

# *A Review of Issues Surrounding Medically Elective Cesarean Delivery*

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■ The rate of cesarean delivery has increased dramatically over the past decade. Medically elective cesareans are a major factor contributing to this rise. This article discusses the most recent evidence on the perinatal risks of cesarean delivery versus vaginal birth, the economic impact of elective cesarean delivery, and ethical principles related to cesareans performed without medical indication. Physicians' rationales and responses to the issues are reviewed and the recommendations and guidelines of professional organizations are summarized. Available evidence does not lend support to a current shift in clinical practice. Research is needed to adequately compare outcomes of planned cesarean delivery and planned vaginal birth. Until evidence supports medically elective cesarean as a birth option that optimizes outcomes for low-risk mothers and their infants, obstetric care providers should continue to support evidenced-based decision making that includes advocacy for vaginal delivery as the optimal mode of birth. *JOGNN*, 36, 605-615; 2007. DOI: 10.1111/J.1552-6909.2007.00196.x

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## **A Review of Issues Surrounding Medically Elective Cesarean Delivery**

The cesarean delivery rate in the United States reached an unprecedented high of 30.2% in 2005 (Hamilton, Martin, & Ventura, 2006) and is rising still. Cesarean delivery statistics and trends imply that indications for this major operation have changed over the past decade. Menacker (2005) reported ris-

ing rates of primary cesarean delivery in low-risk women of all ages, races, and ethnicities. Repeated cesarean delivery rates have risen steeply since 1996, with a concordant drop to 11% in the rate of vaginal birth after cesarean in low-risk women (Menacker). Cesarean delivery on maternal request (CDMR) may also be a factor in the rising cesarean rates, though the incidence of CDMR has been hotly debated (Declercq, Sakala, Corry, & Applebaum, 2006; Gossman, Joesch, & Tanfer, 2006; National Institute of Health [NIH], 2006).

While there is no agreed upon terminology for the variety of cesarean deliveries performed without clear medical indication, we appreciate Menacker, Declercq, and Macdorman's (2006) term "medically elective cesarean," defined in this article to include cesarean performed without medical or obstetric indications, as well as CDMR. This paper will review current research on the rise in cesarean delivery and its implications related to risks, economics, ethics, practice, and future research.

## ***Risks and Benefits of Medically Elective Cesarean Delivery Versus Planned Vaginal Birth***

There are no studies comparing the risks and benefits of medically elective cesarean delivery to those of planned vaginal birth. Therefore, researchers attempting to gather relevant evidence have created proxy definitions of medically elective cesareans such as scheduled, elective, and "no indicated risk" cesareans, and have resorted to studies that included planned cesareans for breech presentation (Macdorman, Declercq, Menacker, & Malloy, 2006; NIH, 2006). Although research findings should be viewed with caution due to the issues above, maternal and neonatal outcomes are reviewed below.

### *Maternal Short-Term Risks and Benefits*

*Postpartum Hemorrhage.* Most postpartum hemorrhage is a result of uterine atony (Gabbe, Niebyl, & Simpson, 2002; Cunningham et al., 2005). Overall, blood loss from vaginal birth and cesarean delivery, however, may be related to lacerations, episiotomy, and abdominal surgery.

The amount of blood loss defined as postpartum hemorrhage is an estimated blood loss of greater than 500 ml (Cunningham et al., 2005). Yet, blood loss in a healthy pregnant woman is frequently 500 ml after vaginal delivery and 1,000 ml after cesarean delivery (Gabbe, Niebyl, & Simpson, 2002). Authoritative obstetric texts such as Gabbe and Cunningham do not offer different definitions for postpartum hemorrhage specific to mode of delivery. Nor is every cesarean delivery considered to be complicated by a postpartum hemorrhage, even though the expected blood loss from cesarean delivery is greater than 500 ml.

Estimated blood loss is not an accurate measure. One recent study showed that there was no correlation between estimated and measured blood loss at vaginal births and that the correlation was only moderate in women delivered by elective cesarean delivery (Larsson, Saltvedt, Wiklund, Pahlen, & Andolf, 2006). Some studies used the need for blood transfusion as proxy for postpartum hemorrhage (Allen, O'Connell, Liston, & Baskett, 2003), while others used diagnosis codes (Lydon-Rochelle, Holt, Martin, & Easterling, 2000). A drop in hemoglobin or hematocrit is sometimes used, despite the unreliability of these measures due to expanded blood volume of pregnancy and the intravascular fluid shift that occurs in the first few postpartum days (Larsson et al., 2006).

