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Pregnancy Amid the COVID-19 Pandemic

Executive Summary

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Pregnancy Amid the COVID-19 Pandemic

Situation

The worldwide pandemic of COVID-19 presents a unique challenge for obstetrical patients since they tend to have multiple, prolonged interactions with their providers, the healthcare system in general and, for the most part, are admitted to the hospital for their delivery. Currently, little is known about the impacts of COVID-19 on pregnant women and infants and as a result limited recommendations exist specific to their evaluation and management. There is concern for proper care and treatment of pregnant women and their infants, as well as the question of possible transmission of the virus to the fetus. ***What are the best practice considerations for management of the pregnant patient and her newborn infant?***

Background

Pregnant individuals have historically been considered "to be at increased risk of severe morbidity and mortality from specific respiratory infections. With regard to COVID-19, the limited data currently available do not indicate that pregnant individuals are at an increased risk of infection or severe morbidity (e.g., need for ICU admission or mortality) compared with nonpregnant individuals in the general population.

Pregnant patients with comorbidities may be at increased risk for severe illness consistent with the general population with similar comorbidities. To date, consistent with our experience with other respiratory viruses such as MERS, SARS, and influenza, there is no conclusive evidence of vertical transmission of COVID-19" (ACOG, 2020). However, with the recent confirmation that patients may have the COVID-19 virus and be asymptomatic, it is imperative that healthcare workers (HCW) be prepared to receive these patients and have adequate and appropriate PPE readily available. The fact is, "there is currently no easy way to clinically predict COVID-19 infection in asymptomatic people" (Breslin, et al. 2020).

Clinical Evidence Assessment

ACOG Guidelines:
In response to this pandemic, American College of Obstetricians and Gynecologists (ACOG) and the Society for Maternal Fetal Medicine (SMFM) have established an algorithm to aid practitioners in the prompt evaluation, assessment and treatment of pregnant persons who have had known exposure or those showing symptoms consistent with COVID-19 (ACOG, 2020). The algorithm includes assessment of patient's symptoms such as presence of fever greater than 38º C or 100.4º F, presence of cough, difficulty breathing or shortness of breath, chills, muscle pain, headache, repeated shaking with chills, sore throat and/ or new sense of loss of taste or smell. If one or more of these symptoms are found to be present, the patient is

considered at an elevated risk and is isolated in the emergency department if no obstetrical issues are involved. In one New York facility, the use of universal SARS-CoV-2 testing in all pregnant patients presenting for delivery due to the risk of Covid-19 among asymptomatic obstetrical patients has been implemented. “The potential benefits of a universal testing approach include the ability to use Covid-19 status to determine hospital isolation practices and bed assignments, inform neonatal care, and guide the use of personal protective equipment. Access to such clinical data provides an important opportunity to protect mothers, babies, and health care teams during these challenging times” (Sutton, et al. 2020).

The risk of exposure to other bodily fluids during delivery exists and must be considered. “Viable, infectious SARS-CoV has been isolated from respiratory, blood, urine, and stool specimens, viable, infectious MERS-CoV has only been isolated from respiratory tract specimens. It is not yet known whether other non-respiratory body fluids from an infected person including vomit, urine, breast milk, or semen can contain viable, infectious SARS-CoV-2”. (CDC, 2019). It has been recommended that if a patient has had possible exposure to COVID-19 that the following be considered for the safety of the patient and newborn infant. In an uncomplicated spontaneous vaginal delivery, delayed cord clamping not be performed, and skin-to-skin contact between the mother and infant not be permitted. ACOG continues to review questions and data regarding the potential for aerosolization in the context of forceful exhalation during the second stage of labor. According to CDC, based on limited data, forceful exhalation during the second stage of labor would not be expected to generate aerosols to the same extent as procedures more commonly considered to be aerosol-generating. (CDC, 2019).

Thus far there has been no evidence of neonatal or intraamniotic infections. One study suggests after delivery the newborn should be placed in a radiant warmer bed away from the mother and moved to a separate room once the condition is stabilized, to remain there until discharge. The newborn should be nourished with formula and/or expressed breast milk. During the postpartum period, contact between the staff and the patient should be minimized and, when possible, use of a telephone should be employed. (Iqbal, et al. 2020). This practice is not supported by all.

