



Society for Maternal-Fetal Medicine and Society for Obstetric and Anesthesia and Perinatology

Labor and Delivery COVID-19 Considerations

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As the epidemiology of COVID-19 evolves, obstetric care providers and obstetric anesthesiologists must thoughtfully consider routine aspects of inpatient obstetric management and discuss alterations in practice to optimize the safety of our patients and staff. Hospitals should begin collaborations with others in their health region to optimize testing and clinical management protocols for pregnant and postpartum women in their geographic area.

These recommendations are not proscriptive and may not apply in your clinical setting. They are intended to introduce concepts to be considered in each setting and give examples of current practices in place. This guidance will be updated as additional data and information emerge.

Systems-Level Responses

Level of Care

Broader health systems and networks should coordinate to identify each hospital's capacity and plans for transferring care as needed to meet both maternal and fetal needs. Communication should frequently occur, as hospital capacities may change rapidly.

Cohorting and Other Strategies for Exposure Mitigation

One public health intervention to reduce exposure risk is cohorting—co-locating patients who are persons under investigation (PUI) and women who test positive for SARS-CoV2 into a restricted area of the hospital. While not all facilities are able to create an independent obstetrics COVID-19 unit, attempts should be made to designate specific locations for the purposes of containment, which will limit the exposure of unaffected patients and staff.

- A clinical risk assessment for COVID-19 symptoms should be performed immediately upon arrival to the hospital to facilitate optimal patient placement and staff personal protective equipment (PPE) utilization. Personnel performing this initial assessment should maintain distance (ie, more than 6 feet, if possible) from the patient and minimize the duration of this encounter.
- Consider limiting the number of support persons entering the unit (see below).
- For hospitals that have the staffing capacity, consider using a designated team of trained clinicians to care for women in these cohorted rooms.
- Proactively log staff that enter and leave these cohorted rooms to enable systematic tracking of potential exposure.
 - This tracking could be considered more broadly for all patient rooms (ie, those off the cohorted unit), depending on local epidemiology, to facilitate tracking of exposures in cases where PPE is not being utilized.

- Tracking is performed by asking clinicians entering the room to log their name and time of entry. Logging can be done by documentation of all clinical encounters within the electronic medical record or via a physical document placed just outside the patient's room.
- Consider staggering staff schedules (eg, creating a patient-facing team and a home-based telehealth team that rotates responsibilities weekly or every 2 weeks) to reduce concomitant exposure risks and minimize the potential for future staffing shortages.
- Hospital visitors should be restricted or eliminated for women who test positive for SARS-CoV2 or PUIs.
 - Expert opinion from areas with advanced community spread supports the elimination of visitors, but each hospital should develop its own policy and disseminate it in advance.
 - If visitors are restricted, exceptions could be made for settings of bereavement. These decisions are local and related to the overall hospital policy.

Patient Rooms

- Women who test positive for SARS-CoV2 or PUIs should ideally be placed in an isolation room.
- Airborne infection isolation rooms (single-patient negative-pressure rooms with a minimum of 6 air changes per hour), if available, can be used if performance of aerosolizing procedures is anticipated. In general, isolation rooms with droplet and contact precautions are recommended.
- Hospital facilities can inform whether specific rooms, such as operating rooms (ORs) or rooms in which higher acuity evaluations are performed (eg, when intubation may be required), can be safely converted to negative-pressure rooms.
- Hospitals may want to consider whether specific ORs can be converted to negative-pressure rooms and designated for cesarean deliveries for women who test positive for SARS-CoV2 or PUIs. Conversion may not be possible in all facilities and, with proper PPE and patient transfer protocols, cesarean deliveries can still be safely performed in a positive-flow OR.
- In general, negative-pressure ORs should not have open surgical equipment (as is often done for designated "crash" rooms). Teams should coordinate with local infection prevention teams to inform these decisions.

PPE for Health Care Workers Caring for Women with SARS-CoV2 or PUIs

- Women who test positive for SARS-CoV2 or PUIs should wear a surgical mask at all times as clinically able.
- Health care workers (HCWs) who may need to wear an N95 mask should ensure fit testing has been performed if it is feasible to do so. However, the Occupational Safety and Health Administration has recently waived this requirement to increase the availability of this equipment to HCWs.
- Proper donning and doffing of PPE takes time. Training in the use of PPE should emphasize the safety of HCWs, recognizing that clinical response times may be slowed by these precautions (<https://www.cdc.gov/hai/pdfs/ppe/PPE-Sequence.pdf>).
 - Consider posting diagrams and/or checklists in area where donning/doffing of PPE will occur.
 - Have an observer witness donning/doffing when possible.
 - Proper donning and doffing procedures should be reviewed and practiced frequently.
 - Anticipate emergencies as best as possible and plan accordingly..
- All HCWs should implement droplet and contact precautions with eye protection (i.e., gown, gloves, surgical mask, face shield or goggles) for clinical interactions with patients suspected or confirmed COVID-19 and follow CDC guidelines (https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fhcp%2Finfection-control.html).
 - Informed by local epidemiology and PPE supply availability, providers could consider utilizing droplet (ie, surgical mask, gloves, gown) precautions for prolonged and close (ie, less than 6 feet distance) patient encounters. This decision should be balanced by hospital supply concerns and should only be done in settings where community prevalence is high.

