Guideline

Maternal-Neonatal COVID-19 General Guideline

Updated: July 22, 2021

Provincial Council for Maternal and Child Health

building a brighter future

Contents

Revision History

July 22, 2021 – Current
For this version of the guideline, revisions are highlighted in yellow throughout the document.
October 22, 2020 – Updated
April 30, 2020 – Original Release

A Note on Terminology and Language

In this guideline, inclusive language is utilized; however, the task force may refer to the pregnant individual as “mother” or “maternal” to reflect their capacity of having a birthing/perinatal experience. Surrogates, gestational carriers, transgender males and persons who do not identify as cis-gendered women may also share these experiences and may also benefit from the recommendations below.

This document and outlined key practice principles are meant to be clinically applicable for a wide range of populations. Ontario is home to diverse pregnant and postpartum populations; inclusive of age, gender identity, race, ethnicity or culture, ability, means of conception or genetic relation and other factors such as geographical location. These factors can greatly influence a person’s unique needs and expectations around care management during pregnancy and postpartum. When appropriate, healthcare providers (HCPs) should consult with specialized organizations dedicated to support of specific populations for assistance in appropriately tailoring these recommendations to individuals under their care.

Health Equity

PCMCH prioritizes identifying actions and objectives for advancing culturally safe and appropriate, accessible and equitable healthcare services across the reproductive and child healthcare system in Ontario. The social determinants of health, and their intersections, impact the health of individuals, groups and communities in diverse ways. Health equity is achieved by removing unfair and avoidable barriers that compromise health and well-being. Addressing the impacts of anti-Indigenous and anti-Black racism and other forms of systemic oppression on healthcare quality, access and outcomes is an important step towards health equity. In January 2021, PCMCH’s COVID-19 Pregnancy Care Task Force released a report, Recommendations to Address Gaps in Prenatal Care System, paving a path forward for equity-informed responses to the COVID-19 pandemic and for a strengthened future health system that can meet the needs of all Ontarians.

Summary of Recommendations

Use of Personal Protective Equipment (PPE) by Providers and Patients during Labour and Delivery

- A point-of-care risk assessment should be done by regulated health professionals (RHP) for risk of droplet and contact transmission during labour, delivery and newborn care. Suitable precautions may include: gloves, gown, a surgical/procedure mask and eye protection (goggles or face shield). This task force recommends Droplet/Contact precautions for all healthcare providers (HCP) at all births in Ontario.
- Therefore, this task force recommends that all pregnant persons who screen positive for signs and/or symptoms of COVID-19 should be treated as suspected for COVID-19, should be given a surgical/procedure mask for all stages of labour (if tolerated) and be advised to perform hand hygiene.
- Only essential operating room (OR) staff should be in the room for administration of general anesthesia for a caesarian section, such staff should follow Airborne precautions (including appropriately fitted N95 respirator). Once intubation is complete, other HCPs may enter the room and use Droplet/Contact precautions.
- This task force recommends that all staff present in the OR for a caesarean section under regional anesthesia to use Droplet/Contact precautions. If regional anesthesia is not sufficient and the procedure needs to be converted to general anesthesia, only necessary HCPs should be in the room for intubation and Droplet/Contact and Airborne precautions should be used. Once intubation is complete and ventilation initiated, other HCPs may enter the room and use Droplet/Contact precautions.

Support People for Pregnant Individuals during a Labour & Delivery Admission

- Considering all of the above, this task force recommends allowing one support person (at minimum) that should remain unchanged during labour and birth. The support person(s) would be screened negative for any signs and symptoms of COVID-19 and be allowed to accompany the birthing person as long as the institution has the following:
    - sufficient PPE for the support person(s);
    - adequate spacing and care environment in which the support person(s) can be appropriately physically distanced from other patients and support people; and
    - the ability to ensure that the support person(s) remains compliant with physical distancing and infection-control measures.

Care of Babies born to Suspected or Confirmed COVID-19 Positive People

- Given the low risk of vertical transmission and the low risk of aerosol exposure from neonatal resuscitation, Droplet/Contact precautions are suitable for the initial resuscitation of newborns, even those born to suspected or confirmed COVID-19 positive person.

- This task force recommends early discharge of well babies after proper risk assessment has occurred.

Infant Testing

- This task force recommends that infants born to people with confirmed COVID-19 at the time of birth should be tested for COVID-19 within 24 hours of delivery, regardless of symptoms.
- If maternal testing is pending at the time of mother-baby dyad discharge, then follow-up must be ensured such that if maternal testing is positive the baby is tested in a timely manner. If bringing the baby back for testing is impractical, the baby should be tested prior to discharge.

