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Maintaining Maternal–Newborn Safety During the COVID-19 Pandemic

Nancy A. Patrick & Teresa S. Johnson

ABSTRACT: COVID-19, the disease caused by the SARS-CoV-2 virus, was declared a global pandemic by the World Health Organization on March 11, 2020. In addition to older individuals and those with underlying chronic health conditions, maternal and newborn populations were also identified as being at greater risk. It became critical for hospitals and clinicians to maintain the safety of individuals in the facility and minimize the transmission of COVID-19 while continuing to strive for optimized outcomes by providing family-centered care. Rapid change during the pandemic made it appropriate to use the plan–do–study–act (PDSA) cycle to continually evaluate proposed and standard practices. Our team established an obstetric COVID-19 unit for women and newborns, developed guidelines for visitation and for the use of personal protective equipment, initiated universal COVID-19 testing, and provided health education to emphasize shared decision making.

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KEYWORDS: coronavirus, COVID-19, maternity, newborn, obstetrics, patient safety, pandemic, practice change, pregnancy, SARS-CoV-2

The outbreak of COVID-19 was declared a pandemic on March 11, 2020, by the World Health Organization (WHO; 2020a). In addition to older individuals and those with underlying chronic health conditions, maternal and newborn populations were also identified as being at greater risk. It is critical that clinicians caring for childbearing families and newborns be informed on best practices regarding how to care for an individual who is deemed a person under investigation (PUI) or who tests positive for SARS-CoV-2 (PUI/positive). Additionally, it is essential to provide information at discharge to help prevent maternal and newborn infection and/or to manage COVID-19 (Centers for Disease Control and Prevention [CDC], 2020).

Rapidly Evolving Guidance

The CDC has been a leader in distributing information regarding COVID-19. However, information changed so rapidly that it was—and continues to be—difficult to keep up with the guidelines. Often by the time guidelines were distributed to

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CLINICAL IMPLICATIONS

- During a time of uncertainty and rapid change, such as a global pandemic with a novel virus, clinicians must continually read and synthesize new information and practice guidance from various organizations.
- Health records should be reviewed to ensure that routine tests have not been overlooked with the advent of limited prenatal visits caused by the pandemic.
- Health education should be focused on how to function in an environment that includes COVID-19; think about adaptation versus avoidance to maintain an individual's safety during hospitalization and after discharge.
- Briefs, huddles, and debriefs can improve communication within multidisciplinary teams; consider using plan–do–study–act cycles to assist with rapid change.
- Revised visitor guidelines should be standardized and implemented to decrease the chance of exposure and to ensure consistent care.

health care providers, they were already changed. The CDC shared interim considerations for infection prevention in inpatient maternity health care settings (CDC, 2020), yet these were based on the limited evidence available about transmission of the virus that causes COVID-19. Additionally, guidelines had to be adapted to individual health care sites because resources, including personnel, equipment, and supplies, varied greatly. At the same time, teams at hospitals and in health care systems were challenged to collaborate with others in their region to optimize testing and clinical management protocols for pregnant and postpartum women in their geographic area (Society for Maternal Fetal Medicine [SMFM], 2020). Health care providers needed to quickly review updated COVID-19 information and make up-to-date recommendations for direct care within individual organizations and systems.

Several organizations, including the American College of Obstetricians and Gynecologists (ACOG), Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN), Society for Maternal-Fetal Medicine (SMFM), Society for Obstetric Anesthesia and Perinatology (SOAP), and Academy of Breastfeeding Medicine (ABM), published information and recommendations about COVID-19 and implications for the provision of health care. Thus, it is important for all clinicians in a facility to systematically and rapidly review ever-evolving information to coordinate patient care to optimize safety, reduce transmission, and optimize maternal–infant outcomes.

Nancy A. Patrick, DNP, RNC-OB, C-EFM, is a clinical nurse specialist at SSM St. Mary's Hospital in Madison, WI; ORCID: 0000-0003-1683-9882. **Teresa S. Johnson,** PhD, RN, is a professor in the College of Nursing at the University of Wisconsin-Milwaukee in Milwaukee, WI. **Address correspondence to:** nancy.patrick@ssmhealth.com.

