

Why Maternity Care Matters

The National Center for Health Statistics (NCHS) reported that in 2014, American women gave birth to about four million babies. Of the four million births, about 2.7 million (68%) were delivered vaginally, and the balance (32%) via cesarean section.¹⁰ The NCHS also reported that almost 650,000 babies were born such that they required significant medical care within the first several months of their existence due to low birth weight or prematurity.¹⁰

A growing concern is the number of births delivered via cesarean section, resulting in longer hospital stays and the use of specialty medical services – all for a surgery that might not have been necessary. As the American Congress of Obstetricians and Gynecologists (ACOG) asserts: “Potential risks of cesarean delivery on maternal request include a longer maternal hospital stay, an increased risk of respiratory problems for the infant, and greater complications in subsequent pregnancies, including uterine rupture, placental implantation problems, and the need for hysterectomy.”¹¹

The Leapfrog Group, long motivated to explore the quality of maternal care delivered at American hospitals, includes in its annual Leapfrog Hospital Survey six measures -- rate of early elective deliveries, rate of nulliparous term singleton vertex (NTSV) cesarean deliveries, rate of episiotomies, two maternity care process measures, and a composite measure for high-risk deliveries.

Early Elective Deliveries

Elective labor induction rates and elective cesarean delivery rates in the U.S. increased dramatically in the years from 1990 to 2009. Labor induction rates more than doubled, from 9.5% in 1990 to 32.9% in 2009.^{1,10} Although this rate declined to 23.2% in 2014, the rise in rates for elective inductions has outpaced the rate of medically indicated induction.^{3,10} The increase in rates is likely due to a number of factors, including incorrect patient belief that it is safe to deliver as early as 36 weeks, physician or patient preferences for scheduling of deliveries, a high intervention culture in hospitals, and fee-for-service payment models.^{2,4}

Earlier use of induction has resulted in more infants being delivered at early term gestation (37-38 weeks), increasing from 19% in 1992 to 29% in 2003).^{1,3} At the same time, there has been a significant reduction in mean birth weights which has received almost no attention.^{1,3} Lower birth weights place infants at greater risk for mortality and are linked to chronic conditions in adulthood.³

A review of the literature shows that these elective deliveries can have serious negative consequences for the mother and baby.⁴ Women who are induced in the 37th to 38th weeks have a significantly higher risk of having a cesarean section than mothers who have spontaneous labor.⁵ And, given low rates of vaginal births after cesarean section, these mothers are likely to have additional cesarean sections with increasing risks.² Some studies have also found a significantly higher risk of other postpartum complications including hematoma, wound dehiscence, anemia, endometriosis, urinary tract infection, and sepsis.⁴ Babies induced in early term (between 37 and 38 weeks) have a higher risk for neonatal mortality and morbidity, including significant respiratory problems, and placement in neonatal intensive care units (NICU).⁵ Placement in a NICU is relatively uncommon for babies delivered at full term (normal delivery). Both maternal and neonatal lengths of stay also increase with either elective induction or elective cesarean section.

Other outcomes of an early delivery include a significant increase in cost, documented in one study as a 17.4% increase over normal delivery costs.⁴ Nearly \$1 billion dollars could be saved annually in the U.S. if the rate of early term delivery were reduced to 1.7%.⁶ Much of the estimated savings accrue from reducing the number of NICU days by one-half million days.⁶

As shown in a 2017 Castlight [Report](#), hospitals across the country have been making steady progress in meeting national maternity care standards. The rate of early elective deliveries reached a rate of 1.9% in 2016, down from 17% when Leapfrog first began reporting this metric in 2010. Leapfrog recommends they be performed in no more than 5% of all low-risk deliveries.

For Leapfrog’s early elective delivery measure, hospitals that participate in the survey are asked to report on the total number of live births between the 37th and 39th

completed week of gestation, minus a number of medical exclusions, and the number of those births where either an elective induction or cesarean section has taken place without a medical indication. The Leapfrog Group calculates a hospital rate of early elective deliveries, which is benchmarked as either being above or below the national target rate of 5%. The measure used by The Leapfrog Group is endorsed by the National Quality Forum. The Joint Commission has also been using the same measure since 2010.

Episiotomies

Epidemiologic data has shown that episiotomy remains in high use, despite ACOG's recommendation to limit use of the procedure.⁸ In 2000, an episiotomy was performed in approximately 33% of vaginal births.⁹ The International Childbirth Education Association (ICEA) asserts that it "agrees with the World Health Organization...that routine performance of episiotomy is not supported by the evidence to decrease perineal damage and may lead to adverse outcomes."¹²

Episiotomy has been clearly linked to worse perineal tears and in turn its attendant complications. These complications are noted to include perineal pain, blood loss, and potential for wound break down/abscess formation and necrotizing fasciitis. Predicated on these concerns, ACOG has called for "restricted use of episiotomy." Restricted use of episiotomy has been firmly linked to lower rates of perineal injury.