Care and Testing of Babies in NICU/ Special Care Nursery (SCN)

- Therefore, RHPs providing care for babies requiring ongoing, potentially aerosolizing respiratory support in the NICU or SCN should use Droplet/Contact and Airborne precautions.
- If any visitor to NICU or RHP is determined to be a suspected or confirmed COVID-19 case, the baby becomes a possible contact and should be isolated with appropriate additional precautions instituted. Hospital infection, prevention and control (IPAC) should be notified to institute proper follow-up. Any infant who is a post-natal contact of a confirmed COVID-19 positive caregiver or RHP should remain isolated with appropriate additional precautions for 14 days according to MOH or local guidelines.
- Infants born to COVID-19 positive people should be tested within the first 24 hours of life and, if the initial test is negative, again at 48 hours of life, regardless of symptoms. Infants should be maintained on Droplet/Contact precautions with or without Airborne precautions as appropriate until results are reported.
    - Infants who have a 24- or 48-hour COVID test positive should be discussed with a paediatric infectious disease specialist.
    - Infants who have a negative test at 48 hours should be discussed with local IPAC to determine appropriate ongoing care measures.

Monitoring/Surveillance Recommendations

- The task force feels it imperative that prospective surveillance of the mother-baby dyad be performed postpartum until two weeks to ensure the safety of this recommendation to room in, breastfeed and remain together throughout the course of care.

Introduction

The COVID-19 pandemic has resulted in multiple practice guidelines from international, national, regional and local authorities that attempt to advise healthcare providers (HCPs) and patients on safe practice related to childbirth and newborn care. These guidelines are often written by various specialty subgroups, resulting in conflicting messages to HCPs and the public. Furthermore, many guidelines are being adapted from non-Canadian data leading to uncertainty in the appropriateness of these guidelines to Canadian practice. As a result, there are wide differences in maternal and newborn care practices across Ontario. This variation in practice guidelines has led to – and will continue to lead to – confusion for pregnant individuals and their support system, as well as being stressful for families and HCPs alike. Additionally, there is concern that individual institutional or provider interpretation of the guidelines will result in inappropriate use of limited provincial resources, such as personal protective equipment (PPE).

The Maternal-Neonatal COVID-19 Task Force was charged by the Ontario Ministry of Health (MOH) with addressing two main areas for consideration. The first is the use of PPE among HCPs and patients during the pandemic. The second is addressing how visitors may support the pregnant person at hospitals during this pandemic response with the goal of equitable and safe care across Ontario. This document also addresses additional areas for concern that are being experienced by providers across the regions and includes recommendations related to intrapartum care, breastfeeding, separation of the mother-baby dyad and neonatal testing for COVID-19. These recommendations were made after considerable deliberation by a task force representing a wide range of clinical expertise including, but not limited to, microbiology and infectious disease (see Acknowledgments).

The task force considered information from existing guidelines and references at the time of publication and with subsequent updates to formulate these recommendations. As guidelines continue to be updated and new evidence emerges, sections of these recommendations may no longer be relevant or applicable to clinical practice. For the most part, this document aligns with Canadian guidelines and only differs where Ontario practice-specific data was needed. The task force made recommendations that represent a general agreement from its members. In the rare event where there was not unanimous agreement, recommendations were based on majority agreement. The task force applied the principles and values in the following section when recommendations from guidelines diverged.

Task Force General Values and Principles

Underlying Values

- **Beneficence**: Promoting safe and effective care within resource constraints and limitations of current evidence.
- **Equity**: Promoting just/fair distribution of benefit and burdens in time of pandemic.
- **Reciprocity**: Minimizing exposures for all, including HCPs and patients, based on risk and institutional prevalence.
- **Solidarity**: Building, preserving and strengthening inter-professional and inter-institutional collaboration (a responsibility of HCPs, institutional leadership, and MOH).
- **Trust**: Foster and maintain the public's trust and HCP's trust in each other, in leadership and in their institutions.
- **Utility**: Balancing the values above and the principles below to maximize the greatest possible good for the greatest number of individuals.

Goals and Principles

1. To promote public health aims of reducing transmission and preserving PPE supplies.
2. To conserve continuity/consistency of care as best as possible for patients/families.
3. To support health/resilience in our workforce and preserve future staffing for patient care.
4. To perform ongoing surveillance and evaluation of new evidence to inform guidelines.

This task force was asked to provide MOH with recommendations that would standardize practice across the province in an attempt to reduce the variations among providers and across all birth settings in the province of Ontario. The recommendations that follow are made to reflect the current pandemic and integrate best scientific evidence in the context of a potential scarcity of resources.