CDC Recommendations:
According to the CDC, the following considerations should be taken in the care of pregnant patients with confirmed COVID-19 or persons under investigation (PUI) of having COVID-19:

Prehospital considerations include notifying the hospital prior to arrival so that “they can make appropriate infection control preparations such as identifying the most appropriate room for labor and delivery, ensuring infection prevention and control supplies and PPE are correctly positioned. Hospital personnel should immediately notify their infection control personnel regarding the anticipated arrival of the patient.

During hospitalization the facility should ensure that infection control practices are consistent with Interim Infection Prevention and Control Recommendations for Patients with Confirmed Coronavirus Disease 2019 (COVID-19) or Persons Under Investigation for COVID-19 in

Healthcare Settings. Facilities should also ensure that their healthcare workers are correctly trained in and that they adhere to infection control requirements. Pregnant women with suspected COVID-19 or PUI should be prioritized for testing. Visitors should be limited to those essential for the pregnant woman's well-being and care (emotional support persons). Any visitors permitted to the labor and delivery should be screened for symptoms of acute respiratory illness and should not be allowed entry if fever or respiratory symptoms are present and should be informed about the appropriate use of personal protective equipment (PPE). Infants born to mothers with known COVID-19 or PUI should be considered infants with suspected COVID-19 and as such should be isolated from other healthy infants.

Mother and baby contact after birth has many benefits and are well understood to enhance mother-infant bonding with skin to skin contact and when breastfeeding however, when a mother has or is suspected of having COVID-19 the risk of transmission of the virus is not clear. The determination of whether or not to separate a mother and her infant should be made on a case-by-case basis using shared decision-making between the mother and the clinical team.

Breastfeeding

The International Lactation Consultant Association (ILCA) issued the following statement regarding breastfeeding: "Breastfeeding should continue and be supported during the COVID-19 epidemic, with appropriate precautions". The benefits of breastfeeding are well documented ranging from increased bonding between mother and infant to protection of the infant through antibody transmission in the breastmilk. Breast milk provides protection against many illnesses. There are rare exceptions when breastfeeding or feeding expressed breast milk is not recommended. UNICEF states "Considering the benefits of breastfeeding and the insignificant role of breastmilk in the transmission of other respiratory viruses, the mother can continue breastfeeding, while applying all the necessary precautions." (ILCA, 2020). If the infant has been separated from the mother, it is recommended that the mother be encouraged to express or pump their milk in an effort to establish and maintain milk supply. The mother should practice good hand hygiene and the pump should be thoroughly cleaned and disinfected between pumping. The milk should be fed to the newborn by a healthy caregiver.

The World Health Organization (WHO) states that families need support navigating infant feeding challenges and questions and should receive counseling and basic psychological support whether they have been exposed to COVID-19 or not. WHO encourages wearing a mask and that the mother perform good hand hygiene before and after any close contact with the infant. In an effort to assist with resources, ILCA suggests telehealth as an option where available.

Telehealth

An alternative to perinatal care of the pregnant patient is telehealth. Many providers have integrated telehealth into their practices prior to the pandemic and they are utilizing it to see patients remotely as needed and only bringing the patient into their office when indicated thus minimizing the risk of COVID exposure to the patient and the HCW. According to the Department of Health and Human Services Office for Civil Rights has announced that it will exercise enforcement discretion and waive penalties for HIPAA violations against health care clinicians who serve patients in good faith through everyday communications technologies, such as FaceTime or Skype, during the COVID-19 nationwide public health emergency. Telehealth can and should be used prenatally as well as post-partum for follow up and monitoring, guidance and support.

Home Births on the Rise

Midwives have been reporting a marked increase in requests from new patients requesting home births or birthing centers out of fear of exposure to COVID-19 in the hospital setting. Many midwives have had to "turn patients away" due to higher volumes of requests as they are unable to accommodate the higher number of a patients. (ACNM, 2020). ACOG recognized this and stated the following: many patients are experiencing new concerns because of the COVID-19 pandemic, hospitals and accredited birth centers remain the safest settings for birth, even during COVID-19 and especially for individuals with suspected or confirmed COVID-19. Patients concerned that delivering in a hospital or accredited birth center setting will increase their risk of exposure to COVID-19 should be assured that hospitals and accredited birth centers continue to be safe with strict infection control procedures. Effective communication is essential in this time of increased stress and uncertainty and patients are encouraged to stay with the health care professionals who have been providing their care and talk with their physician or midwife about their concerns regarding labor support and safe birth care. (ACOG, 2020).

