Management Considerations for Pregnant Patients With COVID-19

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Identification of Mild, Moderate, and Severe Symptoms of COVID-19:

- **Mild disease** is defined as flu-like symptoms, such as fever, cough, myalgias, and anosmia without dyspnea, shortness of breath, or abnormal chest imaging.

- **Moderate disease** is defined by evidence of lower respiratory tract disease with clinical assessment (dyspnea, pneumonia on imaging, abnormal blood gas results, refractory fever of 39.0 °C /102.2 °F or greater not alleviated with acetaminophen) while maintaining an oxygen saturation of greater than 93% on room air at sea level.

- **Severe disease** is defined by a respiratory rate greater than 30 breaths per minute (bpm), hypoxia with oxygen saturation less than or equal to 93%, a ratio of arterial partial pressure of oxygen to fraction of inspired oxygen of less than 300, or greater than 50% lung involvement on imaging.

- **Critical disease** is defined as multi-organ failure or dysfunction, shock, or respiratory failure requiring mechanical ventilation or high-flow nasal cannula.
Pregnant patients, have mild or no symptoms:

- Outpatient monitoring with a 14-day self-quarantine
- Exertional SO$_2$ should be assessed in rest and also with a walking SO$_2$ test. Patients whose SO$_2$ is less than or equal to 95% on room air with exertion should be considered for inpatient admission.
Inpatient monitoring

➢ With moderate to severe signs, $\text{SO}_2 < 95\%$.

➢ With comorbid conditions, eg, uncontrolled hypertension, inadequately controlled (GDM or DM), chronic renal disease, chronic cardiopulmonary disease, or immunosuppressive states.

➢ With fevers $>39^\circ\text{C}$ despite acetaminophen.

➢ Raising concern for secondary hemophagocytic lymphohistiocytosis (sHLH) or "cytokine storm syndrome."
Call a health care provider:

➢ Worsening shortness of breath
➢ Tachypnea
➢ Unremitting fever (>39 °C) despite appropriate use of acetaminophen
➢ Inability to tolerate oral hydration or needed medications
➢ Oxygen saturation less than 95% either at rest or on exertion
➢ Persistent pleuritic chest pain
➢ New-onset confusion or lethargy
➢ Cyanotic lips, face, or fingertips
➢ Obstetrical complaints, such as preterm contractions, vaginal bleeding, or decreased fetal movement

➢ follow-up visit at least once within 2 weeks of diagnosis of COVID-19.
SO₂ in pregnancy:

➢ In general, the recommended oxygen saturation is 95% or greater in pregnancy.
Protocols for inpatient care:

1. For vital sign including temperature, heart rate, respiratory rate, blood pressure, and pulse oximetry can be performed every 4 to 8 hours and as needed.

2. For severe disease should be obtained every 2 to 4 hours. To reduce exposure to health care workers, continuous pulse oximetry and/or telemetry.

3. For critical illness, continuous pulse oximetry and telemetry should be utilized. Noninvasive and invasive cardiovascular monitoring can be considered as indicated. Vital signs, including respiratory support as needed, should be recorded every 1 to 2 hours.

4. Fetal and tocodynamometer monitoring should also be performed when fetal needed.
Anticoagulation:

* Patients who are critically ill or mechanically ventilated should receive prophylactic heparin or low-molecular-weight heparin if there are no contraindications to its use.
Treatment options:
Antibiotics and plasma therapy:

✓ Azithromycin, Remdesivir, Tocilizumab, Bacillus Calmette–Guérin vaccine, and convalescent plasma.

None of these therapies are contraindicated in pregnancy.
Use of antibiotics:

❖ Ceftriaxone plus azithromycin or ceftriaxone cefepime, meropenem, piperacillin-tazobactam, linezolid, and vancomycin can be used to treat community-acquired pneumonia and are not contraindicated in pregnancy.
❖ Procalcitonin can be used to help delineate superimposed bacterial pneumonia.
❖ Although a procalcitonin level is not required in the assessment of COVID-19, it can be used to help delineate superimposed bacterial pneumonia.
❖ Many COVID-19 patients without bacterial pneumonia will have normal procalcitonin levels (less than 0.1 ng/mL).
❖ It should be noted that a high procalcitonin level does not rule out COVID-19 infection.
Timing of Delivery for Critically ill Pregnant Patients:

❖ should be individualized. Decisions should be based on maternal status, concurrent pulmonary disease (eg, cystic fibrosis, asthma, sarcoidosis), critical illness, ability to wean off the ventilator and ventilator mechanics, gestational age at time of delivery, and shared decision-making with the patient or healthcare proxy.

