

Implementation Tips: Preterm Infant Nutrition Care during the Novel Coronavirus Covid-19 Pandemic

PREAMBLE

The novel coronavirus disease (COVID-19) pandemic has created a rapidly evolving public health crisis. Numerous expert groups cited below have comprehensive information and are reputable sources. Although there is much to learn about this coronavirus, authorities agree that the primary mode of transmission is through respiratory droplets directly transmitted person to person.

The purpose of this document is to provide guidance to the neonatal registered dietitian nutritionist (RDN). This document does not seek to replace existing policies within a facility and instead aims to provide information to aid decision making in the nutrition care for preterm infants. This includes information about breast-feeding, expressed human milk, donor human milk and infant formula in both hospital settings and during the immediate post-discharge period. Also included is advice on how to perform neonatal nutrition assessments, construct management plans and communicate recommendations in a setting that is restricted in face-to-face practice. Consideration is given to newborns in normal newborn nurseries and in neonatal ICUs, as well as those newborns transferred to children's hospitals. Each setting will likely have facility-specific policies and procedures which need to be adhered to.

The COVID-19 pandemic is an evolving situation. Substantial ambiguity and variation in practice along with very limited evidence creates the need to adapt, revise and to use the best available information. Because there are no current studies on nutrition management in COVID-19 patients at this time, the following practice tips are based on the best knowledge and clinical experiences of RDNs in the field. RDNs can provide excellent care to their patients and families by staying abreast of the latest developments.

MOTHERS' MILK

There is limited scientific information on whether the novel coronavirus SARS-CoV-2 (i.e. the virus that causes COVID-19) affects breast milk and breast-feeding. Based on a small number of breast milk samples collected from women with COVID-19 the virus was not detectable in the milk.¹⁻⁵ However, there has not been extensive testing of breast milk for SARS-CoV-2, with only 13 breast milk samples from 11 mothers tested in the previously cited literature. It is unclear if the collection and analyzation methodologies used in these studies were optimized for human milk. Additionally, there is no information on whether the timing of COVID-19 infection influences its presence in breast milk, at what stage the studied mothers were in their production of antibodies to the virus, when these antibodies are passed to infants via

breast milk, the viability of the virus in breast milk and how milk storage methods influence the virus' survival. While existing limited evidence suggests that breast milk is unlikely to transfer the COVID-19 virus, it is not yet determined if the novel coronavirus can be spread via breast milk. At this time, there appears to be a higher risk of viral transfer from mother to infant through respiratory droplets than via breast milk.

Breast-feeding and breast milk remain the preferred feeding choice for nearly all infants. Breast milk is of particular importance for premature infants due to its role in reducing the risk of necrotizing enterocolitis risk.

MOTHERS' MILK IN THE HOSPITAL

For mothers and infants in a hospital setting, there are additional barriers to providing breast milk or breast-feeding that may require a response by the RDN and feeding team to provide the hospitalized infant appropriate and safe nutrition.

When determining a policy for breast milk administration, the following factors should be considered:

- Unit visitation policy
- Personal Protective Equipment (PPE) use and availability (e.g. mask, gloves, gowns)
- Hygiene practices of mom (hand hygiene, cleaning of breast)
- Availability of lactation support and supplies (pumping equipment, lactation educators)
- Level of mom/baby contact permissible
- Appropriate feeding modality given mom's health, infant's health and infant's level of prematurity
- Location of infant (normal newborn nursery vs. NICU)
- Breast milk handling chain⁶

In instances where a mother is COVID-19 positive, RDNs should work within policies and procedures set by the hospital. In absence of protocol, RDNs should determine the appropriate level of contact for a given situation by considering the following feeding policies, listed from least to most restrictive:

- Allow skin to skin or direct breast-feeding with mother practicing good hand hygiene and wearing a mask and educate mother on potential risks.⁷
- No direct contact whereby mother expresses breast milk (while wearing a mask and practicing good hand hygiene) and milk is fed to the baby by a well-person.^{8,9}

- Breast milk is not available or not allowed and infant is provided alternative nutrition per unit guidelines.^{8,9}

PASTEURIZED OR STERILE DONOR HUMAN MILK IN THE HOSPITAL

It is recommended to discuss potential supply issues with individual hospital suppliers. It may be prudent to temporarily revise donor breast milk use policies to ensure priority supply availability for the highest-risk patients.

