



OBSTETRICS

The authors examine the high cesarean delivery rate; ongoing interest among women for home birth; management of postpartum hemorrhage; and measurement of cervical length and the use of progesterone to forestall preterm birth



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IN THIS ARTICLE

Home birth and neonatal death

page 19

Get an L & D plan to manage hemorrhage!

page 20

Should we be screening for cervical length?

page 22

The year that has followed our inaugural “Update on Obstetrics” [OBG MANAGEMENT, January 2011, available at www.obgmanagement.com] saw a resurgence of interest in a number of aspects of obstetric care. We want to highlight four of them in this Update because we think they are particularly important—given the attention they’ve

received in the medical literature and in the consumer media:

- the ever-increasing cesarean delivery rate
- home birth
- postpartum hemorrhage
- measurement of cervical length and the use of progesterone.

Taming the cesarean delivery rate—how can we accomplish this?

No one should be surprised to learn that the cesarean delivery rate increased nearly sevenfold from 1970 to 2011—from a rate of approximately 5% in 1970 to nearly 35%. Recall that, in the 1990s, the US Public Health Service proposed, as part of Healthy People 2010, a target cesarean rate of 15%, with a vaginal birth after cesarean (VBAC) rate of 60%. Today, the cesarean delivery rate is, as we said, nearly 35% and the VBAC rate is less than 10%.

Many factors have been cited for the rise, including:

- the obesity pandemic
- delaying childbearing
- increasing use of assisted reproduction
- multiple gestation (although the incidence of higher-order multiple gestations is now decreasing, the rate of twin births remains quite high relative to past decades).

So, how did this happen? And what can we do?

For one, VBAC is not likely to gain in popularity. More than 60% of US hospitals that provide OB services handle a volume of fewer than 1,000 deliveries a year. Such low volumes generally will not be able to support (either with dollars or staffing) the resources needed to safely provide VBAC.

Other options have been proposed: Loosen the guidelines for VBAC, change the personnel requirements, gather community groups of doctors, attorneys, and patients to agree on guidelines that, if followed, would protect physicians from being sued¹—and so on. The medicolegal reality, however, is that these options have not been shown to be viable. We have concluded that increasing VBAC utilization is not the answer. Rather, addressing ways to prevent primary cesarean delivery holds the most promise for, ultimately, reducing the current rising trend.

On a positive note: The most recent data available from the National Center for Health Statistics suggest that **the cesarean delivery rate has dropped slightly**: from 32.9% in 2009 to 32.8% in 2010. The drop is truly slight; we'll watch with interest to see if a trend has begun.

WHAT THIS EVIDENCE MEANS FOR PRACTICE

Considering that the cesarean delivery rate in 1970 was 5%, and that the dictum at the time was “once a section, always a section,” it seems clear (to us, at least) that the solution to this problem lies in preventing first cesarean deliveries. How can the specialty and, in some ways, you, in your practice, work toward this goal? Here are possible strategies:

- Eliminate elective inductions of labor when the modified Bishop score is less than 8
- Return to defining “post-term” as 42—not 41—completed weeks’ gestation
- Eliminate all elective inductions before 39 weeks’ gestation
- Provide better and more standardized training of physicians in the interpretation of fetal heart-rate tracings
- Improve communication between obstetricians and anesthesiologists in regard to managing pain during labor
- Institute mandatory review of all cesarean deliveries that are performed in the latent phase of labor and all so-called “stat cesareans”
- Readjust the compensation scale for physicians and hospitals in such a way that successful vaginal delivery is rewarded.

Even if all these measures were implemented, we think it’s unlikely that we will ever see a 5% cesarean delivery rate again—although probably for good reason. But even a return to a more manageable 20% rate seems a reasonable goal.

Home birth: Consider where you stand

We suppose that one way to avoid cesarean delivery would be to deliver at home. The topic, and practice, of home birth has mushroomed in the past few years—for a number of social and economic reasons, probably. It seems to us that there are a few basic issues that must be addressed, however, before it’s possible to come to grips with home birth in the 21st century in an enlightened way:

- In 1935, the maternal mortality rate approached 500 to 600 for every 100,000 births; most of those deaths occurred at home. In 2009, the maternal mortality rate was approximately 8 for every 100,000 births. Both rates are very low, but the difference would be significant to the 492 to

592 women who met a potentially preventable death.

- Methods of identifying who might be an

WHAT THIS EVIDENCE MEANS FOR PRACTICE

Bottom line? Home birth is legal; home birth may be appropriate for some women who are at low risk and willing to accept a legitimate amount of personal risk; and you, as an OB, are in no way required to participate in or endorse the practice.