Clinical Implications of COVID-19

Vertical Transmission

Limited reports in the literature have raised concern about possible vertical transmission of COVID-19 between mother and newborn before birth, but the extent and clinical significance of vertical transmission, which appears to be rare, is unclear (CDC, 2020). In one study, a single case was reviewed that showed potential vertical transmission, but results were inconclusive (Alzamora et al., 2020). In two additional studies, one with nine cases and another with three cases, the authors concluded that there was no evidence of vertical transmission (H. Chen et al., 2020; Liu et al., 2020). Additional reviews have not detected vertical transmission but reinforce the need for further studies (Dotters-Katz & Hughes, 2020; Mardani & Pourkaveh, 2020; Mimouni et al., 2020; Rasmussen, 2020). At the time of this writing, there is not enough evidence to prove or disprove vertical transmission of COVID-19 from mother to fetus before birth.

> When a pandemic was declared in March 2020, we needed to rapidly adapt our care practices to maintain and promote safety for the maternal–newborn population

Implications for Maternity Care

Various precautions have been recommended because of the COVID-19 pandemic. One recommendation identified by Boelig et al. (2020) was to suspend the use of nitrous oxide for labor pain management. Nitrous oxide is an inhalant delivered at a concentration of 50% nitrous oxide/50% oxygen; it is used as a pain management option self-administered by individuals in labor. It provides antianxiety and dissociation effects that reduce labor pain (Stewart & Collins, 2012). Boelig et al. (2020) explained that because nitrous oxide is aerosolized when administered, it is theorized that it could cause transmission of COVID-19. Also, it is not the standard to dismantle the valve on the nitrous oxide tank and thoroughly sterilize it between uses, and this might cause retained particles to spread the COVID-19 virus to the next user.

Boelig et al. (2020) identified the second stage of labor as the period of potential contagion. In an update on its website dated April 20, 2020, AWHONN recommended that all health care personnel caring for women during the second stage of labor wear appropriate personal protective equipment (PPE), including masks that filter at least 95% of airborne particles (N95). It stated that until universal testing is available, health care personnel should have the option to wear N95 masks when caring for any woman in the second stage of labor (AWHONN, 2020).

Another concern is acute coagulopathy in pregnancy. In pregnant women, some COVID-19–related laboratory test result abnormalities (hemolysis, elevated liver enzyme levels, thrombocytopenia) have been noted to be the same as those that occur in preeclampsia with severe features and HELLP (hemolysis, elevated liver enzymes, low platelets) syndrome. These diagnoses should also be considered when such laboratory changes occur and may coexist with COVID-19 (Berghella, 2020). COVID-19 may be reminiscent of HELLP syndrome without the increased blood pressure or proteinuria. Thus, it is important for health care providers to have a heightened awareness to screen and assess for comorbidities related to HELLP syndrome (Koumoutsea et al., 2020).

Severity of COVID-19 in Pregnancy

Authors of studies conducted in New York and China have suggested that there is not an increased severity of COVID-19 disease in pregnancy, in contrast to what has been observed with influenza (Breslin et al., 2020; L. Chen et al., 2020; Zaigham & Andersson, 2020). Breslin et al. reported that 86% of maternal cases of COVID-19 are mild, 9.3% are severe, and 4.7% are critical, which is similar to results in nonpregnant adults. It is still important to maintain awareness that there have been maternal morbidity and fetal deaths observed with COVID-19, so careful monitoring of pregnancies with COVID-19 is warranted (Zaigham & Andersson, 2020).

Ellington et al. (2020) reported that in adolescents and women ages 15 to 44 years with COVID-19, pregnancy is associated with increased risk for ICU admission and receipt of mechanical ventilation, but it is not associated with increased risk for mortality. The authors also highlight the need for more complete data to fully understand the risk for severe COVID-19 illness among pregnant women and their infants (Ellington et al., 2020).