- During the pandemic, there is potential for a shortage of supply of donor -human milk due to a temporary reduction of donors.
- Donor milk banks are not testing milk samples for the presence of COVID-19. The high heat processing of donor milk (e.g. Holder Pasteurization) inactivates genetically similar viruses like SARS and MERS.¹⁰
- Statements from Human Milk Banking Association of North America: www.hmbana.org/news/statement-on-coronavirus.html

FORMULA FEEDING

For mothers too unwell to breast-feed or to express breast milk with a breast pump and for mothers who use formula to feed their infant, prepare formula according to recommended preparation. (See additional information under NICU Discharge Follow-Up.)

HUMAN MILK AT HOME

General recommendations on COVID-19 and breast-feeding have been provided by the WHO, CDC and AAP for the home-setting.⁷⁻⁹ If mother is COVID-19 positive or is not well and has unknown COVID-19 status, she should wear a mask or strongly consider having someone who is well bottle-feed her expressed breast milk to the infant.⁷⁻⁹

Generally, for near-term and term neonates where the mother is well, mothers should practice usual hand washing precautions before breast-feeding to avoid spreading the virus to her infant. If pumping, the mother should wash her hands before touching any pump or bottle parts and follow recommendations for proper pump cleaning after each use.

Mothers using a face mask while feeding or caring for their infant should wash their hands with soap and water before putting on the mask. Mothers should not touch the mask while wearing it and should replace the mask if it gets damp or dirty. If a mask is accidentally touched while in use, hands should be washed. Single use masks should not be reused. If a facemask is not available, alternatives such as two-layered scarves and bandanas can reduce some respiratory droplets. Mothers should wrap a two- layer cloth like a scarf or bandana around their nose and mouth while feeding their baby. The same handwashing precautions should be followed with alternative masks.

If mother's milk is not available or supply is not adequate, mothers should be advised that feeding milk from another mother can be dangerous. According to American Academy of Pediatrics recommendations regarding donor milk sharing: "Healthcare providers should discourage families from direct human milk sharing or purchasing human milk from the Internet because of the increased risks of bacterial or viral contamination of nonpasteurized milk and the possibility of exposure to medications, drugs, or other substances, including cow milk protein."¹¹

WORKFLOW AND COMMUNICATION

RDNs are essential healthcare providers in the neonatal intensive care unit. However, during these unprecedented times, it may be appropriate to consider the RDN practice essential, but non-location critical. Minimizing physical contact to flatten the pandemic curve and limitations on personal protective equipment are two important considerations when determining RDN workflow during the pandemic.

INPATIENT CARE

It is recommended that a chain of communication be established with the on-site medical team to ensure that quality collaborative care is maintained.

As there are national, state and hospital specific guidance for exposure prevention and control, many different approaches to NICU RDN practice have been reported. Some RDNs have been physically rounding in units with physical safety precautions. Some RDNs have had a combination of in-hospital and at-home work in an effort to reduce the number of providers within the unit while still providing quality care.

Working remotely may be feasible by utilizing the electronic health record and communicating with the healthcare team from afar. RDNs have utilized strategies such as calling in to rounds and video conferencing to continue patient care from afar. For typical charting, ensure there is specific documentation identifying the change in patient assessment and nutrition-related care.

See the the Academy of Nutrition and Dietetics' Professional Resource Hub: www.eatrightpro.org/coronavirus-resources.

