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ABSTRACT & COMMENTARY

Maternal Outcomes Following COVID-19 Infection in Vaccinated and Unvaccinated Pregnant Patients

By Ahizechukwu C. Eke, MD, PhD, MPH

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SYNOPSIS: Pregnant patients who received the COVID-19 vaccine had lower rates of severe or critical COVID-19 infections compared to pregnant unvaccinated patients.

SOURCE: Morgan JA, Biggio JR Jr, Martin JK, et al. Maternal outcomes after severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in vaccinated compared to unvaccinated pregnant patients. *Obstet Gynecol* 2021; Oct 13. doi: 10.1097/AOG.0000000000004621. [Online ahead of print].

In December 2019, the world was hit by a novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes severe pneumonia among other disease manifestations called coronavirus disease 2019 (COVID-19).[1] The United States has 18% of these infections, totaling above 47.5 million cases, with more than 776,083 coronavirus-related deaths as of Nov. 22, 2021.[2] Pregnancy has now been demonstrated to be an independent risk factor for COVID-19 infection, with pregnant people experiencing severe COVID-19 disease, increased risk of preterm birth, preeclampsia, stillbirths, and other maternal and fetal adverse pregnancy outcomes.[3,4]

Recent data have shown that more than 95% of pregnant patients who are hospitalized and/or die from COVID-19 are those who have remained unvaccinated.[5] In June 2021, following data on the safety and efficacy of COVID-19 vaccines in reducing severe COVID-19 disease, morbidity, and mortality, the American College of Obstetricians and Gynecologists (ACOG) and the Society for Maternal Fetal Medicine (SMFM) recommended COVID-19 vaccination for pregnant people, irrespective of COVID-19 infection status.[6] Despite these recommendations, vaccination rates remain low and have lagged behind rates of vaccination in nonpregnant adults. In this study, Morgan and colleagues evaluated maternal outcomes after severe acute

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COVID-19 infection in vaccinated compared to unvaccinated pregnant patients.[7]

This was a retrospective cohort study of all active pregnancies at the Ochsner Health System in New Orleans from June 15, 2021, to Aug. 20, 2021. People were included if they were fully vaccinated two weeks prior to the commencement of the study. People who were partially vaccinated were not excluded, but a secondary analysis was performed. The primary outcome measure was the presence of severe COVID-19 illness (defined as peripheral oxygen saturation [SpO_2] less than 94% on room air, partial pressure of oxygen [PaO_2]/fraction of inspired oxygen [FiO_2] ratio less than 300 mmHg, respiratory rate greater than 30 breaths per minute, or lung infiltrates greater than 50%) or critical COVID-19 (defined as respiratory failure, septic shock, or multiple organ failure) based on the National Institutes of Health (NIH) criteria.[7] Secondary outcomes included SARS-CoV-2 infection, supplemental oxygen requirement, intensive care unit (ICU) admission, and use of adjunctive medical therapy.[7]

A total of 10,092 pregnant patients met inclusion criteria (1,332 vaccinated and 8,760 unvaccinated patients). Women who were vaccinated were likely to be older, have a higher body mass index, and be an active smoker ($P < 0.001$). Patients who were vaccinated had a lower odds of severe or critical COVID-19 infection (0.08% vs. 0.66%; adjusted odds ratio [aOR], 0.10; 95% confidence interval [CI], 0.01, 0.49) and COVID-19 of any severity (1.1% vs. 3.3%; aOR, 0.31; 95% CI, 0.17, 0.51). Although there was one maternal death as the result of severe COVID-19 and six stillbirths in the unvaccinated group, there were no maternal deaths or stillbirths among vaccinated pregnant women. None of the secondary outcomes were statistically significantly different between vaccinated and unvaccinated patients. However, among vaccinated patients, the use of adjunct medical treatment was rare. No vaccinated patient needed supplemental oxygen or ICU admission. In a secondary analysis of partially and fully vaccinated patients (1,536 patients), there remained a lower odds of severe and critical COVID-19 infection (0.07% vs. 0.68%; aOR, 0.08; 95% CI, 0.004-0.40) and COVID-19 of any severity (1.1% vs. 3.3%; aOR, 0.30; 95% CI, 0.17-0.48).[7]