Surgical Procedure Considerations

With all surgical procedures, universal respiratory precautions with N95 masks are recommended (Gonzalez-Brown et al., 2020; Livingston, 2020). Intubation promotes aerosolization and the need for use of N95 masks. During all surgical procedures, including cesarean birth and obstetric (OB) surgeries, even with regional anesthesia, there is the potential to progress to intubation with general anesthesia.

Maternal–Newborn Separation

Multiple professional organizations have provided guidance regarding the separation of women from their newborns when the women are PUI/positive. The CDC provided guidance on prehospital, hospital, maternal/newborn contact, breastfeeding, and hospital discharge care for infection prevention and the control of COVID-19 (CDC, 2020). Initially, the CDC recommended separation of mother and newborn if a mother was PUI/positive and if space and personnel allowed for it. The CDC recommendation was also cited by the SMFM, ACOG, SOAP, and American Academy of Pediatrics. Soon after, on May 12, 2020, the WHO advised that women testing positive for the virus could share a room with their newborn and breastfeed but should practice "respiratory hygiene," to include washing their hands and wearing a mask (WHO, 2020b). The ABM emphasized women's choices and noted that breastfeeding and rooming-in were reasonable choices (ABM, 2020). AWHONN did not issue a specific recommendation separate from the other organizations. Bartick (2020) concluded that there were insufficient data to support separating women and newborns routinely and that it should be considered on a case-by-case basis. For example, if a woman required extensive care on a medical unit for COVID-19, temporary separation would be recommended. As was the case with many recommendations surrounding COVID-19, these were continually evolving. In a press release dated June 12, 2020, the WHO advised that the health benefits of breastfeeding outweighed any potential risks of transmission of COVID-19 (WHO, 2020c). This announcement reinforced the positive effects of breastfeeding as more beneficial than separation.

All statements support and emphasize the importance of a shared decision-making model between women and their health care team to determine the need for postpartum separation of the maternal–newborn dyad (National Perinatal Association & National Association of Neonatal Nurses, 2020).

Universal Testing

Universal testing is not a simple issue. It brings up questions of accessibility, timing, and costs of tests, as well as the accuracy of results. Results of molecular tests (also called polymerase chain reaction [PCR], viral RNA, or nucleic acid tests), which are highly sensitive, can come back negative if tested right after exposure, before the virus has built up to detectable levels. Antigen tests produce results more quickly but do not amplify the protein signal, so they are inherently less sensitive. Their false negative rate is anywhere between 50% and 90%, which also may be related to the collection, transport, and storage of samples (Association of American Medical Colleges, 2020).

recommended universal testing of pregnant women admitted for labor and birth. They completed a retrospective review of electronic health records over 15 days in two affiliated New York hospitals. They identified symptomatic and asymptomatic pregnant women. Because pregnant women may be asymptomatic but still carry the virus, universal testing was recommended to rule out asymptomatic women to protect women, their infants, and health care providers (Breslin et al., 2020). Bianco et al. (2020) completed an observational study within the Mount Sinai Health system in New York in which all women who were scheduled for a planned birth from April 4, 2020, to April 15, 2020, were contacted to undergo COVID-19 testing 1 day before coming in for scheduled birth. They found that 15.5% of asymptomatic maternity patients tested positive for SARS-CoV-2 infection

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despite a negative phone screening result, and 58% of their asymptomatic support persons with negative screening results also tested positive. Bianco et al. proposed that universal testing of women and support persons in greater-prevalence areas would inform OB and newborn care practices as well as help ensure the safety of the health care professionals caring for them.

When reviewing universal testing from a more global perspective, Tanacan et al. (2020) concluded from their prospective cohort study conducted in Turkey that health professionals should be cautious during the labor and childbirth of high-risk pregnant women during the pandemic period and that universal testing for COVID-19 should be considered in selected populations (Tanacan et al., 2020). Overall, universal testing for SARS-CoV-2 in pregnant women admitted for birth identified many women with viral infection who would have been missed with symptom screening. Universal testing needs to be balanced with declining resources and the cost for testing, as well as with the potential for false positive or false negative results. It is not a panacea for identification, but rather one element of a multipronged approach to reduce the risk of transmission (Blitz et al., 2020; Goldfarb et al., 2020).

