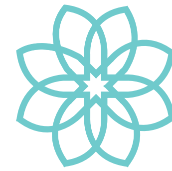

Evidence on: Skin-To-Skin After Cesarean

Early skin-to-skin care (also called kangaroo care) is a natural process that involves placing a naked newborn on the mother's bare chest and covering the infant with blankets to keep it dry and warm. Ideally, skin-to-skin care starts immediately after birth or shortly after birth, with the baby remaining on the mother's chest until at least the end of the first breastfeeding session (Moore et al., 2012). *Note: Laying a baby on top of mother's gown or on top of a towel does not count as skin-to-skin.*

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Skin-to-skin care can start at different times. In research studies, there are 3 main types of early skin-to-skin care for healthy term infants:

1. Birth or immediate skin-to-skin care starts during the first minute after birth
2. Very early skin-to-skin care begins 30-40 minutes post-birth
3. Early skin-to-skin is any skin-to-skin time that takes place during the first 24 hours.

As we will describe in this article, skin-to-skin care after a Cesarean has many benefits for mothers and babies. However, mothers recovering from a Cesarean can't do skin-to-skin if they are routinely separated from their babies. In order to do skin-to-skin, mothers and newborns must stay together—a process known as *couplet care.* Why don't more people receive couplet care? Is it possible for hospitals to make the switch from routine separation to routine couplet care after a Cesarean? Keep reading to find out.

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What is the history of mother-infant separation after birth?

Separation of human mothers and newborns is unique to the 20th and 21st centuries and is a complete break from natural human history. In the past, infant survival depended upon close and virtually continuous mother-newborn contact.

The practice of routinely separating mothers and newborns started in the early 1900s, when birth first began to move from homes to hospitals. At the time, most birthing people received general anesthesia as pain relief during labor, and it made them and their babies incapable of interaction after birth. Because mothers could not care for their babies, hospitals created central nurseries to care for newborns, and infants were typically separated from their mothers for 24-48 hours (Anderson et al., 2004).

When did things begin to change?

In 1961, Dr. Brazelton published a classic study showing that general anesthesia was harmful to newborns (Brazelton, 1961). As a result of his research, more people began to move away from using general anesthesia during birth, which resulted in mothers and infants being more alert—and capable of interaction—immediately after birth (Anderson et al., 2004). Most people who give birth by Cesarean today receive regional anesthesia (epidural or spinal) instead of general anesthesia, so these mothers, too, are usually alert after giving birth.

Furthermore, in the past 30 years, an abundance of research evidence has shown that when mothers and babies are kept close and skin-to-skin after birth, outcomes improve (Moore et al., 2012).

It is important to understand that when researchers study *human* mother-newborn contact, keeping mothers and babies together is considered the "experimental" intervention. In contrast, when researchers study other *non-human mammals*, keeping mothers and babies together is the control condition, while separating newborns from their mothers is "experimental" (Moore et al., 2012).

What is routine practice today?

Although most mothers now are capable of taking care of their babies after birth, and despite the fact that research overwhelmingly supports couplet care—hospital practices have been very slow to change—but they are changing. The Centers for Disease Control (CDC) tracks skin-to-skin care in hospitals and birth centers in the U.S. In the process of updating this article, we were excited to see that 83% of birth facilities reported in 2015 that they practice routine skin-to-skin care for most mothers and babies for at least 30 minutes within one hour of an uncomplicated vaginal birth. That is up from only 43% in 2009. Freestanding birth centers have shown high rates (over 95%) of skin-to-skin after vaginal birth for as long as the CDC has been tracking this measure. The rates of skin-to-skin care still vary widely by region. Overall rates were lowest (76%) in the West North Central states: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota— and highest (98%) in the New England states: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

After a Cesarean, the rates of skin-to-skin care are lower compared to after an uncomplicated vaginal birth. In 2015, according to the CDC, 70% of U.S. birth facilities implemented skin-to-skin care for at least 30 minutes for most mothers and babies within two hours after an uncomplicated Cesarean birth. That is a major improvement from 2009, when that figure was only 32%. The rates were lowest (56%) in the East South Central states: Alabama, Kentucky, Mississippi, and Tennessee, and highest (81%), once again, in the New England states.

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Importantly, the rate of Cesarean births remains high in the U.S. and currently averages around 32%– or 1.4 million American babies born by Cesarean per year (Menacker & Hamilton, 2010). The lower rate of skin-to-skin care provided to this population means that there are a significant number of mothers and babies who do not receive the best practice of skin-to-skin because of their Cesarean births.

If skin-to-skin is not routine after a Cesarean, what is the standard of care?

In many hospitals, the routine standard of care after a Cesarean is for the baby to be taken to a warmer in the operating room, where he or she is examined, cleaned, labeled, weighed, measured, clothed, and swaddled before being shown briefly to the parents. The baby is then taken to a nursery for further assessment and observation in a warmer, while the mother is taken to a separate recovery room, with the separation typically lasting one to two hours.

How often are mothers separated from their infants after a Cesarean?

Separation of mothers and infants is still very common after a Cesarean. In the U.S., 75% of people who give birth by Cesarean are separated from their babies for at least the first hour (Declercq et al., 2013). In 2007, that figure was even higher, at 86% (Declercq et al., 2007). With one-third of mothers in the U.S. now giving birth by Cesarean, this means that a substantial proportion of mothers and babies experience a critical delay in bonding, skin-to-skin contact, and breastfeeding.

