Overview
This document provides interim guidelines for anyone involved in the care and management of newborns and pregnant or nursing women suspected or confirmed cases with coronavirus disease (COVID-19). This information is based on currently available scientific evidence and expert opinion and is subject to change as any new information becomes available. It should be read in conjunction with relevant national public health and clinical guidelines for patient care. The information in this document has been adapted for the Caribbean situation, and therefore may differ from guidance developed by other international agencies. This guidance will be updated as more information becomes available on the outbreak.

Background
The majority of Caribbean countries have reported at least one confirmed case of COVID-19. CARPHA has assessed the risk of disease transmission to the Caribbean Region to Very High. Countries are strongly urged to strengthen their health sector response and move to a state of readiness and rapid response. Health authorities must be ready to respond to possible importation of cases and subsequent local transmission. The aim for all countries now, is to stop transmission and prevent the spread of the virus.

Pregnancy and COVID-19
Pregnant women might be at higher risk for severe illness, morbidity, or mortality compared to the general population as observed in cases of other coronavirus infections [including severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV)] and other viral respiratory infections, such as influenza, during pregnancy.\(^1\) However, as opposed to Influenza A(H1N1)pdm09, pregnant women do not appear to be at higher risk of severe disease from COVID-19. In an investigation of 147 pregnant women (64 confirmed, 82 suspected and 1 asymptomatic), 8% had severe disease and 1% were critical.\(^2\)

Adverse infant outcomes (eg, preterm birth) have been reported among infants born to mothers positive for COVID-19 during pregnancy. However, it is unclear if this was due to the COVID-19 infection or other factors. Currently it is unclear if COVID-19 can cross through the transplacental route to the fetus. There have been a few unsubstantiated reports of infants testing positive for the virus shortly after birth, but it is not known how these infants were infected and whether or not the virus can be transmitted during pregnancy. In limited recent case series of infants born

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to mothers infected with COVID-19 published in the peer-reviewed literature, none of the infants have tested positive for COVID-19.\(^3\)

For pregnant women with confirmed infection, the choice of delivery timing should be individualised depending on the week of gestation and maternal, fetal, and delivery conditions. Whenever possible, vaginal delivery via induction of labour, with eventual instrumental delivery to avoid maternal exhaustion, should be favoured to avoid unnecessary surgical complications in an already sick patient. Septic shock, acute organ failure, or fetal distress should prompt emergency cesarean delivery (or termination if legal before fetal viability).

Newborns of mothers positive for SARS-CoV-2 should be isolated for at least 14 days or until viral shedding clears, during which time direct breastfeeding is not recommended.\(^4\)

**Management of COVID-10 During Pregnancy**\(^5\)

Any pregnant woman who has travelled in an area affected by SARS-CoV-2 within the previous 14 days or who has had close contact with a person with confirmed SARS-CoV-2 infection should be tested, even if asymptomatic. Pregnant women with laboratory-confirmed SARS-CoV-2 infection who are asymptomatic should be self-monitored at home for clinical features of COVID-19 for at least 14 days. These patients and those recovering from mild illness should be monitored with bimonthly fetal growth ultrasounds and Doppler assessments because of the potential risk for intrauterine growth restriction.

Pregnant women with COVID-19 pneumonia should be managed by a multidisciplinary team at a tertiary care centre. Pneumonia arising from any infectious etiology is an important cause of morbidity and mortality among pregnant women. It is the most prevalent non-obstetric infectious condition that occurs during pregnancy. The most common adverse obstetrical outcomes associated with maternal pneumonias from all causes include premature rupture of membranes (PROM) and preterm labor (PTL), intrauterine fetal demise (IUFD), intrauterine growth restriction (IUGR), and neonatal death.\(^6\)

Corticosteroids for the treatment of coronavirus-associated pneumonia should be avoided unless other indications are present because they were not shown to be beneficial in MERS and may have led to delayed MERS-CoV clearance. Therefore, decisions about the use of corticosteroids for fetal lung maturity should be made in consultation with infectious disease specialists and maternal-fetal medicine consultants. When quick Sepsis-related Organ Failure Assessment criteria are met, the patient should be transferred to an intensive care unit.