Many of the journal articles we reviewed referenced the CDC's "Interim Considerations of Infection Prevention and Control of Coronavirus Disease 2019 (COVID-19) in Inpatient Obstetric Healthcare Settings" (CDC, 2020). If the authors of these articles disagreed with the CDC recommendations, they often provided rationale for consideration. Since the information was changing so rapidly, the gap identified was the accuracy of the information. By the time articles were published, or made available to the public, they often contained obsolete information.

Adapting Our Practice to the COVID-19 Pandemic

Our project to adapt our practice during the COVID-19 pandemic had three objectives: (a) to maintain safety for women and neonates in the perinatal period, b) to minimize the transmission of COVID-19 to pregnant women and neonates, and (c) to optimize maternal satisfaction with outcomes in the perinatal period while providing family-centered care. We considered each of these objectives critical to obtaining positive health care outcomes.

We used a cause-and-effect diagram, also known as a fishbone diagram, as a schematic means to organize the contributing causes of risk to the maintenance of maternal–newborn safety during the COVID-19 pandemic. It helped us prioritize, select, and improve the sources of the problem as described by Kelly et al. (2013). The fishbone diagram usually has several organizing categories that provide a guide to identifying problems (Johnson, 2017). In this case, all six categories were applicable. It helped us sort ideas into useful categories for further investigation (see Figure 1).

Setting

Our setting is a tertiary care center in South Central Wisconsin that serves a high-risk OB population and has multiple outpatient clinic sites, including a maternal–fetal medicine (MFM) clinic. It has 2,000 to 2,300 births annually.

Practice Change Objectives

Maintain Safety

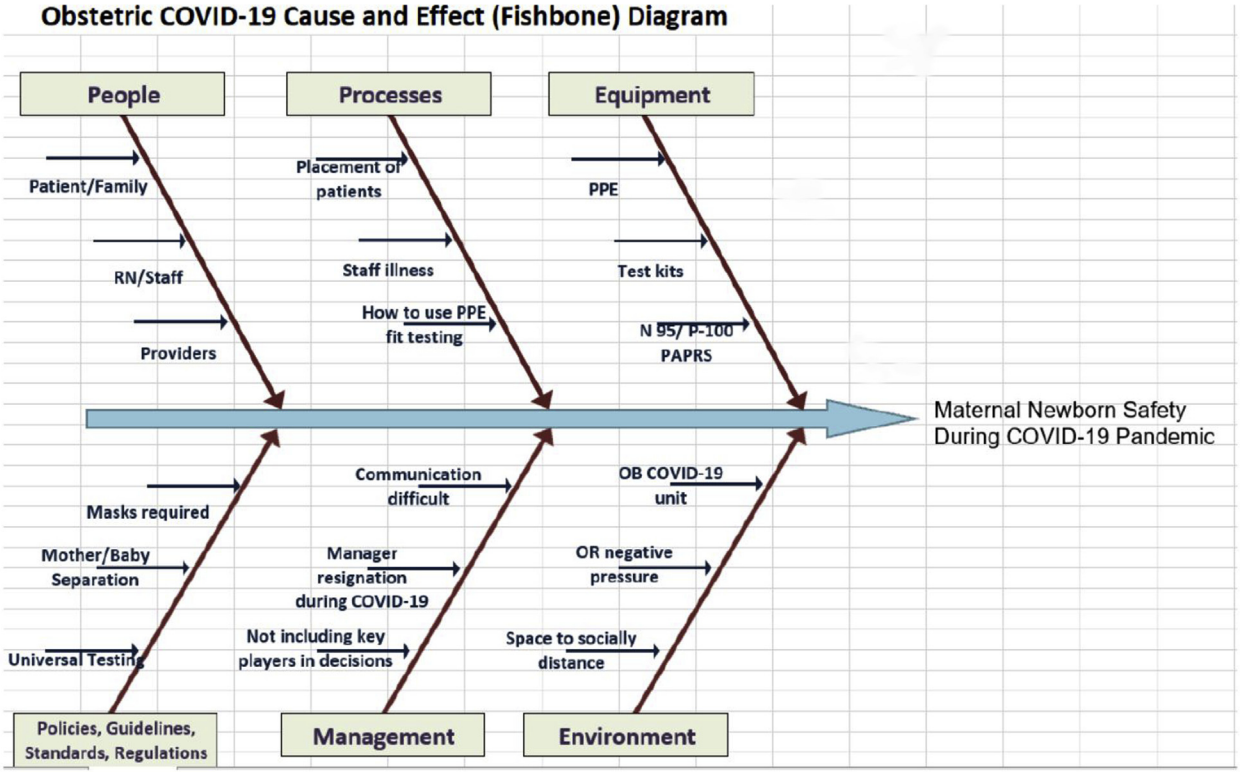
A unit-based binder was created for updated protocols, algorithms, and guidelines on each of the four women and children's units and was initially updated daily to maintain safety by using the most current research-based practices. Although e-mails were sent daily to staff, they needed the most current unit-specific information available immediately to provide the best direct care. One example of unit-specific information is an algorithm of the COVID-19 newborn workflow that defined the care plan after birth (see Supplementary Materials).

