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The Absolute Power of Relative Risk in Debates on Repeat Cesareans and Home Birth in the United States

Eugene Declercq

ABSTRACT

Background

Changes in policies and practices related to repeat cesareans and home birth in the U.S. have been influenced by different interpretations of the risk of poor outcomes.

Methods

This article examines two cases—vaginal birth after cesarean (VBAC) and home birth to illustrate how an emphasis on relative over absolute risk has been used to characterize outcomes associated with these practices. The case studies will rely on reviews of the research literature and examination of data on birth trends and outcomes.

Results

Childbirth involves some unique challenges in assessing health risks, specifically the issues of: (1) timing of risks (lowering health risk in a current birth can increase it in subsequent births); (2) the potential weighing of risks to the mother's versus the infant's health; (3) the fact that birth is a condition of health and many of the feared outcomes (for example, symptomatic uterine rupture) involve very low absolute risk of occurrence; and (4) a malpractice environment that seizes upon those rare poor outcomes in highly publicized lawsuits that receive widespread attention in the clinical community. In the cases of VBAC and home birth, the result has been considerable emphasis on relative risks, typically an adjusted odds ratio, with little consideration of absolute risks.

Conclusion

Assessments of the safety of interventions in childbirth should involve careful consideration and communication of the multiple dimensions of risk, particularly a balancing of relative and absolute risks of poor health outcomes.

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INTRODUCTION

Maternity care practices in the United States have undergone substantial shifts in the past two decades, most notably in the case of cesarean section. Starting in 1989, the U.S. experienced seven years of slow but consistent declines in the cesarean rate from 22.8 percent in 1989 to 20.7 percent in 1996.[1] This was followed by 13 years of a more rapid increase to 32.9 percent in 2009, a rate that has since stabilized (32.8 percent in 2011) with a total of about 1.3 million annually.[2] A critical component in the variation in overall cesarean rates was a series of substantial shifts in the use of vaginal birth after cesarean (VBAC), which increased from 18.9 percent in 1989 to 28.3 percent in 1996, followed by consistent declines to a current unofficial rate of 8.9 percent in 2010.[3] There was another less noticed and notable change through this same period in U.S. home birth rates. A gradual and steady decline in the very small number of U.S. home births occurred from 1989 (0.69 percent) until 2004 (0.56 percent), followed by consistent increases for the next six years (0.85 percent in 2011).[4] This article explores the conceptualization of relative and absolute risk in the sometimes heated debates over

VBACs and home birth in the U.S., with a particular focus on the emphasis on relative risk of poor outcomes in either VBACs or home births.

Examining the role of relative and absolute risk in debates on the safety of maternity care practices is at the heart of this analysis. The balancing of relative and absolute risk in identifying and communicating the chance for a poor health outcome is not a new issue, nor are the implications limited to childbirth.[5] However, this balance may be particularly relevant to the context of birth in industrialized countries. Healthy mothers in industrialized countries will rarely have poor outcomes (for example, only France, among the 33 wealthy countries that belong to the Organization for Economic Co-operation and Development, has a perinatal mortality greater than 1 percent[6]), which means that risks expressed as a relative risk when one intervention is compared to another, typically as an adjusted odds ratio, will involve a generally low absolute risk for an individual mother. For example, a mother in Norway rejecting a new medical intervention that a study suggests would reduce perinatal mortality in Norwegian births (currently 4.4 per 1,000[7]) by 30 percent might be altering her absolute risk (assuming all the conditions of the study applied to her) at a rate of slightly more than one per one thousand. Likewise, media reports of studies that only emphasize relative risk without noting the impact on absolute risk can further heighten patient anxiety and cloud decision making. So why is relative risk so prominent in discussions of medical outcomes?

