PURPOSE: This document describes the escalated procedures that all Toronto Region hospitals should implement to prevent in-hospital transmission of COVID-19 when community transmission is evident in Ontario. The document describes guidelines and algorithms for managing pregnant women and neonates with suspected or confirmed COVID-19 infection in labor.

BACKGROUND:
COVID-19 is a novel respiratory pathogen that has emerged and has resulted in a global pandemic. As the extent of the pandemic expands. it is inevitable that Canada will be impacted. There has already been human to human spread of COVID-19 in British Columbia (BC) without any link to high-risk travel as well as a BC nursing home outbreak related to a COVID-positive healthcare worker who worked while ill. Hospitals currently have screening processes in place for patients at key entry points (e.g., ED, labour and delivery triage) to identify those potentially ill with COVID-19. However, consistent messaging and guidelines for management of pregnant women and neonates with suspected or confirmed COVID-19 infection are lacking.

CURRENT STATE:
Currently, no guiding recommendations are available for safe caring of pregnant women, neonate and her family. Stricter suggestions from China indicate separation of baby and mother for 2 weeks and discourage breastfeeding. However, CDC does not recommend separation of relatively well mother and baby. Fortunately, all reports regarding newborns have shown that even neonates who had positive surface swabs recovered completely and no mortality is reported.

FOR ACTIVATION OF THESE GUIDELINES:

These guidelines were developed and approved by representatives from obstetric, pediatric and infection prevention and control from Level 3 hospital and level 2 hospitals. **These guidelines may need to be adjusted according to local institution for operationalization; however, the purpose is to have underlying similar principle of management across Toronto Hospitals.**

PLANNING PRINCIPLES:

- The safety of our patients, volunteers, staff, physicians and learners is paramount
- Safe provision of care to pregnant women, neonates and families
- Family integration in the care to the extent feasible without compromising safety and health of everyone involved
- Seamless transition of mother and infant to home

RECOMMENDATIONS: The first page reports a COVID-19 Active screening protocol which most organization have developed in one or other format.
This is followed by four algorithms are attached with in this document for your perusal. These are suggested guidelines form Ontario Health for all hospitals providing maternal newborn care.

1. Obstetrical triage management of pregnant women in labor or requiring emergent/urgent obstetrical assessment
2. Guideline for management and referral of the critically ill COVID-19 positive pregnant patient
3. Management of labour, birth and postpartum care for patient under investigation (PUI) or with confirmed COVID-19 infection
4. Management for neonate with suspected or confirmed COVID-19 exposure
5. Transport referral guidelines for mothers for higher level of care

This is followed by useful resource for suggestions regarding breastfeeding support.

KEY POINTS:

1. If either mother or neonate is symptomatic, they will be separated and anyone who is considered exposed will not be allowed to visit baby (including mother or father) while baby is in neonatal unit.
2. Parents will not accompany their child if neonate requires transfer to higher level of care.

COVID -19 Active Screening Protocol

Patient Label

Instructions: Ask patient, and anyone accompanying the patient, all active screening questions (3) outlined below.

Location: _____

1) "Have you traveled **outside Canada** within the last 14 days?"
   YES ☐ NO ☐ UNKNOWN ☐
2) "Have you had close contact with someone with a fever and/or respiratory illness that have traveled **outside Canada** within the last 14 days?"
   YES ☐ NO ☐ UNKNOWN ☐
3) Do you have a fever and/or new onset cough or difficulty breathing?
   YES ☐ NO ☐ UNKNOWN ☐

If **YES** to only Question 1, inform the clinical delegate. If **YES** to only Question 2 or 3, continue with your regular process.

If **YES** to Question 1 and 3, or 2 and 3, follow the active screening guidance:

- ☐ Provide patient, and anyone accompanying the patient, with a procedure mask
- ☐ Ask patient, and anyone accompanying the patient, to use hand sanitizer
- ☐ Ask the patient:
  Where they/contact traveled: _____
  Visit Dates: _____
- ☐ Record the following information (or apply patient label, if available):
  Patient Name: _____
  Date of Birth: _____
  Personal Cell Phone Number: _____
  Procedure patient is booked for (if applicable): _____
- ☐ Page Infection Prevention And Control and call clinical delegate

FOR COMPLETION BY CLINICAL DELEGATE CONTACTED FOLLOWING NOTIFICATION OF A FAILED TRAVEL SCREEN
Collect the following information from the patient and proceed to contact the MRP with clinical information.
If **YES** to any of the below questions, page Infection Control via Locating.

