of outcomes in infants born to mothers who tested positive for SARS-CoV-2 infection while pregnant [1][3]-[6] indicate that risk for vertical transmission is exceptionally low. Transmission from vaginal birth is also exceedingly unlikely, as viral RNA findings in vaginal secretion samples have, with rare exceptions, been negative [7][8]. Although there have been reports of amniotic fluid and placental surfaces yielding positive tests for SARS-CoV-2, the rate of vertical transmission following C-section has also been low [1]. These findings should provide reassurance to families and to health care workers caring for infants born vaginally to mothers known to be SARS-CoV-2 carriers or to have COVID-19.

The question of vertical transmission has not yet been fully resolved. However, some reports have suggested that while vertical transmission of COVID-19 may be rare, it remains a risk. Reports of SARS-CoV-2 being detected by polymerase chain reaction (PCR) testing in fluids and tissues, provide some convincing evidence for possible vertical transmission. The most convincing case was reported in France, with amniotic fluid, surface swabs of the placenta, and maternal blood testing positive by PCR. A nasal swab obtained from the infant at 1 hour of age was also positive. Viral load peaked at day 3 post-birth [9]. A second report from Canada of a woman with a chronic immunodeficiency found evidence for possible vertical transmission based on swabs of maternal and fetal placental surfaces. Three nasal swabs from the newborn, including a sample on the day of delivery, were also positive [8]. Case reports relying solely on serology are much less convincing of vertical transmission risk [10][11].

What all reported cases of vertical transmission have in common is that mothers were symptomatic with viral pneumonia at time of delivery, with presentations ranging from fever and tachypnea to pneumonia on radiography. While it is tempting to speculate that higher viral loads may have been present in these cases, other, population-based COVID-19 studies have found the opposite: that higher viral shedding is more common in less symptomatic patients [12]. This apparent contradiction highlights the need for focused research in the perinatal population worldwide.

Based on hundreds of documented outcomes for newborns born to mothers with COVID-19 in the literature, the risk for vertical transmission of infection is considered low, but not nil. Infants born to mothers with confirmed COVID-19 pneumonia may be at higher risk for vertical or early horizontal transmission, and approaches to care around and after delivery must be precautionary. Transmission of infection from a postnatal caregiver is more likely. The case reports considered here reinforce the need for strict protocols to avoid infecting newborns with COVID-19.

Precautions at delivery for mothers with suspected or confirmed COVID-19

All perinatal care practitioners must be aware of and adhere to local infection prevention and control (IPC) recommendations at all times.

Precautions when attending a delivery are based on five considerations:

1. Non-COVID-related pulmonary disease in the newborn is common, and the differential diagnosis for neonatal respiratory distress should be considered in full. One study has described outcomes for 10 infants, including 6 born preterm, of mothers with confirmed COVID-19 infection ^[13]. Despite respiratory illness being present in 6 out of 10 infants in this cohort, all tested negative by pharyngeal swab. Therefore, when attending any high-risk delivery, perinatal practitioners should consider more common neonatal causes of respiratory distress before COVID.
2. Neonatal resuscitation team attendance at delivery when mothers have confirmed COVID-19 is not routinely indicated if there are no other signs of fetal distress or an anticipated need to resuscitate. When a resuscitation team is required, only essential, skilled personnel should attend. Optimally, team members should maintain a distance of 2 metres from the mother and adhere to all droplet/contact precautions, as per local IPC guidance.
3. In the asymptomatic or mildly symptomatic mother who is being investigated for COVID-19, or when she is known to be positive, it is highly unlikely that her newborn will have been infected with SARS-CoV-2 in utero. Taking all droplet/contact precautions during the initial steps of resuscitation is strongly recommended, particularly when administering positive pressure ventilation (PPV) or continuous positive airway pressure (CPAP), and during intubation. Provided that a distance of 2 metres can be maintained between the mother and the bed in which resuscitation of a newborn will occur, managing newborn care can occur in the delivery suite.
4. In cases where the mother has severe COVID-19 (e.g., when she is experiencing respiratory distress or needs respiratory support), resuscitation team members should wear an N95 mask and eye protection during any aerosol-generating medical procedure (AGMP) for the infant. When resuscitation occurs in the delivery room, obstetrical personnel should take all droplet/contact precautions and use an N95 mask along with eye protection. Practitioners must be aware of and adhere to local IPC recommendations at all times.
5. Because the newborn cannot be completely protected using droplet/contact precautions, infant resuscitation should be performed in an adjacent room (if available) when the mother is intubated or an AGMP is underway. Further, when resuscitation is taking place in a separate room, a delivery room attendee should bring the newborn to the resuscitation team outside the room for transfer to the resuscitation bed, thus minimizing the use of enhanced PPE, including N95 masks. This recommendation, while not evidence-based, strikes a balance between timely resuscitation and minimizing exposure of the resuscitation team to risk for airborne transmission.

Cord management

Because it is unlikely that SARS-CoV-2 would be transmitted during the brief delay before cord clamping, this practice should continue for COVID-19 births due to the known benefits of this procedure.

See related documents:

- NICU care for newborns born to mothers with suspected or confirmed COVID-19 (<https://www.cps.ca/en/documents/position/nicu-care-for-infants-born-to-mothers-with-suspected-or-proven-covid-19>)
- Breastfeeding when mothers have suspected or confirmed COVID-19 (<https://www.cps.ca/en/documents/position/breastfeeding-when-mothers-have-suspected-or-proven-covid-19>)

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