Hospital costs associated with pregnancy, childbirth and newborn care totaled an estimated $34.2 billion in 2007, federal data show.

An evidence-based approach is born

Hospitals, docs use protocols to cut costs from avoidable OB/GYN injuries

At HCA, the number of malpractice claims in obstetrics plummeted in the past decade.

Specifically, it dropped from 12 per 10,000 births in 2000 to four per 10,000 births in 2009.

How did HCA do it?

"Our approach to reducing malpractice has been to reduce bad outcomes. If we have healthy mothers taking home healthy babies, we won't have litigation. And that has been the key to our success," says Steven Clark, medical director of women's and children's services at HCA. The Nashville-based, 159-hospital chain, which began adoption of standardized, evidence-based protocols in 2000, delivers about 220,000 babies annually, or about 5% of all U.S. births.

Keller: Most people want elective birthing procedures "for convenience."

Even a small drop in the number of claims in obstetrics can equal big dollars. In the healthcare reinsurance industry, for example, "about 50% of the losses we see and pay are birth injuries. Those are the most expensive ones," says Nat Cross, team leader for the healthcare underwriting practice at London-based Beazley Group. "If you injure a baby at birth and there is profound brain damage, and they have a life expectancy of 30 or 40 years but they are on 24-by-7 nursing-home care, that is going to cost a lot of money," Cross says.

HCA isn't the only healthcare organization applying the tenets of evidence-based medicine and quality improvement to deliver safer care and lower malpractice risk. Other efforts include a statewide collaboration in Michigan, a city-based solution in Des Moines, Iowa, and a system-centric initiative at 32-hospital Catholic Healthcare Partners, Cincinnati.

The impact of improved quality in obstetrics could be huge. More than 4.2 million babies are born in the U.S. each year, making mothers and newborns the largest group of hospital patients, accounting for 25% of hospital discharges, according to the Childbirth Connection, a New York-based research and advocacy organization.

In 2007, hospital costs associated with pregnancy, childbirth and newborn care totaled $34.2 billion, according to the Healthcare Cost and Utilization Project of the Agency for Healthcare Research and Quality.

And although the rate of avoidable injury during childbirth declined 20% from 2000 to 2006, there still were 157,700 preventable injuries to mothers and newborns in 2006, according to the AHRQ's cost project.

Mortality rates for mothers and babies are high in the U.S. as compared with other developed countries. The maternal mortality rate per 100,000 live births in 2008 was 24 in the U.S., compared with 12 in Canada, six in Japan and 12 in the U.K., according to a 2010

World Health Organization report. Additionally, the number of infants who died during the first year of life was seven per 1,000 live births in 2009 in the U.S., compared with five in Canada, five in the U.K. and two in Japan, according to the World Bank.

Although the American College of Obstetricians and Gynecologists has published numerous clinical quality-improvement guidelines, the field of obstetrics has been slow to adopt them. There isn't a lot of pressure to change the way labor and delivery is managed because the risk of medical complications in a young and healthy pool of patients is small, says Eric Knox, a maternal-fetal medicine specialist and OB/GYN who has authored journal articles and consulted on best practices for several decades. He now is chief of OB risk and safety officer at PeriGen, a Princeton, N.J.-based software vendor of decision-support tools for obstetrics.

"This is all about how babies are pretty resilient, so you can get away with a lot of things," Knox says.

Targeting defensive medicine

But widespread use of standardized, evidence-based protocols would be a change from the reliance on defensive medicine—over-ordering tests, rushing to cesarean sections, or refusing to care for high-risk patients because of the fear of getting sued.

In a 2009 survey of its members, ACOG found that 62.9% of respondents had changed the way they practice medicine between 2006 and 2009 because of a fear of liability claims or litigation. Of those, 30.2% decreased the number of high-risk patients they saw and 29.1% increased the number of C-sections they performed.

Across all medical specialties, the total cost of defensive medicine was $45.6 billion in 2008—or the bulk of the $55.6 billion total cost of the medical liability system in 2008, according to Harvard researchers in an article in the September issue of *Health Affairs*.

Iowa Health-Des Moines requires tests to determine gestational age before an early elective birthing procedure is allowed.

Given the room for improvement in quality and malpractice risk, HCA decided obstetrics had to change. To get uniformly healthy results, HCA crafted standard procedures designed to attack root causes of bad outcomes. The standardized processes are followed not only within a given hospital but also across the hospital system.