NICU DISCHARGE FOLLOW-UP

Highest risk patients may be seen in person while stable patients may be assessed remotely. Utilization of teleconference or virtual visits allows for continuing of care while maintaining physical distance and limiting unnecessary in-person visits.

It is important to note that use of remote care videoconferencing and phone consultations may be challenging to implement for under-resourced families.

Gaps in care may be corrected through collaboration with other healthcare team members. Home visiting nursing services may be offered to families at some facilities. RDNs can maintain communication with nurses and parents to obtain nutrition

assessment information and learn about feeding issues.

As concerned families have been purchasing several weeks supply of formula, shortages of formula at points of purchase have been reported.¹² Strategies to ensure formula access following NICU discharge are encouraged to ensure appropriate nutrition administration. Consider providing contact information on where formulas are available utilizing company-specific store locators.

This article describes helpful recommendations on what to do in the setting of formula shortages and may be an appropriate resource to share with families: www.healthychildren.org/English/tips-tools/ask-the-pediatrician/Pages/Are-there-shortages-of-infant-formula-due-to-COVID-19.aspx

Patients and clients should also be notified of potential price gouging. Price gouging is the occurrence of sellers taking advantage of consumers during a crisis by dramatically increasing the cost of necessities. There have been reports of price gouging of essential items such as infant formula and diapers, particularly by third-party providers sold online.¹³

- File a complaint: www.consumerresources.org/covid-19-consumer-updates/#toggle-id-3

HOMEMADE FORMULA

Last but not least, mothers should be cautioned on the use of homemade formula recipes. Homemade formulas (as may be promoted online and in social media) can be dangerous and are not recommended.¹⁴

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Additional Resources

Academy of Breastfeeding Medicine Statement on COVID-19 (Breastfeeding, Home and Inpatient Care): <https://www.bfmed.org/abm-statement-coronavirus>

American Academy of Pediatrics- Infants Born to Mothers with COVID-19, breastfeeding, testing, visitation: www.aappublications.org/news/2020/04/02/infantcovidguidance040220 and downloads.aap.org/AAP/PDF/COVID%2019%20Initial%20Newborn%20Guidance.pdf

Care for Breastfeeding Women: Interim Guidance on Breastfeeding and Breast Milk Feeds in the Context of COVID-19: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/care-for-breastfeeding-women.html>

Considerations for Inpatient Obstetric Healthcare Settings: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/inpatient-obstetric-healthcare-guidance.html>

Health Canada- Pregnancy, childbirth, breastfeeding, visitors and mental health: <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/pregnancy-advise-mothers.html>

Inpatient Obstetric Care: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/inpatient-obstetric-healthcare-guidance.html>

International Society for Research in Human Milk and Lactation (ISRHML): Collecting human milk and breastfeeding: <https://www.isrhml.com/i4a/pages/index.cfm?pageid=3368>

Opinion article, donor milk banks and NICUs: [https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642\(20\)30103-6/fulltext](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(20)30103-6/fulltext)

Pregnancy and Breastfeeding during COVID-19: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/pregnancy-breastfeeding.html>

Rocky Mountain Children's Health Foundation- Mothers' Milk Bank and COVID-19: <https://rmchildren.org/mothers-milk-bank-and-covid-19-update-2/>

Rosenquist Foundation (Meier PP and Patel AL)- Breastmilk and NICU: https://www.larsson-rosenquist.org/media/1353/2003_nicu_babies_covid19.pdf

The Society of Obstetricians and Gynaecologists of Canada: <https://sogc.org/en/-COVID-19/COVID-19/en/content/COVID-19/COVID-19.aspx?hkey=dd7d7494-49fa-4966-ab4d-4dca362a9655>

Royal College of Obstetricians & Gynaecologists- COVID-19 concerns and pregnancy: <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/coronavirus-pregnancy/>

World Health Organization- Pregnancy, Childbirth, Breastfeeding Q&A: <https://www.who.int/news-room/q-a-detail/q-a-on-covid-19-pregnancy-childbirth-and-breastfeeding>