The lowest achievable rate of episiotomy remains unclear. Nonetheless, 9.6% of women continued to undergo this procedure according to Leapfrog's [report](#) of 2016 survey results. The Leapfrog Group's Maternity Care Expert Panel recommended a rate of 5.0% as a national standard for this measure.

NTSV Cesarean Deliveries

The rate of cesarean deliveries in the United States rose by 50 percent between 1998 and 2008.¹³ The increased rate of cesarean deliveries is attributed to an increase in first-birth cesareans done in the course of labor as well as a decline in vaginal births after a prior cesarean (VBAC). Babies born by scheduled cesarean delivery have significantly higher rates of respiratory complications, infections and prolonged length of stay in NICUs compared to babies delivered vaginally.¹³ Health

risks to women undergoing a cesarean delivery include increased rates of infection, hemorrhage and hospital readmission.

In addition to the considerable health risks associated with cesarean delivery, there are also increased costs. As labor and delivery account for nearly a quarter of all hospitalizations, costs associated with pregnancy and its complications are a driving factor in the rising cost of health care.¹⁴ Cesarean delivery rates have risen to just over 32% in the United States, an increase of about 20% from the 1996 rate.¹⁵ Average total payments for maternal and newborn care with cesarean births are about 50% higher than average payments with vaginal births for commercial payers (\$27,866 vs. \$18,329).¹⁴

NTSV refers to a first-time pregnancy (nulliparous) that has reached its 37th week or later (term) and consists of one fetus (singleton) in the head-down position (vertex). Unlike other cesarean section delivery measures, the NTSV cesarean section delivery rate is associated with concrete quality improvement activities that can be performed to address the differences in cesarean delivery rates among hospitals. These quality improvement activities include reducing admissions in early labor and eliminating elective labor induction before 41 weeks in the first births. ACOG recognizes the importance of the NTSV population as the optimal focus for measurement and quality improvement action.

The Leapfrog Group's Maternity Care Expert Panel recommended a hospital's rate of NTSV cesarean section delivery be measured against a national target of 23.9%, which aligns with the [Healthy People 2020](#) goal set for the U.S.

High-Risk Delivery Outcomes

Babies with low birth weight or major congenital anomalies are more likely to survive if they are delivered and treated at a hospital with a high-volume, experienced NICU,^{16,17} defined by caring for 50 or more very-low birthweight babies (VLBWb; <1500 grams) per year, or at a hospital that has demonstrated "better than expected" performance on the Vermont Oxford Network's measure of death or morbidity. Hospitals are asked to report their annual NICU volume of VLWBWs or their performance on the VON measure.

In addition to reporting on one of these outcome

measures, hospitals are also asked to report their performance on providing antenatal steroids to mothers who are at risk of delivering a preterm infant. The National Institutes of Health recommendation is to give a full course of corticosteroids to all pregnant women between 24 weeks and 34 weeks of gestation who are at risk of preterm delivery. Provision of antenatal steroids prior to delivery is associated with a significant reduction in rates of neonatal death and respiratory distress syndrome.

Appropriate DVT Prophylaxis

Pulmonary embolism (PE) is a leading cause of death in women undergoing cesarean delivery.¹⁸ To reduce the risk of PE, current ACOG recommendations call for the use of pneumatic compression devices (PCD) in all women undergoing cesarean delivery who are not already receiving medical venous thromboembolism (VTE) prophylaxis. PCD use has been shown to reduce the incidence of PE in the general population of patients undergoing major surgery by about 70%. In cesarean deliveries, PCD use has demonstrated a two-thirds reduction in post-cesarean deaths from thromboembolism.¹⁸

Newborn Bilirubin Screening

If not detected and treated, hyperbilirubinemia (high bilirubin level) in a newborn can cause irreversible brain damage resulting in permanent visual, muscular or other disabilities and even death. Unfortunately, visual inspection of the baby for jaundice frequently fails to identify the presence of the condition, particularly if the infant is discharged after a very short inpatient stay. Simple serum or transcutaneous screenings conducted before discharge significantly improve the detection and treatment of hyperbilirubinemia.¹⁹

Reporting

The Leapfrog Hospital Survey results are publicly reported on The Leapfrog Group's website at <http://leapfroggroup.org/compare>.

Why Purchasers Need to Get Involved

Maternity care needs to be safe, guided by sound medical evidence, and cost-effective. Purchasers should urge hospitals to adhere to peer-reviewed medical guidelines surrounding maternity care. This approach not only saves the precious lives of mothers and their babies, but also health care dollars.

Purchasers might also consider looking at alternative payment models and innovative benefits design to drive the desired changes. For example, the Washington State Medicaid Purchasing Administration restricts inductions of labor at less than 39 weeks of gestation without medical indication.⁷

References

1. Martin JA, Hamilton BE, Sutton PD, Ventura SJ. Births: Final data for 2006. Natl Vital Stat Rep 2007, 57, no.7.
2. Signore C. No time for complacency: Labor inductions, cesarean deliveries, and the definition of "Term." Am J Obstet Gynecol, 116(1), July 2010, 4-6.
3. Zhang X, Joseph KS, Kramer MS. Decreased term and postterm birthweight in the United States: impact of labor induction. Am J Obstet Gynecol 2010; 203:124, e1-7.G.
4. King VJ, Pilliod RP, Little A. Medicaid-Evidence-Based Decisions Project (MED) Rapid review: elective inductions of labor. September 17, 2010.
5. Clark SL, Miller DD, Belfort MA, Dildy GA, Frye DK, Meyers JA. Neonatal and maternal outcomes associated with elective term delivery. Am J Obstet Gynecol, 156, February 2009, e1-e4.
6. Clark SL, Frye DR, Meyers JA, Belfort MA, Dildy GA, Kofford S, Englebright J, Perlin JA. Reduction in elective delivery at <39 weeks of gestation: comparative effectiveness of 3 approaches to change and the impact on neonatal intensive care admission and stillbirth. Am J Obstet Gynecol, 2010, 203:449, e1-6.
7. Dimer J.S. Improving maternity outcomes and cutting costs in Washington State. Accessed 12/17/2010 at http://www.acog.org/departments/dept_notice.cfm?recno=51&bulletin=5430
8. ACOG- Practice Bulletin-"Episiotomy" No.71 2006
9. Martin JA, Hamilton BE, Ventura SJ, Menacker F, Park MM. Births: final data for 2000. Natl Vital Stat Rep 2002;50(5):1-101. (Level II-3)
10. Hamilton BE, Martin JA, Osterman MJ, et al. Births: Final data for 2014. National Vital Statistics Reports; vol 64 no 12. Hyattsville, MD: National Center for Health Statistics. 2015
11. Cesarean delivery on maternal request. Committee Opinion No. 559. American College of Obstetricians and

- Gynecologists. *Obstet Gynecol* 2013;121:904–7.
<https://www.ncbi.nlm.nih.gov/pubmed/23635708>
12. ICEA Position Paper: Episiotomy. <https://icea.org/wp-content/uploads/2015/12/Episiotomy-PP-2017.pdf>
 13. Main E, Morton C, Hopkins D, Giuliani G, Melsop K, Gould J. Cesarean deliveries, outcomes, and opportunities for change in California: Toward a public agenda for maternity care safety and quality. December 2011.
<https://www.cmqcc.org/resource/cesarean-deliveries-outcomes-and-opportunities-change-california-toward-public-agenda>
 14. Truven Health Analytics. The cost of having a baby in the United States. January 2013.
<http://transform.childbirthconnection.org/wp-content/uploads/2013/01/Cost-of-Having-a-Baby1.pdf>
 15. Menacker F, Hamilton B. Recent trends in cesarean delivery in the United States. Center for Disease Control and Prevention, March 2010, NCHS Data Brief No. 35.
<http://www.cdc.gov/nchs/data/databriefs/db35.pdf>
 16. Phibbs C, Bronstein J, Buxton E, Phibbs R. The effects of patient volume and level of care at the hospital of birth on neonatal mortality. *JAMA*. 1996;276:1054-1059.
 17. Cifuentes J, Brontstein J, Phibbs C, Phibbs R, Schmitt S, Carlo W. Mortality in low birth weight infants according to level of neonatal care at hospital of birth. *Pediatrics*. 2002;109(5):745-751.
 18. Clark S, Belfort M, Dildy G, Herbst M, Meyers J, Hankins G. Maternal death in the 21st century: causes, prevention, and relationship to cesarean delivery. *American Journal of Obstetrics & Gynecology* 2008; 199:36.e1-36.e5.
 19. Bhardwaj K, et al. Newborn bilirubin screening for preventing severe hyperbilirubinemia and bilirubin encephalopathy: a rapid review. *Curr Pediatr Rev*. 2017; 13(1):67-90.

For a comprehensive list of references please review the Maternity Care Bibliography, available here:
<https://www.leapfroggroup.org/ratings-reports/maternity-care>.