Symptom	YES/NO	Symptom Onset Date
Fever		
Cough		
Shortness of breath		
Myalgia/fatigue		
Headache		
Runny nose		
Other (indicate)		

Date_____ Time_____ Print Name_____Signature_____

Ontario Health

Obstetrical Triage Management of Pregnant Women in labor or Requiring Emergent/Urgent Obstetrical Assessment

Patient arrives directly to **OB TRIAGE**

If patient known COVID-19 positive, admit directly to Private/Isolation Room

Patient goes to **REGISTRATION**

Patient goes to **ED**

OB Triage Assessment Tool AND COVID Active Screening Protocol
If arriving by ambulance, confirm screening questions with EMS first

Registration Clerk completes COVID screening protocol

ED completes COVID screening protocol

FAIL
(YES to questions 1+3 or 2+3)

PASS

PASS

FAIL
(YES to questions 1+3 or 2+3)

Pt assessed as **PUI** + OB complaint

Triage RN will:

- Instruct patient under investigation (PUI) and visitors to perform hand hygiene and don procedure mask
- Perform hand hygiene and don PPE: Gown, N95 mask, Face Shield, gloves
- Move to private/isolation room and initiate **Droplet/Contact** precautions.
  Note: *If PUI needs emergent admission or has severe respiratory symptoms consider going directly to private/isolation room and notify appropriate HCP*
- RN completes COVID-19 Active Screening Protocol form
- Page IPAC through Locating
- Complete registration
- Complete Infection Control screen
- PUI/visitors will remain in isolated room until further orders received from IPAC
- Notify appropriate OB team/ FP/ Midwife of PUI admission and status
- If PUI requires swabs, complete in private/isolation room
- Transfer to appropriate location as per orders

ROUTINE CARE
Proceed to REGISTRATION with COVID-19 Active Screening Protocol form

ROUTINE CARE
Proceed to intended destination (Antenatal, Triage, Procedure room, L+D)

Assessment by ED/L+D team as per institution protocol

For Labour and Delivery and Fetal Procedures
Registration clerk will:

- Call Triage RN to prepare for patient arrival
- Instruct patient under investigation (PUI) and visitors to perform hand hygiene and don procedure mask
- Page Infection Prevention and Control (IPAC) to Triage RN extension
- Patient/visitors will arrive to Triage wearing procedure mask carrying pink sheet

If Antenatal Unit or Mother-Baby Unit Admission required
Registration clerk will:

- Notify Nursing Team Leader of admission
- Instruct patient under investigation (PUI) and visitors to perform hand hygiene and don procedure mask
- Patient/visitors will arrive to Unit wearing procedure mask carrying pink sheet
- Patient to be admitted to private room/isolation room

COVID-19 NEGATIVE
Routine care as ordered
Discontinue Precautions

COVID-19 POSITIVE/PUI
Continue Droplet/Contact Precautions in private/ isolation room

COVID-19 NEGATIVE
Routine care as ordered
Discontinue Precautions

Refer to "Management of Labour, Birth and Postpartum Care for Patient Under Investigation (PUI) or With Confirmed COVID-19 Infection"

Ontario Health

Guideline for management and referral of the critically ill COVID-19 positive pregnant patient

The consequences of a COVID -19 infection during pregnancy are uncertain; to date there is no evidence for severe outcomes, however the possibility should be considered. Pregnant patients with COVID-19 infection who are asymptomatic and/or have mild symptoms should be managed at home with self-monitoring and symptom relief. If the pregnant COVID-19 patient is admitted to hospital, there is limited indication from interhospital transfer for any patient with COVID-19 infection including those requiring ICU admission. However, given the potential obstetrical consequences of the critically ill pregnant patient admitted to the ICU (non-reassuring fetal status, indicated or spontaneous preterm birth), there may be indication for inter-hospital transfer. The following is a guide to the direct care of the COVID-19 pregnant patient.