As weeks passed, the binders became less important, and daily rounding was used to provide updates to staff or answer questions as a more effective use of time and resources. The hospital initiated an Incident Command Center staffed by hospital leaders, and daily e-mails were sent with the latest information as it evolved. Information specific to care of the maternal–newborn dyad was developed by a maternal–newborn team at the system level, with input from each hospital's maternal–newborn team. This information was included in the daily e-mails, which were printed and posted for staff members who were not able to access e-mail but regularly used the unit-specific binder.

Another way maternal safety was maintained and promoted was through multidisciplinary briefs, huddles, and debriefing sessions, which included the obstetrician, anesthesiologist, charge nurse, primary nurse, clinical nurse specialist (CNS), certified registered nurse-anesthetist, and certified nurse-midwife. Often, the OB manager or administrative director would be included as well as the neonatologist, neonatal nurse practitioner, and OB technician, depending on the circumstances.

Briefs were held before the woman arrived when it was known in advance. There were planning sessions for workflow, a review of how supplies would be limited, caregiver protection, and a review of maternal and visitor preferences to coordinate family-centered care while maintaining safety. Huddles often occurred after admission to update the plan for individuals who were PUI/positive. This provided the team with an opportunity to evaluate the rapidly changing evidence. Debriefing sessions occurred as a review of what went well, what did not go well, and what needed to be changed. Assignments were given to team members for changes that needed to be made, which was critical to promote teamwork and communication to improve outcomes. In a debrief after a cesarean birth by a woman who was positive for the virus, it was identified that the negative-pressure operating room did

FIGURE 1 **FISHBONE DIAGRAM**



Note. OB = obstetrics; PAPRS = powered air-purifying respirators; PPE = personal protective equipment; RN = registered nurse.

not have adequate supplies for a birth. The supplies had been decreased significantly to eliminate waste, because all supplies not contained in closed areas needed to be disposed of after a woman with COVID-19 was in the room. The supplies were limited so much that the team members had to continuously leave the room to obtain what they needed. After the debrief, the physician, nurse, and OB technician reviewed the supply list and made recommendations for improvement. The OB technician stocked a cart with additional supplies and positioned it in the anteroom outside of the operating room but within the negative-pressure area. A runner easily obtained additional supplies, and the process was coordinated and efficient.

Minimize Transmission of COVID-19

The main intervention to minimize the transmission of COVID-19 to pregnant women and newborns was the design and implementation of a COVID-19 unit to cluster all the women who were COVID-19 PUI/positive in one area. This action was recommended by the SMFM and SOAP to limit exposure of unaffected individuals and staff (SMFM, 2020). The need for this unit was identified after visiting a similar unit in the emergency department for all individuals who presented to the hospital and were COVID-19 PUI/positive. It became clear that separating women with the virus from those negative for the virus was essential to effectively provide appropriate care while simultaneously protecting the health care team. The rooms on the designated unit were identified and prepared for specific purposes depending on individual need to include triage of laboring women through the delivery of postpartum care. If a woman had significant illness due to COVID-19, she was admitted to the ICU specific for those with COVID-19, and labor personnel were sent to the ICU to monitor her for OB concerns.

