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CLINICAL OVERVIEW

ACTA PÆDIATRICA NURTURING THE CHILD WILEY

Promoting attachment between parents and neonates despite the COVID-19 pandemic

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Abstract

Social distancing is the only option available during the COVID-19 pandemic until a vaccine is developed. However, this is having a major impact on human relationships and bonding between parents and neonates is a major concern. Separation during this health emergency could have lifelong consequences for offspring, and there are even greater concerns if newborn infants are sick or vulnerable and need intensive care. We look at how bonding can be safely supported and maintained without risking infecting neonates, by comparing the international guidelines and proposing safe actions within those frameworks.

KEYWORDS

bonding, COVID-19, guidelines, pandemic, separation

1 | INTRODUCTION

The social distancing measures adopted during the COVID-19 pandemic are having a major impact on human relationships, and this poses particular challenges for those caring for newborn infants. This paper examines the guidelines and clinical evidence and explores how transmission risks can be balanced with neonates' needs for early bonding and nutrition, including skin-to-skin contact and breastfeeding.

Lack of contact could have lifelong consequences on the neurodevelopment of babies admitted to wards and to the neonatal intensive care unit (NICU), as they all have the same need for their parents to be involved in their care during hospital stays. Close contact just after birth has been associated with neurodevelopmental benefits.[1,2] For example, skin-to-skin contact has demonstrated beneficial effects when infants reach adulthood.[3]

We reviewed the international guidelines in place at April 30, 2020, for managing neonates whose mothers have suspected or confirmed COVID-19. These include the World Health Organization, UNICEF, the worldwide Academy of Breastfeeding Medicine, national consensus guidelines from China, America, Australia and New Zealand and the UK and guidance from Italian, French, Swedish and European societies.[4-19]

National quarantine measures have included prohibited or restricted visits to infants or limited them to one parent or caregiver, even if none of the parties have COVID-19. We analyse how the primary needs of neonates can be balanced with infection control measures and the advice and support healthcare professionals can provide for parents.

1.1 | SARS-CoV-2 virus is highly contagious

Coronaviruses are usually spread by respiratory droplets, and COVID-19 is very contagious. Early data showed that infants only accounted for 1%-5% of infections, were often asymptomatic and had milder cases than adults.[20] This may also mean they were less likely to be tested.

Abbreviations: SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; NICU, neonatal intensive care unit.

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TABLE 1 International guidelines for neonates exposed to mother who has suspected or confirmed COVID-19

Guidelines	Separation at birth?	Neonate tested for COVID-19	Mother COVID-19 positive	Breastmilk from COVID-19 positive mother	Neonate COVID-19 positive	Neonate COVID-19 negative
Chinese consensus[4]	Yes. Infant admitted to quarantine ward in a designated hospital	Nasopharyngeal swab on day one of life	Separation from the baby until she's negative. This should last at least 14 d	No	Quarantine in incubator in pressure-negative room until: a) two consecutive, negative samples at least 24 h apart b) no symptoms for 3 d. Quarantine at home for at least 14 d	Routine care by parents or guardians
United States of America consensus[5-7]	Yes, if mother agrees and separate area available. Default should be incubator in same room as mother	Nasopharyngeal, throat, rectal swab at 24 and 48 h	Separation from the baby until she's negative. At least 14 d	Yes	Quarantine in hospital and, or, at home for at least 14 d. Mask, gloves, hand hygiene for all caregivers. If possible, testing every 48/72 h until two consecutive tests are negative. Follow-up in hospital, by phone or telemedicine	Routine care by parents or guardians
Australian and New Zealand consensus[8,9]	No routine separation	Not stated	No routine separation	Yes	Not stated	Not stated
Canadian consensus [10,11]	No	Not stated	No routine separation	Not stated	Not stated	Not stated
European societies[12-14]	No, unless mother has moderate or severe symptoms or baby needs NICU care	Nasopharyngeal swab if mother is positive. Test repeated at 96 h if baby is admitted to NICU	No separation unless mother or baby need specific hospital care. Strict maternal droplet precautions	Yes	Quarantine in hospital and home for at least 14 d with mother. Strict maternal droplet precautions	Routine care by mother or guardian if mother is hospitalised. Strict maternal droplet precautions