1. The "well" COVD19 pregnant patient does not need referral to a tertiary care centre for in patient care and/or ambulatory consultation.
   There is no information to date to suggest COVID-19 is teratogenic or has long- term implication for fetal/neonatal health: referral to Maternal Fetal Medicine and/or Prenatal Genetics and Diagnosis is NOT indicated at this time.
   Following recovery, consider follow up assessment of fetal growth and well-being (q2-4 weeks); refer according to obstetrical indication.

2. The management of the "unwell" COVID 19 pregnant patient is similar to any acute viral respiratory illness: supportive therapy and possible hospitalization. A COVID-19 positive pregnant patient with sign/symptoms of pneumonia should be admitted to hospital. The patient should be managed by a multidisciplinary team in a hospital setting: internal medicine (respirology), infectious disease and obstetrics services should be involved. The intensive care unit (ICU) should be made aware of the admission of any pregnant patient admitted with COVID-19 in the event of acute deterioration.
   a. Consider oxygen therapy to keep O2 sat >95%
   b. Encourage oral hydration; limit IV fluid if concern for cardiovascular instability.
   c. Antipyretic therapy (for maternal comfort and to limit the fetus to the risk of maternal increased body temperature).
   d. Screen for other viral infections and/or superimposed bacterial infections; consider empiric antibiotic therapy.
   e. If hospitalized, consider VTE prophylaxis.
   f. Consider fetal monitoring as a tool to detect maternal deterioration.
   g. The diagnosis of COVID 19 itself is not an indication for delivery.
   h. Consideration of the use of empiric antenatal steroids (based on gestation age) given the risk of preterm birth associated with acute maternal illness.

3. A pregnant COVID-19 patient who does not have pneumonia but is "unwell" may also require hospitalization if they are at risk of acute maternal deterioration. These patients include:
   a. Any medical co-morbidity of pregnancy: type I DM with end organ involvement, chronic hypertension, renal impairment, cardiovascular disease, immunosuppression, active cancer diagnosis, chronic respiratory disease.
   b. Any obstetrical co-morbidity: PET/HELLP, acute VTE, preterm premature ruptured membranes (at risk for chorioamnionitis).

4. In-patient surveillance should be in place to ensure the recognition of maternal deterioration and/or indication(s) for admission to the ICU. In general, the most common reason for an ICU admission would be respiratory: clinical respiratory distress, hypoxemia on pulse oximetry or significant chest X-ray infiltrates. Consideration should be given for a low threshold to ICU admission given the potentially difficult airway management of the pregnant patient.
   a. The maternal early warning criteria (MEWC; see appendix) provides the criteria for assessment. The frequency of the assessment can be determined by the clinical status of the patient and the individual medical/nursing team (suggested minimum frequency would by q four hourly). A "screen positive" MEWC would be one or more criteria and would demand a medical review of the patient and consideration of ICU admission.
   b. The Quick Sequential Organ Failure Assessment tool (SOFA) can be used as a rapid tool to detect indication for medical assessment and/or ICU admission. A positive SOFA screen would be the

presence of 2 of the 3 following criteria: systolic BP < 100 mmHg, Respiratory Rate > 22, altered level of consciousness.

5. If the COVID-19 pregnant patient is admitted to the ICU, there may be indication for interhospital transfer based on gestational age and the availability of the neonatal care facility at the referral institution.
    - If the patient is < 22 weeks' gestation (prior to viability); the patient DOES NOT require inter-hospital transfer for obstetrical considerations; may require transfer based on medical indications.
    - If patient is 22 weeks' and 0 days to 23 weeks and 6 days; the decision will need to be made after discussion with obstetrician on call at referring facility. Woman may require transfer for medical indication for herself.
    - If the patient is 24-32 weeks' gestation and the referral facility DOES NOT have neonatal facilities to manage the care of a neonatal at this gestational age (level III NICU), CONSIDERATION could be made for transfer to a level III centre given the inherent obstetrical risk of the critically ill pregnant patient.
    - If the patient is >32 weeks' gestation and the referral facility DOES NOT have neonatal facilities to manage the care of a neonatal at this gestational age (level II NICU), CONSIDERATION could be made for transfer to a level II centre.