■ COMMENTARY

This study by Morgan et al demonstrated an overall vaccination rate of 13.2% during pregnancy.[7] Vaccinated participants had a lower odds for severe and critical COVID-19 infection, COVID-19 infection of any severity, and lower maternal adverse event rates compared to unvaccinated patients. However, this study did not address a number of lingering questions about outcomes following COVID-19 vaccination during pregnancy. For example, the authors focused mainly on maternal outcomes, and only a few fetal outcomes between vaccinated and unvaccinated patients were discussed. Although Morgan et al evaluated the risk of stillbirth, gestational age at delivery and neonatal outcomes were not evaluated.[7] These are important data for pregnant people, since fear of adverse neonatal outcomes (e.g., fear of miscarriages and teratogenicity) have been a major reason why some pregnant women are not getting vaccinated.

Maternal COVID-19 vaccination is an effective means of protecting pregnant patients and their fetuses from vaccine-preventable infections.[5] Despite the availability of sufficient safety data to support the use of COVID-19 vaccines during pregnancy, maternal immunization remains an underused method of disease prevention, often because of concerns about vaccine safety from both healthcare providers and pregnant people.[5] However, recent data suggest that COVID-19 vaccination does not increase the risk for first trimester miscarriage.[8] Although current data regarding COVID-19 vaccines during pregnancy are very reassuring, the Centers for Disease Control and Prevention continues to monitor the safety of COVID-19 vaccines during pregnancy through its Vaccine Adverse Event Reporting System (VAERS), V-safe, and Vaccine Safety Datalink surveillance systems.[9]

Booster COVID-19 vaccine doses were recommended recently for pregnant women and postpartum women. However, the optimal timing of COVID-19 vaccine boosters during pregnancy remains unknown. Although the current practice is to vaccinate pregnant women at least six months from their last completed COVID-19 dose, the optimal timing to vaccinate pregnant women to aid optimal development of passive fetal immunity remains unknown. Determining the optimal timing of COVID-19 vaccination during pregnancy is critical for fetal protection in the first few months of life.

ACOG and SMFM continue to encourage pregnant and postpartum people to get vaccinated against COVID-19 (irrespective of prior COVID-19 infection status). As nationwide efforts to improve vaccination

acceptance continue, it is critical for physicians to continue to educate pregnant and postpartum people on the potential benefits of the COVID-19 vaccine in preventing severe or critical illness. ■

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ABSTRACT & COMMENTARY

Intravenous Iron: Does This Therapy Increase the Risk of Infection?

By Rebecca H. Allen, MD, MPH, Editor

SYNOPSIS: In this systematic review and meta-analysis, among all populations, intravenous iron was associated with a slight increased risk of infection (relative risk, 1.17; 95% confidence interval, 1.04-1.31) compared to oral iron or no iron. However, there was no difference in mortality or length of hospital stay.

SOURCE: Shah AA, Donovan K, Seeley C, et al. Risk of infection associated with administration of intravenous iron: A systematic review and meta-analysis. *JAMA Netw Open* 2021;4:e2133935.

Intravenous (IV) iron is superior to oral iron in many ways for the treatment of anemia and has become used more commonly in pregnant patients. However, there is biologic plausibility that intravenous iron, by increasing the levels of circulating unbound iron, may contribute to pathogen growth and, therefore, increase infection risk.[1]

The authors of this study sought to evaluate this association by performing a systematic review and meta-analysis of all randomized clinical trials (RCTs) from 1966 onward that compared IV iron with oral iron, no iron, or placebo, as well as non-randomized trials that met certain criteria (reporting data on infection, at least two comparable groups, and published since 2007) among all populations. The primary outcome was the proportion of patients who developed an infection. Other endpoints included mortality, requirement for red blood cell transfusion, hospital length of stay, and hemoglobin level.