(Continues)

TABLE 1 (Continued)

Guidelines	Separation at birth?	Neonate tested for COVID-19	Mother COVID-19 positive	Breastmilk from COVID-19 positive mother	Neonate COVID-19 positive	Neonate COVID-19 negative
UK consensus[15,16]	No, unless mother has moderate or severe signs or baby needs NICU care	Nasopharyngeal swab if the baby meets case-definition for NICU care: clinical or radiological evidence of pneumonia or acute respiratory distress syndrome or influenza like illness. Swab repeated after 48 h	No separation, unless the mother or baby need hospital care. Strict maternal droplet precautions	Yes	Quarantine in hospital and home for at least 14 d with the mother. Strict maternal droplet precautions	Routine care by the mother or guardian if mother is hospitalised. Strict maternal droplet precautions
World Health Organization[17]	No	Not stated	No separation, unless mother or baby need hospital care	Yes	Quarantine in hospital and home for at least 14 d with mother. Droplet precautions	Routine care
Academy of Breastfeeding Medicine – worldwide organisation[18]	No	Not stated	No separation from the baby, unless mother or baby need hospital care	Yes	Quarantine in hospital and home for at least 14 d with mother. Droplet precautions	Routine care
UNICEF[19]	No	Not stated	No separation, unless mother or baby need hospital care	Yes	No separation, unless mother or baby need hospital care	Routine care

Note: United States of America consensus: Center for Disease Control, American College of Obstetricians and Gynecologists, American Academy of Pediatrics. Australian and New Zealand consensus: Royal Australian and New Zealand College of Obstetricians and Gynaecologists, Ministries of Health for both countries. Canadian consensus: Society of Obstetricians and Gynaecologists, Ministry of Health. European societies: Italian, French, and Swedish Societies of Neonatology, Union of European Neonatal and Perinatal Societies. UK consensus: Royal College of Obstetricians Gynaecologists, British Association of Perinatal Medicine.

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus that causes COVID-19 binds to the human angiotensin-converting enzyme-2 receptor and its expression in neonates, and on the placenta is not well known.[21] COVID-19 has been detected in infants as young as 16 hours of age, mostly with mild or asymptomatic disease.[22] At the time of writing, there had not been any reported cases of adverse infant outcomes when mothers had developed COVID-19 during pregnancy. However, these mothers can deliver prematurely and have complicated outcomes,[23] which can lead to early separation and maternal intensive care. So far, there has been no reliable evidence to support vertical transmission from mothers to babies.[24] Limited studies have not found SARS-CoV-2, and related viruses, in breastmilk, but we cannot rule this out.[24] It is possible that specific SARS-CoV-2 antibodies can pass during breastfeeding, within a few days of disease onset, and modulate the clinical expression of the infant's infection. Scientific evidences on the vertical transmission and the transmission through breastfeeding are too scarce to justify any intervention based on these evidences.

1.2 | Conflicting guidelines for managing neonates

Table 1 summarises the guidelines and recommendations and highlights the conflicting views about whether mothers with COVID-19 should be separated from neonates.

The Chinese consensus explicitly recommends separation if mothers have suspected or confirmed COVID-19.[4] It defines neonates with possible COVID-19 in two ways, regardless of whether they have symptoms: those born to mothers with the disease 14 days before delivery to 28 days after delivery and those directly exposed to any infected individuals, including family members, caregivers and medical staff.

The United States Centers for Disease Control, the American College of Obstetricians and Gynecologists and the American Academy of Pediatrics advise temporary separation at birth if mothers have suspected or confirmed COVID-19.[5-7] The Centers for Disease Control says rooming in is acceptable if the mother wants this or there are limited hospital facilities, but infants should ideally be in a closed incubator or more than two metres from the mother, with a curtain or barrier separating them. The mother must use respiratory hygiene measures, including a mask.

Other professional societies say that health status should guide decisions and separation should not be the rule.[8-16] If the mother has no, or mild symptoms, she can room in with her baby. If she needs specific care for COVID-19, or if the neonate needs neonatal care, they should be separated. International organisations favour joint COVID-19 management of mothers and babies. Skin-to-skin contact and breastfeeding are encouraged, subject to strict hygiene measures.[17-19]

Most of the guidelines consistently support breastfeeding for neonates born to mothers with suspected or confirmed COVID-19 (Table 1), but the Chinese consensus does not.[4]

During the pandemic, hospitals have adopted specific and very strict parental access policies for NICU admissions, in order to protect neonates and healthcare professionals. Most allow none, one or a maximum of two healthy caregivers. Many NICUs are open units with multiple cots, which is a challenge for infection control. Even in Sweden, where couplet care in single family rooms is standard care, a common recommendation is to separate the sick baby and admit them to the NICU with a healthy caregiver only.[14] The Swedish recommendations can allow couplet care with strict conditions, such as no need for NICU admission, single family rooms and enough nursing staff.[14] A closed incubator in a pressure-negative room, or at least with no pressure, is recommended if the baby is at risk of COVID-19.

TABLE 2 How to protect neonates during the COVID-19 pandemic

Access and role of parents
Restricted hospital access. Neonates require technical care and infant and family-centred care. Both parents must have access to infants. Participation in care and skin-to-skin contact should be welcomed and supported. Psychological support should be provided for parents
Parents and caregivers must respect infection barriers
Wash hands regularly. Cough or sneeze inside elbow. Use disposable tissues. Physical distancing. Surgical masks before entering, and inside, unit. Hand sanitiser before any contact with baby
Parents must inform staff of possible COVID-19 symptoms as fever, cough, muscle pain, headache, sore throat, digestive symptoms, loss of taste or smell
Staff will determine if parents need further assessment or testing
Parents must respect quarantine period
Developmental care practices
Early and prolonged skin-to-skin contact, adapted sound and light levels, flexed posture, protected sleep periods, prevent and treat pain
Presence and role of parents
Both parents must have access to their child
Participation in care and skin-to-skin contact are welcomed and supported
Psychological support for parents
Breastfeeding
Expressed milk, raw mother's milk and breastfeeding are supported. Hygiene measures recommended, including cleaning breast pump and personal hygiene
For parents with suspected or confirmed COVID-19
Healthy neonate: mother and baby may stay together in the maternity ward until discharge. Then, home quarantine until day 14 of life and follow-up. Hospitalised neonate: minimal guaranteed access to NICU for mother, or for the father if mother unavailable, until the end of quarantine, then standard access for both parents. Parental visits must be organised and secure. Use technology so family can see baby if contact is impossible

1.3 | Primary needs of healthy and sick neonates

Infant-parent attachment is fragile and can be interrupted by early separation, the infant's illness and NICU admission.[3,25] Although

medical advances mean more vulnerable babies survive, neurodevelopmental disabilities remain an issue. Bonding to the primary caregiver is fundamental to children's growth and development,[26] and the neurobiological processes involved in the maturation of the brain and activation of neuroendocrine systems are driven by attachment-related behaviours.[27] This attachment is facilitated by couplet care or no separation from birth. The initial hours and days after birth are vital for establishing breastfeeding, during constant, close physical proximity, especially with skin-to-skin contact.[28]

Important protective factors can support the complex attachment process in the NICU. These include skin-to-skin contact, close proximity, caregiving, sensitivity to the infant's cues—namely recognition and interpretation—and identifying and responding to the infants' needs. All these actions are part of infant and family-centred developmental care. Parents of very preterm infants face a high risk of stress and depression,[29] and these feelings may be enhanced during the pandemic. Mothers who have tested positive may also feel more guilty. Early separation hampers the normal physical contact and emotional closeness between the mother and her infant and has been associated with long-lasting effects on emotional programming, neurodevelopmental outcomes and parental mental health.[30]

The European Foundation for the Care of Newborn Infants has published standards of care that encourage full parental access and to support early bonding.[2,31] These state that parents, and any nominated substitutes, should have continuous access to the infant and be able to remain with them at all times.[2,31]

2 | ACTION THAT CAN BE IMPLEMENTED DURING THE PANDEMIC

The risk-benefit balance between possible transmission and the impact of interrupting mother-infant attachment must be carefully weighed up. This includes also limiting staff exposure to infected parents. A number of steps can be taken to protect the primary needs of exposed healthy or sick hospitalised neonates (Table 2).