Appendix

Maternal Early Warning Criteria:

1. Systolic BP <90 or >160 mm of hg
2. Diastolic BP >100 mm of Hg
3. Heart rate <50 or >120/min
4. Respiratory rate <10 or >30/min
5. Oxygen saturation in room air of <94
6. Oliguria defined as urine output <35 ml/hr for ≥2 hours
7. Maternal confusion, agitation, unresponsiveness
8. Known patient with preeclampsia reporting a non-remitting headache or shortness of breath

References

1. ACOG PRACTIC BULLETIN: Critical care in pregnancy #211. Obstetrics and Gynecology, vol 133(5), 2019.
2. Guidelines for pregnant women with suspected SARS-CoV-2 infection; Lancet Infectious Disease, March 2020. https://doi.org/10.1016/S1473-3099(20)30157-2
3. Care for Critically Ill Patients with COVID-19. JAMA Insights. March 2020 doi:10.1001/jama.2020.3633
4. Maternal early warning systems- towards reducing preventable maternal mortality and severe morbidity through improved clinical surveillance and responsiveness; Seminars in Perinatology; 41, 2017.
5. Use of maternal early warning trigger tool reduces maternal morbidity; AJOG 214:527:e1-6; 2016.

Management of Labour, Birth and Postpartum Care for Patient Under Investigation (PUI) or With Confirmed COVID-19 Infection

Patient was assessed in LD Triage/ED and determined to be PUI or patient transfer with confirmed COVID-19 infection:

1. LD RN receives notification of PUI admission.
2. Initiate **Droplet/Contact precautions** in private/isolation room. Ensure proper signage.
3. HCP performs hand hygiene and dons PPE: Gown, N95 mask, Face Shield, gloves.
4. LD RN receives handover from Triage RN.
5. LD RN admits patient and completes local Infection Control form as required.
6. Limit visitors according to current hospital policy.
7. Ensure notification to the appropriate OB/GP/MW team, IPAC and follow orders.
8. Complete swabs as ordered in private/isolation room.
9. Monitor patient for respiratory deterioration – vital signs as ordered.
10. Continuous fetal monitoring per protocol (fetal heart rate changes will occur prior to maternal signs and O2 Sat monitoring).

Obstetrical Assessment or Vaginal Delivery

- **Droplet/Contact** precautions
- Notify NICU/RT/Anesthesia of PUI
- Mask not required for patient and visitor if admitted to private/isolation room. Mask is required outside of room AND at any transfer points
- Routine contraindications for epidural apply
- Only allow essential staff in room
- Make provision for resuscitation of baby in location of delivery, do not move baby to another location
- Pediatrician to discuss with family re: infant feeding options as soon as possible *(see guidance in "Neonatal Management for COVID-19" section)*

C-section

- **COVID-19 is not an indication for C-Section**
- Preferably use OR with negative pressure option in case of aerosol generating procedure (i.e. intubation, bronchoscopy)
- **Droplet/Contact** precautions: ensure signage is placed at the door
- Obtain air scrubber if possible
- Notify Pediatrician/respiratory therapist/Anesthesia of PUI
- Essential staff only
- Resuscitation of baby in location of delivery, do not move baby to another location
- NO SWABS to be completed in any Operating Room
- After delivery move to private/isolation room for recovery, swabs can only be completed there

Mother COVID-19 NEGATIVE

Discontinue Precautions as per Infection Control

ROUTINE CARE

Mother **COVID-19 POSITIVE OR PUI**

Baby Born + Mother Well

- Maintain Droplet/Contact precautions
- Monitor patient for respiratory deterioration – vital signs as ordered
- Patient and visitor to maintain mask, if they are not in room, during breastfeeding, at any transfer points and when on MBU
- Recovery to occur in private/isolation room
- After recovery - transfer mother + partner, wearing masks, to private/isolation room on Mother-Baby unit
- Transfer baby in incubator with mother *(Refer to Neonatal Management Guidelines)*

Baby born + Mother Unwell

- Maintain Droplet/Contact precautions
- Monitor patient for respiratory deterioration – vital signs as ordered
- Patient and visitor to maintain mask, if they are not in room, during breastfeeding, at any transfer points and when on MBU
- Recovery to occur in private/isolation room
- After recovery - transfer mother and partner, wearing masks to private/isolation room on MBU or ICU
- Transfer baby to neonatal nursery in incubator *(Refer to Neonatal Management Guidelines)*

Mother COVID-19 NEGATIVE

Discontinue Precautions as per Infection Control; Patient can recover in recovery room

ROUTINE CARE

Ontario Health

Neonatal Management for Neonate with Suspected or Confirmed COVID-19 Exposure

ASYMPTOMATIC NEWBORN

All Infant Resuscitation/ Assessment will occur in the location where the infant is born – **AVOID TRANSFER**

Infant born to Mother with Confirmed or Suspected (PUI) COVID-19
DROPLET/CONTACT PRECAUTIONS
Staff to don Personal Protective Equipment
(N95 mask, reflective face shield, gown, gloves)

Infant **ASYMPTOMATIC** Rooming with **Well** Mother

- Admit to Mother-Baby Unit in private/isolation room
- **DROPLET/ CONTACT PRECAUTIONS**
- Monitoring for symptoms- Vital Signs q 4h
- Discuss feeding options with parents – CAN breastfeed with mask

Mother COVID-19 **NEGATIVE**

- Discontinue Droplet/Contact Precautions
- ROUTINE Newborn Care

Mother COVID-19 **POSITIVE**

Infant testing for PCR COVID-19 - NP swab

Infant COVID-19 **NEGATIVE**

Infant COVID-19 **POSITIVE**

Well Mother and Well Infant Rooming together on Mother-Baby Unit

- Droplet/Contact Precautions if remains in hospital
- Mother CAN breastfeed with mask
- Can be discharged home as per routine
- Arrange routine 48-72h postnatal visit at your location with Droplet/ Contact Precautions in conjunction with Public Health
- Public Health referral at discharge

Infant **SYMPTOMATIC** *Go to next page*

Mother becomes **Unwell**

Infant **ASYMPTOMATIC** Separated from **Unwell** Mother

- Admit to Neonatal Nursery room *(preferably with Negative Pressure option in case of aerosol generating procedure)*
- **DROPLET/ CONTACT PRECAUTIONS**
- Monitoring for symptoms
- Discuss feeding options with parents
- Supportive Care as needed

Mother COVID-19 **POSITIVE**

Infant testing for PCR COVID-19 - NP swab

Infant COVID-19 **POSITIVE**

Mother COVID-19 **NEGATIVE**

- Discontinue Droplet/Contact Precautions
- ROUTINE Newborn Care

Infant COVID-19 **NEGATIVE**

Well infant in Neonatal Nursery / Unwell Mother

- Consider Consultation with Infectious Disease specialist for COVID-19 positive infants
- Droplet/Contact Precautions until discharge from hospital
- Discuss feeding options with parents
- Can be discharged home as per routine if well
- Arrange routine 48-72h postnatal visit at your location with Droplet/Contact Precautions in conjunction with Public Health
- Public Health referral at discharge

Ontario Health

Management for Neonate with Suspected or Confirmed COVID-19 Exposure

SYMPTOMATIC NEWBORN

Infant born to Mother with
Confirmed or Suspected (PUI) COVID-19
Or
Exposed to Contact with Confirmed COVID-19
AIRBORNE/DROPLET/CONTACT PRECAUTIONS
(due to risk for aerosol generating medical procedures)
Staff to don Personal Protective Equipment
(N95 mask, reflective face shield, gown, gloves)

All Infant Resuscitation/ Assessment will occur in the location where the infant is born – **AVOID TRANSFER**

SYMPTOMATIC

- Admit to Neonatal Nursery
- Preferably in Negative Pressure Room in case of aerosol generating procedure
- **AIRBORNE/DROPLET/CONTACT PRECAUTIONS**
- Supportive Care

Investigations:
- CBC
- CRP
- Blood Culture
- PCR COVID-19 (NP swab)
- Influenza, Parainfluenza, RSV -NP swab
- Chest Xray
- AXR and LFT as needed
- Discuss feeding options with parents

Mother COVID-19 **NEGATIVE**

Mother COVID-19 **POSITIVE**

Infant COVID-19 **NEGATIVE**

- Supportive care as required
- Reassess Droplet/Contact Precautions based on underlying disease

Infant COVID-19 **POSITIVE**

- Supportive care as required
- Consultation with Infectious Disease specialist
- Droplet/Contact Precautions until discharge from hospital
- Can be discharged home if well
- Arrange routine 48-72h postnatal visit at your location with Droplet/Contact Precautions if remains COVID-19 positive in conjunction with Public Health
- Public Health referral at discharge