The authors identified 154 RCTs (32,920 participants) and eight non-randomized controlled trials (7,146 participants) to include. The median number of participants in the RCTs was 111 (interquartile range, 14-2,534). The most common setting was obstetrics (39 RCTs, 9,993 participants), followed by surgery (27 RCTs, 4,223 participants), and chronic kidney disease (22 RCTs, 6,013 participants). The most common IV iron preparations studied were iron sucrose and ferric carboxymaltose. For the primary outcome of infection, IV iron was associated with a slightly elevated risk compared with oral iron or no iron (relative risk [RR], 1.17; 95% confidence interval [CI], 1.04-1.31). This risk did not appear to be influenced by anemia levels at study enrollment. The subgroup of patients with inflammatory bowel disease had the highest risk of infection (RR, 1.73; 95% CI, 1.11-2.71). IV iron was associated with improved hemoglobin levels in the meta-analysis compared with oral iron or no iron (mean difference, 0.57 g/dL; 95% CI, 0.50 g/dL to 0.64 g/dL) and a reduction in the risk of requiring a red blood cell transfusion (RR, 0.93; 95% CI, 0.76-0.89). There was no effect on mortality or hospital length of stay.

■ COMMENTARY

This study resulted in a headline that IV iron increases the risk of infection. But is that really the case? This is a systematic review and meta-analysis that necessarily depends on the quality of the studies included. The primary outcome was judged to be based on moderate quality evidence. However, the authors acknowledge that the studies had inconsistent and variable reporting of infection

as an outcome. Furthermore, grouping obstetrics, surgical, and other types of patients together seems to muddle the picture. The actual increased RR of 1.17 is quite small and in the realm of statistical noise.

Because newer preparations are available that are less likely to cause allergic reactions, the use of IV iron has become more popular in clinical medicine and relevant to obstetric providers in prenatal care. Pregnancy is a state in which increased iron is required (approximately 1,000 mg) to support the increase in red blood cell mass, fetal and placental growth, and blood loss at delivery.[2] Therefore, pregnant women routinely are screened for anemia. The first-line therapy for iron-deficiency anemia in pregnancy is, of course, oral iron supplementation, above the amount available in a prenatal vitamin. However, gastrointestinal side effects often limit adherence to oral iron. New guidelines actually recommend administering oral iron every other day to increase absorption and limit side effects.[2]

Among prenatal patients who are anemic as the result of iron deficiency and cannot tolerate oral iron or are unable to raise hemoglobin levels with oral iron, IV iron is an effective option that typically is given in the third trimester. In contrast to other clinical states, during pregnancy there is a limited period of time available to raise hemoglobin levels prior to delivery. Intravenous iron actually has been shown to raise hemoglobin and ferritin levels faster and to a greater extent compared to oral iron.[2] The logistics of administering IV iron are more complex than oral iron, but most infusion centers are able to accommodate this. In my institution, we are referring pregnant women with anemia and low ferritin levels who are not responding to oral iron for IV iron more commonly than in the past, without a hematology consultation. Different IV iron formulations are available and often are dictated by the formulation covered by the patient's insurance.

Although IV iron theoretically may increase the risk of infection, there are so many variables that come into play in any clinical scenario, it would be difficult to assign a cause-and-effect relationship. The recent Clinical Expert Series on Iron Deficiency Anemia in Pregnancy published in *Obstetrics and Gynecology* did not mention the risk of infection at all.[2] Furthermore, the risks of not treating anemia in pregnancy with the anticipated delivery blood loss must be balanced against the slight theoretical risk of infection. Most experts believe any increased risk is negligible and would only withhold IV iron for a patient with an active infection. Therefore, this would not apply to the vast majority of prenatal patients. In conclusion, this systematic review and meta-analysis will not change my clinical practice. ■

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ABSTRACT & COMMENTARY

Benefits of Delayed Umbilical Cord Clamping

By Ahizechukwu C. Eke, MD, PhD, MPH

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SYNOPSIS: Delayed umbilical cord clamping at the time of delivery resulted in higher mean hematocrit concentrations, with no significant maternal or neonatal complications when compared to immediate umbilical cord clamping.