On the OB COVID-19 unit, the staff wore PPE including a surgical mask, face shield, gown, and gloves when caring for PUI/positive women. Women admitted to the unit and visitors were also expected to wear masks. It was challenging for staffing when only one maternal–newborn dyad was on the unit. The unit was staffed with two staff members for safety because it was in a secluded wing of the hospital. As weeks passed, if there was only one laboring PUI/positive woman, she was assigned to the one negative-pressure labor room on the labor unit and went to a separate hall on the postpartum unit after birth to allow for better staffing ratios. One nurse instead of two could be assigned to the dyad because additional staff members were immediately available for emergencies down the adjacent hallway. The COVID-19 unit

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continued to be used, but most often it was for women admitted from the MFM clinic, when a process was set up with the onsite MFM clinic. When a pregnant woman who was PUI/positive came for an appointment, a single staff member in full PPE directed her to the OB COVID-19 unit to complete an ultrasonogram and/or prenatal appointment. At the culmination of her visit, the woman left the facility without exposing other women who were at greater risk or additional staff members in the MFM clinic.

The second intervention to minimize transmission was securing appropriate PPE for all health care personnel. This included N95 mask fit testing and education about how to use powered air-purifying respirators for all staff who could potentially be exposed to an aerosolizing procedure with a patient who was PUI/positive. Because there was potential for a limited supply of PPE, it was secured in a locked area to be accessed only by charge nurses, managers, and the CNS. Staff members were given the required PPE at the beginning of each shift by the charge nurse. If additional PPE was required during the shift because of contamination or damage, staff would request it from the charge nurse, manager, or CNS.

As a third intervention, visitor guidelines specific to the maternity unit were developed and vetted through the Hospital Incident Command Center (see Supplementary Materials). The visitor guidelines limited the number of people coming into the hospital and outlined the process to monitor visitors to ensure that they remained healthy while visiting.

Optimize Patient Satisfaction

Hospital staff conducted a review of rooms and assigned paired rooms to women and newborns. If a PUI/positive woman was accompanied by a healthy visitor who was designated to care for the newborn, the woman could have a room for recovery that was separate from the room for the newborn. This allowed time for the woman to recover and maintain separation from her newborn while at greatest risk of passing on the virus by droplet transmission. Breastfeeding was encouraged, and individual breast pumps were secured, along with a basin to wash supplies before and after each pumping session. Guidelines were also provided for women about how to breastfeed with safety precautions.

Many of the recommendations described regarding breastfeeding and maternal–newborn separation quickly changed. Although health care providers were concerned about viral spread, there were also concerned about risks to the dyad from separation. Breastfeeding is the safest, most reliable method of feeding in an emergency, and there were widespread reports of shortages of retail supplies of infant formula due to hoarding (Bartick, 2020). Breastfeeding is associated with reduced risk for ear infections and diarrhea, thus reducing the chance that a newborn and caregiver would need to leave their home to seek medical attention and expose themselves to the virus (Bartick, 2020). Also, breastfeeding may be protective because it often contains antibodies to pathogens to which women have been exposed (Bartick, 2020; WHO, 2020b).

> Information changed so rapidly that it was—and continues to be—difficult to keep up with the guidelines

Discharge instructions were developed at the hospital system level and were provided for use by each hospital location. Women and their support persons were instructed on how to care for themselves and their newborns after discharge. Teaching was initiated immediately after birth with the mother and support person as part of family-centered care.

Plan–Do–Study–Act

The plan-do-study-act (PDSA) cycle is shorthand for testing a change—by planning it, trying it, observing the results, and acting on what is learned. This is the scientific method used for action-oriented learning (Institute for Healthcare Improvement, 2020). Rapid change during the pandemic continually made it necessary to use the PDSA method to trial and evaluate different practices. Because the PDSA cycle allowed for continual adjustments, this example shows how practices were developed and adjusted based on standards, guidelines, and input to maintain patient- and family-centered care over time (see Supplementary Materials).