Ability to provide surveillance for early detection of a worsening maternal course of illness, as well as an ability to monitor for evidence of obstetric complications (e.g., preterm labor or fetal

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compromise), are needed. Changes in fetal heart rate pattern may be an early indicator of maternal respiratory deterioration. Based on experience with SARS and MERS, severe respiratory failure might occur in pregnant women, and in the most severe cases, mechanical ventilation might not be sufficient to support adequate oxygenation. Whether delivery provides benefit to a critically ill mother is unknown; decisions regarding delivery should consider the gestational age of the fetus and should be made in conjunction with the neonatologist. There are currently no antiviral medications endorsed by the WHO for treatment of COVID-19.

- Patients with respiratory symptoms should adhere to respiratory hygiene, cough etiquette, and hand hygiene. Ensure rapid triage of pregnant patients with respiratory symptoms. Patients with respiratory symptoms should wear a facemask and wait in a separate, well ventilated waiting area at least 1-2 metres from other people.
- Initiate Infection Prevention and Control procedures including use of gloves, mask, gown and eye protection
- Confirmed and suspected cases of COVID-19 should be isolated as soon as possible in a single room or grouped with other patients with the same diagnosis
- Limit visitor and health care personnel access to patient rooms with a confirmed or suspected case. Limit movement of the patient as much as possible and have the patient wear a mask when outside of their room.
- Collect and send relevant specimens for diagnostic SARS-CoV-2 testing.
- Pregnancy should be considered a potentially increased risk condition and monitored closely including fetal heart rate and contraction monitoring.
- Consider early oxygen therapy (target O2 saturations ≥95% and/or pO2 ≥70mmHg). Consider early mechanical ventilation with evidence of advancing respiratory failure. Non-invasive ventilation techniques may have a small increased risk of aspiration in pregnancy.
- Use intravenous fluids conservatively unless cardiovascular instability is present. Aggressive fluid resuscitation may worsen oxygenation, especially in settings where there is limited availability of mechanical ventilation.7
- Screen for other viral respiratory infections and bacterial infections (due to risk of coinfections).
- Consider empiric antimicrobial therapy (because of risk for superimposed bacterial infections).
- Consider empiric treatment for influenza, pending diagnostic testing.
- Do not routinely use corticosteroids. Use of steroids to promote fetal maturity with anticipated preterm delivery can be considered on individual basis.
- If septic shock is suspected, institute prompt, targeted management.
- Delivery and pregnancy termination decisions should be based on gestational age, maternal condition, and fetal stability, and maternal wishes.
- Communicate with patients and families regarding diagnosis, clinical status and management wishes.

**Newborns and COVID-19**

At this time the risk of adverse infant outcomes is not known. Given the limited data available related to COVID-19 during pregnancy, knowledge of adverse outcomes from other respiratory viral infections may provide some information. For example, other respiratory viral infections during pregnancy, such as influenza, have been associated with adverse neonatal outcomes, including low birth weight and preterm birth. Additionally, having a cold or influenza with high fever early in pregnancy may increase the risk of certain birth defects. Infants have been born preterm and/or small for gestational age to mothers with other coronavirus infections, SARS-CoV and MERS-CoV, during pregnancy.8

**Care of infants born to mothers with COVID-19** 9

The limited experience with newborn evaluations after delivery with SARS and MERS has not identified cases of maternal-to-fetal transmission. At this time, it is unknown if SARS-CoV-2 can be transmitted from mother to fetus. However, insufficient information is known about SARS-CoV-2 to rule out perinatal transmission. Given the current lack of information, it seems reasonable to assume that a newborn born to a mother with COVID-19 at delivery could possibly be infected, either in utero or perinatally, and thus should be placed in isolation to avoid exposure to other newborns. Although the ideal setting for a healthy infant is within a healthy mother’s room, temporary separation of an ill mother and her infant, as was recommended during pandemic H1N1, is prudent. Infants born to mothers with COVID-19 should be considered persons under investigation (PUIs).10

Clinical management includes prompt implementation of infection prevention and control measures in healthcare settings and supportive management of complications. Family members should engage in preventive actions to prevent the spread of respiratory infections, including covering coughs, cleaning hands often with soap and water or alcohol-based hand sanitizer, and staying up to date on vaccinations, including influenza and pneumococcal vaccines.11

**Isolation guidelines for newborns who are PUIs**12

- separate isolation room should be available for the infant while they remain a PUI.
- Limit visitors, except for a healthy parent or caregiver.
- Visitors should be instructed to wear appropriate PPE, including gown, gloves, face mask, and eye protection.
- Persons diapering, bathing and feeding the newborn, should use appropriate PPE.
- Discontinue temporary separation of the mother from her baby in consultation with clinicians, infection prevention and control specialists, and public health officials. Take

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into account disease severity, illness signs and symptoms, and results of laboratory testing for the virus that causes COVID-19.