Most contemporary quantitative studies rely on multivariate analysis, for theoretical reasons (it enables them to control for a variety of potential confounders) and for practical reasons (they wouldn't get published without it). These studies will have a dual finding: a relative risk of a given outcome in a group of interest (for example, those with a VBAC or home birth) compared to some reference group (for example, those with a repeat cesarean or hospital birth) and an absolute risk of the given outcome of interest (for example, neonatal death). The reliance on adjusted odds ratios has led to an emphasis on relative risk over absolute risk, although both would presumably be central to clinical decision making, particularly in the case of rare events such as poor childbirth outcomes in the U.S. How does a clinician balance a given intervention's association with a 50 percent lower risk of a poor outcome in one in one thousand cases? The interest, in recent years, in "shared decision making"[8] has been seen as one solution, encouraging clinicians and patients to jointly determine the optimal evidence-based course of action for that particular case. However, as Kaimal and Kuppermann note, shared decision making has not typically been the model for decisions on mode of delivery, with a heavier reliance by obstetricians on clinical guidelines.[9] In part, this may be a result of the history of decision making in obstetrics that has relied heavily on physician discretion and partly on the nature of the decision on the mode of delivery, which involves a discrete choice (one doesn't have a "partial cesarean") rather than on a range of treatment options.

There are also different conceptualizations of risk that can shape these decisions. Birth is not a singular event, and reducing "risk" in a current birth may alter risk profiles in subsequent births.[10] Birth also involves two patients, and, in some cases, reducing risk for one enhances it for the other. For example, a cesarean without trial of labor can often improve infant health, while at the same time complicating recovery and future births for the mother, and put a mother and infant at risk in a subsequent birth because of placental difficulties associated with repeat cesareans.[11] There are also risks, financial and professional, to clinicians who fail to intervene in a timely manner with, for example, a repeat cesarean, and while absolute risks of a poor outcome may be small, the widespread communication to clinicians of large malpractice settlements adds another dimension to their assessment of risk.[12] Clinicians constantly wrestle with the need to balance these competing risks. What's notable about the debates over VBACs and home birth is how often such judgments have apparently been reduced to a single finding—an adjusted odds ratio.

METHODS

This study adopts a case study approach to examine the debates over vaginal birth after cesarean and home birth. Descriptive data adapted from U.S. national and state data sets will be used to illustrate trends over time in these practices. A review of research and commentaries in the obstetrical clinical literature will provide the core information for the analysis. Finally, selected data from a national survey of mothers, *Listening to Mothers II (*2006), that involved 1,573 English-speaking mothers aged 18 to 45 who had a singleton, hospital birth in 2005, and a baby still living at the time of the survey, will be presented to illustrate maternal perspectives on these questions. The design, sample, and overall results from *Listening to Mothers II* have been presented elsewhere.[13] In addition to closed and open-ended questions concerning their experiences in

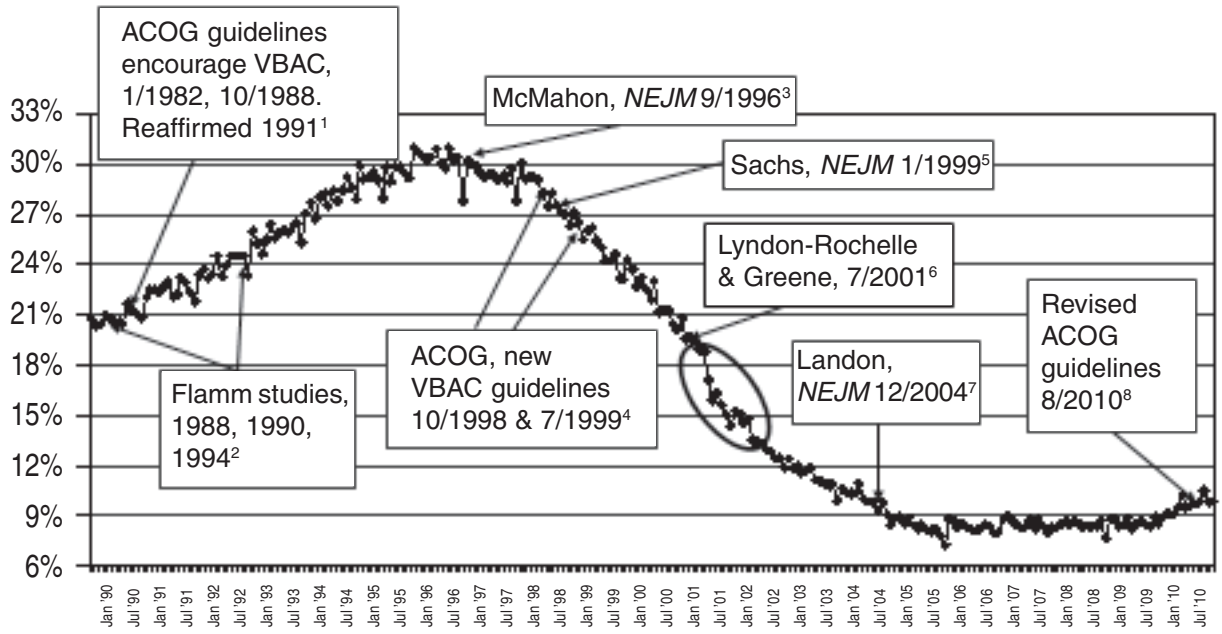
birth, the survey included attitudinal questions concerning mothers' perceptions of risk and their preferences on how risks in childbirth should be conveyed to them.

RESULTS

The Debate Over Vaginal Birth After Cesarean

In his 1916 article entitled "Conservatism in Obstetrics," Edwin Cragin, MD, famously stated, "the usual rule is, once a Cesarean, always a Cesarean."[14] That dictum was cited repeatedly in subsequent years with little attention to the remainder of Cragin's article, which argued against the overuse of primary cesareans in part because he believed they lead to repeat cesareans. Cragin's conclusion, "I believe that the extension of Cesarean section to conditions other than dystocia from contracted pelvis or tumors should be exceptional and infrequent," on page 3, is far less noted. Nonetheless, for decades the belief

FIGURE 1. Percentage of VBAC lower risk* mothers, U.S., monthly rates, 1990-2010



* Full-gestation (37+ weeks), vertex presentation, singleton births.

1. ACOG guidelines on vaginal birth after cesarean section (January 1982); ACOG guidelines on vaginal birth after cesarean section (October 1988); ACOG guidelines on vaginal birth after cesarean section (1991).

2. B.L. Flamm et al., "Vaginal birth after cesarean section: results of a multicenter study," *American Journal of Obstetrics & Gynecology* 158 (1988): 1079–84; B.L. Flamm et al., "Vaginal birth after cesarean delivery: results of a 5-year multicenter collaborative study," *Obstetrics & Gynecology* 76, no. 5, part 1 (1990): 750-4; B.L. Flamm et al., "Elective repeat cesarean delivery versus trial of labor: a prospective multicenter study," *Obstetrics & Gynecology* 83, no. 6 (1994): 927-32.

3. M.J. McMahon, E.R. Luther, W.A. Bowes, Jr., and A.F. Olshan, "Comparison of a trial of labor with an elective second cesarean section," *New England Journal of Medicine* 335, no. 10 (1996): 689-95.

4. "ACOG practice bulletin. Vaginal birth after previous cesarean delivery. No. 2, October 1998. Clinical management guidelines for obstetrician-gynecologists," *International Journal of Gynaecology & Obstetrics* 64, no. 2 (February 1999): 201-8; ACOG guidelines on vaginal birth after cesarean section (July 1999).

5. B.P. Sachs, C. Kobelin, M.A. Castro, and F. Frigoletto, "The risks of lowering the cesarean-delivery rate," *New England Journal of Medicine* 340, no. 1 (1999): 54-7.

6. M. Lydon-Rochelle, T.R. Easterling, and D.P. Martin, "Risk of uterine rupture during labor among women with a prior cesarean delivery," *New England Journal of Medicine* 345, no. 1 (2001): 3-8; M.F. Greene, "Vaginal delivery after cesarean section—is the risk acceptable?" *New England Journal of Medicine* 345, no. 1 (2001): 54-5.

7. M.B. Landon et al., "Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery," *New England Journal of Medicine* 351, no. 25 (2004): 2581-9.

8. "ACOG Practice bulletin no. 115: Vaginal birth after previous cesarean," *Obstetrics & Gynecology* 116, no. 2, part 1 (August 2010): 450-63.

that an initial cesarean so weakened the uterine wall that labor prior to a subsequent vaginal birth was dangerous took hold, as clinicians feared uterine rupture if a women with a prior cesarean were allowed to labor. Given the nature of the long vertical incisions used in cesareans for much of the 20th century, the fear was not unfounded. As surgical techniques improved and the classic vertical incision was replaced by the low transverse incision, the potential for safe vaginal birth after an initial cesarean increased, and clinicians, particularly in Europe where approaches to reducing intervention in obstetrics have been more positively received than in the U.S., explored the safety of VBACs. Early research was promising, as a series of clinical trials followed by meta-analyses found that if the reason for the initial cesarean was not a chronic condition (for example, contracted pelvis) and the mother was otherwise not at medical risk, as many as 75 percent of women with a low transverse scar could successfully deliver vaginally in a subsequent birth.[15]

The subsequent growth in the VBAC rate (based on the number of VBACs divided by the total number of mothers with a prior cesarean) in the early 1990s (see figure 1) was not just a function of changes based on new research findings, but also a function of general concerns about rising cesarean rates in the U.S. in the late 1970s, when the rate increased from 5.5 percent (1970) to 16.5 percent (1980).[16] This was manifested in a 1980 consensus report from National Institutes of Health (NIH) concerning steps that could be taken to reduce the overall U.S. cesarean rate, which included increasing mothers' access to VBACs.[17] The American College of Obstetricians and Gynecologists (ACOG) later issued new practice guidelines to support the increased use of VBACs in 1988.[18] Insurers saw the potential to decrease the use of VBACs as a way to reduce charges for unnecessary surgery, and began to pressure obstetricians to justify why they performed repeat cesareans, while at the same time encouraging them, through special training and financial incentives (for example, extra payments for discussing VBAC options with patients) to perform more VBACs.[19] A backlash against VBACs arose within parts of the obstetrical community with a focus on several themes, including infringement on clinical judgment;[20] cost (with some studies concluding repeat cesarean birth might be cheaper when the cost of failed VBACs were taken into account);[21] consumer choice, suggesting that mothers seeking a repeat cesarean were being denied their rights;[22] and safety. The safety argument emphasized the greater relative risk of uterine rupture in VBACs.[23]

The VBAC rate peaked in 1996 and then began a swift decline. Figure 1 identifies a series of research articles, commentaries, and editorials, primarily in the *New England Journal of Medicine* (*NEJM*), that appear to be related to the decline of VBACs. The first, a research article in 1996, is a clear example of the emphasis on a single finding in a complex study.[24] McMahon and colleagues studied 6,138 mothers with a prior cesarean, comparing women with a trial of labor to those with elective repeat cesareans on a range of outcomes. There were no maternal deaths and they found no statistically significant difference in the overall rate of maternal morbidity, Apgar scores, admission to the neonatal intensive care unit, and perinatal mortality. When they combined three of their outcomes, hysterectomy, uterine rupture, and operative delivery, into a category of "major complications," they found the adjusted odds ratio for these complications in trials of labor to be 1.8, with a confidence interval just barely reaching significance (95 percent confidence interval. 1.1-3.0) compared to elective repeat cesareans. The absolute difference in major complications was 0.8 percent, or one in 125 cases. Notably, while the results section of the abstract of the study notes these overall mixed findings, the conclusion is unambiguous: "Among pregnant women who have had a cesarean section, major maternal complications are almost twice as likely among those whose deliveries are managed with a trial of labor as among those who undergo an elective second cesarean section."[25] Despite an accompanying editorial that noted the low absolute risk of negative outcomes associated with trials of labor,[26] the impact of the article's conclusion appears to be profound. A six-year rise in the VBAC rate began to be reversed from the all-time high (29.0 percent) in the month the article was published (September 1996). In the following months, the rate began to fall gradually and then leveled off at about 27 percent for the next 18 months, when a second decline began in mid-1998, just prior to the release of new guidelines from the ACOG. These guidelines cited the McMahon study and Level C evidence ("Based primarily on consensus and expert opinion") that "VBAC should be attempted in institutions equipped to respond to emergencies with physicians immediately available to provide emergency care."[27] The emphasis on resources being immediately available effectively limited most VBACs to larger hospitals, further restricting access for mothers.

The decline in VBACs continued gradually until July 2001, when another article in the *NEJM* by Lydon-Rochelle and colleagues documented poor

outcomes associated with induction of labor in mothers attempting a VBAC.[28] It did not conclude VBACs themselves were dangerous; however, an accompanying editorial by the *NEJM*'s obstetrical editor, entitled, "Vaginal Delivery after Cesarean Section—Is the Risk Acceptable?"[29] analyzed the study data, noting the low absolute risk of uterine rupture in trials of spontaneous labor (0.52 percent) and repeat cesareans (0.16 percent), but a higher relative risk. It essentially called for an end to VBACs, concluding, "a patient might ask, 'But doctor, what is the safest thing for my baby?' . . . my unequivocal answer is: elective repeat cesarean."[30] The findings from the article and the commentary in the editorial became mixed in subsequent media coverage, and the impact was immediate. The U.S. VBAC rate dropped from 17.6 percent in the month before the editorial to 13.4 percent by December 2001, a 24 percent decline in a national rate in six months,[31] without a definitive research finding. Interestingly, while the findings of systematic reviews concerning the safety of VBACs found a higher risk of uterine rupture with a trial of labor, the likelihood of a serious rupture was so low that the benefits of elective repeat cesareans were not as clear as suggested by the change in practice.[32] In December 2004, the largest prospective study (33,669 women in 19 centers that are part of the NIH Maternal-Fetal-Medicine network) of VBACs and repeat cesareans was published, also in the *NEJM*.[33] Similar to past studies, it found very low absolute risks for poor outcomes associated with trials of labor (for example, the re-opening of a site of a previous cesarean, 0.7 percent versus 0.5 percent for elective cesareans), but higher relative risks (1.38 95 percent confidence interval 1.04-1.85). While many of the findings paralleled McMahon, the Landon study's analysis of those differences took a more measured approach, concluding, "our data suggest a risk of an adverse perinatal outcome at term among women with a previous cesarean delivery of approximately 1 in 2000 trials of labor (0.46 per 1000), a risk that is quantitatively small but greater than that associated with elective repeated cesarean delivery."[34] By the time Landon's study was published, the national VBAC rate had dropped to 8 percent. In the months and years subsequent to the Landon study, the national VBAC rate has remained at around 8 percent. The impact of these constraints were seen in the results of a 2006 national survey of mothers, 57 percent of whom reported an interest in a VBAC, but no access to one.[35]

It would be naïve to assume that the shifting VBACs rates were driven solely by studies that emphasized relative over absolute risk. Several other factors, including a changing malpractice climate that encouraged repeat cesareans over VBACs,[36] growing clinician preference for cesareans,[37] greater acceptance of repeat cesareans by mothers,[38] and the virtual ban of VBACs in smaller to middle sized hospitals all contributed to this trend. However, the major studies cited to support these policy and practice shifts emphasized relative risk, with minimal attention to absolute differences in outcomes. The largest, best-quality study that presented a more balanced analysis of relative and absolute risks had virtually no impact on practice: in 2010, the NIH (the prime funder of the Landon study) convened a meeting to sort through the evidence and concluded, "Given the available evidence, trial of labor is a reasonable option for many pregnant women with one prior low transverse uterine incision,"[39] and, "Given the low level of evidence for the requirement for 'immediately available' surgical and anesthesia personnel in current guidelines, we recommend that the American College of Obstetricians and Gynecologists and the American Society of Anesthesiologists reassess this requirement with specific reference to other obstetric complications of comparable risk, risk stratification, and in light of limited physician and nursing resources."[40] The ACOG did issue new guidelines that provided more support for VBAC but, once again based on Level C evidence, refused to lift the "immediately available" phrase from the guidelines.[41] A more recent and widely cited study[42] exhibited the familiar emphasis on relative over absolute risk in creating a composite measure (similar to McMahon in 1996) of three outcomes (fetal death, infant death, and a created measure of "serious infant outcome"), and then finding a relative difference in outcomes (0.39 relative risk for poor outcomes from elective cesarean compared to trial of labor). However, as Kotaska points out in a review of this study, there were problems with not only the emphasis on relative risk, but also the construction of the composite measure, the classification of cases, and the assumption of long-term impacts from outcomes measured in the short term.[43]

The success in characterizing VBACs as high risk can be seen in the degree to which mothers have internalized the message. In the 2006 *Listening to Mothers II* survey, mothers who had received a cesarean were asked if they had requested that cesarean before they went into labor. While primary cesareans performed at the request of the mother were exceedingly rare (<1 percent), more than one-fourth (28 percent) of mothers with a prior cesarean had requested a repeat cesarean during her pregnancy.

Some mothers explicitly cited risk as their prime reason, with one mother stating, "I really wished I could have used a midwife for my second pregnancy, but because VBAC is considered 'high risk,' it was not an option. I had a midwife with my first pregnancy and I loved it."[44]

HOME BIRTH

While there are far more repeat cesareans in one month (~40,000) in the U.S. than there are home births in a year (31,500[45]), the debate over the safety of home birth in the U.S. tends to be as heated as that over repeat cesareans and VBACs.[46] A combination of ethical, practical, and measurement issues, along with the relatively small number of home births, makes research on outcomes of planned home births in the U.S. exceedingly difficult.[47] This has led to efforts to infer the applicability to the U.S. of results from other countries where home birth is more common and measurement systems allow for better tracking of planned home births. The best known such effort was a 2010 meta-analysis in the *American Journal of Obstetrics & Gynecology* by Joseph Wax and colleagues,[48] which attempted to combine the results from a series of studies from industrialized countries. Even though the article was an "Editor's Choice," its methodology has been the subject of considerable controversy;[49] but assuming the statistical analysis was sound, what is of interest here is the interpretation of risk. The primary outcomes the authors focused on were perinatal and neonatal mortality (both including and excluding anomalous conditions—primarily congenital anomalies that might cause death and be unrelated to place of delivery), and the results were driven by a Dutch study with 480,000 births,[50] or about eight times as many cases as the other 11 studies cited combined. Neonatal mortality includes only live births, and measures deaths within the first 28 days of life. Perinatal mortality combines both fetal deaths and early (within seven days) neonatal deaths in its measure. Given the differences in the way countries classify live births and fetal deaths, there are advantages in using perinatal mortality when combining data from different countries.

After finding no difference in perinatal mortality, the authors chose to exclude the Dutch study from the analysis of neonatal mortality (a decision that was the basis of much of the controversy) and found statistically significantly higher adjusted odds ratios for neonatal death in the home births in the case of all births (odds ratio 1.98, 95 percent CI—confidence interval—1.19-3.28) and nonanomalous births (odds ratio 2.87, 95 percent CI 1.32-6.25). They also found lower rates of intervention in home births. Their conclusion in the article and highlighted in the abstract and subsequent media coverage was clear, "Less medical intervention during planned home birth is associated with a tripling of the neonatal mortality rate."[51] This conclusion was quickly adopted in an ACOG Obstetric Practice Bulletin that was published shortly thereafter, which stated, "Women inquiring about planned home birth should be informed of its risks and benefits based on recent evidence. Specifically they should be informed that although the absolute risk is low, planned home birth is associated with a twofold to threefold increased risk of neonatal death."[52] What is not mentioned in either of the conclusions is the absolute differences in outcomes. For nonanomalous cases, the difference in neonatal deaths between planned home births (0.15 percent) and planned hospital births (0.04 percent) is one case per one thousand. In a far more measured commentary in *Obstetrics & Gynecology* in 2011, Ecker and Minkoff bring the focus back to absolute risk, stating, "Weighing benefits and burdens should not focus on the relative risk . . . but absolute risk. As noted for home birth, the magnitude of the relative risk in comparison to hospital birth remains unsettled but even in those studies that show a difference, the absolute risk remains low. In fact the absolute risk is congruent with risks accepted for other choices including a trial of labor after cesarean delivery."[53] With few exceptions[54] recent arguments that home birth is unsafe are based almost entirely on assessments of relative risk, typically citing the Wax conclusion, since the general health of women having planned home births, combined with risk selection during the prenatal period, results in generally positive maternal and infant outcomes for home births.

MATERNAL PERSPECTIVES ON COMMUNICATION OF RISK

The *Listening to Mothers II* survey included a series of questions concerning mother's expectations of how risks associated with birth should be conveyed to them. The questions were not framed as relative or absolute risk, but simply how much they should be told about possible procedures they might experience. Mothers were given one of three statements: "Quite a few women experience [labor induction or cesarean or epidural] while giving birth. Before consenting to an [induction/cesarean/epidural], how important is it to learn about possible side effects of an [induction/cesarean/epidural]?" Almost

four in five mothers responded in each case that they felt it was necessary to know every complication associated with the given procedure, and most of the remaining respondents felt they should know most of the possible complications.[55] It is almost impossible for clinicians to meet this expectation,[56] but it does capture mothers' interest in knowing everything they can, which would presumably include both relative and absolute risk.

DISCUSSION

The events described here concerning debates over the safety of VBAC and home birth identify a predominant reliance on relative risk in criticisms of each practice. In both cases absolute risk of a poor outcome (typically uterine rupture or neonatal death) was very low (from 1 percent to 0.05 percent), but in the studies at the core of the debate, a higher relative risk was the key evidence cited for changing practice. As noted, others have questioned whether the findings of higher relative risk were valid,[57] but of greater interest here is the acceptance of relative risk as the criteria for assessing a practice among both clinicians and ultimately mothers themselves. To understand why low levels of absolute risk are not persuasive to clinicians, we can learn from a political example. In his reporting on decision making in the Bush administration following the September 11 terrorist attacks, author Ron Suskind describes what he terms the "One Percent Doctrine."[58] The phrase is drawn from a statement by Vice President Dick Cheney, who apparently indicated at a security meeting that if there were even a 1 percent chance of a terrorist act occurring, it must be treated as if it were a certainty. The power of the vice president's claim is in suggesting it reflected his deeper concern with protecting Americans against another terrorist attack, which was deeper than anyone elses'—a position not unlike aggressive clinicians who advocate intervening even in cases of low absolute risk, arguing that intervention with, for example, a repeat cesarean can prevent even a small chance of a symptomatic uterine rupture. A conviction that medical intervention can eliminate low absolute risk with even weak evidence of a lower relative risk for that intervention can easily become the "proof" that a clinician who is inclined toward that procedure needs to intervene at a higher rate. This combination of predisposition and some form of evidence may help account for rapid shifts like the steep decline in VBACs.

The role of mothers in these risk assessments is not easy to characterize. A substantial majority feel it is their right to receive information on every possible risk that is associated with some of the most common interventions (for example, inductions and cesareans) in labor, presumably to better determine whether or not to avoid them. This desire for complete information is both understandable (shouldn't more information lead to a better decision?) and unrealistic. Current constraints on time for visits renders this an almost impossible standard, even assuming that a clinician has the requisite communication skills and the mother has a solid understanding of the statistical and clinical components of risk assessment. However, mothers' responses to open-ended questions in *Listening to Mothers II* about their best and worst experiences in pregnancy and childbirth revealed that many mothers have accepted the inevitability of repeat cesareans and fully internalized the idea of higher risk associated with VBACs. One mother remarked, "I was on bed rest for the majority of my pregnancy and it wasn't needed but my doctor didn't want to risk something happening even if it was a very small chance," while another stated, "I had a healthy pregnancy. I scheduled a C-section this time because of higher risk for uterine rupture." Perhaps the redefining of birth as a high-risk event was best captured by this mother: "There are an alarming number of High Risk [mothers], and people like me did not know there [were so many] high risk doctors. Maybe you can let more people know about it."

There is hope that the use of relative and absolute risk can be improved by the development of decision aids[59] and "shared decision making,"[60] in which "decisions are shared by doctors and patients, informed by the best evidence available, and weighted according to the specific characteristics and values of the patient; this exchange occurs in a partnership that rests on explicitly acknowledged rights and duties and on an expectation of benefit to both parties."[61] The disproportionate levels of information between the two parties in the decision process places the responsibility for sharing on clinicians, and this will be subject to their own perspective on the clinical decision process. Finding balance in the relationship between the "partners" in these decisions is tricky at best, as can be seen in the varying interpretations of patient autonomy in VBACs and home birth. Doctors performing elective repeat cesareans will cite their actions as manifesting their respect for the autonomy of the large number of mothers seeking another surgical birth.[62] At the same time, obstetricians opposed to home birth (often the same individuals advocating repeat cesareans) will cite the importance of professional

responsibility over patient autonomy in refusing to support a mother seeking a home birth.[63] This example suggests one view that could be best summarized as shared decision making as long as the decision coincides with the clinicians' views. Decision aids have had some success in informing mothers[64] concerning risks, but their impact on cesarean rates is mixed, and they have not yet been widely adopted.

Relative risk should unquestionably be a key element in decision making concerning an intervention. The difficulty arises when relative risk appears to be the only information that is communicated to patients and used to establish clinical guidelines. With thoughtful communication, mothers are capable of understanding both relative and absolute risks and sorting out the meaning of each for themselves. It is the obligation of the clinical and policy community to establish systems that will effectively assist in both.

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