Use of Personal Protective Equipment (PPE) by Providers and Patients During Labour and Delivery

Use of Droplet/Contact PPE

It is clear that the COVID-19 virus spreads largely by respiratory droplets and aerosols [1] during close, unprotected contact [2]. Therefore, proper use of Droplet/Contact precautions, including PPE, should be implemented to prevent spread among HCPs [1]. We support the recommendation that patients with suspected or confirmed COVID-19 infection should only be cared for by providers who have adequate Droplet/Contact infection prevention unless involved in aerosol generating medical procedures (AGMPs) where Airborne precautions are recommended [1]. Regardless of the vaccination status of the HCP, Droplet/Contact precautions should remain the minimum requirement necessary when providing care to any patient suspected or confirmed to have COVID-19 [1, 3].

A point-of-care risk assessment should be done by regulated health professionals (RHP) for risk of droplet and contact transmission during labour, delivery and newborn care. Suitable precautions may include: gloves, gown, a surgical/procedure mask and eye protection (goggles or face shield). This task force recommends Droplet/Contact precautions for all HCPs at all births in Ontario.

A recent case series demonstrated that 13.5 per cent of pregnant patients without any COVID-19 associated symptoms at initial presentation were later identified as COVID-19 positive after either developing symptoms or following the implementation of universal testing [4, 5].

The care of all babies born to persons who are not suspected to have COVID-19 will continue to follow universal precautions in accordance with provincial guidance [1].

Therefore, this task force recommends that all pregnant persons who screen positive for signs and/or symptoms of COVID-19 should be treated as suspected for COVID-19, should be given a surgical/procedure mask for all stages of labour (if tolerated) and be advised to perform hand hygiene.

Use of Airborne PPE/N95 Respirators

Public Health Ontario (PHO) has recommended that N95 Respirators be limited to use only in the presence of AGMPs, or when needed based on a point of care risk assessment [1]. This best practice continues to apply within the COVID-19 environment. In obstetrical care environments, this recommendation chiefly addresses caesarean

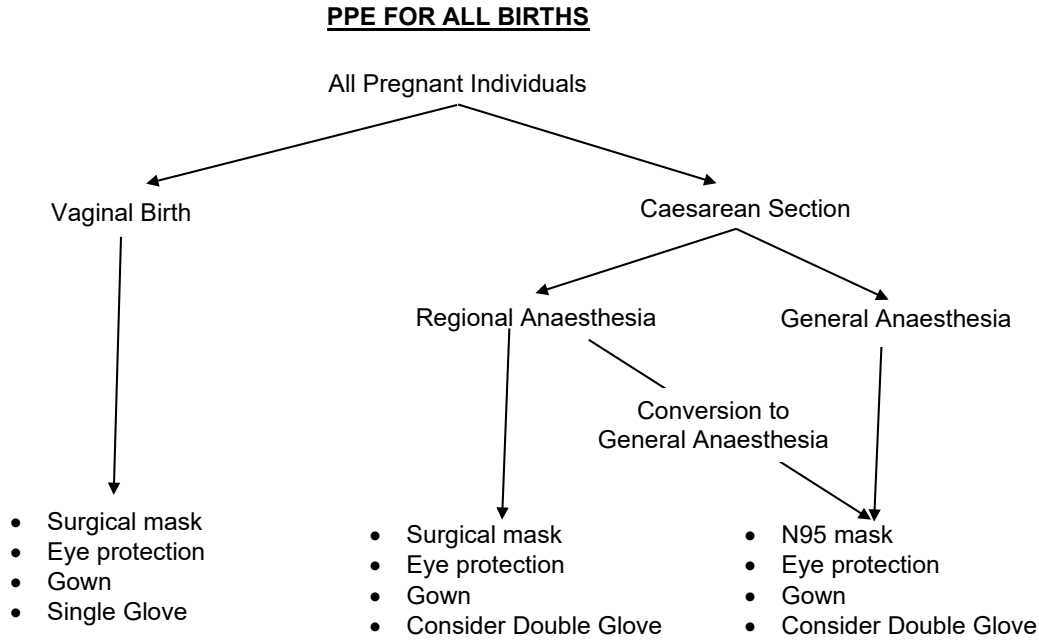
sections under general anesthetic, which represents between three to five per cent of all caesarean sections in Ontario. All acute care settings should define the minimum team required to provide a safe caesarean section and aim to eliminate unnecessary HCPs in the OR.

Only essential operating room (OR) staff should be in the room for administration of general anesthesia for a caesarian section, such staff should follow Airborne precautions (including appropriately fitted N95 respirator). Once intubation is complete, other HCPs may enter the room and use Droplet/Contact precautions.

In some cases, a caesarean section may begin under regional anesthesia and then need to convert to general anesthetic. It is theoretically possible for the anesthesia to be induced by an anesthetic team wearing an N95 mask and then for the rest of the healthcare team to wait for the operating room atmosphere to clear of potentially aerosolized virus before commencing the surgery. However, this task force is of the opinion that this will lead to an unnecessary delay in what is likely an emergency caesarean section and unnecessary prolonged exposure of the fetus to the anesthetic.

