



Guidelines to Run Obstetrics Clinic and Hospital during Corona Pandemic

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Clinical Note

Volume 5 Issue 1

Received Date: May 22, 2020

Published Date: June 19, 2020

DOI: 10.23880/oajg-16000194

Clinical Note

Coronaviruses are a large family of viruses that cause illness ranging from the common cold to more severe diseases. The novel coronavirus is a new strain, not previously identified in humans. COVID-19 is the infectious disease caused by the latest discovered coronavirus (SARS-CoV-2). People can catch COVID-19 from others who have the virus through inhaling small droplets from people with COVID-19 who cough or sneeze or through touching contaminated surfaces.

Many people who become infected experience mild illness and recover, but it can be more severe for others. The symptoms include a combination of: Fever, Cough, Difficulty breathing, Muscle pain, Tiredness.

Pregnant women are not more at risk of catching COVID-19 or suffering from the more severe disease than other adults of similar age. There is no evidence that the virus can be transmitted to the unborn child during pregnancy, or during childbirth. Babies and young children are known to only experience mild forms of COVID-19.

Pregnant woman is advised practicing the following physical distancing measures:

- Avoid contact with anyone displaying symptoms of coronavirus disease (COVID-19).
- Avoid public transport when possible.
- Work from home, where possible.
- Avoid large and small gatherings in public spaces, particularly in closed or confined spaces.
- Avoid physical gatherings with friends and family.
- Use telephone, texting or online services to contact your obstetrician and other essential services.

Additional protective measures include frequent hand washing with soap and water; regular cleaning and disinfection of frequently touched surfaces at home; self-monitoring of any signs or symptoms consistent with COVID-19 and seeking early care from a health care provider.

Clinical Manifestations

All pregnant women should be monitored for development of symptoms and signs of COVID-19, particularly if they have had close contact with a confirmed case or persons under investigation.

Classification of Disease Severity

Asymptomatic or presymptomatic infection: Positive test for SARS-CoV-2 but no symptoms.

- **Mild Illness:** Any signs and symptoms (eg, fever, cough, sore throat, malaise, headache, muscle pain) without shortness of breath, dyspnea, or abnormal chest imaging.
- **Moderate Illness:** Evidence of lower respiratory disease by clinical assessment or imaging and a saturation of oxygen (SaO_2) >93 percent on room air at sea level.
- **Severe Illness:** Respiratory frequency >30 breaths per minute, $\text{SaO}_2 \leq 93$ percent on room air at sea level, ratio of arterial partial pressure of oxygen to fraction of inspired oxygen ($\text{PaO}_2/\text{FiO}_2$) <300, or lung infiltrates >50 percent.
- **Critical Illness:** Respiratory failure, septic shock, and/or multiple organ dysfunction.

Complications: Acute respiratory distress syndrome, arrhythmias, acute cardiac injury, and shock.

Course in Pregnancy

- Available data from multiple small series suggest that pregnancy and childbirth do not increase the risk for acquiring SARS-CoV-2 infection, do not worsen the clinical course of COVID-19 compared with non-pregnant individuals of the same age, and most infected mothers recover without undergoing delivery.
- The patient group most commonly affected by severe disease includes older adults (>60 years), particularly with comorbidities, and most pregnant women are younger than middle age; however, they may have comorbid conditions that increase their risk (eg, hypertension, diabetes, severe obesity, severe asthma, serious heart disease, immunocompromise).
- While the course of the infection in pregnant persons is similar to that in nonpregnant persons, there are added issues during pregnancy, such as timing of prenatal care visits and screening tests in uninfected women and, in infected women, potential pregnancy complications, timing and management of labor and delivery, and postpartum care (mother-newborn separation, breastfeeding, infant care, postpartum depression risk).
- Pregnant health care workers have additional concerns, and there is no standard occupational guidance for them. Some human resources units suggest that those in the third trimester, particularly ≥ 36 weeks, stop face-to-face contact with patients to help reduce their risk of acquiring infection and its consequences.
- The International Society of Infectious Disease in Obstetrics and Gynecology suggests that pregnant women working in high-risk exposure settings (eg, labor and delivery, operating room, respiratory wards, intensive care or high dependency units) transfer to low-risk exposure settings, especially if they are >24 weeks of gestation.
- Fever and hypoxemia from severe pneumonia may increase the risks for preterm labor, prelabor rupture of membranes, and abnormal fetal heart rate patterns. It appears that many of the initial third-trimester cases were electively delivered by cesarean because of a bias to intervene catalyzed by the belief that management of severe maternal respiratory disease would be improved by delivery; however, this hypothesis is unproven.
- Hyperthermia, which is common in COVID-19, is a theoretical concern as elevation of maternal core temperature from a febrile illness during organogenesis in the first trimester may be associated with an increased risk of congenital anomalies, especially neural tube defects, or miscarriage. Use of acetaminophen in pregnancy, including in the first trimester, has been shown overall to be safe and may attenuate the pregnancy

risks associated with fever exposure.