"One of the fundamental principles of quality improvement is that standardization of practice, per se, will improve outcomes. When the obstetrical team is faced with a given situation, they handle it the same way every time," says Clark, who has written extensively about HCA's obstetrics program in peer-reviewed journals.

One medical practice that HCA standardized is the use of the drug oxytocin, also known by the brand name of Pitocin. The drug is used either to force a woman's labor to begin or restart a stalled labor. But administering oxytocin correctly is tricky because the drug can bring on contractions that either are too long in duration or come too close together. Problems with contractions can stress the fetus, which, in turn, can result in an emergency C-section.

Nationally, C-sections account for about one of every three births and are associated with a higher risk of medical complications for both mothers and babies than vaginal deliveries.

To ensure that all doctors and nurses administer oxytocin properly, HCA created a checklist-based approach in which a mother's contractions and the baby's heart rate are monitored closely.

QUALITY » *Linda Wilson*

Stopping the bleeding

Calif. collaborative targets maternal hemorrhage

While most quality-improvement efforts in obstetrics focus on improving outcomes for babies, a statewide collaborative in California concentrates on mothers.

Launched in 2004, California Maternal Quality Care Collaborative's quality-improvement projects include an ongoing effort to reduce deaths and medical complications resulting from maternal hemorrhage.

"There are some causes of maternal mortality that you can't do much about, but hemorrhage has a high degree of preventability," says Elliott Main, chairman of obstetrics quality and safety for Sutter Health and director of the California Maternal Quality Care Collaborative, Stanford, Calif.

Hemorrhage occurs in about 5% of births, and about one out of every 10 of those cases is severe, Main says.

That's why the California collaborative created a comprehensive, evidence-based process, which 30 hospitals throughout the state implemented in 2009. As of September 2010, clinicians had used the new protocols in 110,000 births.

The idea is to identify hemorrhage early and treat it aggressively to prevent bad outcomes. To do so, clinicians measure the amount of blood a mother loses. They also monitor vital signs, such as blood pressure.

When the first signs of hemorrhage appear, clinicians react quickly, using a systematic process, beginning with targeted medications and other measures. If necessary, they move on to blood transfusions, using what Main describes as "whole blood"—not the blood products typically stored in blood banks.

A comprehensive tool kit and educational webinars are available online at cmqcc.org. «

In addition to improving the malpractice situation, HCA also improved the quality of care. The C-section rate at HCA dropped from a peak of 24% in 2005 to 21% in 2009. Clark attributes the decline in C-sections, in part, to better administration of oxytocin.

As is the case with HCA, hospitals in Des Moines wanted to improve obstetrical care. They took a citywide approach, instituting a ban in 2007 on elective C-sections and inductions before 39 weeks of pregnancy.

The practice of scheduling elective procedures before 39 weeks is based on the traditional assumption that any baby—whether born electively or spontaneously—is fully developed and ready for birth after 37 weeks. Most of the early elective procedures occur between the 38th and 39th weeks.

"We all did (it), and it is still being done elsewhere," says Steven Keller, an OB/GYN in Des Moines who has delivered babies for nearly 20 years.

But scientific evidence demonstrates that not all babies' lungs are mature at 37 weeks or 38 weeks. By inducing a birth early, the risk of admission to a neonatal intensive-care unit increases, as does the risk of a C-section. The use of induction—both elective and medically indicated—doubled from 9.5% of all births 1990 to 22.3% in 2000, according to the National Center for Health Statistics.

Elective procedures—both inductions and C-sections—are popular with patients and doctors. "It is much quicker and more convenient than the unpredictability of when a woman will go into labor, who will be on call when she does and how long it will take for that labor to unfold," says Carol Sakala, director of programs at the Childbirth Connection.

The citywide ban in Des Moines on early elective procedures made enforcement easier because physicians and patients couldn't play one health system off of another, says Susan Gehlsen, director of women's health services at Iowa Health-Des Moines, part of Iowa Health System. The Des Moines hospitals with obstetrics include: Iowa Methodist Medical Center, Iowa Lutheran Hospital and Methodist West Hospital.

But the ban hasn't stopped patients from pleading for early procedures. "We have that discussion multiple times a day," Keller says. "Most people want it for convenience; oftentimes, just because of discomfort. They like that they can call an end to the pregnancy."

Before they can schedule an elective procedure at Iowa Health-Des Moines, physicians are required to provide evidence of gestational age, such as via an ultrasound, as well as the mother's biological readiness for labor.

Inductions and C-sections that slip through the process are pulled out for peer review. In 2008, 93% of elective inductions and C-sections followed policy, compared with 99% in 2009, according to Iowa Health.