This task force recommends that all staff present in the OR for a caesarean section under regional anesthesia to use Droplet/Contact precautions. If regional anesthesia is not sufficient and the procedure needs to be converted to general anesthesia, only necessary HCPs should be in the room for intubation and Droplet/Contact and Airborne precautions should be used. Once intubation is complete and ventilation initiated, other HCPs may enter the room and use Droplet/Contact precautions.

Figure 1: PPE Requirements for all Obstetrical Deliveries



Support People for Pregnant Individuals During a Labour and Delivery Admission

A significant area of contention for providers is the issue of sites allowing a support person or people to accompany the labouring individual and immediately thereafter. While the same basic principles apply to all birth environments, this task force recognizes that local factors will result in some variation from institution to institution and across regions. It is also recognized that variations in policies cause significant confusion and concern for pregnant people and the public and we urge institutions to clearly communicate their policies along with the rationale behind the decisions made.

In determining whether to enable a support person to attend the birth and participate in the postpartum period, obstetrical care environments (or providers) need to balance the known risks of COVID-19 transmission with the benefit of having a support person present during labour alongside local public health guidance. Given the high prevalence of asymptomatic disease, these risks are present for all admissions but are more clear and likely greater for those suspected or confirmed COVID-19 positive. In creating these policies, institutions should consider the following:

- If there is PPE rationing, consider that a support person may require PPE.
- Healthcare environments should conduct symptom and exposure screening for the visitor prior to entry to the facility. Suspected or confirmed COVID-19 positive visitors are typically denied entry. Allowing a support person with suspected or confirmed COVID-19 positive to accompany a pregnant person will increase the risk of COVID-19 transmission to HCPs and threaten maintaining a healthy provider workforce for the duration of the pandemic.
- An asymptomatic visitor also poses a risk to both HCPs and other patients in the care environment.
- Exposing a well support person to potential viral transmissions may not be ethical or appropriate when the severity of the disease for the individual is unpredictable or unknown.
- HCP anxiety may increase due to real or perceived exposure to the virus from infected, exposed and/or asymptomatic individuals.
- A support person may require resources and logistical considerations outside of normal care practices.
- Designated professional labour support (doulas and other perinatal support persons) are an integral part of the birth experience for some people and are valued members of the perinatal care team.

These considerations must be balanced against the following risks of limiting support:

- Birth is an emotional event and can often be anxiety-provoking or even traumatic. The presence of support can mitigate these effects.
- Continuous support in labour can reduce some complications. Support in the postpartum period increases desirable outcomes such as successful breastfeeding and readiness for early discharge [6].

- An extra staff person may be needed for each labour/birth to help with tasks normally taken by the support person. This may compound difficulties due to reduced staffing availability and increased workload created by infection control measures

Considering all of the above, this task force recommends allowing one support person (at minimum) that should remain unchanged during labour and birth. The support person(s) would be screened *negative* for any signs and symptoms of COVID-19 and be allowed to accompany the birthing person as long as the institution has the following:

- **sufficient PPE for the support person(s);**
- **adequate spacing and care environment in which the support person(s) can be appropriately physically distanced from other patients and support people; and**
- **the ability to ensure that the support person(s) remains compliant with physical distancing and infection control measures.**

Additional factors to consider:

- Movement through and between care environments by the support person should be minimized.
- In-and-out privileges should be discouraged and supports may be required to remain in the patient room at all times.
- Differing policies may apply to individuals who are suspected or confirmed COVID-19 positive than to asymptomatic individuals.
- Differing policies may apply to differing obstetrical and newborn care environments (e.g., triage, labour and delivery, postpartum).
- If the support person is to accompany a pregnant person, the same recommendations for PPE precautions must be taken.
- Where in-person support is not possible, virtual and/or alternative options for support should be provided. When distance support is given, practical physical support should be provided.
- Policies should be flexible enough to address exceptional considerations (e.g., need for language interpretation, critically ill women) as well as to encompass the diversity of families we care for (e.g., adoptive and surrogacy families, persons with disabilities).

Intrapartum Care Considerations for Suspected/Confirmed COVID-19 Positive People

- Regardless of whether the individual is suspected or confirmed COVID-19 positive, their place of birth will continue to be informed by obstetrical factors and their birth-place preferences. Individuals should deliver in a care environment that can meet both their needs and the needs of the newborn while receiving care for COVID-19.