❖ Mechanical ventilation alone is not an indication for delivery. If delivery is considered based on severe hypoxemia, other options should also be discussed, including prone positioning, extracorporeal membrane oxygenation (ECMO), and the use of other advanced ventilator methods, especially if the gestational age is less than 30 to 32 weeks.

❖ Although the late third-trimester uterus may account for some mechanical restriction in ventilation, it is unclear whether delivery provides a substantial improvement in every case.
**Timing of Delivery in Asymptomatic or Mildly Symptomatic Pregnant Patients:**

- COVID-19-positive status is not an indication for delivery, and delivery should be reserved for routine obstetrical indications.
- In an asymptomatic or mildly symptomatic woman positive for COVID-19 at 37 to 38 6/7 weeks of gestation without other indications for delivery, expectant management can be considered until 14 days after the polymerase chain reaction (PCR) result was noted to be positive.
- OR until 7 days after onset of symptoms and 3 days after resolution of symptoms.
- This option allows for decreased exposure of health care workers and the neonate to SARS-CoV-2 and decreased PPE utilization in areas with supply-chain limitations.
- In an asymptomatic or mildly symptomatic woman positive for COVID-19 at 39 weeks of gestation or later, delivery can be considered to decrease the risk of worsening maternal status.
Fetal concerns:

- Limited data are currently reassuring regarding fetal risks in the setting of maternal COVID-19 infection.
**Preterm labor:**

- Decisions regarding the use of magnesium sulfate for neuroprotection in patients with COVID-19 should be individualized based on at risk of preterm birth at less than 32 weeks of gestation.

- With severe respiratory compromise or COVID-19-related acute renal injury, it is reasonable to consider withholding or dose-adjusting magnesium sulfate, particularly in the intubated patient already receiving benzodiazepine.

- Intake and output of fluids should be strictly monitored to avoid hypervolemia, and magnesium should be discontinued or deferred if the risk of preterm birth is low.

- In COVID-19 pregnant patients, it is unclear whether the use of magnesium sulfate increases the risk of pulmonary edema due to limited data and potential confounding of disease process overlap.
Preeclampsia:

- Laboratory findings for COVID-19 can overlap with those found in HELLP syndrome and preeclampsia with severe features.
- The diagnostic criteria for preeclampsia remain unchanged during the pandemic, and management should be dictated by established guidelines.
- However, it is reasonable to consider PCR testing for SARS-CoV-2 if a patient with transaminitis and thrombocytopenia has additional risk factors for COVID-19.
Thromboprophylaxis:

✓ Aspirin and indomethacin may be used for their respective common obstetrical indications.
Postpartum Care Considerations:

- Women who are asymptomatic/presymptomatic or women with mild symptoms without comorbid conditions may be able to recover at home after a normal postpartum recovery. Those with severe or critical disease require ongoing hospitalization.

Outpatient:

- It should be emphasized that patients can clinically worsen after several days of apparently mild illness, and women should be instructed to call or be seen for care if symptoms worsen.

Breastfeeding:

- There is no evidence of COVID-19 in the breast milk.
Postpartum pain management considerations:

♦ For women who are asymptomatic, mildly symptomatic, or moderately symptomatic who require analgesic medication beyond acetaminophen, nonsteroid anti-inflammatory drugs (NSAIDs) should be used because opioids likely pose more clinical risks. For women with acute kidney injury, this decision must be individualized.

contraception considerations:

► Immediate postpartum insertion (defined as insertion within 10 minutes of delivery of the placenta up to hospital discharge) of an IUD or implant placement can be considered.

► Postpartum tubal ligation in the setting of SARS-CoV-2 infection should be avoided. Obstetric clinicians should ensure that safe and effective contraception options remain available to all postpartum women.
postpartum depression:

- Universal screening for perinatal depression both during pregnancy and the postpartum period has been recommended by the American College of Obstetricians and Gynecologists.
Thank You