Analysis

During this time of rapid change, the CNS and nursing leadership, as part of the health care team, were required to continually review and synthesize information for childbearing women, newborns, and the staff members who care for them. A review of health records to check for missed appointments because of changing outpatient procedures was necessary to identify and screen for unanticipated risks. Standardization of hospital visitor guidelines helped guide care. Regular communication that included multidisciplinary care conferences was essential to update health care providers to provide the best patient care. The use of briefs before a woman arrives, huddles during episodes of care, and debriefs after procedures or discharge helped leaders with situational monitoring to form a shared mental model of care. Finally, the use of PDSA cycles helped define the model of care to allow staff to adapt to a rapidly changing clinical environment as new evidence and research became available.

Results

To monitor the maintenance and promotion of safety for women and neonates in the perinatal period, we reviewed event reports and identified an increase in the number of

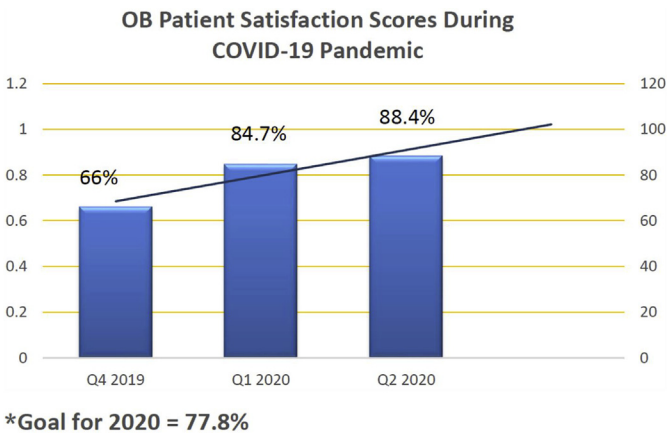
events related to COVID-19 testing. This provided the opportunity to educate staff on how to effectively resolve issues through adjustments to the process and communication. The resource binder, daily e-mails, briefs, huddles, and debriefs became important communication techniques to help maintain patient safety based on the events.

To minimize the transmission of COVID-19 to pregnant women and neonates, we used three methods. First, visitor guidelines were developed to limit the number of people coming into the hospital, which included information on screening visitors daily. Each pregnant woman was allowed one visitor who could stay overnight but was screened by the nurse each morning. Screening included recording the visitor's temperature and their answers to questions about symptoms. A colored sticker was given daily to indicate a negative screening result. In the course of screening, one visitor who tested negative on an initial check subsequently developed a fever and symptoms and was asked to leave. He willingly left to help minimize any exposure to COVID-19 for his family or the health care team. Second, we created an OB COVID-19 unit in the hospital to allow for separation of individuals who were PUI/positive with COVID-19 from the rest of the maternal–newborn population. We logged an average of two to three women per week who were PUI/positive who used the OB COVID-19 unit for ultrasonography procedures. They never entered the high-risk MFM clinic during their potentially infectious stage, thus eliminating the potential for exposing other high-risk pregnant women and health care staff. A neonatal measure used to track vertical transmission and early neonatal exposure to COVID-19 monitored how many neonates tested positive for COVID-19. All newborns of women who were PUI/positive were tested at 24 hours and/or at 48 hours of age. From March 2020 through December 2020, no neonates tested positive for COVID-19.

To measure maternal satisfaction with outcomes in the perinatal period while providing family-centered care, we used Press Ganey patient surveys. The "Patient Needs Report: Inpatient" is a report based on three key correlates including *Response to Concerns/Complaints*, *Staff Worked Together To Care for You*, and *Staff Includes You in Decisions Related to Treatment*. The percentage of responses of *very good* (9 or 10 on a 0–10 Likert scale) were tracked and calculated. A goal was set at 77.8% for 2020. The actual score was 66% in Quarter 4 of 2019, which was less than that from Quarter 3 and something to focus on for improvement, but in Quarter 1 of 2020 it was 84.7% and was 88.4% in Quarter 2 of 2020. In this time of uncertainty and decreased number of visitors allowed in the hospital, patient satisfaction scores were expected to decline. The fact that they were greater than observed in 2019 was an unexpected positive result (see Figure 2).