- Discontinuation of temporary separation is the same as those to discontinue transmission-based precautions for hospitalized patients with COVID-19.

Isolation of the exposed newborn in resource-limited settings

If “rooming in” of the newborn with his/her ill mother in the same hospital room is unavoidable due to facility limitations, facilities should consider implementing measures to reduce exposure of the newborn to the virus that causes COVID-19.

- Consider using engineering controls like physical barriers (e.g., a curtain between the mother and newborn) and keeping the newborn ≥6 feet away from the ill mother.
- If no other healthy adult is present in the room to care for the newborn, a mother who has confirmed COVID-19 or is a PUI should put on a facemask and practice hand hygiene before each feeding or other close contacts with her newborn.
- The facemask should remain in place during contact with the newborn. These practices should continue while the mother is on transmission-based precautions in a healthcare facility.

Breastfeeding

Breastfeeding is important to the health of mother and baby. Breastfeeding is the best source of nutrition for the baby, helps build the infant’s immune system, and plays a key role in building the bond between mother and child. Breastfeeding has been shown to be protective against many illnesses and conditions, including: Upper and lower respiratory ailments, colds, viruses, staph, strep and e coli infections, allergies, and other illnesses. Also, mothers that breastfeed have lower rates of breast cancer, ovarian cancer, type 2 diabetes, and high blood pressure.\(^\text{13}\)

There are rare exceptions when breastfeeding or feeding expressed breast milk is not recommended. The decision to discontinue breastfeeding should be determined by the mother in coordination with healthcare providers. Disruption of breastfeeding may lead to several issues:

- emotional trauma for the nursing baby or toddler,
- a drop in milk supply due to the need to express milk,
- later breast refusal by the infant due to the introduction of bottles,
- a decrease in protective immune factors due to lack of direct breastfeeding and expressed milk not matching the infant’s needs at a particular time, and
- an increased risk of the infant becoming ill due to lack of immune support from direct breastfeeding.\(^\text{14}\)

\(^\text{13}\) CDC, Breastfeeding Recommendations and Benefits. [https://www.cdc.gov/nutrition/infantandtoddernutrition/breastfeeding/recommendations-benefits.html](https://www.cdc.gov/nutrition/infantandtoddernutrition/breastfeeding/recommendations-benefits.html).

Breast Feeding with COVID-19

Due to the benefits of breastfeeding and the negative effects of cessation, it is recommended that mothers should not stop breastfeeding. COVID-19 is not currently thought to be present in breastmilk. The presence of SARS-CoV-2 was tested in amniotic fluid, cord blood, neonatal throat swab, and breastmilk samples collected from six patients. All were found to be negative for SARS-CoV-2.\textsuperscript{15} Of primary concern is not whether the virus can be transmitted through breastmilk, but that an infected mother can transmit the virus through respiratory droplets during the period of breastfeeding.

A mother with confirmed COVID-19 or who is symptomatic should take all possible precautions to avoid spreading the virus to her infant, including:

- All women with COVID-19 or who have recovered from COVID-19 should be provided with information and counselling on safe infant feeding and appropriate IPC measures to prevent COVID-19 virus transmission.\textsuperscript{16}
- Mothers and infants should be enabled to remain together and practise skin-to-skin contact, kangaroo mother care and to remain together and to practise rooming-in throughout the day and night, especially immediately after birth during establishment of breastfeeding, whether they or their infants have suspected, probable, or confirmed COVID-19.\textsuperscript{17}
- During temporary separation, mothers who intend to breastfeed should be encouraged to express their breast milk to establish and maintain milk supply.
- A dedicated breast pump should be provided.
- 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.
- This expressed breast milk should be fed to the newborn by a healthy caregiver.
- 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.\textsuperscript{14}

\textsuperscript{16} WHO, March 2020. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected.