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Addressing Decision Making in Progesterone Treatment for History of Preterm Delivery

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Abstract

Introduction The United States ranks 27th among nations worldwide for infant mortality with a rate of 6.1 deaths per 1,000 live births. The majority of perinatal morbidity and mortality is related to preterm birth, defined as delivery prior to 37 weeks' gestation. Among the risk factors for preterm birth is prior preterm birth, which is associated with a 1.5- to 2.0-fold increase in risk. At the present time, there is only one Food and Drug Administration approved treatment for the prevention of preterm birth among women with a history of prior spontaneous premature delivery, intramuscular 17-α-hydroxyprogesterone caproate (17-OHP), administered once weekly from 20 to 36 weeks' gestation. However, many eligible pregnant patients decline this therapy.

Methods This was a prospective, cohort study involving patients who were identified as candidates for 17-OHP treatment at their first obstetric visit and asked to complete a short survey regarding their history of preterm birth. Those patients who consented to a follow-up phone call were asked to participate in a focus group discussion regarding their experience with progesterone and the health care system.

Results During the 1-year study period, 55 progesterone candidates were identified, 43 accepted treatment, 7 refused, and 5 either initiated prenatal care too late to receive injections or did not follow-up. Those who accepted treatment appeared to cope better with treatment side effects, and/or had traumatic emotional reactions regarding their prior premature birth outcomes. Women who declined treatment often cited pain with injection, had fatalistic beliefs regarding their care, and/or had personal concerns related to full-term pregnancy.

Discussion Maternal health care providers should always discuss the implications of prematurity at the time of the index premature delivery and again at the first prenatal visit of the subsequent pregnancy. Providers need to be prepared to employ various techniques for patient counseling and education. Small changes in office practice, like having fewer care providers involved in patient care or providing distractions for children, may make the difference between a patient who is open or closed to treatment options.

Keywords
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The United States ranks 27th among nations worldwide for infant mortality with a rate of 6.1 deaths per 1,000 live births.[1] The majority of perinatal morbidity and mortality is related to preterm birth, defined as delivery prior to 37 weeks' gestation. In the United States, one in eight deliveries occurs prematurely, and these births contribute 85% of the neonatal morbidity and 35% of infant mortality (deaths in the first year of life).[2,3] The cost of providing care to these infants exceeds $26 billion annually.

Only 50% of all preterm births occur in women with risk factors that are identifiable before the preterm birth occurs, making screening and surveillance difficult. The risk factor having the greatest predictive value is a history of preterm delivery, which is associated with a 1.5- to 2.0-fold increase in risk. Attempts to treat premature labor once it occurs have been largely ineffective resulting in only a 2- to 7-day extension of pregnancy.[4] The most effective intervention has been prevention of premature labor utilizing progestins.[4] In a large multi-institutional study conducted in the National Institute of Child Health and Human Development (NICHD) Maternal-Fetal Medicine Units Network, Meis et al demonstrated that 17-α-hydroxyprogesterone caproate (17-OHP) given intramuscularly decreased recurrent preterm birth by 30%.[5] Patients who were strongly adherent to this regimen decreased their risk of recurrent preterm birth with a relative risk of 0.66 (confidence interval: 0.54–0.81).[6]

In contemporary practice, when a pregnant patient presents with a history of prior spontaneous premature delivery or preterm premature rupture of membranes, she is offered intramuscular progesterone (17-OHP) once weekly, beginning at 16 to 20 weeks' gestation and continuing until 36 weeks' gestation, in the hope of preventing a recurrence in her current pregnancy. Despite the absence of other Food and Drug Administration (FDA) approved treatments for the prevention of preterm birth, many pregnant patients decline this therapy. In some populations, this approximates 50% and appears to be most pronounced among non-Hispanic black women.[4] This is distressing given the lack of significant side effects associated with the administration of 17-OHP and the high premature birth rate experienced in the United States. Summit County, Ohio—the location of this study—ranked as one of the worse counties in the nation for preterm births from 2010 to 2012, with a rate of 13.5% compared with Ohio's and national rates of 12.3 and 11.7%, respectively.[7]

There have been many studies exploring patient refusal of appropriate treatment among the pregnant population. Ribak et al (2011) reported that women with a previous history of perinatal morbidity and mortality more frequently refused the indicated intervention of emergent cesarean section in the face of nonreassuring fetal heart tracings as compared with women with parity less than 5, and maternal age less than 31 years.[8] Ohel et al[9] also found that increased maternal comorbidities, pregnancy complications, maternal age, and parity of more than 5 were associated with patient refusal of indicated cesarean sections and/or blood transfusions.[8] One prior study examined the issue of progesterone refusal. Ransom et al demonstrated that those patients who had a previous delivery at an early gestational age (mean 28.7 weeks) were more likely to accept treatment with 17-OHP compared with those with later deliveries (mean 34 weeks).[9] This finding is distressing as 80% of preterm birth occurs in the late preterm period (32–36 weeks), and these infants often still experience difficulties with respiration, thermoregulation, feeding, health complications, and death in childhood.[10]

While all the aforementioned studies find commonalities within the groups of patients who refuse treatment, none has taken the next step and directly asked patients, "Why are you refusing this proven beneficial treatment?" The goal of this study was to address and clarify the reasoning patients utilize to make their decisions to accept or decline 17-OHP administration while pregnant.

Methods

This was a prospective study using both qualitative and quantitative techniques over a 12-month period (May 2016–May 2017) to assess patient decision making regarding 17-OHP treatment to prevent preterm delivery. To be eligible for the study women needed to be currently pregnant, 18 years of age or older, and have a history of noniatrogenic preterm birth between 20 and $36^{6/7}$ weeks. Exclusion criteria included patients with only iatrogenic preterm births, as well as those without a history of preterm birth. Patients who were candidates for 17-OHP treatment were identified at their first obstetric visit and asked to complete a 5-minute survey regarding their history of preterm birth. This study was granted expedited approval by the Cleveland Clinic Akron General and Akron Children's Hospital Institutional Research Review Board.

Items included in the questionnaire were developed based on a review of the literature, discussions with patients similar to those included in the study, and suggestions based on the clinical experience of a licensed social worker and registered nurse (both attached to a federally qualified health center specializing in obstetrics and gynecology), and a practicing maternal–fetal medicine physician. Items centered on factors that were thought likely to influence patients' decisions regarding 17-OHP use in pregnancy. Questionnaires such as the one used in this study have been found helpful in past qualitative studies evaluating treatment refusal in pregnancy.[9] The surveys included a request for contact information from those willing to be telephoned for follow-up questions and/or participation in a focus group. An interview guide for use in the focus groups was developed in the same manner as the questionnaire (see ►**Table 1**). The focus groups were led by the primary authors of this article with this preset list of questions and lasted ~90 minutes, with time for introductions, discussions, and conclusions. These discussions were audio recorded and then transcribed. Focus group participants were reimbursed $50 to cover time and transportation expenses associated with attendance.

Results

During the 1-year study period, 55 progesterone candidates were identified, 43 accepted treatment, 7 refused, and 5 either initiated prenatal care too late to receive injections or did not

Table 1 Focus group interview layout

Rapport building stage—10 min • Tell us what happened with your first preterm birth. • How did that interaction with the medical system make you feel?
In-depth discussion—40–60 min • What do you know about progesterone? • What things about this medication make you nervous or scared? • What things about progesterone do you feel comfortable with? • What do you wish was different in the medical system to make the process of accepting treatment for preterm birth easier? • What are things in your personal lives do you think make it difficult to receive care that doctors do not know about? • What are things that we can change in the doctors' office to make your care easier? • Has anyone used progesterone in the past? What was your overall experience with it? • When you interact with your OB/GYN, how does it make you feel? • If you could say one thing about our group today that has not been addressed, what would it be?
Wrap-up/closure—5–10 min • Summarize impressions or conclusions gathered and participants clarify, confirm, or elaborate on the information.

follow-up. Average age of the patients in the sample was 27.8 years (±5.7) with no significant difference between the groups who accepted versus declined treatment, 28.4 and 23.6 ($p = 0.076$), respectively. Those who accepted treatment were 23% African American (10 of 43) versus 29% (2 of 7) of those who declined treatment, and 70% Caucasian (30 of 43) compared with 29% (2 of 7) in the declined treatment group. Fifty-eight per cent (25 of 43) of the acceptors were covered by public insurance, whereas 86% (6 of 7) of the treatment decliners had public insurance. ►**Table 2** summarizes the preterm delivery history by treatment acceptance status. Those who accepted 17-OHP treatment had previously delivered infants at an earlier mean gestational age who required longer hospitalizations after birth and experienced more frequent infant mortality secondary to prematurity, although these differences were not statistically significant. Only 7 of the 50 participants (14%) declined treatment, providing insufficient sample size for adequate power to detect statistically significant differences between the groups.

A brief overview of interesting trends between these populations is as follows: 100% of decliners ($n = 7/7$) felt well educated by their providers regarding progesterone and its potential benefits and indication for the prevention of recurrent premature birth. Eighty-six per cent of decliners ($n = 6/7$) had not received progesterone in the past, suggesting that their refusal was not based on bad experiences with previous use. In contrast, 85% of acceptors were past users and indicated they would use it again. Eighty-six per cent of decliners were publicly insured and were aware that their insurance would cover the 17-OHP–associated costs.

Separate focus groups were held for those who accepted treatment ($n = 4$) versus those who declined treatment ($n = 2$). Various themes were identified regarding women's acceptance or refusal of treatment. These include their perception of education regarding treatment, their coping mechanisms surrounding painful or perceived painful stimuli, a patient's participatory view versus fatalism, the presence of traumatic birth processes, and the timing of patient education.

Acceptors

As described earlier, four volunteers identified through the initial surveys participated within a focus group held for those who had accepted progesterone therapy. Of these, three had delivered their subsequent pregnancies at term and the fourth had recently reached 36 weeks of gestation and finished her injections. All reported an overall positive experience with progesterone therapy. Three participants had children who required neonatal intensive care unit (NICU) admission and would like to use 17-OHP in the future, and one delivered a late preterm infant at 36 weeks who was discharged without a NICU stay. The themes which emerged

Table 2 Prior preterm delivery history by 17-OHP treatment status.

	Accepted treatment ($n = 43$)	Declined treatment ($n = 7$)	*p*-Value
Gestational age previous preterm delivery			
Mean	31 wk	33 wk	0.139
Median	34 wk	34 wk	
Mode	16–36 wk	21–26 wk	
Duration of infant's hospitalization	16.2 d (95% CI: −3.1 to 19.1)	9.8 d (95% CI: 1.6 to 18.0)	0.084
Infant mortality secondary to prematurity	8 (19%)	1 (14%)	–

Abbreviations: CI, confidence interval; 17-OHP, 17-α-hydroxyprogesterone caproate.

regarding patients who accept treatment are further described as follows.

Theme 1: Education

Within the medical profession, consent and explanation of care are a pillar of patient treatment. Surprisingly, focus group members accepting progesterone felt less educated regarding their treatment process than those who had refused. Within the surveys, all refusals answered "Yes" when asked if their physician had explained the purpose of progesterone *and* had answered all their questions. Paradoxically, those who accepted progesterone felt as if their questions regarding side effects were not addressed as serious, and many felt frustrated with the paternalistic nature of their care.

> "I looked it [the side effects] up online because my doctor didn't say anything when I asked." "…..The physician [he] didn't really even have anything for me. I researched myself." "I just got blown off." "Honestly with the side effects that I had, I called Makena because they knew more about it than my doctor's office."

> " 'Oh yeah we're just gonna start these for you.' How do you know that I want this? How do you know that I don't have different questions this time? Yeah, they do need to have more information available for patients."

While most women with preterm birth proceed with prophylactic therapy, it is important to note that those who decide to accept care still require ardent support and explanation of their care. Every focus group member requested additional materials to support them in their decision making, going as far as to provide examples, such as a pharmacy helpline or YouTube video.

Theme 2: Pain

Both groups cited pain, or perception of pain, as a side effect of injectable 17-OHP. However, the interpretation of that pain was dissimilar between the groups. Progesterone acceptors described injection-associated pain as a means to a healthy child, and often as a nuisance rather than an absolute barrier to care. They also described all other side effects as acceptable given the increased likelihood for a positive outcome.

> "… the chances of having a healthy baby are higher. It does get, again, annoying, like by 30 weeks, I'm like, for real, we've got to be done with this. I have six more weeks of this? But, the comfort in knowing, OK, this will increase my chances of having a full term healthy baby is enough in itself to continue on with it."

> "That while weekly injections may not be comfortable, they are better than a sick or lost baby."

Although pain may be cited as a contributing factor for treatment refusal, those who accept progesterone frame the discomfort as a part of the narrative toward achieving a term delivery.

Theme 3: Belief Systems

This constructive perception of a painful stimulus may well encompass acceptors' overall belief systems, in that they demonstrate participatory responses and positivity regarding their care. All focus group acceptors endorsed this readiness to alter their future prenatal care to increase the odds of term delivery.

> "You do all the research, you see all the side effects, but even if it give my baby a 1% chance of even making it to 35 weeks, let's go, we can do this. So, for me, it was a no brainer."

Her participatory role is exemplified here by her acceptance of the treatment side effects, and her willingness to engage and overcome them in exchange for a healthy infant. Open-ended survey responses from acceptors further perpetuate this theme:

> *"I decided to [take progesterone] because I wanted to avoid the risk of losing my baby again."* All participants were hopeful that their odds of delivering a premature infant would be reduced with 17-OH-P, and were ready and willing to play an active role in their future care.

Theme 4: Traumatic Birth Processes

The majority of women who accepted progesterone within the focus group endorsed a personal experience of traumatic birth and recovery. Two participants had infants spend significant time in the NICU, and one experienced a perinatal demise. They independently use the word "traumatic" and cite it is a major nisus for their decisions in future care, stating that they would continue to use progesterone during their subsequent pregnancies.

> "Because it is traumatizing, I had him and I didn't even get to see him because they took him straight to the NICU...it's a pain in the butt literally, but it's worth it. It's definitely worth it, when you've gone through that NICU experience and everything, you just don't want to go through that ever again, and if there's something that can make that avoidable, then you should really weigh out your options."

> "I had him living, and then he died afterwards, and it was pretty traumatic for me. Like the whole process of, what do you even do? How do you even approach this?"

Interestingly, the focus group participant who delivered a late preterm infant not requiring NICU admission felt as if she did not need progesterone in the future to maintain a healthy future pregnancy—*"my daughter was born at 36 weeks and we stayed the normal 2 days and then we went home, no problems, nothing… 'cause honestly I was wondering if I need it."*

Theme 5: Timing of Candidate Identification

The temporal association of the principal premature birth and counseling from a health care professional appears to impact the decision-making process for progesterone candidates. All focus group members were approached by health care providers during their admission for delivery of their first premature infant.

> "My doctor, my son was born at 34 weeks, and we were in the NICU and it's something he brought up to me and he knew how strongly I felt about that not wanting that to happen again."

> *"My doctors were very thorough with it. They were on top of it,"* states one candidate regarding her recovery process after delivery of a previable fetus.

Perhaps discussing preventative measures while the gravity of premature birth is fresh within the patient's experience has a more lasting implication for future consideration of their care.

Additionally, this approach may continue to build rapport within the medical field, especially if the patient travels between various care providers. The repetitive nature of this medical advice may also sway the decision-making process, and so early introduction of the topic begins this process. All focus group participants also mentioned that progesterone was discussed at their first prenatal visit as well in the subsequent pregnancy.

> "He [the doctor] did bring it up my first visit as well."

Decliners

Two volunteers identified from the initial surveys participated in a focus group for women who did not receive progesterone. They both delivered premature infants at 36 weeks who did not require NICU admission. One volunteer had subsequently given birth to two term pregnancies. The first subsequent infant delivered at term without progesterone because the woman was mistakenly not identified as a candidate. She accepted progesterone briefly in her third pregnancy but refused shortly thereafter secondary to pain. The second volunteer was currently pregnant with her subsequent pregnancy.

Theme 1: Education

When asked on a survey, "Do you feel your healthcare professional explained progesterone to you and answered your questions?" and, "has anyone explained the risk of premature birth?" all seven women who declined progesterone marked "Yes." This is in sharp comparison to the discussion had with those accepting progesterone, who often felt undereducated with regard to their treatment. There may be many explanations for this. By declining progesterone, the health care professional is obligated to addresses those consequences and potential use with each prenatal visit, and so those who decline truly are receiving more education. Those who accept progesterone may receive less education in the office because the goal of "convincing" someone to receive care is less driven. Alternatively, those who refuse progesterone may feel compelled to project that their decision is informed and defensible, and therefore will display their confidence with the subject matter. It is also possible that those who accept treatment are also more integrated into their care and have more questions. Regardless of cause, integrating more education within the treatment curriculum regardless of a patient's decision seems integral to closing the perceived knowledge gap for those actively pursuing treatment.

Theme 2: Pain

Pain, whether physically experienced or potentially experienced, was an active deterrent for members of the focus group of treatment decliners. When asked to identify their largest concern for treatment, both members cited, "*Just only pain*." The physical pain also generated an emotional deterrent—"*but I'm scared of shots.*" This discomfort from injections infiltrated beyond the isolated events of medication administration. It generated a pervasive concern for maintaining everyday life and caring for their families while being both pregnant and acutely uncomfortable.

> "Because I had to take care of 2 babies, with the pregnancy. So, it's really hard. My leg is painful, so I cannot go anywhere."

The theme of pain was also applied by women when discussing the ramifications of carrying a gestation to full term, and justified their refusal as preventing the potential for pregnancy-related pain or complications.

> "My biggest scare is having a uterine rupture from where my cesarean section is…..I really don't want a big baby or have a rupture. I'm just uncomfortable. When I put my legs together I feel like I'm smashing her head."

> "I have little babies, [I'm] scared if I carry full term the baby would be too big for me to deliver natural. I'm tiny."

Health care professionals naturally interact with patients on the provider's terms within their offices. This may prevent the providers from adequately understanding the patients' more complex life stressors or concerns. It may be important to be aware that pain directly associated with therapy refusal may have broader implications in the patient's day-to-day life. The mention of pain as a reason for treatment rejection may be a point with which to start a conversation regarding the wider implications of the pain and to initiate a search for solutions to those problems.

Theme 3: Belief Systems

Women who declined progesterone often voiced the belief that all events are predetermined and therefore inevitable. Within the surveys, an open-ended question asked for a generalized statement regarding progesterone therapy.

Many of these responses aligned with this fatalistic belief system:

> "I wouldn't use it, rather things run its course."
>
> "I have faith that my baby is going to make it. And I'm going to love him or her with every flaw."
>
> "I believe in fate, because what's going to happen is going to happened regardless of what we take…. if the baby does not survive it wasn't that babies time."

These statements stand in stark contrast to patients who actively demonstrate a participatory role in their care. This situation may be the most difficult for a clinician to navigate, as the decision making for these patients is rooted in their belief systems, and not from an evidence-based process. Personalized approaches, such as motivational interviewing, which is a patient-centered counseling style designed to elicit behavioral changes, may be more effective with these cases.

Theme 4: Traumatic Birth Processes

Neither focus group participant not receiving progesterone had previous birth outcomes which required NICU admission. Both had late premature births, which were not described as traumatic, and therefore, these women did not feel that their future pregnancies warranted treatment.

> "He went home—because he was at the baby shower a week later… I just didn't ever look at it as [premature]—because he was almost 37 weeks."

Many women cite a following uncomplicated term birth, without treatment, as further cause for their refusal.

> "Not sure its 100% necessary because my 2nd pregnancy was full term without it"
>
> "I had my first son at 33 weeks. My second pregnancy I refused progesterone and baby was born at a perfect 38 weeks. My third pregnancy-chance of preterm baby is even lower."

Theme 5: Timing of Candidate Identification

Neither woman in the refusal focus group was approached at the time of their premature birth to discuss plans for progesterone use in their future pregnancies. One participant had not been properly identified during her second pregnancy as a candidate but was correctly identified in her third. Within the medical field, it has been demonstrated that consistent repetition of appropriate treatment recommendations by the treatment team is extremely important to patient treatment acceptance and compliance. The lack of consistent education/identification between providers may also prove a jarring experience for patients and may serve to generate distrust. The commitment of weekly injections—which require time away from work and inflict pain (among other side effects)—is potentially a difficult conversation and expectation to thrust upon a patient. Establishing a framework at the outset of a premature delivery helps establish patient trust and establishes an expected plan of care.

Women who refused treatment were asked what could be done to improve their care within the medical field—each listed having multiple different care providers, and, being distracted by their children in the office, as barriers to their care.

> "I know my children [are] quieter if they're distracted with coloring or a movie… I'm more focused on what the doctor is saying and telling me. I can remember and absorb more information..."

They both endorsed the support from a counselor as being critical step toward their emotional health and well-being.

> "The 2 times that I did talk to her, it was very soothing, kind of stopped the tears and stuff. She's very concerned about what's going on my life. And make sure that nothing progressed to something that would put me in danger. So, I think it's real good that she's there."

Small changes in office management may make the environment more approachable for patients who remain initially closed regarding their care.

Discussion

The primary objective of this study was to examine the decision-making process for women who were candidates for intramuscular 17-OHP, based on a past history of noniatrogenic preterm birth. This process is multifactorial, and different women approach this decision with different backgrounds. While the initial surveys sent out did not generate enough data to achieve statistical significance, the open-ended questions and focus groups generated enlightening qualitative information. Themes identified from the study would suggest that those who accept progesterone are more likely to have had traumatic birth processes, an active interest in their medical care, were identified as candidates at their index preterm birth, were undeterred by pain, and wanted more education regarding their care. Women who declined progesterone were more likely to be deterred by pain, felt that their decision was well informed, were less likely to have had traumatic birth processes, were not identified at their initial preterm birth as progesterone candidates, and were more likely to have a fatalistic belief system.

A literature search failed to identify other current research examining the reasoning patients use to decide whether to accept or decline progesterone that employed a qualitative process. Quantitative studies are consistent with results in this article. Ransom et al determined with a retrospective cohort study that those refusing progesterone had a median gestational age of 5 weeks earlier than those accepting treatment, likely correlating to more traumatic birth and recovery processes.[9] Iris et al identified other risk factors for overall treatment refusal, such as higher parity and increasing maternal age.[11]

Medical decision making is by nature a multifactorial process. This is complicated further by the physical and emotional changes of pregnancy. Drawing from this study, several approaches to the patient who delivers a premature infant may be employed. Maternal health care providers should always discuss the prematurity of the index pregnancy and the associated implications for future pregnancies at the time of delivery, or while admitted for recovery, and again at the first prenatal visit of the subsequent pregnancy. Providers need to be prepared to employ various techniques for patient counseling and education. These tools may include using motivational interviewing and having handouts readily available. Interestingly, all members of both focus groups were asked which modes of information delivery they prefer, and all participants advocated for a brief video. Development of such a video might also engender patient acceptance and compliance. For women who cite pain as their primary concern, it may be appropriate to explore the wider implications of that statement. Additionally, it may be reasonable to consider the use of vaginal progesterone, which although not FDA approved for this indication, several studies have shown to be effective for prevention of premature birth. Barriers to accessible care should also be addressed, such as limiting the number of providers and providing distractions for children.

The major limitation of this study was sample size. In Summit County, the 2016 rate of premature births was 10.4% according to the March of Dimes. Those refusing treatment are a small subset of these pregnancies. Future studies may prove more significant if data can be collected over the course of more than 1 year. Interestingly, most progesterone candidates were from the Federally Qualified Health Center (FQHC), where 16 women with a history of premature birth were identified as candidates; however, only 10 received progesterone therapy. Three of the six women who refused 17-OHP treatment also declined to participate in this study. This suggests that the motivations of women who refuse therapy may be underrepresented and that novel approaches may need to be employed to recruit such women in futures studies.

Qualitative research such as this, where women are invited to participate in a setting free of judgment with like-minded peers, in support of their individual opinions, gives privileged insight into the medical decision-making process.[12] Understanding the various narratives of human experience may flesh out and ground our approaches to patient care and hopefully provide a basis to develop new approaches to encourage patient acceptance of 17-OHP therapy and other appropriate therapies during pregnancy.

Conflict of Interest
None.

References

1 MacDorman MF, Matthews TJ, Mohangoo AD, Zeitlin J. International comparisons of infant mortality and related factors: United States and Europe, 2010. Natl Vital Stat Rep 2014;63(05):1–6
2 Mathews TJ, MacDorman MF. Infant mortality statistics from the 2013 period linked birth/infant data set. U.S. Department of Health and Human Services, Centers for Disease Control. Natl Vital Stat Rep 2014;61(08):1–30
3 Kramer MS, Demissie K, Yang H, Platt RW, Sauvé R, Liston R; Fetal and Infant Health Study Group of the Canadian Perinatal Surveillance System. The contribution of mild and moderate preterm birth to infant mortality. JAMA 2000;284(07):843–849
4 Yee LM, Liu LY, Sakowicz A, Bolden JR, Miller ES. Racial and ethnic disparities in use of 17-alpha hydroxyprogesterone caproate for prevention of preterm birth. Am J Obstet Gynecol 2016;214(03): 374.e1–374.e6
5 Meis PJ, Klebanoff M, Thom E, et al; National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. Prevention of recurrent preterm delivery by 17 alpha-hydroxyprogesterone caproate. N Engl J Med 2003;348(24):2379–2385
6 Markham KB, Walker H, Lynch CD, Iams JD. Preterm birth rates in a prematurity prevention clinic after adoption of progestin prophylaxis. Obstet Gynecol 2014;123(01):34–39
7 Ohio Department of Health Report on Low Birth Weight and Preterm Birth. 2014. Available at: https://www.odh.ohio.gov/-/media/ODH/ASSETS/Files/data-statistics/maternal-and-child-health/wih_low-birthweight.pdf?la=en. Retrieved March 26, 2018
8 Ribak R, Harlev A, Ohel I, Sergienko R, Wiznitzer A, Sheiner E. Refusal of emergency caesarean delivery in cases of non-reassuring fetal heart rate is an independent risk factor for perinatal mortality. Eur J Obstet Gynecol Reprod Biol 2011;158(01):33–36
9 Ohel I, Levy A, Mazor M, Wiznitzer A, Sheiner E. Refusal of treatment in obstetrics - a maternal-fetal conflict. J Matern Fetal Neonatal Med 2009;22(07):612–615
10 Callaghan WM, MacDorman MF, Rasmussen SA, Qin C, Lackritz EM. The contribution of preterm birth to infant mortality rates in the United States. Pediatrics 2006;118(04):1566–1573
11 Ransom CE, Chin JR, Roeder HA, Sinclair TR, Heine RP, Murtha AP. The influence of prior obstetrical history on current 17-hydroxyprogesterone caproate use. J Pregnancy 2011;2011:286483
12 Schreier M. Qualitative Content Analysis in Practice. Thousand Oaks, CA: Sage Publications Ltd.; 2012