- Movement within and between facilities should be minimized. COVID-19 alone should not be an indication for transfer but may be a consideration.
- Timing of delivery should be determined by obstetrical indications. Suspected or confirmed COVID-19 positive status alone is not a sufficient indication for induction or caesarean delivery.
- Delivery for suspected or confirmed COVID-19 positive pregnant people may be expedited for fetal reasons or if it is felt that delivery will help with the resuscitation of the birthing individual. If delivery is required, stabilization of the birthing individual should be the priority.
- Infection control precautions and PPE recommendations should be followed as listed above.
- COVID-19 should be suspected in all pregnant people manifesting with an unexplained, persistent (on two occasions, 30 minutes apart) fever (>37.8) and COVID-19 testing should be performed. While testing should be considered for any febrile person in labour, if community prevalence remains low and an alternate cause of fever is clear, it may be reasonable not to test.
- There is a lack of comprehensive and definitive evidence on the risk of nitrous oxide use and COVID-19. A point-of-care risk assessment should be done by RHPs for risk of droplet or contact transmission. Precautionary principles suggest that a biomedical filter should be applied along with adequate sanitization of equipment if nitrous oxide is used during labour and delivery.
- The use of water immersion (for pain relief or birth) should be avoided. Care providers should be protected from exposure from spray if showering is used for pain relief.
- The use of all other analgesia options (e.g. epidurals, opioids) is unchanged regardless of COVID-19 positive status.
- Fetal health surveillance should continue as routinely practiced in accordance with obstetrical indications.
- Amniotomy and fetal scalp clips may be used.
- Delayed cord clamping is recommended for preterm infants and there is no reason not to do this for term babies as there is no supporting evidence to say otherwise. However, this practice is not recommended for babies born by caesarean section under general anesthesia (see below).
- Skin-to-skin care can be performed by the birthing person. Cleansing of the skin and chest may be recommended if that person was not wearing a mask and coughed and/or sneezed on their bare chest [7].

Care of Babies Born to Asymptomatic or Non-Suspect People

HCPs should continue to wear a surgical/procedure mask and eye protection as routinely practiced and to follow local institution's current guidelines. This practice is aligned with the above recommendations and in accordance with MOH recommendations.

Care of Babies Born to Suspected or Confirmed COVID-19 Positive People

It is reassuring to note in the short term there have only been a few reported cases of infected infants. However, antepartum, intrapartum and post-natal transmission is a potential risk of unknown scale. There is limited evidence to suggest that babies under one year of age may experience increased severity of disease from COVID-19 infection than older children. There are also reported cases of possible Multisystem Inflammatory Syndrome of Neonates (MIS-N) [8, 9]. A population-based study from Sweden reported [10] in-hospital mortality of 0.3 per cent (7/2030) among neonates born to mothers who were COVID-19 positive in pregnancy; however, direct attribution of these deaths to maternal COVID-19 has not been ascertained. A recent report identified deaths of two neonates out of 18 neonates who were diagnosed with MIS-N [11], As a result, all efforts should be made to prevent postnatal transmission both in hospital and in the community.

In the current literature, there is no convincing evidence of in-utero transmission of COVID-19 to the fetus [5]. As a result, this information may not be representative of vaginal births and it is theoretically possible that the child born vaginally, as is anticipated more commonly in Ontario, may have a risk of COVID-19 colonization. However, there have been several cohorts reported with no virus detection in vaginal secretions in COVID-19 positive people. In addition, the neonatal respiratory tract is narrow (largest endotracheal tube size is 4 mm). Most infants who need respiratory support at birth are less than 30 weeks gestation and colonization of non-respiratory tissue (e.g., skin) would not generate aerosols during positive pressure ventilation (PPV). Therefore, it is our opinion at this time that it is highly improbable that a child at birth would generate infectious aerosol particles during PPV, even if born to a COVID-19 positive person.

Given the low risk of vertical transmission and the low risk of aerosol exposure from neonatal resuscitation, Droplet/Contact precautions are suitable for the initial resuscitation of newborns, even those born to suspected or confirmed COVID-19 positive person.

This recommendation applies to neonatal resuscitation including PPV, intubation, and CPAP, based on principles of risk exposure in the newborn. This recommendation was made by majority agreement and not by unanimous decision. Therefore, we highly recommend continued surveillance of this practice with testing and continued clinical monitoring of newborns of suspected and confirmed COVID-19 positive individuals. Should this surveillance lead to a different understanding of transmission risk, N95 masks could be provided to and worn by all HCPs in the resuscitation space [12].
An exception to the above recommendation is if the resuscitation is performed in the OR where a maternal AGMP (e.g., intubation) has occurred for a mother who is suspected

or confirmed COVID-19 positive. Where facilities and human resources allow, we recommend the following:

- The baby should be removed from the OR, whether baby is well or requiring resuscitation, as soon as possible, in order to reduce the risk of the baby being infected by maternal aerosols.
- If the baby is well, a HCP (in clean PPE) should transfer the baby, in an incubator or open bassinet, to the newborn care environment (e.g., nursery, postpartum room).
- If the baby requires resuscitation, the provider from the OR should place the baby on warmer bed and other providers in droplet/contact PPE should begin resuscitation. After doffing the PPE from the OR and donning new PPE, the HCP can assist in ongoing resuscitation and infant care.
- After resuscitation, the baby is transferred to the neonatal intensive care unit (NICU) or to the appropriate newborn care environment in a manner that is consistent with organization practice.
- The alternate care area requires cleaning according to Public Health Ontario (PHO) best practices after baby and team leave the room, regardless of what level of resuscitation was required.
- If the infant does not require any respiratory support, placing them in an open bassinette is adequate for movement between hospital environments. Infants requiring CPAP or ventilation should be transferred in an incubator from the delivery environment to an ongoing care environment.
- Appropriate follow-up care must be in place to ensure newborn screening and assessments (e.g., bilirubin check, and infant hearing screening) are performed at the correct time. Bathing the infant as soon as possible after birth is recommended in order to remove any virus that may have colonized on the surface of the infant skin. The exception to this would include infants where the bathing may cause instability in newborn thermoregulation. Separate mechanisms are required for follow-up of babies born to COVID-19 positive people such that they can safely return to a healthcare environment with appropriate PPE for HCPs.

This task force recommends early discharge of well babies after proper risk assessment has occurred.

Mother-Baby Dyad Care for Suspected or Confirmed COVID-19 Positive Person

Given the risk of postnatal transmission, it is recommended that families with a suspected or confirmed COVID-19 positive person are counseled regarding the risks and benefits of keeping mother and baby together vs separated, and options discussed if possible and at the mother's request. It is recognized that current national guidelines

do not recommend separating babies from their mothers. Therefore, this task force supports either of following options:

A. **Baby stay in the mother's room.** While caring for the baby in the mother's postpartum room, there are several recommendations:
   - Infant(s) should be two metres from the mother at all times unless they are providing direct care or breastfeeding.
   - Mother must be placed in a private room or if that is not possible, to be cared for in a room with no other patient.
   - Mother should perform hand hygiene prior to all care and breastfeeding.
   - Mother should always wear a mask.
   - Consideration should be given to caring for babies in incubators to provide an additional barrier.
   - Wherever possible, there should be a barrier (such as a curtain or incubator) between mother and infant(s) to protect against droplets due to coughing.
   - Infant(s) and mother can be discharged when well.
   - Infant(s) should remain two metres from mother at home and these precautions should continue until the mother is proven negative according to current local public health guidance.

B. **Separation of mother and baby**. In some sites, a separate newborn care area and caregiver may be available for:
   - Women who are unable to care for their infants while in hospital due to significant symptoms; or
   - At the request of the mother or family to prevent post-natal transmission of COVID-19 to the baby.

While some institutions may be able to offer mother-baby dyad separation as part of their COVID-19 policy, it must be acknowledged that neighbouring institutions will have differing policies and transfer between institutions solely for that reason may not be practically accommodated.

Care provided to infants, where mother-baby dyad separation has occurred, should be done in accordance with infection control principles, including physical distancing where babies are cohorted in one room and appropriate PPE for all care providers (staff and family).

Infant Testing

Only infants born to confirmed COVID-19 positive people require testing for SARS-CoV-2.

This task force recommends that infants born to people with *confirmed* COVID-19 at the time of birth should be tested for COVID-19 within 24 hours of delivery, regardless of symptoms.

This collection should be done only after the newborn has been bathed and cleaned ensuring that any residual birth secretions in the nasal area have been removed. If an infant is swabbed within the first few hours of life, the face should be first cleansed to prevent contamination at the time of specimen collection. If the newborn was not washed, the timing should be discussed with the most responsible provider. The recommended neonatal specimen is a nasopharyngeal swab placed in universal transport medium (UTM). Any symptomatic newborns should also be assessed for other causes of clinical disease according to the clinical findings.

If the maternal respiratory swab result is not yet available at 24 hours after birth, and the mother and infant are ready for discharge and clinically well, arrangements for follow-up should be made such that the result can be communicated to the mother and the newborn can be swabbed if mother is COVID-19 positive. In these cases, swabs of newborn should be conducted as soon as possible after a confirmed positive.

If maternal testing is *pending* at the time of mother-baby dyad discharge, then follow-up must be ensured such that if maternal testing is positive the baby is tested in a timely manner. If bringing the baby back for testing is impractical, the baby should be tested prior to discharge.

Any positive COVID-19 test in a newborn should be repeated after discussion with a paediatric infectious disease consultant, who will assist with result interpretation (e.g., colonization vs infection) and may advise on further investigations. The decision for expanded testing would be made by the clinical team. Any symptomatic newborns should also be assessed for other causes of clinical disease according to the clinical findings.