Postpartum hemorrhage is not consistently linked to mode of delivery. Allen, O'Connell, Liston, and Baskett (2003) reported lower hemorrhage rates in women undergoing cesarean without labor when compared to women entering labor spontaneously for planned vaginal delivery. In a large study, Koroukian (2004) similarly reported an increased risk of postpartum hemorrhage with spontaneous delivery but noted that women undergoing a cesarean were significantly more likely to receive blood transfusion in the postpartum period. Lydon-Rochelle et al. (2000) reported higher rates of postpartum hemorrhage associated with assisted vaginal and cesarean delivery when compared to spontaneous vaginal birth. These findings suggest a need for more consistency in terminology, practice, and research on this subject.

*Fever, Infection, Pneumonia, and Thromboembolic Events.* The risk of these types of postpartum morbidity is consistently increased with cesarean delivery. Until recently, most studies on postpartum morbidity were limited to in-patients (Allen et al., 2003; Burrows, Meyn, & Weber, 2004) and did not account for women who experienced complications after hospital discharge. Lydon-Rochelle et al. (2000), Liu et al. (2005), Koroukian (2004),

and DeClercq et al. (2007) included morbidities diagnosed after discharge by looking at hospital readmissions and claims data. All of these reported a higher risk of wound complications and infection for low-risk or planned cesarean deliveries when compared to uncomplicated or planned vaginal births. Assisted vaginal deliveries and cesarean deliveries preceded by labor were reported to have the highest association with postpartum morbidities.

*Surgical and Traumatic Complications.* Surgical and traumatic complications from planned vaginal birth involve soft tissue damage, including nerve and sphincter damage, and rarely, skeletal damage from symphyseal separation, or coccyx fractures. The majority of traumatic complications in vaginal birth occurred when episiotomies, vacuum extraction, and forceps were used to accelerate the delivery (NIH, 2006). These interventions may be indicated for fetal or maternal health, but when employed as a matter of routine, according to physician preference, or for educational purposes, episiotomy, vacuum extraction, and forceps may cause unnecessary traumatic complications. Studies to date do not control for these nonmedically indicated interventions that confound outcomes for planned vaginal birth.

For cesarean deliveries, more surgical and traumatic complications occurred when the patient labored prior to the procedure (NIH, 2006). Surgical and traumatic complications from cesarean delivery included damage to the bladder, ureters, and other abdominal structures. According to the NIH, weak evidence supported a lower risk of surgical complications with elective cesarean when compared to planned vaginal birth. More recently, however, Declercq et al. (2007) reported a significantly higher rate of complications in women with planned cesarean deliveries compared to planned vaginal birth, when adjusted for risk. No studies to date have reported the long-term effects on the quality of women's lives.

*Maternal Mortality.* Since the release of the NIH report (2006), which concluded that studies were inadequately powered to demonstrate evidence on maternal morbidity and mortality related to mode of delivery, two relevant studies with large sample sizes have been published. In June of 2006, the World Health Organization (WHO) released the results of a 2005 survey of maternal and perinatal health, with attention to the rising rate of cesarean delivery. Data from almost 100,000 deliveries in Latin America reflected higher rates of severe maternal morbidity and mortality when compared to vaginal delivery, even after adjusting for risk (Villar et al., 2006). Deneux-Tharoux, Carmona, Bouvier-Colle, and Breart (2006) also concluded based on a large population-based case-control study that cesarean delivery was associated with severe maternal morbidity and a greater risk of maternal death from anesthesia complications, infection, and venous thromboembolism. Both studies were conducted in other

countries, perhaps, reflecting different practices than in the United States, but notably both studies controlled for risk.

**T**he risk of maternal fever, infection, pneumonia, and thromboembolic events is consistently increased with cesarean delivery.