Many institutions have addressed this matter by developing a family-centered health care model for obstetrics—so-called hospitals within hospitals—that allow for a less interventionist approach to childbirth within the safety net of a hospital facility, should unforeseeable complications arise. Consider your interest in affiliating with such a facility, based on your acceptance of the practice of home birth and your comfort with being part of this approach.



appropriate candidate for a home birth are, at best, imprecise.

- Infrastructure for rapidly transporting mother and baby to a hospital if matters go awry is inadequate.

Although evidence is limited, what data there are suggest that one significant outcome—neonatal death—occurs with higher frequency among home births than among

hospital births, even after correcting for anomalies (odds ratio, 2.9 [95% confidence interval, 1.3–6.2]).² Although women who delivered at home did have fewer episiotomies, fewer third- and fourth-degree perineal lacerations, fewer operative deliveries (vaginal and cesarean) and a lower rate of infection, those reductions seem inconsequential compared to the death of a newborn....

Formal, systematic planning is key to managing postpartum hemorrhage

A question for mothers-to-be: What could be worse than having a cesarean delivery in your home?

Answer: Having an associated postpartum bleed.

Perhaps that isn't the most elegant segue, but postpartum hemorrhage is a significant problem that remains a major contributor to maternal mortality in the United States. And, in fact, a prolonged and unsuccessful labor—the kind that could present to your hospital from an outside birthing facility or home—necessitating a cesarean delivery is a set-up for postpartum hemorrhage.

One of the tenets of emergency management in obstetrics is the three-pronged preparedness of **1)** risk identification, **2)** foreseeability, and **3)** having a plan for taking action. Of late, many institutions have begun to develop **a formal plan for managing OB emergencies**—in particular, postpartum hemorrhage.

(A note about the potential role of interventional radiology in the management of postpartum hemorrhage: Our experience is limited, but we conjecture that, in most US hospitals that provide OB services, mobilizing an interventional radiology group in an emergency isn't feasible. That makes it essential to have established medical and surgical management guidelines for such cases.)

WHAT THIS EVIDENCE MEANS FOR PRACTICE

To establish a plan on labor and delivery for managing postpartum bleeds, we recommend the following steps and direct you to ACOG's "Practice Bulletin #76" for more specific information³:

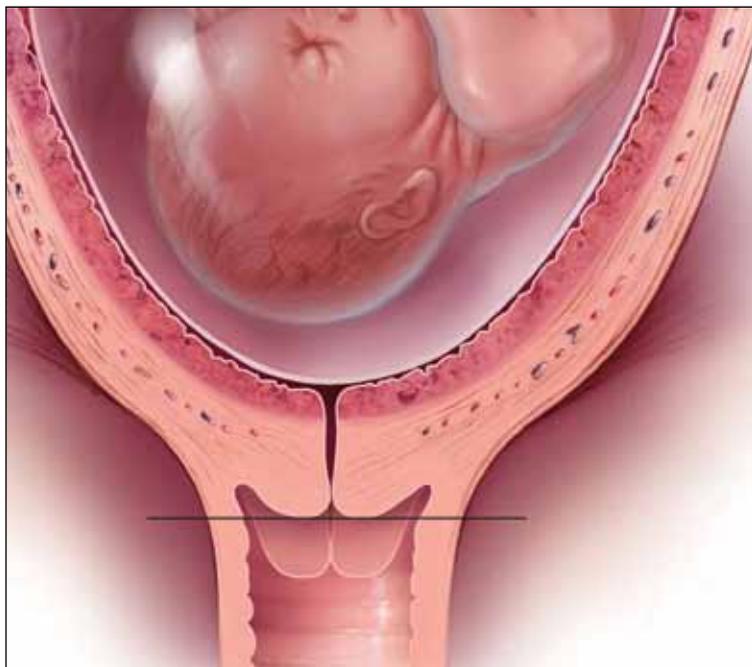
- Establish a list of conditions that predispose a woman to postpartum hemorrhage and post that list throughout labor and delivery to heighten the awareness of team members
- Establish protocols for pharmacotherapeutic intervention—including oxytocin, methylergonovine, misoprostol, and prostaglandin F_{2α},⁴ with dosage and frequency guidelines and algorithms for use—and have those protocols readily available on labor and delivery, either on-line or posted
- Establish an "all-hands-on-deck" protocol for surgical emergencies—actual or potential—that includes what personnel to call and in what order to call them
- Use simulation to practice the all-hands-on-deck protocol and evaluate team and individual performance in managing hemorrhage
- Establish blood product replacement protocols, including order sets for products that are linked to particular diagnoses (e.g., typing and cross-matching for patients coming in to deliver who have a diagnosis of placenta previa; adding products such as fresh frozen plasma and platelets for patients who have complicating diagnoses, such as suspected placenta accreta or severe pre-eclampsia).