Clinical Evidence:
ACOG, SMFM and the CDC are focusing on the importance of appropriate diagnosis and treatment of the pregnant patient with known or suspected exposure to the COVID-19 virus. "Pregnant women are more susceptible to viral infection due to immune and anatomic alteration…" (Chen, et al. 2020). Coronavirus may increase the risk of pregnancy complications and these patients should be managed within a healthcare facility with close maternal and fetal monitoring. Management "should include early isolation, aggressive infection control procedures, oxygen therapy, avoidance of fluid overload, consideration of empiric antibiotics (secondary to bacterial infection risk), laboratory testing for the virus and co-infection, fetal and uterine contraction monitoring, early mechanical ventilation for progressive respiratory failure, individualized delivery planning, and a team-based approach with multispecialty consultations". (Rasmussen, et al. 2020). ACOG recognizes that hospital visits may pose an increased risk of

exposure to the virus however, the lack of medical care during the pregnancy may be more harmful. Telehealth should be used when possible to mitigate the risk.

Of further concern is the possibility of transmission of the virus from the mother to the fetus. According to the CDC, there has been no confirmed cases of vertical transmission, nor has there been any definitive evidence of vertical transmission (Dashraath, et al. 2020).

“Overall, due to lack of appropriate data about the effect of COVID-19 on pregnancy, it is necessary to monitor suspected pregnant women before and after delivery. For confirmed cases both the mother and the newborn child should be followed up comprehensively” (Panahi, et al. 2020).

Financial Assessment

The Society for Maternal Fetal Medicine has recently published new ICD-10-CM coding recommendations related to COVID-19 and pregnancy. “In the setting of pregnancy, codes from ICD-10-CM Chapter 15 (Pregnancy, Childbirth, and Puerperium) should be sequenced first… U07.1 should be used to report a patient who has confirmed/tested positive for COVID-19. Do not report a code of coronavirus when the diagnosis is not confirmed or stated in the medical record” (Rad, et al. 2020). In addition to the U07.1 code the following are suggested:

Exposure

• Exposure to someone confirmed to have COVID-19: O99.89, Z20.828

• Possible exposure to COVID-19, ruled out after evaluation: Z03.818, Z3A._ (0-42 weeks)

Signs and Symptoms without definitive diagnosis

• Use O99.89 + appropriate code for each presenting sign and symptom: R05 Cough, R06.02 Shortness of breath, R50.9 Fever

Confirmed COVID-19 infection

• Confirmed COVID-19 without symptoms: O98.51_, U07.1 (*Last character _ denotes trimester)

• Lower respiratory infection: O98.51_, U07.1, O99.51_, J22

• Acute bronchitis: O98.51_, U07.1, O99.51_, J20.8

• Bronchitis not otherwise specified (as acute or chronic): O98.51_, U07.1, O99.51_, J40

• Viral Pneumonia: O98.51_, UO7.1, O99.51_, (*Note: Due to Exclude 1 rule, J12.81 pneumonia code may not be used with U07.1).

• Respiratory failure with hypoxia: O98.51_, U07.1, O99.51_, J96.01

• ARDS: O98.51_, U07.1, O99.51_, J80

• Respiratory infection, not otherwise specified (other respiratory disorders): O98.51_, U07.1, O99.51_, J98.8

Operational Considerations

When possible, pre-hospital check-in by the patient should be performed to ensure that adequately trained personnel and appropriate PPE is available upon the patient's arrival to the facility. All OB personnel should be appropriately trained in the handling and care of the COVID patients. Due to the high incidence of asymptomatic COVID positive patients, HCW "must acknowledge that every admission and delivery present real risk for infection to our front-line healthcare workers. As such, ideal practice, if adequate supplies are able to be obtained, would involve universal PPE including N95 masks for all COVID-19 positive deliveries, whether vaginal or cesarean, as well as for those with unknown COVID-19 status until disease status can be determined through testing. Surgical masks should also be provided for all team members on the inpatient service and for all patients presenting to labor units and worn at all times". (Breslin, et al. 2020).

Testing is critical for risk mitigation, data collection, and directing critical resources, including PPE. Pregnant women admitted with suspected COVID-19 or who develop symptoms suggestive of COVID-19 during admission should be prioritized for testing. Because of the potential for asymptomatic patients presenting to labor and delivery units, particularly in high prevalence areas, additional testing strategies may be appropriate. (ACOG, 2020). Furthermore, appropriate and adequate PPE is critical in an effort to mitigate HCW exposure to the virus.