SOURCE: Ofojebe CJ, Eleje GU, Ikechebelu JI, et al. A randomized controlled clinical trial on peripartum effects of delayed versus immediate umbilical cord clamping in term newborns. *Eur J Obstet Gynecol Reprod Biol* 2021 Jul; 262:99-104. doi: 10.1016/j.ejogrb.2021.04.038.

Immediate clamping of the umbilical cord following vaginal and cesarean deliveries was a common practice for decades, until the early 2000s, when practice began to shift toward delayed cord clamping because of the benefits of improved hematocrit and ferritin concentrations, increased stored iron, and reduced risk of anemia in neonates with delayed umbilical cord clamping.[1] Although studies have demonstrated polycythemia in fetuses with delayed cord clamping, the polycythemia was transient and benign, and did not place fetuses at an increased risk of neonatal jaundice.[1,2] In addition, no significant maternal or neonatal complications have been demonstrated with delayed umbilical cord clamping when compared to immediate cord clamping.[3,4]

Following delivery of the neonate, blood flow continues from the placenta to the fetus via the umbilical vessels, a condition known as placental transfusion.[5] Physiological studies have demonstrated transfer of blood from the placenta to the neonate of approximately 80 mL of blood at one minute following delivery, reaching approximately 100 mL at three minutes of delivery.[5,6] Therefore, delayed umbilical cord clamping provides sufficient time for the physiologic transition from fetal to neonatal life, and might be responsible for the significant reductions in intraventricular hemorrhage and necrotizing enterocolitis in neonates following delivery.[7] However, a recent Cochrane review demonstrated there is insufficient evidence to show what the best delayed umbilical cord interval (in minutes)

should be for optimal maternal and fetal outcomes.[1] Therefore, Ofojebe and colleagues evaluated the effect of delayed umbilical cord clamping on neonatal hemoglobin level and serum bilirubin in term newborns.[8]

This was a randomized controlled clinical trial at a single tertiary center, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra state, Nigeria, between July 1, 2019, and Sept. 30, 2020. Women with singleton pregnancies in labor at a gestational age from 37w0d to 42w0d and having vaginal deliveries were included.[8] Exclusion criteria included women with chronic medical disease, such as human immunodeficiency virus I and II, diabetes mellitus, and rhesus isoimmunization, participants at increased risk of postpartum hemorrhage, preeclampsia, prolonged rupture of fetal membranes, participants with congenitally malformed fetuses, and those whose newborns had fetal asphyxia.[8] The primary outcome measures included mean hemoglobin and bilirubin levels of the newborn (at birth and 48 hours after birth). Secondary outcome measures included incidence of maternal postpartum hemorrhage after intervention, neonatal polycythemia, anemia, need for phototherapy, and proportion of newborns with respiratory symptoms.[8]

Participants were randomized to an immediate vs. a delayed cord clamping group. The intervention in the delayed cord clamping group consisted of delay in clamping the cord for 60 seconds, while in the immediate cord clamping group the cord was clamped within 15 seconds after delivery. Following clamping and cutting of the cord, 3 mL of cord blood was collected for hemoglobin and bilirubin estimation. A sample size of at least 102 women per group was sufficient to demonstrate statistically significant differences between the immediate umbilical cord clamping and the delayed cord clamping groups based on a baseline mean hemoglobin of 14.5 g/dL in the immediate umbilical cord clamping group (standard deviation of 2.4 g/dL), assuming 90% power, a type 1 error rate of 5%, and a 20% attrition rate.