Breastfeeding experience success was also considered to have improved based on anecdotal feedback from lactation staff. The staff members credit improved breastfeeding with having fewer visitors and women being able to spend more one-on-one time with their neonates. Lactation staff members were also able to spend more uninterrupted time with maternal–newborn couplets.

FIGURE 2 **PATIENT SATISFACTION SCORES**



Note. OB = obstetric; Q = quarter.

Implications for Practice

When a pandemic was declared in March 2020, we needed to rapidly adapt our care practices to maintain and promote safety for the maternal–newborn population. The safety of women and newborns was maintained with clear communication through unit information binders and e-mails based on hospital, regional, and system best practices using the most current guidelines available. Teamwork that was essential to collaborative care was promoted by briefs, huddles, and debriefs with the health care team to ensure a shared mental model for individualized patient care. Minimizing the transmission of COVID-19 was realized by creating a COVID-19 OB unit for the triage of women in labor through postpartum and newborn care of those individuals identified as positive for COVID-19. Securing appropriate PPE and maintaining clear visitor guidelines also aided in minimizing transmission. Optimizing the outcomes for women and newborns was achieved through repeated PDSA cycles in practice. This not only promoted evidence-based practice but helped promote safe, family-centered care by identifying factors that affected family bonding and positive effects of breastfeeding.

There were and continue to be unintended consequences—positive and negative—that occur as circumstances continue to change during the pandemic. One unfortunate consequence occurred when a woman did not have her 36-week routine prenatal visit related to COVID-19 clinic restrictions. At the 36-week visit, a Group B *Streptococcus* (GBS) culture would routinely be obtained, but without in-person visits, a GBS culture was not obtained. When the woman in question reached 37 weeks, she was diagnosed

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with cholestasis and was admitted for induction of labor. Her GBS culture status was unknown. Although the culture was obtained on admission, based on ACOG criteria, she was not given prophylactic antibiotics during induction because she was not considered at greater risk for GBS. It was her first pregnancy, and she had no history of GBS, no substantial risk of preterm birth, no preterm prelabor rupture of membranes or rupture of membranes for 18 hours or longer, and no presentation with intrapartum fever of >100.4 °F. She gave birth vaginally before the culture results were available. At birth, the neonate had respiratory distress and was admitted to the NICU. The neonate's GBS culture status was positive and diagnosed as the reason for admission to the NICU. The mother's GBS status was positive; if the mother's test had been performed and had come back positive at 36 weeks, she would have been treated with antibiotics in labor, which could have possibly prevented the newborn's GBS infection. In this case, the newborn responded well and was discharged home without complications.

Limitations

Reproducibility of this project is limited by the rapidly changing rules, standards, and guidelines related to COVID-19 recommendations. The parts of this project that are applicable in another facility or with another viral outbreak are the basic principles of identifying specific aims; drafting a fishbone diagram to outline the process; using PDSA cycles of change; and utilizing briefs, huddles, and debriefs for teamwork and communication with multidisciplinary teams.

> The hospital initiated an "Incident Command Center" staffed by hospital leaders, and daily e-mails were sent with the latest information as it evolved

Conclusion

Maintaining safe care for women and newborns during the COVID-19 pandemic was critical. Rapid action by nursing leadership to coordinate with maternity and newborn care providers helped create an atmosphere conducive to best practices. The collaboration of multidisciplinary teams helped promote consistency amidst the chaos of continually changing guidelines and information during a global pandemic with a novel virus.

Supplementary Materials

Note: To access the supplementary material that accompanies this article, visit the online version of *Nursing for Women's Health* at http://nwhjournal.org and at https://doi.org/10.1016/j.nwh.2021.03.003.

Conflict of Interest

The authors report no conflicts of interest or relevant financial relationships.

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Check for updates

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