Vertical Transmission

Standards for neonatal evaluation at delivery of an infected mother and criteria for vertical transmission have not been developed. Assessing the immunoglobulin M (IgM) level for the virus in cord blood and sampling the neonatal nasopharynx, amnion-chorion interface, and placental tissue using aseptic technique immediately after delivery have been suggested. Amniotic fluid obtained at cesarean delivery could also be tested.

Approach to Diagnosis

- The possibility of COVID-19 should be considered in patients with new-onset fever/chills and/or respiratory tract symptoms (eg, cough, dyspnea). It should also be considered in patients with severe lower respiratory tract illness without any clear cause. Residing in or travel to a location where there is community transmission of SARS-CoV-2 or close contact with a confirmed or suspected case of COVID-19 in the past 14 days should heighten suspicion.
- Patients who meet the testing criteria should undergo testing for SARS-CoV-2 RNA by reverse-transcription polymerase chain reaction (RT-PCR) on a nasopharyngeal swab specimen, ideally in addition to testing for other respiratory pathogens (eg, influenza, respiratory syncytial virus).
- A positive RT-PCR generally confirms the diagnosis of COVID-19, although false-positive tests are possible. If the initial nasopharyngeal test is negative but the suspicion for COVID-19 remains and determining the presence of infection is important for management or infection control, the test should be repeated in 24 hours to a few days. Infection control precautions for COVID-19 should continue while repeat evaluation is being performed. Two subsequent negative samples generally rule out the infection. If there is high suspicion of COVID-19 infection and diagnosis is required for management, lower respiratory tract specimens (eg, sputum, bronchoalveolar lavage) can be tested as they have higher sensitivity.
- A chest radiograph is sufficient for initial evaluation of pulmonary complications in most hospitalized patients with COVID-19. A single chest radiograph carries a very low fetal radiation dose of 0.0005 to 0.01 mGy. Computed tomography (CT) should be performed, if indicated, as the fetal radiation dose for a routine chest CT is also low and not associated with an increased risk of fetal anomalies or pregnancy loss. Some authorities have advocated pulmonary ultrasound, possibly at the

same time as the obstetric scan, for quick diagnosis of pneumonia in pregnant women, which in certain locations would be the quickest way to ascertain high suspicion of maternal COVID-19 infection.

Routine Prenatal Care in Asymptomatic Women

During the pandemic, most low-risk pregnant women come to the office only for in-person prenatal visits at approximately 12, 20, 28, and 36 weeks of gestation (ie, at gestational ages when ultrasound and/or laboratory tests can also be performed) to minimize person-to-person contacts. Some practices are encouraging that even these visits occur by telemedicine, and others include a visit at approximately 32 weeks. When an outpatient office visit occurs, all patients and health care workers wear at least a surgical mask; no partner is allowed.

Medical Management of Pregnant Women with COVID-19

Home care: Most pregnant patients with known or suspected COVID-19 have mild disease (no shortness of breath) that does not warrant hospital-level care in the absence of obstetric problems (eg, preterm labor). Patient instructions and other aspects of home care are similar to that in nonpregnant persons, except pregnant women in the third trimester should perform fetal kick counts and report decreased fetal movement. This can help reduce patient and health care provider contact and potential exposure to COVID-19 during the pandemic.