- The following recommendations are made in the absence of a firm evidence base and are considerations in the absence of N95 shortages. When applicable, alternative practices are put forward as suggestions to continue to mitigate exposure risk to staff.
 - N95 masks should be used in any room [eg, labor and delivery room (LDR), OR] whenever an aerosolizing procedure is being performed or likely to be performed on a patient with suspected or confirmed COVID-19. Examples in obstetric environments may include:
 - Cesarean deliveries
 - Women brought to OR for management of postpartum hemorrhage
 - Intubation (or anticipated intubation when there may not be time to properly re-do)
 - Second stage of labor and delivery: The Centers for Disease Control (CDC) does not categorize a vaginal delivery as an aerosolizing procedure, and droplet and contact precautions are deemed adequate by the CDC.
 - Surgical drapes could be used as an additional physical respiratory droplet barrier during the second stage and at delivery.
 - All providers should check with their institution's infection prevention guidelines regarding policies and procedures for reusing N95 masks and face shields.
- Given several variables unique to childbirth, including the length of patient contact, repeated and prolonged exhalations, and often substantial exposure to body fluids, SMFM believes it is reasonable to consider N95 mask use for HCWs caring for patients with suspected or confirmed COVID-19 in the second stage of labor, including specifically HCWs with significant and prolonged exposure to such patients. As with all resource considerations and potential supply and demand imbalances, the ability to adhere to this suggestion will need to be evaluated on an institutional level. It is acknowledged that this suggestion is above and beyond current CDC recommendations.
- Institutions should simulate patient transfers (eg, from LDR to OR) to ensure that staff properly don and doff PPE. Separate teams are required to facilitate safe transfer, and roles should be clearly established based on local staffing.

Clinical Obstetric Care for Women with SARS-CoV2 or PUIs

Obstetric Triage and Testing Procedures

- Labor and delivery leadership should coordinate with hospital practices regarding outpatient screening opportunities for pregnant women with exposure to or symptoms of SARS-CoV2. Pregnant (particularly those in the third trimester) and breastfeeding women should be prioritized in screening algorithms if possible given the change in clinical guidance that might ensue in the setting of a positive screen.
 - Hospitals should become familiar with turnaround times and identify opportunities to reduce this lag (eg, partner with other testing facilities) when results will directly inform clinical management, such as with women temporally proximate to delivery.
- Microscopy for ferning evaluation may be deferred to mitigate transport of the specimen across a unit, given the potential exposure risks. Alternative methodologies for evaluation of rupture of membranes (eg, pooling and nitrazine alone or incorporating commercially available tests) could be considered.

Antepartum

- Antenatal corticosteroids (ANCS): Prolonged exposure to high-dose steroids has been associated with worsening SARS-CoV2 patient outcomes in the general population. How this applies to ANCS is unknown, although it is important to recognize that ANCS exposure is not prolonged. Until evidence is available, practices could consider adjusting protocols (eg, ANCS after 34 weeks, repeated courses of ANCS), balancing theoretical maternal risks against the magnitude of known fetal benefits in each clinical circumstance.

- Particular caution should be exercised when considering ANCS for critically ill women in an ICU setting.
- Magnesium for fetal neuroprotection: The benefits of magnesium sulfate for fetal neuroprotection should be weighed against potential risks of maternal respiratory depression. This balance might shift as gestational age advances and is based on maternal respiratory status.
 - As per routine clinical practice, normal renal function should be assured before initiating magnesium therapy, and for those with renal dysfunction, dosage and fluid administration should be adjusted accordingly.
 - A single 4-gram bolus dose of MgSO₄ may serve as an alternative to usual dosing in the setting of mild respiratory distress.
 - For women with increasing oxygen requirements, the risk-to-benefit ratio should be considered before using magnesium for fetal neuroprotection.
- While some have suggested avoiding the use of nonsteroidal anti-inflammatory drugs (NSAIDs) for symptoms suggestive of SARS-CoV2 infection, this practice is controversial and data are lacking.
- Prenatal ultrasonography should be used judiciously and reserved for situations when results would likely alter clinical management.