Infant COVID-19 **NEGATIVE**

- Droplet/Contact Precautions for minimum 14d if remains in hospital
- Supportive care as required
- Can be discharged home if well
- Arrange routine 48-72h postnatal visit at your location with Droplet/ Contact Precautions in conjunction with Public Health
- Public Health referral at discharge

Reference: Wang L et al. Chinese expert consensus on the perinatal and neonatal management for the prevention and control of the 2019 novel coronavirus infection (First edition). *Ann Transl Med* 2020 | http://dx.doi.org/10.21037/atm.2020.02.20

Ontario Health

Contact with Newborn for Pregnant Women with Suspected or Confirmed COVID-19 Infection

Based on Infection Prevention and Control (IPAC) Considerations for Pregnant Women with Influenza

- Check household contacts that will have contact with the baby (e.g. partner) – consider whether they will be infectious at the time of delivery, and ask them to seek care accordingly
- Individuals with an acute respiratory illness should not visit
- If there are children at home, counsel caregivers re: good hand hygiene and keeping ill children away from the newborn
- Discuss risks and benefits of direct contact with baby and breastfeeding:
    - IPAC recommendation for well neonates not in the NICU:
        1. Rooming in, skin to skin contact and breast feeding as usual.
        2. Mom puts on a clean mask and cleans her hands with alcohol-based hand rub before each contact with baby.
        3. Bassinette is kept more than 6 feet from mom's face if feasible at other times.

    - IPAC recommendations for neonates in the neonatal nursery:
        1. Decision to be made based on clinical status of neonate (i.e. unwell infant) and parental preference based on particular situation.
        2. No access to infant in neonatal nursery for mothers who are COVID-19 positive and/or at-risk caregiver. This would be re-evaluated as needed in cases where the infant is critically ill.

Feeding infants born to Mother with Confirmed or Suspected (PUI) COVID-19 Infection

Breast milk is the best source of nutrition for most infants. There remain however many unknowns about COVID-19. For that reason, families should participate in the decision to use breastmilk for infant feeding with the support of the healthcare providers. Whenever infants must be separated from their mother due to infection control restrictions, hospitals should **make every effort to provide access to a double-electric breast pump for the parent whose long-term plan is to breastfeed**.

- **Well near-Term or term Infants rooming with their mother**
  The feeding options are:

  1. Breastfeeding
     A symptomatic mother with confirmed or suspected infection should take all possible precautions to avoid spreading the virus to her infant, including washing her hands before touching the infant and wearing a face mask, if possible, while feeding at the breast. If a mother and newborn do room-in and the mother wishes to feed at the breast, she should put on a facemask and practice hand hygiene before each feeding.

  2. Feeding expressed breastmilk by bottle
     If expressing breast milk with a manual or electric breast pump, the mother should wash her hands before touching any pump or bottle parts and follow recommendations for proper pump cleaning after each use. If possible, consider having someone who is well feed the expressed breast milk to the infant.

  3. Feeding infant formula by bottle
     For mothers who are unwell to breastfeed or to express breastmilk with a breast pump and also for mothers who have chosen formula to feed their infant.

- **Preterm infants, Ill or well near-term or term infants separated from their mother**
  The feeding options are:

  1. Feeding expressed breastmilk by bottle or OG/NG
     For near-term and term infants where the mother is well enough to express breast milk with a manual or electric breast pump, the mother should wash her hands before touching any pump or bottle parts and follow recommendations for proper pump cleaning after each use. If possible, consider having someone who is well feed the expressed breast milk to the infant.

  2. Feeding donor breastmilk
     For infants who qualify for donor breastmilk as per current NICU feeding guidelines.

  3. Feeding infant formula
     For mothers who are unwell to breastfeed or to express breastmilk with a breast pump and also for mothers who have chosen formula to feed their infant.

During temporary separation, mothers who intend to breastfeed should be encouraged to express their breast milk to establish and maintain milk supply. Prior to expressing breast milk, mothers should practice hand hygiene. After each pumping session, all parts that come into contact with breast milk should be thoroughly washed and the entire pump should be appropriately disinfected per the manufacturer's instructions.

Reference

https://www.cdc.gov/coronavirus/2019-ncov/hcp/inpatient-obstetric-healthcare-guidance.html

Ontario Health