The CDC recommends, in both the inpatient and outpatient settings, that visitation be reduced to the minimum necessary, with visitors limited to those essential for the pregnant individual's emotional support. Visitors should be screened for symptoms such as fever, acute respiratory illness and should not be permitted visitation for the safety and well-being of the patient.

ACOG recommends that, "to limit the risk of inadvertent exposure and infection, it may be appropriate to expedite discharge when both the mother and the infant are healthy. For example, discharge may be considered after 1 day for women with uncomplicated vaginal births and after 2 days for women with cesarean births depending on their status. Early discharge will require discussion with the facility's pediatric care team and should be linked to home telehealth visits for the mother and infant". (ACOG, 2020). Also of importance, it may be necessary to provide modified postpartum counseling or enhanced resources by phone or electronically where possible.

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Summary

COVID-19 continues to make its way throughout the nation and infect many, including pregnant women. The pandemic is a rapidly evolving situation and, in light of this, the healthcare community must have a clear understanding of how to manage the pregnant patient and her newborn. American College of Obstetricians and Gynecologists, Centers for Disease Control, Society for Maternal-Fetal Medicine and American College of Nurse-Midwives are continuously updating recommendations and protocols for the care of the pregnant patient and their newborn amid the COVID pandemic.

Abstracts

1. Am J Obstet Gynecol. 2020 Feb 24. pii: S0002-9378(20)30197-6. doi:10.1016/j.ajog.2020.02.017. [Epub ahead of print]

Coronavirus Disease 2019 (COVID-19) and pregnancy: what obstetricians need to know.

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Coronavirus disease 2019 is an emerging disease with a rapid increase in cases and deaths since its first identification in Wuhan, China, in December 2019. Limited data are available about coronavirus disease 2019 during pregnancy; however, information on illnesses associated with other highly pathogenic coronaviruses (ie, severe acute respiratory syndrome and the Middle East respiratory syndrome) might provide insights into coronavirus disease 2019's effects during pregnancy. Coronaviruses cause illness ranging in severity from the common cold to severe respiratory illness and death. Currently the primary epidemiologic risk factors for coronavirus disease 2019 include travel from mainland China (especially Hubei Province) or close contact with infected individuals within 14 days of symptom onset. Data suggest an incubation period of ~5 days (range, 2-14 days). Average age of hospitalized patients has been 49-56 years, with a third to half with an underlying illness. Children have been rarely reported. Men were more frequent among hospitalized cases (54-73%). Frequent manifestations include fever, cough, myalgia, headache, and diarrhea. Abnormal testing includes abnormalities on chest radiographic imaging, lymphopenia, leukopenia, and thrombocytopenia. Initial reports suggest

that acute respiratory distress syndrome develops in 17-29% of hospitalized patients. Overall case fatality rate appears to be ~1%; however, early data may overestimate this rate. In 2 reports describing 18 pregnancies with coronavirus disease 2019, all were infected in the third trimester, and clinical findings were similar to those in nonpregnant adults. Fetal distress and preterm delivery were seen in some cases. All but 2 pregnancies were cesarean deliveries and no evidence of in utero transmission was seen. Data on severe acute respiratory syndrome and Middle East respiratory syndrome in pregnancy are sparse. For severe acute respiratory syndrome, the largest series of 12 pregnancies had a case-fatality rate of 25%. Complications included acute respiratory distress syndrome in 4, disseminated intravascular coagulopathy in 3, renal failure in 3, secondary bacterial pneumonia in 2, and sepsis in 2 patients. Mechanical ventilation was 3 times more likely among pregnant compared with nonpregnant women. Among 7 first-trimester infections, 4 ended in spontaneous abortion. Four of 5 women with severe acute respiratory syndrome after 24 weeks' gestation delivered preterm. For Middle East respiratory syndrome, there were 13 case reports in pregnant women, of which 2 were asymptomatic, identified as part of a contact investigation; 3 patients (23%) died. Two pregnancies ended in fetal demise and 2 were born preterm. No evidence of in utero transmission was seen in severe acute respiratory syndrome or Middle East respiratory syndrome. Currently no coronavirus-specific treatments have been approved by the US Food and Drug Administration. Because coronavirus disease 2019 might increase the risk for pregnancy complications, management should optimally be in a health care facility with close maternal and fetal monitoring. Principles of management of coronavirus disease 2019 in pregnancy include early isolation, aggressive infection control procedures, oxygen therapy, avoidance of fluid overload, consideration of empiric antibiotics (secondary to bacterial infection risk), laboratory testing for the virus and coinfection, fetal and uterine contraction monitoring, early mechanical ventilation for progressive respiratory failure, individualized delivery planning, and a team-based approach with multispecialty consultations. Information on coronavirus disease 2019 is increasing rapidly. Clinicians should continue to follow the Centers for Disease Control and Prevention website to stay up to date with the latest information (https://www.cdc.gov/coronavirus/2019-nCoV/hcp/index.html).

