

Draft Document:

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 inter-hospital 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” COVID19 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. Appendix #1 provides guideline to determine the severity of the illness; adapt the flow plan to local resources and facilities.
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 >94%
 - 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. Refer to Appendix #1 for disease severity assessment. 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 etc.
 - b. Any obstetrical co-morbidity: PET/HELLP, acute VTE, preterm premature ruptured membranes (at risk for chorioamnionitis), etc.
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 (oxygen saturation < 94%) 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 2) 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 be 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 inter-hospital transfer based on gestational age and the availability of the neonatal care facility at the referral institution.

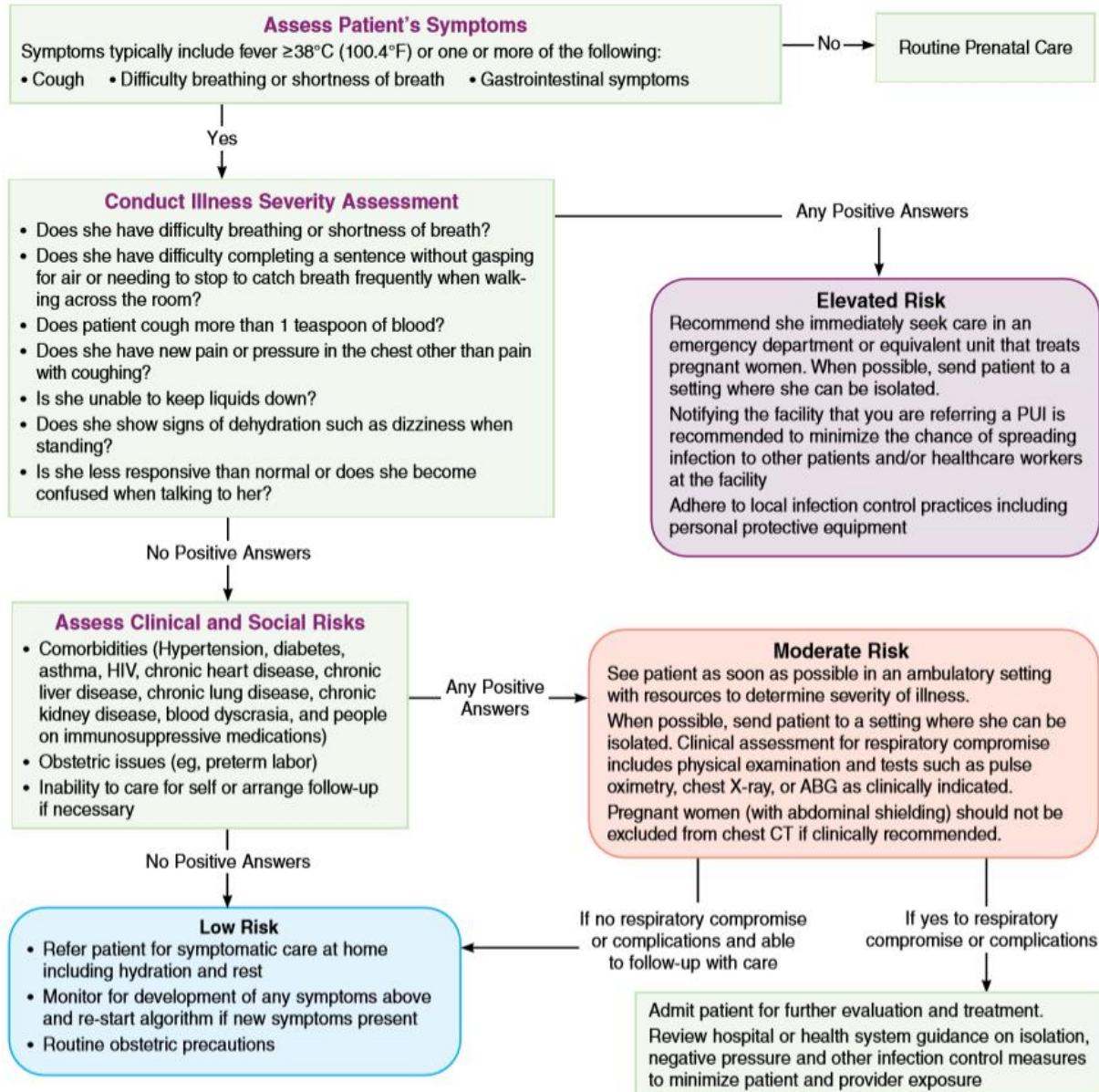
- a. If the patient is < 22-24 weeks gestation (prior to viability); the patient DOES NOT require inter-hospital transfer for obstetrical considerations; may require transfer based on medical indications.
 - b. If the patient is 24-32 weeks gestation and the referral facility DOES NOT have neonatal facilities 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.
 - c. If the patient is >32weeks 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 center.
6. If a COVID-19 positive patient proceeds to delivery- see specific Management of Labor and Delivery algorithm. Sspecial considerations at the time of delivery include:
- a. Delayed cord clamping should be considered (at the patients discretion) based on the current clinical indications; no current evidence to suggest that the virus is present in cord blood.
 - b. Direct skin to skin contact after birth (goal to achieve 60 minutes of uninterrupted contact immediately after birth) continues to be recommended; a COVID -19 positive patient and/or patient under investigation at the item of birth should wear a face mask during this contact.
 - c. Cord blood stem cell collection and storage should be at the direction of the individual companies providing such service

Quick References

1. ACOG PRACTIC BULLETIN: Critical care in pregnancy #211. Obstetrics and Gynecology, vol 133(5), 2019.
2. ACOG and SMFM; https://s3.amazonaws.com/cdn.smfm.org/media/2263/COVID-19_Algorithm5.pdf
3. 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](https://doi.org/10.1016/S1473-3099(20)30157-2)
4. Care for Critically Ill Patients with COVID-19. JAMA Insights. March 2020 doi:10.1001/jama.2020.3633
5. Maternal early warning systems- towards reducing preventable maternal mortality and severe morbidity through improved clinical surveillance and responsiveness; Seminars in Perinatology; 41, 2017.
6. Use of maternal early warning trigger tool reduces maternal morbidity; AJOG 214:527:e1-6; 2016.

Appendix #1:

Ambulatory Assessment and Management for Pregnant Women With Suspected or Confirmed Novel Coronavirus (COVID-19) (From ACOG/SMFM 2020)



Appendix #2

Maternal Early Warning Criteria

Systolic BP (mm Hg) <90 or >160

Diastolic BP (mm Hg) >100

Heart rate (beats per min) <50 or >120

Respiratory rate (breaths per min) <10 or >30

Oxygen saturation on room air, at sea level, % <95

Oliguria, mL/hr for ≥ 2 hrs <35

Maternal agitation, confusion, or unresponsiveness;
Patient with preeclampsia reporting a non-remitting
headache or shortness of breath