CONTINUED ON PAGE 22



To prevent preterm birth: Cervical length screening and progesterone

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There is mounting evidence that cervical length is inversely related to risk of preterm birth.

Preterm birth accounts for almost 13% of births in the United States, with spontaneous preterm labor and preterm rupture of membranes accounting for approximately 80% of those cases.⁴ Once preterm labor has begun, little in the way of successful intervention is possible, beyond short-term prolongation of pregnancy with tocolytic agents to allow for corticosteroid administration. Studies in recent years have, therefore, moved the focus back on prevention, using the same treatments that were used 60 years ago—progesterone supplementation and cerclage—with the addition of transvaginal ultrasonography (US) screening for cervical length.

Several large, randomized trials have examined the use of intramuscular injection or vaginal delivery of progesterone to prevent preterm birth in patients who are at high risk of preterm birth based on their obstetric

history.^{5,6} Both 17 α -hydroxyprogesterone caproate and vaginal progesterone suppositories are associated with a significant reduction in the risk of preterm birth in singleton pregnancies. ACOG reconfirmed the value of this finding in a 2011 Committee Opinion, which recommended the use of progesterone supplementation in singleton pregnancies in which there is a history of preterm labor or preterm rupture of membranes.⁷

The real question, however, is: **What should be done about transvaginal cervical length: Should we be screening, or not?** As recently as 2009, a Cochrane Review did not advocate universal screening for cervical length as a predictor for preterm birth⁴—despite mounting evidence that cervical length is inversely related to risk of preterm birth, with progressively shorter length (starting at <25 mm) associated with significantly higher risk of preterm birth.^{8,9} Keeping in mind that the decision to screen depends on your ability to treat the condition for which you are screening, what was needed was proof that intervention works.

2011 brought two studies that recommend screening for cervical length based on a successful reduction in preterm birth with a specific intervention. A large, randomized trial of vaginal progesterone gel for the prevention of preterm birth used universal screening for shortened cervical length (10 to 20 mm) as the criterion for randomization to treatment or placebo. The investigators demonstrated a **45% reduction in preterm birth of less than 33 weeks in the treatment arm.**¹⁰

An interesting aspect of this study: The reduction in preterm birth was not, in fact, seen in patients who had a history of preterm birth, suggesting that this may be a different patient population that benefits from vaginal progesterone.

On the other hand, a recent meta-analysis

concluded that patients who meet the criteria of **1)** cervical length less than 25 mm and **2)** a history of prior spontaneous preterm birth experience a significant reduction in preterm birth and a reduction in perinatal morbidity and mortality if they have cervical cerclage placed.¹¹

Although these publications lead us to hope that there may be some benefit from preventive intervention for preterm birth, the question of how to screen for, and prevent, spontaneous preterm birth remains somewhat nebulous: It hasn't been determined which patient population will benefit from which combination of screening and intervention. Larger trials for specific populations are still needed. ❌

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WHAT THIS EVIDENCE MEANS FOR PRACTICE

This is what we know, for now:

- Women who have a history of spontaneous preterm birth should have a thorough evaluation of their OB history to determine possible modifiable risk factors (e.g., smoking, short inter-pregnancy interval) and to determine, as definitively as possible, the likely cause of that preterm birth
- Women who have a singleton pregnancy and a history of either spontaneous preterm labor or preterm rupture of membranes can be offered progesterone supplementation as intramuscular 17a-hydroxyprogesterone or a vaginal preparation to reduce their risk of preterm birth
- Women who have an asymptomatic shortening of the cervix, as measured on transvaginal US at 18 to 24 weeks' gestation, can be offered vaginal progesterone to reduce their risk of preterm birth
- Women who have a history of preterm birth and cervical shortening may see a reduction in their risk of preterm birth from cerclage placement
- The use of screening for cervical length or progesterone supplementation, or both, in a multiple gestation pregnancy are not recommended because their benefit in this population has not been demonstrated.

Until we fully understand the various etiologic pathways of spontaneous preterm birth, we won't have a one-size-fits-all solution to this major cause of perinatal morbidity and mortality.

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