Hospitalized patients: Pregnant women with mild disease plus comorbidities or moderate to critical disease are hospitalized. Pregnant hospitalized patients with severe disease, an oxygen requirement plus comorbidities, or critical disease should be cared for by a multispecialty team

Additional issues in pregnant women include:

- **Fetal monitoring:** For hospitalized patients, a Bluetooth-enabled external fetal monitor can transmit the fetal heart rate tracing to the obstetric provider. The monitor can be used continuously in unstable hospitalized patients in whom cesarean delivery would be performed for a persistent nonreassuring fetal heart rate pattern. An abnormal tracing might also help guide maternal oxygen therapy. In patients with stable oxygen saturation (SaO₂), a nonstress test can be performed twice daily, as one option.
- **Monitoring for preterm labor:** Monitoring pregnant patients for signs and symptoms of preterm labor is a routine component of obstetric care and should be a component of maternal monitoring of pregnant patients hospitalized in nonobstetric settings.
- **Use and type of venous thromboembolism**

(VTE) prophylaxis: The American Society of Hematology, the Society of Critical Care Medicine, and the International Society of Thrombosis and Haemostasis recommend routine pharmacologic VTE prophylaxis in patients hospitalized with COVID-19 unless there is a contraindication (eg, bleeding, severe thrombocytopenia). Unfractionated heparin is generally preferred in pregnant women who might be proximate to delivery because it is more readily reversed than low molecular weight heparin.

- **Use of standard medications for managing pregnancy complications:** Because of the clear benefits of antenatal betamethasone administration between 24+0 and 33+6 weeks of gestation in patients at high risk of preterm birth within seven days, ACOG continues to recommend its use for standard indications to pregnant patients with suspected or confirmed COVID-19. However, for pregnant patients with suspected or confirmed COVID-19 at 34+0 to 36+6 weeks of gestation and at risk of preterm birth within seven days, the benefits to the neonate are less clear, and ACOG has advised not administering a course of betamethasone to such patients. However, these decisions may need to be individualized, weighing the neonatal benefits with the risks of potential harm to the pregnant patient.
- **Low-dose aspirin:** For pregnant women without COVID-19, ACOG has stated that low-dose aspirin should continue to be offered as medically indicated (eg, prevention of preeclampsia).

Management of Labor and Delivery

Infection Control Precautions

Prehospital notification of possible infection: The Centers for Disease Control and Prevention (CDC) recommend that pregnant patients who have confirmed or suspected COVID-19 notify the obstetric unit before arrival so that the facility can make appropriate infection control preparations. The obstetric unit should ensure that their infection control practices for these patients are consistent with CDC guidelines.

Evaluation of all patients presenting to the hospital: All patients should be screened for signs and symptoms of COVID-19, as well as whether they have had close contact with a confirmed case or persons under investigation, before entering the hospital for admission to the labor and delivery unit. Screening can include checking temperature and asking about fever and/or new cough, shortness of breath, sore throat, muscle aches, rhinorrhea/nasal congestion, and smell and taste abnormalities.

Use of personal protective equipment on labor and delivery: All clinicians with person-to-person contact wear a surgical mask in the health care setting, under the

assumption that every patient and health care colleague might be infected with COVID-19. To address asymptomatic and presymptomatic transmission, we also suggest that all asymptomatic patients wear a cloth face covering, at a minimum, consistent with CDC guidance. If a patient arrives to the health care facility without a cloth face covering, a facemask should be used if supplies are available.

Care of COVID-19-positive inpatients: Ideally, pregnant COVID-19 inpatients should be cared for in specially equipped (eg, negative-pressure) rooms in antepartum, intrapartum, and postpartum COVID-19-only units. Patients with suspected or confirmed COVID-19 are normally instructed to wear a face mask, including during labor and delivery, which may be difficult during active pushing.

Timing delivery in infected women: For most women with preterm COVID-19 and nonsevere illness who have no medical/obstetric indications for prompt delivery, delivery is not indicated and ideally will occur sometime after a negative testing result is obtained or isolation status is lifted, thereby minimizing the risk of postnatal transmission to the neonate.

- For the hospitalized patient with COVID-19 with pneumonia but not intubated, some authorities have advocated consideration of delivery in pregnancies >32 to 34 weeks. The rationale is that delivery is performed before the pulmonary situation worsens and ongoing maternal hypoxemia places the fetus at risk of compromise. Most authorities do not advocate delivery prior to 32 weeks.
- Timing of delivery of the hospitalized pregnant woman intubated and critically ill with COVID-19 is challenging. After 32 to 34 weeks, some have advocated delivery if the patient is stable, but this could exacerbate the maternal condition. Between viability and <32 weeks, continuing maternal support with fetal monitoring is usually suggested for perinatal benefit as long as the maternal situation remains stable or improving.