### *Maternal Long-Term Risks and Benefits*

*Postpartum Health.* Return to functionality reflects the long-term impact of childbirth (Borders, 2006; Tulman, Fawcett, Groblewski, & Silverman, 1990). It has been suggested that mode of delivery influences physical discomfort, activity levels, mood, sexual function, emotional fulfillment, and levels of distress (Borders; Lydon-Rochelle, Holt, Martin, 2001; Miller, Thornton, & Gittens, 2002). Women undergoing cesarean delivery or assisted vaginal delivery were more likely to report significantly lower postpartum general health status scores than women with unassisted vaginal delivery. Additionally, women with assisted vaginal delivery reported significantly worse sexual, bowel, and urinary functioning (Lydon-Rochelle et al., 2001).

*Pelvic Floor Disorders.* Pelvic floor disorders include urinary and anal incontinence, as well as pelvic organ prolapse and its sequelae. Urinary incontinence (UI) has become a major concern of both women and health care providers as life expectancy for women rises.

Factors that have been repeatedly associated with UI but not mode of delivery include age, obesity, and fetal macrosomia (Rogers & Leeman, 2007). Rogers and Leeman noted that it was still unclear as to whether some changes (urinary and anal incontinence, pelvic organ prolapse, and sexual function) were due to the method of childbirth or simply pregnancy itself.

Altman et al. (2006) conducted a prospective observational cohort study over 10 years and also found that the risk of UI increased significantly after a first vaginal birth. One team (Groutz et al., 2004) concluded that cesarean without labor confers more of a benefit to the pelvic floor than labored cesarean, and that operative vaginal delivery causes more sequelae than spontaneous vaginal birth. Rortveit et al. (2003) reported that in a large community-based cohort study, vaginal birth increased the risk of stress urinary incontinence (SUI) when compared to cesarean delivery. Other factors associated with SUI included increasing parity, age, mean infant birthweight, and maternal body mass index.

In contrast, in a randomized controlled trial of cesarean delivery and vaginal birth for term breech deliveries, the

incidence of urinary and anal incontinence was found to be the same at 2 years postdelivery (Hannah et al., 2000), and a recent survey of 2,625 perimenopausal women concluded that previous pregnancy itself increased the risk of severe SUI among women by age 50 and the impact of the mode of delivery (spontaneous, forceps, or cesarean) on severe SUI was minimal (Fritel et al., 2005).

While associated with maternal age and pregnancy itself, anal incontinence has been strongly associated with anal sphincter injury sustained during vaginal birth (Rogers & Leeman, 2007). A strong correlation between anal sphincter injury and the use of episiotomy, vacuum extraction, and forceps at delivery has been repeatedly demonstrated (FitzGerald, Weber, Howden, Cundiff, & Brown, 2007; Hartmann et al., 2005; Rogers & Leeman). Episiotomy and operative vaginal delivery were also associated with pain and sexual dysfunction (Klein et al., 1994).

A recent study by Schaffer et al. (2005) found that coached pushing in the second stage of labor significantly affected urodynamic indices. Albers, Sedler, Bedrick, Teaf, and Peralta (2006) also concluded that an unrushed and controlled delivery technique resulted in less obstetric trauma. Albers et al. (2006) suggested that genital trauma might be prevented or minimized by encouraging delivery of the baby between contractions. Further research may demonstrate that expectant management of the second stage of labor, with spontaneous pushing as the norm and operative delivery or episiotomy only as medically indicated, will lead to pelvic floor outcomes similar to those after cesarean.

*Loss of Reproductive Capability.* Future reproductive capability is influenced by the condition of the uterus subsequent to birth. Uterine infection and scarring alter muscle integrity, predisposing the uterus to subsequent rupture and abnormal placentation. Getahun, Oyelese, Salihu, and Ananth (2006) demonstrated that the risk of placental abruption, as well as placenta previa, increases after a first-birth cesarean and with each subsequent cesarean. The risk of hysterectomy for complications of placenta previa and placenta accrete is also increased with repeated cesarean deliveries (NIH, 2006). Unexplained fetal loss in pregnancies subsequent to cesarean delivery has been reported (Gilliam, 2006). The NIH report on CDMR rated the quality of the research on the loss of reproductive capability after cesarean as weak, but according to one of the Conference's researchers, "CDMR is harmful for a woman's future reproductive health" (Gilliam) and recent research has supported this comment (Getahun et al., 2006).

*Psychosocial Risks and Benefits.* In a systematic review conducted by Childbirth Connections, researchers looked at social and emotional harms as a consequence of mode of childbirth. Maternal mental health problems (perception of birth experience, self-esteem, psychological trauma, and depression) were strongly associated with cesarean

delivery (Declercq et al., 2006). In addition, delay in maternal-infant bonding, unfavorable early maternal reaction to the infant, and difficulty in establishing lactation were strongly correlated with cesarean delivery (Rowe-Murray & Fisher, 2001, 2002; Sakala, 2006).

## **W**omen widely perceive cesarean delivery to be safer than vaginal birth for their babies.

Women widely perceive cesarean delivery to be safe and many view it as safer than vaginal birth for their babies (Weaver, Statham, & Richards, 2007). Yet, the number of women who choose or would prefer a medically elective cesarean delivery is small, varying from less than 1% to 6% in several studies (Childbirth Connections, 2006; Gamble & Creedy, 2001; Weaver et al.). In addition, Gossman, Joesch, and Tanfer (2006) reported a decrease in the overall rate of CDMR since 1998. However, little information is known about the women who choose medically elective cesarean delivery other than they tend to be older (Lin & Xirasagar, 2005) and are more likely to be married than unmarried (Kalish, McCullough, Gupta, Thalker, & Chervenak, 2004).

As shown in Table 1, women who choose or would prefer a medically elective cesarean delivery report a variety of reasons for doing so (Bettes et al., 2007; Evanaki, Khakbazan, Babaei, & Noori, 2004; Gamble & Creedy, 2001; Lavender, Hofmeyr, Neilson, Kingdon, & Gyte, 2007; Liu & Yang, 2003; Wagner, 2000; Weaver et al., 2007). The most prevalent reason, reportedly experienced by as many as 20% of women, is fear of childbirth (Saisto & Halmesmaki, 2003; Tillet, 2005). Severe fear of childbirth, with resultant nightmares, physical complaints, and anxiety, may complicate as many as 6% to 10% of pregnancies (Saisto & Halmesmaki). A prior traumatic birth may also trigger a demand for a medically elective cesarean in a subsequent delivery (Gardner, 2003). However, psychosocial health benefits derived from medically elective cesarean delivery have yet to be demonstrated.

### **Neonatal Risks and Benefits of Cesarean Birth**

**Respiratory Effects.** Research has long demonstrated that term and near-term infants have higher rates of respiratory morbidity from cesarean delivery than from vaginal birth (Jain & Dudell, 2006). Research over the past decade has focused on the potential for childhood asthma, allergies, and atopic disease associated with birth method (Renz-Polseer et al., 2005; Salam et al., 2006). These studies have suggested that cesarean delivery is positively correlated with long-term respiratory and autoimmune disorders in the neonate.

**Injury and Mortality.** Some neonatal outcomes have favored unlabored cesarean delivery over planned vaginal birth. The rates of birth asphyxia, meconium aspiration, and hypoxic ischemic encephalopathy were less with unlabored cesarean (Jain & Dudell, 2006). Alexander et al. (2006) conducted a large, prospective cohort study and similarly found that approximately twice as many fetal injuries occur with unplanned versus planned cesareans. Macdorman et al. (2006) analyzed nationally linked birth and infant death data for the 1998 to 2001 birth cohorts (5,762,037 live births and 11,897 infant deaths) to examine infant mortality based on mode of delivery in low-risk mothers, while controlling for factors such as congenital anomalies. Higher rates of neonatal mortality were seen for medically elective cesarean delivery than for vaginal birth. The NIH concluded, however, that the evidence favoring one delivery method over another for neonatal outcomes such as iatrogenic prematurity, length of stay, mortality, intracranial hemorrhage, asphyxia, encephalopathy, injury, and infection was weak (NIH, 2006).