Newborns may be discharged home while awaiting laboratory test results if clinically well and otherwise ready for discharge. Appropriate education to caregiver(s) should be provided about signs and symptoms of infection in the neonate and when to seek care and advice.

Babies Requiring Transfer to a Higher Level of NICU/Special Care Nursery (SCN)

Babies born to suspected or confirmed COVID-19 mothers who require transfer to a higher level of care should be cared for using Droplet/Contact precautions and

separated by at least two metres from the mother at all times. Ideally, the baby should be cared for in a separate room from the mother while awaiting transfer.

While it is not thought that the newborn at the time of birth is either infected with COVID-19 or capable of creating infectious aerosols, they may subsequently become infected from surface virus or exposure to virus during the process of birth. Additionally, prolonged care of a baby on respiratory support exposes care providers to longer duration of potential aerosols. While this risk is unknown, but felt to be low, out of an abundance of caution it is reasonable to transition to Airborne precautions for babies requiring prolonged respiratory support (CPAP, high flow, ventilation).

There is no evidence to guide providers as to when this transition should occur. For hospitals with an NICU/SCN, it seems reasonable to change to Airborne precautions when the baby is transferred to their room in the NICU/SCN. In the case of a hospital where a baby is being stabilized while awaiting transport to a higher level of care, it is reasonable for providers to change to airborne PPE after the initial resuscitation if the baby remains on respiratory support and is likely to remain at the institution for longer than four-to-six hours awaiting transport. Such a baby should be maintained in a single room with the door closed while awaiting the transport team. The neonatal transport team members will wear airborne PPE during their management of the baby and transport.

Care and Testing of Babies in NICU/SCN

As described above, while the newborn is very unlikely to generate infectious aerosols at birth, this may become possible later.

Therefore, RHPs providing care for babies requiring ongoing, potentially aerosolizing respiratory support in the NICU or SCN should use Droplet/Contact and Airborne precautions.

HFO/Jet/NIPPV/CPAP and the acts of intubation and extubating are all widely agreed to be AGMPs. Conventional ventilation of a patient with a cuffed ETT is generally not thought to be an AGMP, however, in the newborn ventilated with an uncuffed ETT it is unclear and as for paediatric and adult patients, this should be treated as an AGMP. Negative pressure rooms are preferred for babies on aerosolizing respiratory support, but, in the absence of such a room, a single patient room with the door closed can be used.

The birthing person/caregivers who are COVID-19 positive (or suspected if test result is not yet available) shall not enter the NICU/SCN until they are considered negative according to current MOH guidelines. This may include repeat testing of the birthing individual/caregiver to determine negative nasopharyngeal swab. All visitors/parents

who are entering the NICU/SCN must have passed hospital screening protocol for COVID-19 symptoms or exposure.

If any visitor to NICU or RHP is determined to be a suspected or confirmed COVID-19 case, the baby becomes a possible contact and should be isolated with appropriate additional precautions instituted. Hospital IPAC should be notified to institute proper follow-up. Any infant who is a post-natal contact of a confirmed COVID-19 positive caregiver or RHP should remain isolated with appropriate additional precautions for 14 days according to MOH or local guidelines.

The presence of SARS-CoV-2 genome in breastmilk is uncommon and identified in approximately five per cent of samples tested. Even among those who were positive it led to symptoms in infants in small minority of cases and they were mild symptoms [13]. Mothers should express breastmilk with a designated manual or electric breast pump which should not be shared and must be patient specific. The mother should wash their hands before touching any pump or bottle parts, clean their chest, put on gloves and a mask, and follow recommendations for proper pump cleaning after each use. The HCP receiving bottles of expressed breast milk (EBM) should wear gloves and wipe the bottles of EBM with a disinfectant antiviral wipe prior to transporting the EBM to the NICU/SCN. Where possible, EBM of suspected or confirmed COVID-19 positive people should be stored in a separate fridge from EBM of people who are not suspected/positive. The HCP collecting milk from the fridge should wear gloves to transport milk to patient room and where possible all milk preparation should be completed in the patient room.

In the NICU/SCN, babies who are not on potentially aerosolizing respiratory support or having other AGMPs may be cared for using Droplet/Contact precautions in single rooms or cohorted with other babies born to suspected/confirmed COVID-19 people. If babies are cohorted, they must be separated by two metres and/or in incubators with RHPs changing their Droplet/Contact PPE (possibly with the exception of their mask if institutions have policies about mask conservation) between babies.