More than 4.2 million babies are born annually, making mothers and their infants the largest group of hospital patients.

In addition to the ban on elective C-sections and inductions, Iowa Health-Des Moines, like HCA, also standardized protocols for administering oxytocin.

The number of inductions that resulted in a C-section dropped after both policies were introduced, going from 23% in 2007 to 13% in 2008 and 2009. The rate went up to 17% in the first half of 2010.

While hospitals in Des Moines adopted a citywide approach, hospitals in Michigan opted for a statewide initiative.

The Michigan collaboration began with 13 hospitals that also are co-owners of Caymich Insurance Co.—a malpractice insurer based in the Cayman Islands.

Caymich and its reinsurer, London-based Beazley, launched a premium-rebate program in 2007. The hospitals earn rebates based on their performance on specific metrics, such as the use of forceps or vacuums and the administration of Pitocin.

The hospitals earned a rebate of $93,000 in the first year of the program and have qualified for a premium rebate every year since then. The hospitals could earn up to $225,000 in the current fiscal year, including $150,000 from Beazley and $75,000 from Caymich.

The money is divided up among the hospitals proportionately, based on each institution's performance. "We actually each get a check. We can reward our departments or do whatever we want to do with that money," says Chandra Morse, vice president and corporate compliance officer at Mid-Michigan Health in Midland. Morse also is chairwoman of the claims committee at Caymich.

The success of the premium rebate program led to a separate initiative through the Michigan Health & Hospital Association's Keystone Center for Patient Safety and Quality.

The 13 Caymich hospitals were the pilot sites for a quality-improvement program in labor and delivery in 2008, which was opened up to all Michigan hospitals in 2009. As of September 2010, 66 of 85 hospitals with labor and delivery units were participating in the program.

In addition to a prohibition on elective C-sections and inductions before 39 weeks and protocols for oxytocin, the Michigan initiative

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also includes standardized measures to respond to either fetal distress or contractions that occur either too close together or last too long.

The program in Michigan also includes changes in nursing practices to lessen the stress on babies of the second stage of labor—the time during which the mother pushes.

Michigan hospitals in the project randomly select 20 patient charts, including strips from the fetal monitor, to review monthly. They also review every elective induction and C-section. Hospitals monitor outcome metrics, which include admissions to a special-care nursery or neonatal intensive-care unit and Apgar scores of less than seven at five minutes after birth. Apgar scores are a combined measure of such characteristics as a baby's color, breathing, heart rate, tone and reflexes. A perfect score is 10.

To help create the quality-improvement project, Keystone hired Knox and Kathleen Simpson, a perinatal clinical nurse specialist. The consulting duo has created a standardized approach to quality improvement in obstetrics based on their work for numerous organizations, including Catholic Healthcare Partners. CHP reduced the cases of birth trauma from 5 per 1,000 births in 2003 and 0.17 per 1,000 births in 2008. During the same period, the average cost per obstetrical claim decreased from $1 million to less than $500,000, according to a 2009 study Simpson and Knox published in the *Joint Commission Journal on Quality and Patient Safety*.

Improved clinical outcomes

Michigan's hospitals are on track to achieve similar results.

Lakeland Community Hospital, Niles, Mich., already has improved clinical outcomes even though it only implemented the Keystone OB program last year, according to Tammy Jerz, manager of the Birthplace at Lakeland, Niles.

In 2009, the hospital transferred 57 babies who were greater than 37 weeks' gestation at birth to a higher level of care—such as a special-care nursery or neonatal intensive-care unit—representing 7% of deliveries. During January through August of 2010, eight babies were transferred, representing 1.5% of deliveries.

The number of C-sections initiated after signs of fetal distress also dropped. In 2008, the primary C-section rate (patients who underwent the procedure for the first time) was 13.4%. Of those, 21% were a result of problems with the fetal heart rate. During January through August 2010, the primary C-section rate was 11%, and 0.7% of those were the result of fetal heart-rate problems.

"We just do not see the amount of fetal distress we did in the past from the use Pitocin," Jerz says.

Although executives from Michigan's hospitals believe better care will lead to lower malpractice costs, they don't as yet have the corresponding data necessary to prove their case because of the time lag between when an injury occurs and when a lawsuit is filed.

"The claims have what we call a long tail. It is hard to say at this point," says Brian Connolly, president and CEO of Oakwood Healthcare, Dearborn, Mich.

As a result, Michigan's hospitals await the verdict on their obstetrics initiative. «

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