A total of 237 women were assessed for eligibility during the study period; 204 were eligible. Of these 204 women, 102 newborns were randomized into each group. None were lost to follow-up. Participants in both groups had similar socio-demographic and clinical characteristics.[8] The mean birth weight for the delayed clamping group was 3.21 ± 0.19 kg, while that of immediate umbilical clamping group was 3.24 ± 0.27 kg; $P = 0.360$. There was a statistically significant difference in the mean cord blood hemoglobin at birth between the delayed clamping group and the immediate cord clamping group (15.65 ± 0.29 g/dL vs. 15.25 ± 0.48 g/dL; $P < 0.001$). Similarly, there was a statistically significant difference in the mean blood hemoglobin at 48 hours after birth between the delayed clamping group and that of the immediate cord clamping group (15.51 ± 1.71 g/dL vs. 15.16 ± 2.27 g/dL; $P < 0.001$).[8] Cord blood bilirubin concentration at birth and mean infant bilirubin concentration at 48 hours after birth were not significantly different between the two groups. There was no statistically significant difference in the frequency of the secondary outcomes, notably postpartum hemorrhage ($P = 0.653$), neonatal jaundice ($P = 0.856$), and the need for phototherapy ($P = 0.561$). None of the infants had respiratory symptoms, polycythemia, or anemia during the study.[8]

■ COMMENTARY

Typically, active management of the third stage of labor involved the use of uterotonics, early clamping of the umbilical cord, and controlled cord traction to expedite placental delivery, with the aim of reducing blood loss. A Cochrane systematic review demonstrated that active management of labor resulted in a reduction in the average risk of primary hemorrhage at time of birth (more than 1,000 mL; relative risk [RR], 0.34; 95% confidence interval [CI], 0.14-0.87) and maternal hemoglobin less than 90 g/L following delivery (RR, 0.50; 95% CI, 0.30-0.83).[9] Several other studies have demonstrated similar findings. However, immediate clamping of the umbilical cord has fallen out of favor because it can result in decreased neonatal iron stores, low birthweight, and increased risk of neonatal anemia.[10]

[The time limit for immediate vs. delayed cord clamping can affect neonatal iron stores, ferritin, and birthweight.]

The optimal timing for umbilical cord clamping is unclear. Ofojebe et al defined immediate cord clamping as cord clamping done within 15 seconds after delivery and delayed cord clamping at 60 seconds post-delivery, but many other studies define immediate and delayed cord clamping as cord clamping done within 30 seconds of birth and until at least two minutes after delivery, respectively.[8] These have important implications for clinical practice, since the time limit for immediate vs. delayed cord clamping can affect neonatal iron stores, ferritin, and birthweight. A systematic review and meta-analysis of randomized controlled clinical trials demonstrate that delaying clamping for at least two minutes is beneficial to fetuses from birth until approximately 1 year of age.[11] The American College of Obstetricians and Gynecologists (ACOG), the International Federation of Gynecology and Obstetrics, and the World Health Organization (WHO) no longer recommend immediate cord clamping as a component of active management of labor.[12] The WHO states that "delayed cord clamping (performed after one to three minutes after birth) is recommended for all births while initiating simultaneous essential newborn care. Early cord clamping (less than one minute after birth) is not recommended unless the neonate is asphyxiated and needs to be moved immediately for resuscitation."[13]

Except for infants who require immediate neonatal resuscitation, the current recommendation by ACOG and the American Academy of Pediatrics is for delayed umbilical

cord clamping for at least 30 to 60 seconds after birth (vaginal and cesarean deliveries) in all vigorous term and preterm neonates.[12,14] ■

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SPECIAL FEATURE

Accessing Hormonal Contraception by Pharmacy Prescriptions

By Maria F. Gallo, PhD

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When the first oral contraceptive became available in the United States in 1960, it was approved for use by prescription only. Requiring a prescription creates barriers to access. For example, until recently, those seeking a prescription had to attend an in-person appointment with a qualified provider (physician, nurse practitioner, or physician assistant), and any gaps in their routine visits often would result in lost access to hormonal contraception. Consequently, 29% of adult, reproductive-age women who sought a prescription for hormonal contraception said they had experienced difficulties before in getting or refilling a prescription.[1] Access to effective contraception is critical for avoiding unintended pregnancy, which accounts for about 45% of pregnancies overall in the United States.[2]

In the six decades since the introduction of oral contraception, we gained extensive knowledge about its safety from research studies. (Today, when I search Medline via PubMed, the Medical Subject Heading [MeSH] term "Contraceptives, Oral" produces 35,505 articles; in comparison, the MeSH term for "Metformin," one of the most widely prescribed drugs worldwide, produces 25,682 articles.) Hormonal contraception has become safer with lower doses of estrogen and new formulations of progestins. As a result, the American College of Obstetricians and Gynecologists (ACOG) and others have argued that short-acting methods of hormonal contraception should be available over the counter to people of any age.[3] These methods include oral contraception, vaginal rings, patches, and depot medroxyprogesterone (DMPA). To make this change for a given method, the drug sponsor would need to collect post-marketing data to support the safety of over-the-counter use and then file an application for the method with the U.S. Food and Drug Administration (FDA). To date, this has not been done, and hormonal contraception remains available only by prescription in the United States.

PHARMACY PRESCRIPTIONS

A stopgap step to increasing access is to expand prescribing authority to pharmacists. Compared to other clinical settings, pharmacies can be easier for people to access, given their wide distribution across the country and their extended hours of operation. Also, pharmacies do not require an appointment, and their setting allows the prescription and method to be obtained in a single visit. Reducing the delay in starting the contraception method is critical for people

who are at risk of unintended pregnancy. Starting in 2013, states began to pass legislation to allow pharmacists to prescribe hormonal contraception. Currently, the District of Columbia and the following 16 states have authorized this pharmacy access without requiring a collaborative practice agreement: Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Maryland, Minnesota, Nevada, New Hampshire, New Mexico, Oregon, Utah, Vermont, Virginia, and West Virginia.[4] Other states have legislation pending. Advocates hope that pharmacy prescribing of hormonal contraception will follow the example of pharmacy administration of flu vaccines, a practice which initially was approved in individual states before going on to become adopted nationally.

States differ in their rules for pharmacy prescribing of hormonal contraception, the requirements for program certification, and the process for becoming a billable provider. For example, some states do not allow pharmacists to prescribe hormonal contraception to minors (younger than 18 years of age) or allow refills for people who have not seen a physician within a certain timeframe.[5] Although all participating states allow pharmacists to prescribe oral contraception and the patch, some do not extend pharmacist authority to include prescriptions for the contraceptive ring and injectable DMPA. States also differ in the duration of the supply that can be prescribed.

Enacting a state law is only a first step in expanding access via pharmacies. Pharmacies then have to enroll in the program. Without widespread participation of pharmacies, access will continue to be an issue, especially among rural and underserved areas. After one year, the fraction of retail pharmacies enrolled has ranged from less than 30% in Utah to 46% in Oregon and 51% in California.[6-8] Given that most community pharmacies belong to one of a few large retail chains, gaining the participation of these pharmacy chains is key. After pharmacies enroll in the program, pharmacy staff must be aware of the service, agree to participate, and complete any additional training, which typically includes several hours of continuing education from an accredited training program.[9] If not all pharmacists in a given facility agree to participate, people then will need to visit the pharmacy during a time when participating staff is available. Furthermore, the public must know that the option is available to them and want to access contraception through this setting.

PATIENT ACCEPTABILITY

Eckhaus et al conducted a detailed systematic review of qualitative and quantitative studies on the perspectives of pharmacists and patients regarding pharmacy prescribing of hormonal contraception.[10] They found 15 eligible studies. Most studies, though, were small and were not population-based, which limits their generalizability. Also, many studies were conducted before pharmacy prescribing was permitted in their setting. As a result, the findings relate more to hypothetical constructs rather than actual experiences with the practice. Overall, they found that people expressed support for pharmacy prescribing on the grounds that it would be easier to access. The two national surveys found substantial proportions of women were interested in pharmacy prescribing of oral contraception (38%) or hormonal contraception (68%).[11,12] Among those not using contraception, 47% of uninsured women and 40% of low-income women reported intent to start use if pharmacy prescribing were to become available. Among those using contraception, 66% expressed a preference for this mode of access. Concerns with pharmacist prescribing included issues related to patient safety, the potential for a decline in completing routine Pap smears, the availability of private space for consultation, the amount of fees charged, and maintaining confidentiality from parents.[11,13]

SAFETY

The Direct Access Study conducted among 26 community pharmacists and 214 women in 2003-2004 was a seminal study in demonstrating that pharmacy prescription of hormonal contraception could be safe and acceptable.[14] Given that the study procedures included 12 hours of continuing education for the pharmacy participants, this detailed training might be a necessary component for pharmacists to be able to screen and counsel people appropriately on hormonal contraception. Subsequent studies have shown that women who have contraindications to hormonal contraception use (e.g., a history of ischemic heart disease, migraines with aura, and venous thromboembolism) can screen themselves reliably for these conditions using a checklist without the assistance of a physician. Furthermore, as ACOG and others have noted, the increased risk of venous thromboembolism from using combined oral contraception is lower than the increased risk of venous thromboembolism from pregnancy.[3] In response to concerns about de-coupling contraception access from attending for routine health examinations, ACOG and the Centers for Disease Control and Prevention also state that pelvic and breast examinations and screening for cervical cancer and sexually transmitted infections are not required for starting hormonal contraception and should not be used to deny access to hormonal contraception.[3,15]

INSURANCE

People with private or public insurance can use this to cover their consultation fee when they visit their physician, nurse practitioner, or physician assistant to access contraception. In contrast, few states require insurance to cover pharmacist consultation fees, which were an average of $40 to $45 in Oregon and California.[10] Thus, even if someone has insurance that would cover the hormonal contraception itself, they might face financial barriers in obtaining a prescription from a pharmacist. Note that this issue might be less relevant for young people who are on their parent's or guardian's insurance and who want to maintain privacy about their contraception use. Paying out of pocket instead of using insurance can be a strategy for maintaining privacy regarding their contraceptive use.

SUMMARY AND RECOMMENDATIONS

Until short-acting hormonal contraception is available over the counter, allowing pharmacists to prescribe oral

contraception, the patch, ring, and injectable DMPA is important to reduce people's barriers to starting and continuing effective contraception. Standardized training programs for pharmacists, both board-approved continuing education and pharmacy school-based training, would help ensure the safety and consistency of this practice. Pharmacists should be prepared to refer people who desire long-acting methods (sterilization, intrauterine device, or implant) to an appropriate healthcare provider. Even in these cases, though, people may want to receive a prescription from a pharmacist for a short-acting hormonal method to "bridge" them until they can navigate the process needed to start a long-acting method. Requiring insurance to cover the pharmacy consultation fees likely would reduce barriers to participation both on the part of pharmacies as well as people seeking contraception. ■

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CME/CE QUESTIONS

1. Which of the following is a component of severe COVID-19 infection based on National Institutes of Health criteria, according to Morgan and colleagues?
a. Peripheral oxygen saturation less than 98% on room air
b. Partial pressure of oxygen/fraction of inspired oxygen ratio less than 200 mmHg
c. Respiratory rate greater than 25 breaths per minute
d. Lung infiltrates greater than 50%

2. In the study by Shah et al, intravenous iron use was associated with all of the following *except*:
a. an increase in hemoglobin levels.
b. prolonged hospital stay.
c. a reduced need for red blood cell transfusion.
d. an increased risk of infection.

3. Which of the following is a benefit of delayed umbilical cord clamping?
a. Decreased neonatal iron stores
b. Low birthweight
c. Increased risk of neonatal anemia
d. Improved neonatal hematocrit concentrations

4. Currently, how many states allow pharmacists to prescribe hormonal contraception?
a. No states yet, although some have legislation pending
b. A minority of states
c. Most states
d. All states allow pharmacists to prescribe some forms of hormonal contraception.