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2. Am J Obstet Gynecol. 2020 Mar 23. pii: S0002-9378(20)30343-4. doi:10.1016/j.ajog.2020.03.021. [Epub ahead of print]

Coronavirus disease 2019 (COVID-19) pandemic and pregnancy.

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The current coronavirus disease 2019 (COVID-19) pneumonia pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is spreading globally at an accelerated rate, with a basic reproduction number (R0) of 2-2.5, indicating that 2-3 persons will be infected from an index patient. A serious public health emergency, it is particularly deadly in vulnerable populations and communities in which healthcare providers are insufficiently prepared to manage the infection. As of March 16, 2020, there are more than 180,000 confirmed cases of COVID-19 worldwide, with more than 7000 related deaths. The SARS-CoV-2 virus has been isolated from asymptomatic individuals, and affected patients continue to be infectious 2 weeks after cessation of symptoms. The substantial morbidity and socioeconomic impact have necessitated drastic measures across all continents, including nationwide lockdowns and border closures. Pregnant women and their fetuses represent a high-risk population during infectious disease outbreaks. To date, the outcomes of 55 pregnant women infected with COVID-19 and 46 neonates have been reported in the literature, with no definite evidence of vertical transmission. Physiological and mechanical changes in pregnancy increase susceptibility to infections in general, particularly when the cardiorespiratory system is affected, and encourage rapid progression to respiratory failure in the gravida. Furthermore, the pregnancy bias toward T-helper 2 (Th2) system dominance, which protects the fetus, leaves the mother vulnerable to viral infections, which are more effectively contained by the Th1 system. These unique challenges mandate an integrated approach to pregnancies affected by SARS-CoV-2.
Here we present a review of COVID-19 in pregnancy, bringing together the various factors integral to the understanding of pathophysiology and susceptibility, diagnostic challenges with real-time reverse transcription polymerase chain reaction (RT-PCR) assays, therapeutic controversies, intrauterine transmission, and maternal-fetal complications. We discuss the latest options in antiviral therapy and vaccine development, including the novel use of chloroquine in the management of COVID-19. Fetal surveillance, in view of the predisposition to growth restriction and special considerations during labor and delivery, is addressed. In addition, we focus on keeping frontline obstetric care providers safe while continuing to provide essential services. Our clinical service model is built around the principles of workplace segregation, responsible social distancing, containment of cross-infection to healthcare providers, judicious use of personal protective equipment, and telemedicine. Our aim is to share a framework that can be adopted by tertiary maternity units managing pregnant women in the flux of a pandemic while maintaining the safety of the patient and healthcare provider at its core.

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3. Arch Acad Emerg Med. 2020 Mar 23;8(1):e34. eCollection 2020.

Risks of Novel Coronavirus Disease (COVID-19) in Pregnancy; a Narrative Review.

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Introduction: The outbreak of the new Coronavirus in China in December 2019 and subsequently in various countries around the world has raised concerns about the possibility of vertical transmission of the virus from mother to fetus. The present study aimed to review published literature in this regard.
Methods: In this narrative review, were searched for all articles published in various databases including PubMed, Scopus, Embase, Science Direct, and Web of Science using MeSH-compliant keywords including COVID-19, Pregnancy, Vertical transmission, Coronavirus 2019, SARS-CoV-2 and 2019-nCoV from December 2019 to March 18, 2020 and reviewed them. All type of articles published about COVID-19 and vertical transmission in pregnancy were included.
Results: A review of 13 final articles published in this area revealed that COVID-19 can cause fetal distress, miscarriage, respiratory distress and preterm delivery in pregnant women but does not infect newborns. There has been no report of vertical transmission in pregnancy, and it has been found that clinical symptoms of COVID-19 in pregnant women are not different from those of non-pregnant women.
Conclusion: Overall, due to lack of appropriate data about the effect of COVID-19 on pregnancy, it is necessary to monitor suspected pregnant women before and after delivery. For confirmed cases both the mother and the newborn child should be followed up comprehensively.