**Breastfeeding, Bonding, and Attachment.** Initiating breastfeeding in the first hour of life, nursing frequently, and on demand have been shown to result in successful breastfeeding (Riordan & Hoover, 2005). Women recovering from cesarean delivery are generally monitored postoperatively for 2 hours, most often without the ability or opportunity to initiate breastfeeding. Incision pain and sedation from pain medication alter a woman's ability to hold and breastfeed her newborn in the first 24 to 48 hours postoperatively. These conditions, along with limited maternal mobility, result in hospital policies dictating that infants not be left alone with postoperative mothers until the mothers are more independent. Given these barriers, it is not surprising that current evidence supports vaginal birth over cesarean delivery for better breastfeeding outcomes (NIH, 2006).

Prolonged neonatal hospitalization, either in the newborn nursery or the neonatal intensive care unit, may also result in alterations of bonding and attachment. Whether the admission is due to maternal status, medical indications, or for prophylactic treatment of alterations in newborn respiratory status, newborns delivered by cesarean are more likely to spend more time separated from their mothers than those born vaginally.

### **Professional Opinions on Cesarean Birth**

**Physicians.** More than half of physicians in the United States and the U.K. have either performed a cesarean on maternal request (Bettes et al., 2007) or would be willing to do so (Cotzias, Paterson-Brown, & Fisk, 2001; Wax, Cartin, Pinette, & Blackstone, 2005; Wu, Hundley, & Visco, 2005). From 40% to 54% of physicians approve of a woman's right to request and obtain a cesarean without medical indication (Bergholt, Ostberg, Legarth, & Weber, 2004; Bettes et al.), and a majority believe that medical

**TABLE 1*****Reasons for Choosing Elective Cesarean Delivery in Research to Date***

	<i>Concern</i>	<i>Research Source</i>
Maternal reasons	Concern for safety of self and infant	Evanaki, Khakbazan, Babaei, & Noori, 2004; Weaver, et al. (2007)
	Fear of childbirth	Lavender, et al. (2007); Saisto & Halmesmaki (2003); Tillet (2005); Weaver et al.
	Fear of pain	Evanaki et al.; Weaver et al.
	Perception of cesarean delivery as safe or safer than vaginal birth	Wagner (2000); Weaver et al.
	Damage to perineal floor	Evanaki et al.; Weaver et al.
	Prior complicated/traumatic birth	Bettes et al. (2007); Gardner (2003); Weaver et al.
	Social convenience	Bettes et al.; Tillet; Wagner; Weaver et al.
	Stress and anxiety	Evanaki et al.; Gamble & Creedy (2001)
	Fear of vaginal examinations	Evanaki et al.
Physician reasons	Recognition of woman's fear of childbirth	Tillet; Wax, Cartin, Pinette, & Blackstone (2004); Wax, Cartin, Pinette, & Blackstone (2005); Weaver et al.
	Patient pain	Wax et al. (2004); Wax et al. (2005)
	Fear of perineal injury	Bergholt et al. (2004); Bettes et al.; Ghetti, et al. (2004); Tillet; Wax et al. (2004); Wax et al. (2005); Weaver et al.
	Fear of fetal injury	Bettes et al.; Tillet; Wax et al. (2004); Wax et al. (2005)
	Fear of urinary or anal incontinence	Bergholt et al.; Bettes et al.; Ghetti et al.; Tillet; Wax et al. (2004); Wax et al. (2005)
	Possibility of sexual dysfunction	Tillet; Wax et al. (2004); Wax et al. (2005)
	Patient convenience	Tillet; Wax et al. (2004); Wax et al. (2005)
	Physician convenience	Bettes et al.; Wax et al. (2004); Wax et al. (2005)
	Previous adverse birth outcome	Wax et al. (2004); Wax et al. (2005)
	Fear of litigation	Wagner

evidence and ethical issues sometimes or always support nonmedically indicated cesarean delivery (Wax et al., 2005). Female physicians are significantly more negative toward a woman's right to request and obtain a cesarean delivery and they are less likely than male physicians to perform a medically elective cesarean delivery (Bettes et al.; Ghetti, Chan, & Guise, 2004). However, when physicians were questioned about the mode of delivery they would prefer for themselves or their partners, only about 20% indicated a preference for cesarean delivery (Bettes et al.; Wax et al., 2005).

**F**rom 40% to 54% of physicians approve of a woman's right to request and obtain a cesarean without medical indication.

As seen in Table 1, physicians gave different reasons for performing a medically elective cesarean delivery (Bergholt et al. 2004; Bettes et al., 2007; Tillet, 2005; Wagner, 2000; Wax et al. 2005; Weaver et al., 2007) but were more likely to agree to cesarean delivery regardless of indication when the patient had a high socioeconomic level (Ghetti et al., 2004). Patients who had undergone assisted reproductive technology were more likely to be offered a medically elective cesarean delivery when compared to patients who had conceived spontaneously (Kalish et al., 2004).

It is unclear whether the impetus for most medically elective cesarean delivery is an offer made by the physician, a subtle coercion by a health care provider, or a request originating with the woman. In one study, intrapartum elective cesarean delivery without a medical indication was offered by physicians in 13% of cases and requested by the patient in 8.8% of cases (Kalish et al., 2004). Childbirth Connections (2006) reported that almost 10% of survey respondents felt pressure from a health professional to

deliver by cesarean. Researchers in Brazil and Chile found that the medically elective cesarean delivery rate was not driven by maternal requests. Instead it was the interaction between the physician and the woman that led to a decision to perform a cesarean (Murray, 2000; Potter et al., 2001). In Potter's study, more than 80% of first-time mothers anticipated a vaginal birth 1 month prior to their due date, yet more than half of them ended up with a cesarean delivery.

Attendees at the NIH State of the Science Conference on CDMR suggested that physicians play a key role in promoting elective cesarean delivery to individual women (Mayberry, 2006). Physician convenience, benefits, and issues of reimbursement may contribute to a willingness to offer cesarean delivery as an elective procedure. Elective cesarean deliveries are usually performed during daylight hours, on weekdays versus weekends, and involve much less of a physician's time than being on call or in hospital for a vaginal birth.

Malpractice actions and insurance premiums have risen significantly in recent years, causing physicians to practice defensive medicine. Ryan, Schantz, Greene, and Curry (2005) demonstrated a significant increase in the volume of primigravida cesarean deliveries in private practice patients compared to a clinic population and suggested that malpractice concern may be a major contributing factor. However, when asked directly, although 67% of physicians in one study cited liability issues and defensive practice as explanations for the increase in medically elective cesarean deliveries, in another study, only 2.6% did so (Bettes et al., 2007; Weaver et al., 2007).

*Positions Taken by Organizations.* In 2003, The American College of Obstetrics and Gynecology (ACOG) recommended acceptance of medically elective cesarean delivery based on principles of patient autonomy and informed consent. The committee opinion stated, "If the physician believes that cesarean delivery promotes the overall health and welfare of the woman and her fetus more than vaginal delivery, he or she is ethically justified in performing a cesarean delivery." (ACOG, 2003). The International Federation of Gynecology and Obstetrics (FIGO) guidelines, however, state that "because hard evidence of net benefit does not exist, performing cesarean delivery for nonmedical reasons is not ethically justified" (FIGO, 2004).

In 2004, The American College of Nurse Midwives (ACNM) took a similar position and identified vaginal birth as the optimal mode of delivery for women without a medical indication for a cesarean delivery (ACNM, 2004). In response to the conclusions of the NIH State-of-the-Science Conference: Cesarean Delivery on Maternal Request, The Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN) released a statement that strongly supports health care providers dissuading

women from having a medically elective cesarean delivery prior to 39 weeks gestation and supports research to further clarify this issue (AWHONN News and Views, 2006).

### *Other Effects of Cesarean Birth*

*Economic Impact.* The economic impact of medically elective cesarean delivery remains unclear, although it is assumed that doctors and hospitals earn more from a cesarean than from a vaginal delivery (Wagner, 2000). Malkin (2001) suggested that studies investigating the cost difference between vaginal and cesarean delivery are of poor quality and fail to describe what resources were included in the analysis of the cost estimates. Some studies (Allen, O'Connell, Farrell, & Baskett, 2005; Palencia et al., 2006) were conducted in countries with nationalized health care, making comparison to the United States difficult.