If the baby is on potentially aerosolizing respiratory support they should be placed in a negative-pressure room or single room with door closed on airborne precautions. In the absence of potentially aerosolizing respiratory support, care in a single room or cohort on Droplet/Contact precautions is appropriate. Determining when the enhanced precautions can be discontinued for the infant will require local IPAC input as it will depend on the parent's test results and symptoms. Testing may be required on the baby, but this will again depend on individual circumstances and must be determined in consultation with IPAC.

If the birthing person is suspected to be COVID-19 positive but their test result is not yet available, it is reasonable to continue enhanced precautions in the care of the infant and

delay infant testing until the maternal result is known as infant testing is only required if the mother's test is positive.
Discontinuation of enhanced precautions for the infant should be done in consultation with local IPAC, but generally if the mother tests negative then the infant should not require ongoing enhanced precautions. If an infant tests positive, consultation with paediatric infectious disease specialist is recommended.

NICU/SCN teams must adapt their rounding procedures to allow physical separation. Communication with parents outside rounds must be a priority if they are not allowed to join rounds. For parents who are excluded from the NICU/SCN, the healthcare teams must make use of electronic means to ensure that parents are fully updated on their infant's condition.

Infants born to COVID-19 *positive* people should be tested within the first 24 hours of life and, if the initial test is negative, again at 48 hours of life, regardless of symptoms. Infants should be maintained on Droplet/Contact precautions with or without Airborne precautions as appropriate until results are reported.

- **Infants who have a 24- or 48-hour COVID test positive should be discussed with a paediatric infectious disease specialist.**
- **Infants who have a negative test at 48 hours should be discussed with local IPAC to determine appropriate ongoing care measures.**

Hospitals must consider what accommodations can be made for suspected or confirmed COVID-19 positive parents of infants who are moribund/undergoing end-of-life care and how they may be facilitated to be with their baby during that time.
Babies may remain in NICU/SCN care for weeks or months. Confirmed COVID-19 parents of NICU/SCN patients can be cleared from isolation using a time-based approach once 10 days have passed from the time of the positive test (if asymptomatic) or symptom onset (subject to change based on local public health guidelines) and therefore may safely enter the NICU/SCN to be with their baby [14].

Breastfeeding Recommendations

While there is evidence that in up to five per cent of cases virus has been found in breastmilk, impact on neonates who received milk from mothers whose breastmilk was positive has been very mild and thus, breastfeeding is not contraindicated for mothers who are suspect or COVID-19 positive and on the contrary be supported.

To prevent transmission of COVID-19 from the mother to infant, mothers who are confirmed or suspected COVID-19 patients should adhere to the following precautions:

- wash hands before touching/reaching for their infant, bottles, breast pump, etc.
- be masked while holding or feeding their infant;
- cough or sneeze away from their infant while holding or feeding;

- follow chest and skin cleansing hygiene before holding or feeding if the mother has not worn a mask and coughed and/or sneezed on their bare chest [7];
- clean pumps and bottles adhering to institution's IPAC policies.

Monitoring/Surveillance Recommendations

The recommendation of mother-baby dyad on rooming in, breastfeeding and non-separation are based on the best evidence available at the writing of this guideline. We acknowledge that the global literature on this is limited to small numbers of cases and limited study design.

The task force feels it imperative that prospective surveillance of the mother-baby dyad be performed postpartum until two weeks to ensure the safety of this recommendation to room in, breastfeed and remain together throughout the course of care.

COVID-19 Vaccination in Pregnancy

The COVID-19 vaccines authorized in Canada have shown to be safe, efficacious against symptomatic laboratory confirmed COVID-19, and appear to protect against severe disease, hospitalization and death due to COVID-19 [15] [16]. HCPs should engage in discussions to support informed decision-making on COVID-19 vaccination during pregnancy and breastfeeding with persons in their care prior to discharge. The Society of Obstetricians and Gynaecologists of Canada (SOGC) recommends that pregnant or breastfeeding people should be offered the COVID-19 vaccine at any time if they are eligible and if they have no contraindications [17].

For additional guidance and recommendations on pregnancy and COVID-19, see PCMCH Maternal-Neonatal COVID-19 Pregnancy Care Guideline.

Conclusion

This guideline responds to the rapidly evolving range of international evidence on COVID-19 prevention, testing, treatment and surveillance of women and healthcare providers for potential transmission of infection. This interpretation is for Ontario maternal and newborn populations and publicly funded services delivered at birth and shortly afterwards. The task force acknowledges that population health needs and access to maternal-newborn health services vary widely across Ontario. The ability for healthcare providers, healthcare environments and/or regions to comply with all aspects of this guideline may be influenced by circumstances outside of their control. This may include factors such as health human resources, system capacity, supply chain

management of PPE resources, patient access and patient preferences. The task force and PCMCH committees will regularly review and recommend updates to the guideline to incorporate evidence-informed best practice tailored to the needs of individuals, sub-populations, birth environments, HCPs, regions and the province.

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