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4. J Med Virol. 2020 Mar 26. doi: 10.1002/jmv.25787. [Epub ahead of print]

Maternal health care management during the outbreak of coronavirus disease 2019.

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Coronavirus disease 2019 (COVID-19) is a novel type of highly contagious pneumonia caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Despite the strong efforts taken to control the epidemic, hundreds of thousands of people were infected worldwide by 11 March, and the situation was characterized as a pandemic by the World Health Organization. Pregnant women are more susceptible to viral infection due to immune and anatomic alteration, though hospital visits may increase the chance of infection, the lack of medical care during pregnancy may do more harm. Hence, a well-managed system that allows pregnant women to access maternal health care with minimum exposure risk is desired during the outbreak. Here, we present the managing processes of three pregnant women who had fever during hospitalization in the gynecology or obstetrics department, and then, we further summarize and demonstrate our maternal health care management strategies including antenatal care planning, patient triage based on the risk level, admission control, and measures counteracting emergencies and newly discovered high-risk cases at in-patient department. In the meantime, we will explain the alterations we have done throughout different stages of the epidemic and also review relative articles in both Chinese and English to compare our strategies with those of other areas. Although tens of COVID-19 cases were confirmed in our hospital, no nosocomial infection has occurred and none of the pregnant women registered in our hospital was reported to be infected.

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5. Am J Perinatol. 2020 Apr 17. doi: 10.1055/s-0040-1710051. [Epub ahead of print]

Considerations for Obstetric Care during the COVID-19 Pandemic.

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The novel coronavirus disease 2019 (COVID-19) is a growing pandemic that is impacting daily life across the globe. Though disease is often mild, in high-risk populations, severe disease often leads to intubation, intensive care admission (ICU) admission, and in many cases death. The implications for pregnancy remain largely unknown. Early data suggest that COVID-19 may not pose increased risk in the pregnant population. Vertical transmission has not been confirmed. Because no treatment, no vaccine and no herd immunity exist, social distancing is

the best mechanism available to protect patients and health care workers from infection. This review will discuss what is known about the virus as it relates to pregnancy and then consider management considerations based on these data.
KEY POINTS: COVID-19 severity in pregnancy is unclear. Social distancing is the best protective mechanism. No clear evidence of vertical transmission exists. Mother/baby separation avoids transmission.

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6. Am J Perinatol. 2020 Apr 24. doi: 10.1055/s-0040-1709993. [Epub ahead of print]

Successful Treatment of Preterm Labor in Association with Acute COVID-19 Infection.

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Novel coronavirus disease 2019 (COVID-19) infection occurring during pregnancy is associated with an increased risk of preterm delivery. This case report describes successful treatment of preterm labor during acute COVID-19 infection. Standard treatment for preterm labor may allow patients with acute COVID-19 infection to recover without the need for preterm delivery. KEY POINTS: Acute COVID-19 infection is associated with a high rate of preterm delivery. Standard treatment for preterm labor such as intravenous magnesium sulfate, antepartum steroid therapy and antibiotic prophylaxis for group B streptococcus infection were effective in this patient. In the absence of maternal or fetal compromise, acute COVID-19 infection is not an indication for early elective delivery.

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Severe COVID-19 during Pregnancy and Possible Vertical Transmission.

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There are few cases of pregnant women with novel corona virus 2019 (COVID-19) in the literature, most of them with a mild illness course. There is limited evidence about in utero infection and early positive neonatal testing. A 41-year-old G3P2 with a history of previous cesarean deliveries and diabetes mellitus presented with a 4-day history of malaise, low-grade fever, and progressive shortness of breath. A nasopharyngeal swab was positive for COVID-19, COVID-19 serology was negative. The patient developed respiratory failure requiring mechanical ventilation on day 5 of disease onset. The patient underwent a cesarean delivery, and neonatal isolation was implemented immediately after birth, without delayed cord clamping or skin-to-skin contact. The neonatal nasopharyngeal swab, 16 hours after delivery, was positive for severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2) real-time polymerase chain reaction (RT-PCR), and immunoglobulin (Ig)-M and IgG for SARS-CoV-2 were negative. Maternal IgM and IgG were positive on postpartum day 4 (day 9 after symptom onset). We report a severe presentation of COVID-19 during pregnancy. To our knowledge, this is the earliest reported positive PCR in the neonate, raising the concern for vertical transmission. We suggest pregnant women should be considered as a high-risk group and minimize exposures for these reasons. KEY POINTS: We report a severe presentation of COVID-19 in pregnancy requiring invasive ventilatory support. This is a case of positive RT-PCR in first day of life, suggesting possible vertical transmission. There were no detectable maternal antibodies for COVID-19 until after delivery.