The Health Insurance Association of America (1999) reported a mean charge for an uncomplicated cesarean delivery that was \$4,000 greater than the mean charge for an uncomplicated vaginal birth. A recent analysis of a Massachusetts data system looked at planned vaginal births compared to planned primary cesarean deliveries and found that the \$2,487 average initial hospital cost of a planned vaginal birth was 24% lower than the \$4,372 average cost for a planned cesarean delivery (Declercq et al., 2007).

The costs of technologically managed labor may exceed that of uncomplicated cesarean birth. Bost (2003) reported that the direct medical cost of an attempted vaginal birth without oxytocin or epidural was 15% to 20% lower than elective cesarean delivery. However, the addition of oxytocin nullified the cost savings of vaginal birth, and when an epidural was used, the cost of a vaginal birth was almost 10% higher than that of a cesarean delivery. In the Term Breech Trial (Palencia et al. 2006), the costs associated with a planned vaginal birth were higher than those of a planned cesarean delivery. Allen et al. (2005) found that the cost of a planned cesarean delivery without labor was 13% higher than the cost for spontaneous vaginal delivery (\$1,532 vs. \$1,340), but the cost of a planned cesarean delivery was lower than assisted vaginal birth (\$1,594), vaginal birth after induction (\$1,715), and cesarean delivery after labor (\$2,137). In a medicalized birthing model, the cost of a medically elective cesarean delivery may differ little from a vaginal birth.

*Length of Stay.* One benefit of vaginal birth is that length of hospital stay is shorter than following a cesarean delivery. Declercq et al. (2007) reported lengths of stay for planned vaginal births that were 23% shorter (2.4 to 4.3 days) than for planned cesarean delivery. In women planning vaginal births in birth centers (Jackson et al., 2003; Rooks, Weatherby, & Ernst, 1992), lengths of stay were even shorter, with the average discharge occurring between 4 and 12 hours postpartum.

*Rehospitalization.* Another factor in the economic impact of planned vaginal birth versus planned cesarean delivery was the increased rate of maternal readmission following cesarean delivery (Liu et al., 2005; Lydon-Rochelle et al., 2000). Declercq et al. (2007) demonstrated that women who underwent planned cesarean delivery were 2.3 times more likely to need hospital readmission in the first 30 days postpartum. Given the many variables affecting costs (nursing care, anesthesia, hospital inpatient stays, procedure and supply charges, hospitals, insurers, providers, and parents), and the costs incurred with subsequent pregnancies, more research is needed to fully understand the economic implications of cesarean delivery without medical indication.

### **Ethical Considerations**

Two main ethical principles, autonomy, and beneficence, must be considered when discussing medically elective cesarean delivery. Beneficence obligates a provider to promote the patient's health and welfare. Whether evidence in favor of medically elective cesarean delivery is sufficient to support benefit to the mother and her infant is controversial, although Minkoff, Powderly, Chervenak, and McCullough (2004) concluded that beneficence-based clinical judgment still favors vaginal birth.

Much of the debate about elective cesarean delivery, especially when referring to maternal request for cesarean, is described using language of choice, conveying a sense of autonomy. However, autonomy, control, and empowerment can only be actualized when the woman is provided with complete, unbiased information about risks and benefits. The process of informed consent is vital to patient choice. Ideally, a discussion of the risks and benefits of the different modes of delivery occurs during the prenatal period, when there is ample time for the patient and her family to ask questions and consider all the implications (Simpson & Thorman, 2005).

### **Future Research**

Many authors have called for study of short and long-term maternal and neonatal outcomes of medically elective cesarean delivery and planned vaginal birth (Lavender et al., 2007; Menacker et al., 2006; Visco et al., 2006; Wax et al., 2005). Others have called for studies of the economic consequences to families, institutions, and health care systems of rising rates of cesarean delivery (Bost, 2003; NIH, 2006). These studies would best use an intent to treat approach to analysis, with attention to maternal risk status, so that low-risk women choosing medically elective cesarean delivery are compared to low-risk women planning vaginal birth. Research also is needed on practices that are thought to optimize outcomes for both pregnancy and vaginal birth, including noncoached pushing, management of the perineum, and adoption of the WHO's recommendation for the active management of the third stage of labor.