2.1 | All healthy infants if mother has suspected or confirmed COVID-19

Mothers and healthy babies who do not need NICU care should not be separated if the mother tests positive but does not require COVID-19 care. Vertical perinatal transmission has not been observed and most babies have no symptoms. Rooming in supports breastfeeding and this should ideally be provided in a pressure-negative room or in a room where the windows can be opened regularly. The mother should wearing a surgical mask and observe careful hand hygiene when caring for her baby. When the mother is not holding the baby, it should be placed in a closed incubator or at least two metres from the mother. Paediatric examinations must be carried out in the room by healthcare staff wearing personal protective equipment. When they are discharged, the mother and the baby should be quarantined at home until at least day 14 of life. After discharge, the baby's cot should be two metres from the mother's bed and hygiene precautions should be maintained. A follow-up plan for the infant's first month is important, and telemedicine should ideally be used instead of face-to-face visits. Primary healthcare facilities or home visits by healthcare professionals, such as midwives, general practitioners or paediatricians, are an alternative.

2.2 | Procedures for all NICU admissions

Parents are part of their baby's care, and their presence is crucial. They should be part of the NICU team and observe the same rules and restrictions as healthcare professionals during the pandemic. This includes strict hand hygiene at the entrance of the unit and before touching the baby. Parents should wear a surgical mask at all times and not circulate within the NICU. NICU areas commonly used by parents should be closed. Only two parents or primary support people should be allowed during the entire NICU stay. Parents should each be allowed one visit a day, with no set visiting hours and no limits on duration. However, they should always remain next to the baby during their visit. The duration of skin-to-skin contact should not be restricted, and successful breastfeeding should be promoted and supported for all infants who are not isolated.

No adult should be admitted if they have tested positive for COVID-19 or have symptoms in the last 72 hours.[32] In exceptional situations, extra visits could be authorised by the responsible physician.

Parents who have tested negative can come back to the NICU 48 hours after the end of any symptoms. If they test positive, home isolation is required for at least eight to 14 days after symptoms end.

2.3 | All neonates admitted to NICUs or neonatal units whose mothers have suspected or confirmed COVID-19

Newborn infants should be isolated in a single room, preferably pressure-negative, and be cared for by healthcare professionals with adequate personal protective equipment and other hygiene measures. Infants exposed to COVID-19 can be cohorted in the NICU. Isolation should last 14 days and cease once all viral tests are negative. Mothers who test positive can only meet their babies during their hospital stays if they are in the same hospital or maternity ward as the NICU and they are mobile. It is important she can visit her infant before she is discharged, as she will have to be quarantined at home to minimise the risk to others in her community. The healthcare perinatal team caring for the mother should make sure she can visit her infant before she is discharged.

The following rules are proposed. A set time should be arranged between the postnatal and neonatal teams. The mother should be wearing surgical mask and move directly between locations, accompanied by healthcare staff. She should not touch anything *en route*

to the NICU and observe strict hand hygiene at all times. The NICU entrance should be cleared of other visitors ready for her arrival, and she should be welcomed by one member of the medical team. The mother should be transferred securely and straight to her infant, who should be in a single room. The visit can last for 4 hours, as this is how long a surgical mask provides protection for.

The mother should be given the full opportunity to be involved in the care of her infant as long as safety precautions are observed. Skin-to-skin contact should be discussed with the hygiene team and could be postponed until the end of parental isolation. The baby should be introduced to other family using live links on cell phones and tablets. Healthcare professionals can also use this technology if the parents cannot see their baby for some time or the mother is too ill to visit. After the mother has been discharged, the same home isolation rules will apply to the parents as other members of the public. When this period is over, both asymptomatic parents can see their baby and should have skin-so-skin contact as soon as possible. The possibility of letting a healthy family member have skin-to-skin contact and interact with the baby while the parents are in quarantine should be discussed.

3 | CONCLUSION

Social distancing measures are important because they protect others, but neonates will probably suffer consequences because of these rules. Being separated from their parents or caregivers could have long-term consequences, especially for sick and vulnerable infants with prolonged hospital stays. It is important to raise awareness of the issues neonates and their families face during the pandemic and protect the infant's primary needs, without risking further virus transmission.

CONFLICTS OF INTEREST

None.

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