Labor and Delivery

- Internal monitors: Internal monitors (ie, fetal scalp electrodes, intrauterine pressure catheters) may be necessary modalities to optimize fetal monitoring. Although data are limited, they so far do not suggest maternal-to-fetal transmission of SARS-CoV2 is likely to occur. Decision-making about internal monitors will evolve as more data become available.
- Amniotomy: Given the reassuring (but limited) data to date pertaining to maternal-to-child transmission, amniotomy may still be utilized for labor management as clinically indicated.
- Operative vaginal deliveries: As above, the data on perinatal transmission available to date do not preclude the use of forceps or vacuum. Given the challenges associated with rapid patient transfer to an OR, consideration should be given to performing these procedures (particularly non-outlet deliveries) in an OR, balancing existing workflows in other sites alongside OR availability.
- Magnesium for preeclampsia/seizure prophylaxis: The risk of eclampsia should be balanced against the risk of respiratory depression in the setting of SARS-CoV2. In general, for women without severe features, avoidance of magnesium seems prudent in this situation.
 - For those with renal dysfunction, dosage and fluid administration should be adjusted accordingly.
- Early epidural analgesia for labor should be considered to mitigate risks associated with general anesthesia in the setting of an urgent cesarean.
- Each hospital should facilitate discussions between obstetric care, maternal-fetal medicine, neonatology, critical care, infectious disease, and obstetric anesthesiology providers regarding pregnancy management in the setting of worsening maternal respiratory status.
 - Given the potential for rapid deterioration in maternal respiratory status, anticipatory planning and counseling is prudent.
 - All patients, including pregnant patients, should be encouraged to have an identified health care proxy and/or an advance directive on admission to the hospital.
 - If available, multidisciplinary care with anesthesia and/or critical care should be sought.
 - Maternal considerations: It is unclear whether uterine decompression improves maternal respiratory status and how the potential benefit balances against the known operative risks in the setting of COVID19.
 - Fetal considerations: The prolonged maternal hypoxemia associated with severe cases of COVID-19 may lead to fetal hypoxemia and ultimately acidemia. Given the protracted clinical course that is often seen with COVID-19, the risks of prolonged fetal hypoxemia (eg, stillbirth, neurologic injury) must be balanced against the risks associated with delivery at the given gestational age in the setting of rapidly worsening maternal respiratory status.

- Neonatal considerations: Protocols for postdelivery management of the neonate should be planned and clearly communicated to the woman. Dedicated care teams should be considered with protocols that avoid neonatal exposure to SARS-CoV2.

Postpartum Care

- Obstetric clinicians should be aware of hospital and CDC guidelines pertaining to the recommendation for neonatal separation from the mother after delivery for PUIs and women with SARS-CoV2. Teams should be prepared to educate patients early regarding these recommendations and plan for alternative neonatal protective plans (eg, maternal mask and glove use, bassinet in the room but distanced from mother, etc.) if the mother declines separation or when hospital capacities do not allow for separation.
 - Expediting testing results, as feasible, for women in temporal proximity to delivery will minimize the need for separation in settings of negative testing.
- In accordance with the American College of Obstetricians and Gynecologists, breastfeeding or pumping for women who are SARS-CoV2 positive or PUIs is still recommended. However, the neonate may be at risk of SARS-CoV2 acquisition via respiratory droplets while breastfeeding. The decision to express breast milk with a dedicated breast pump (and have milk given by an unexposed caregiver) versus direct breastfeeding with careful hand hygiene and droplet precautions (eg, surgical mask) should be made in communication with the patient, taking into consideration her health status and her surrounding resources.
- Information on NSAID use in the setting of COVID19 is emerging. While some have suggested avoiding the use of NSAIDs for symptoms suggestive of SARS-CoV2 infection, this practice is controversial, and robust data are lacking. At this point, for women who are asymptomatic or mildly symptomatic that require analgesic medication beyond acetaminophen, NSAIDs can continue to be used, as the alternative of opioids likely poses more clinical risks.
- When an acceptable clinical alternative is available, nonurgent postpartum procedures, such as a postpartum tubal ligation, should be postponed.
- As infants are considered PUIs, the decision to perform a circumcision should be made in communication with the pediatric team, and appropriate PPE must be worn.

Routine Labor and Delivery Practices to be Reconsidered for All Pregnant Patients in the Setting of Community Spread

- Changes to routine clinical practice should be informed by local epidemiology. Recognizing the presence of asymptomatic viral shedding, practices that increase potential SARS-CoV2 exposure with insufficient benefit in the setting of potential community spread should be suspended.
- There is currently insufficient information about the cleaning, filtering, and potential aerosolization of nitrous oxide in labor analgesia systems in the setting of COVID-19. As such, individual labor and delivery units should discuss the relative risks and benefits and consider suspending use.
 - The use of oxygen for fetal indications is controversial. As the use of high flow nasal cannula or face mask oxygen may be aerosolizing procedures, the routine use for fetal indications should be suspended.
- Hospital visitors should be restricted (broadly). In some settings, such as COVID+ -cohorted areas, visitors may be eliminated. These restrictions are institution dependent.
 - If visitors are restricted for general medical or surgical hospitalizations, exceptions should be considered for labor and delivery and postpartum and in settings of bereavement.
 - Designated visitors should be asked to remain in the hospital room during their visitation. Hospitals can consider whether patient food services or provision of other basic care supplies can be expanded to facilitate this practice.