Support persons on labor and delivery: The support person should be screened for fever and other symptoms before entering the building and in accordance with hospital policies. Those with any symptoms consistent with COVID-19, exposure to a confirmed case within 14 days, or a positive test for COVID-19 within 14 days should not be allowed to attend the labor and birth. If screening is negative, we require that the support person wear a cloth face covering, at a minimum, consistent with CDC guidance.

Route of Delivery

COVID-19 is not an indication to alter the route of delivery. Cesarean delivery is performed for standard obstetric indications.

Analgesia and Anesthesia

In patients with known or suspected COVID-19, neuraxial anesthetic is not contraindicated and has several advantages in laboring patients: it provides good analgesia and thus reduces cardiopulmonary stress from pain and anxiety and, in turn, the chance of viral dissemination, and it is available in case an emergency cesarean is required, thus obviating the need for general anesthesia.

Magnesium sulfate: In women with respiratory compromise, the use of magnesium sulfate for maternal seizure prophylaxis and/or neonatal neuroprotection should be decided on a case-by-case basis since the drug may further depress respirations. Consultation with maternal-fetal medicine and pulmonary/critical care specialists is advised. SARS-CoV-2 has not been detected in vaginal secretions or amniotic fluid, so rupture of fetal membranes and internal fetal heart rate monitoring may be performed for usual indications, but data are limited. It should be noted that labor, and particularly pushing, often causes loss of feces, which can contain the virus and spread the infection.

For women with known or suspected infection, ACOG has stated that delayed umbilical cord clamping is highly unlikely to increase the risk of transmitting pathogens from an infected mother to the fetus.

6.3.2. Infant evaluation: The infants of mothers with COVID-19 are considered COVID-19 suspects, and they should be tested, isolated from other healthy infants, and cared for according to infection control precautions for patients with confirmed or suspected COVID-19. Where testing capacity is available, neonates should be tested for SARS-CoV-2 infection as soon as possible and within the first 24 hours of age using available molecular assays. Repeat testing should be performed at approximately 48 hours of age if the infant is still at the birth facility.

6.3.3. Mother-baby contact: Temporary separation of mothers with known or suspected COVID-19 from their newborns has been proposed to reduce the risk of mother-baby transmission, but may also have adverse consequences. For example, not rooming-in and avoiding skin-to-skin contact can be stressful for mothers; disrupt breastfeeding; and have negative effects on newborn stress, feeding, and bonding.

The World Health Organization (WHO) has opined that mothers who have suspected, probable, or confirmed COVID-19 virus infection should be enabled to remain together and practice skin-to-skin contact.

If separation is indicated, but not implemented, other measures may be utilized to reduce potential mother-to-infant transmission and include:

- Physical barriers (eg, a curtain between the mother and newborn) can be constructed, and the newborn can be kept ≥ 6 feet away from the mother.

- The mother can wear facemask and practice hand hygiene when in close contact with her infant, particularly when feeding.
- If another healthy adult is in the room, they can care for the newborn.

After hospital discharge: After hospital discharge, the American Academy of Pediatrics advises:

- A mother with COVID-19 infection should maintain a distance of at least six feet from the newborn and use a face mask and hand hygiene for newborn care until
 - She is afebrile for 72 hours without use of antipyretics, and
 - At least seven days have passed since symptoms first appeared. For discontinuation of home isolation in non-pregnant persons, the CDC also suggests improvement in respiratory symptoms (eg, cough, shortness of breath).
- A mother with COVID-19 infection whose newborn requires ongoing hospital care should maintain separation until
 - She is afebrile for 72 hours without use of antipyretics, and
 - Her respiratory symptoms are improved, and

- At least two consecutive SARS-CoV-2 nasopharyngeal swab tests collected ≥ 24 hours apart are negative.

Breastfeeding and formula feeding: It is unknown whether the virus can be transmitted through breast milk. However, droplet transmission could occur through close contact during Breastfeeding.

Breastfeeding should be encouraged. In addition to its many other benefits, breast milk is a passive source of antibodies and other anti-infective factors and, thus, may provide passive antibody protection for the infant.

If mother and baby separation has been implemented, ideally, the infant is fed expressed breast milk by another healthy caregiver until the mother has recovered or has been proven uninfected, provided that the other caregiver is healthy and follows hygiene precautions.

Discharge from hospital

- Afebrile for 72hrs
- 7 days post symptoms
- 2 nasopharyngeal swabs negative >24hrs apart