Nurses, nurse practitioners, and midwives can study the impact of birth mode on bonding, parental attachment behaviors, psychological outcomes, satisfaction, return to functionality, and quality of life of the maternal-infant dyad are needed (NIH, 2006). Maternal decision making on birth mode and the impact of interactions with health care providers should be investigated (Mayberry, 2006; Menacker et al., 2006; Simpson & Thorman, 2005). Given that a first cesarean delivery virtually insures that all future births will also be cesarean, health outcomes and the economic impact of medically elective cesarean delivery must be considered over the lifetimes of women.

### **Nursing Implications**

As the number of medically elective cesarean deliveries rise, perinatal nurses, nurse practitioners, and certified nurse midwives are ideally situated to assess a woman's knowledge base about cesarean delivery and to provide education about the inherent risks and benefits as compared to vaginal birth. The Maternity Care Association (2006) has published an easily understood booklet entitled "What every pregnant woman needs to know about cesarean section." This educational resource is available online at [www.maternitywise.org/cesareanbooklet/or](http://www.maternitywise.org/cesareanbooklet/or) by calling 212-700-5000.

Nurses who care for women have an additional responsibility to understand the controversies surrounding medically elective cesarean delivery and be able to counsel the woman and her family appropriately. Fear is the basis for many of the reasons that women give for requesting a cesarean delivery. Women who demonstrate a preference for cesarean delivery are more anxious, overestimate its benefits and safety, and are unaware of the risks involved (Gamble & Creedy, 2001; Weaver et al., 2007). If fears are explored before birth, two thirds of women requesting a medically elective cesarean delivery will ultimately choose vaginal birth (Saisto, Salmela, Nurmi, Kononen, & Halmesmaki, 2001). Women should be encouraged to attend prepared childbirth classes, ask questions about the labor and delivery process, and discuss their fears and anxiety. Women who suffer from extreme anxiety or fear of childbirth may benefit from counseling intervention or therapy (Nerum, Halvorsen, Sorlie, & Oian, 2006; Saisto et al., 2001).

Maternal requests for medically elective cesarean delivery may be based on anticipation of a long and painful labor. Nurses, nurse practitioners, and midwives should advocate for continuous nursing support and the involvement of doulas during labor for all women. Continuous support may be of particular value to women fearful of childbirth, based on evidence of shorter labor and lower operative and cesarean delivery rates and greater satisfaction when women are continuously supported in labor (Campbell, Lake, Flak, & Backstrand, 2006; Hodnett, Gates, Hofmeyr, & Sakala, 2003; Kennel, Klaus, McGrath,

Robertson, & Hinkley, 1991). Appropriate pain management, if desired, should be available for all women during labor and delivery.

Requesting a medically elective cesarean delivery is an emotional, personal decision and the psychosocial reasons for doing so may be paramount to some women. A feeling of control, the ability to schedule the date or time of the birth, cultural influences, or other motivations may be true benefits of medically elective cesarean delivery, making a woman willing to accept the potential risks involved. In addition, a request for a cesarean delivery by a woman who has experienced a previous traumatic birth or sexual assault may actually prevent additional trauma (Gardner, 2003). Whatever the motivation for the request, nurses must recognize the importance of these reasons to the individual woman. Utilizing a nonjudgmental, holistic approach in the care of women will bestow upon them the attention and respect required.

Nurses may experience secondary benefits of planned cesareans. Patient morbidity is increased in relation to inadequate levels of staff and health care provider fatigue, so medically elective cesarean delivery may enable staffing balanced with clinical acuity and volume (Minkoff & Chervenak, 2003; Lavender et al., 2007). However, with the potential for increased neonatal and maternal morbidity with cesarean delivery rates, it is likely that additional nursing resources will be required, nurse-patient ratios may be altered, and patient satisfaction may decline.

As the debate continues and the evidence accumulates, nurses must stay abreast of current medical and nursing literature and the lay media to adequately address their patients' questions and concerns regarding medically elective cesarean delivery. They must be actively involved in the education of women and their families regarding the risks and benefits associated with various birth options. In addition, nurses have an obligation to promote evidence-based practices that optimize birth for all women and infants. Until the evidence demonstrates that medically elective cesarean delivery optimizes outcomes for mothers and their infants, perinatal nurses must advocate for vaginal delivery as the optimal mode of birth.

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