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References

Breslin, N, Baptiste, C, et al. COVID-19 in Pregnancy: Early Lessons. *AJOGMF.* Accessed April 30, 2020 from https://doi.org/10.1016/j.ajogmf.2020.100111.

Bryner J. Newborn tests positive for COVID-19 in London. March 15, 2020. Accessed April 21, 2020. *Live Science*. https://www.livescience.com/newborn-has-coronavirus-london.html

Chen H, Guo J, Wang C, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet*. 2020;395(10226):809-815. Accessed April 21, 2020. doi:10.1016/S0140-6736(20)30360-3

Chen, H, Juanjuan, G, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *The Lancet.* Feb. 12, 2020. Accessed April 30, 2020. https://doi.org/10.1016/S0140-6736(20)30360-3

Chen Y, Peng H, Wang L , et al. Infants born to mothers with a new coronavirus (COVID-19). *Front Pediatr*. 2020;8:104. Accessed April 21, 2020. doi:10.3389/fped.2020.00104

Clinical Questions about COVID-19: Questions and Answers. *CDC.* Accessed April 21, 2020 from https://www.cdc.gov/coronavirus/2019-ncov/hcp/faq.html

Coronavirus: newborn becomes youngest person diagnosed with virus. *BBC News.* February 6, 2020. Accessed April 21, 2020. https://www.bbc.com/news/world-asia-china-51395655

COVID-19 FAQs for Obstetricians, Gynecologists, Obstetrics. American College of Obstetricians and Gynecologists. Accessed May 7, 2020 from https://www.acog.org/en/Clinical%20Information/Physician%20FAQs/COVID%2019%20FAQs%20for%20Ob%20Gyns%20Obstetrics.

Iqbal, S, Overcash, R, et al. An Uncomplicated Delivery in a Patient with Covid-19 in the United States. *NEJM.* Accessed April 21, 2020 from https://www.nejm.org/doi/full/10.1056/NEJMc2007605?query=featured_coronavirus

Lactation Matters. International Lactation Consultant Association. March 18, 2020 Accessed May 6, 2020. https://lactationmatters.org/2020/03/18/ilca-statement-on-breastfeeding-and-lactation-support-during-the-covid-19-pandemic/

Novel Coronavirus 2019 (COVID-19). *ACOG.* Accessed April 29, 2020 from https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2020/03/novel-coronavirus-2019

Outpatient Assessment and Management for Pregnant Women with Suspected or Confirmed Novel Coronavirus (COVID-19). ACOG. 2020. Accessed April 29, 2020 from

https://www.acog.org/-/media/project/acog/acogorg/files/pdfs/clinical-guidance/practice-advisory/covid-19-algorithm.pdf?la=en&hash=2D9E7F62C97F8231561616FFDCA3B1A6

Panahi L, Amiri M, Pouy S. Risks of Novel Coronavirus Disease (COVID-19) in Pregnancy; a Narrative Review. *Arch Acad Emerg Med*. 2020;8(1):e34. Published 2020 Mar 23.

Rad, S, Malisch, T, et al. Updated Interim ICD-10-CM Coding Guidance: Recommended Coding for COVID-19 and pregnancy. The Society for Maternal-Fetal Medicine (SMFM) Coding Committee. April 2020. Accessed May 1, 2020 from https://s3.amazonaws.com/cdn.smfm.org/media/2300/COVID19_Updated_Diagnosis_White_Paper_April2020.pdf

Responding to COVID-19. American College of Nurse-Midwives. Accessed May 7, 2020 from https://www.midwife.org/responding-to-covid-19

Sutton, D, Fuchs, K, et al. Universal Screening for SARS-CoV-2 in Women Admitted for Delivery. *NEJM.* Accessed April 21, 2020 from https://www.nejm.org/doi/full/10.1056/NEJMc2009316?query=featured_coronavirus