Research shows that most of the time when babies are separated from their mothers after a Cesarean it is so that the hospital can provide routine mother/baby care in separate rooms—not because the babies need any kind of special care (Declercq et al., 2007). When infants are brought to the nursery while their mothers recover separately, it is common for a nurse to give a first feeding of formula (Elliott-Carter & Harper, 2012).

Routine separation of mothers and babies also happens after vaginal births—20% of birth facilities in the U.S. routinely separate mothers and babies immediately after birth (CDC, 2015). In 2009, the rate of routine separation after vaginal births was more than double that amount (42%). As we've come to expect, rates vary widely from state to state. The CDC found that 0% of birth facilities surveyed in New Hampshire, Rhode Island and Vermont practice routine separation after vaginal birth. In Mississippi, on the other hand, 77% of birth facilities routinely separate mothers and newborns after vaginal birth, with 60% of those hospitals typically keeping mothers and babies separated for more than an hour.

What are the benefits to keeping mothers and babies together for skin-to-skin care?

In 2016, Cochrane researchers pooled the results from 46 randomized trials that included 3,850 mothers and their healthy infants (Moore et al., 2016). Eight of the trials included people who had given birth by Cesarean and six of the trials included late preterm infants (greater than 35 weeks' gestation). The researchers found significant evidence that skin-to-skin care influences breastfeeding. Mothers who had skin-to-skin care with their babies were 24% more likely to still be breastfeeding at one to four months after giving birth compared to the mothers who received routine hospital care. They also tended to breastfeed their infants longer, by 64 days on average. When the researchers looked at the rate of exclusive breastfeeding from six weeks to six months after the birth, they found that the mothers who had skin-to-skin care were 50% more likely to exclusively breastfeed.

Babies held skin-to-skin with their mothers were 32% more likely to breastfeed successfully during their first feed and they had higher blood sugar levels by more than 10 mg/dL. That amount of difference in blood sugar levels is clinically significant because infants with low blood sugar may be given formula, a

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practice that can interfere with breastfeeding. Overall, the babies that had received skin-to-skin care had better combined scores for heart rate, breathing, and oxygen level during the first six hours after birth.

The researchers did not find any differences when they looked at skin-to-skin care beginning within 10 minutes of the birth or after 10 minutes of the birth, or when they compared less than one hour of time spent skin-to-skin to more than one hour. Almost all of the included studies began skin-to-skin care within one hour after the birth. Larger studies are needed to better understand any differences between birth, very early, and early skin-to-skin time and differences between longer and shorter time spent skin-to-skin.

To summarize, the benefits of early skin-to-skin care included:

For mothers:

- Longer and more effective breastfeeding; more likely to exclusively breastfeed
- Less breast engorgement/pain at three days
- Less anxiety three days after birth
- Higher satisfaction—mothers were six times more likely to want the same care in the future when they held their babies skin-to-skin rather than swaddled.

For babies:

- More effective suckling during the initial breastfeeding session
- Less crying– babies who received skin-to-skin care were 12 times less likely to cry during the observation period
- Heart rate, breathing, and oxygen levels were more likely to remain stable
- A beneficial increase in blood sugar

In fact, the benefits of skin-to-skin care are so clear that the World Health Organization recommends that ALL newborns receive skin-to-skin care, no matter the baby's weight, gestational age, birth setting, or clinical condition (WHO, 2003). Skin-to-skin should begin immediately after birth and continue uninterrupted for at least one hour or until the first breastfeeding session for mothers who are breastfeeding.

Skin-to-skin contact and breastfeeding instincts

In the 1970s, Ann-Marie Widstrom, PhD, RN, MTD, a Swedish nurse-midwife, began to observe and document patterns in the behaviors of babies that were placed skin-to-skin with their mothers immediately after birth (Phillips, 2013). She discovered that, when undisturbed, babies move through nine distinct phases that include 1) the birth cry, 2) relaxation, 3) awakening, 4) activity, 5) resting, 6) crawling, 7) familiarization with the nipple, 8) suckling, and 9) sleeping. Dr. Widstrom observed that newborns are usually capable of finding the breast, latching, and suckling without assistance, as long as they are provided skin-to-skin contact immediately after birth. When hospital staff are educated about this normal and instinctive process, they are better able to support the first breastfeeding without rushing or interfering.

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Are there any potential harms to keeping mothers and babies together for skin-to-skin care?

The only risk to early skin-to-skin care is something called sudden unexpected postnatal collapse (SUPC). This is when a seemingly healthy infant becomes rapidly unstable within the first two hours after the birth, often during the first breastfeeding session. This happens in three to five infants out of 100,000. Zero to 1.1 deaths are thought to occur for every 100,000 births (Moore et al., 2016). SUPC is most likely to occur when an infant has an internal risk factor, like an infection or heart defect, combined with an external risk factor, like exposure to pain medication or magnesium sulfate medication during labor or risky positioning after the birth (Ferrarello & Carmichael, 2016). Studies have found that 74% of cases occurred while the baby was lying face down during skin-to-skin contact with their mothers, and in 77% of cases, the mother or both parents were alone with the newborn at the time of the episode (Herlenius & Kuhn, 2013; Ferrarello & Carmichael, 2016).

Researchers have proposed a few safety measures to decrease the risk of SUPC during skin-to-skin care (Ferrarello & Carmichael, 2016):

- Increase the time that a nurse or midwife observes the mother-infant pair during the first two hours after birth
- Educate the parents and the doula (if present) to recognize abnormal newborn appearance and behaviors—such as pale or bluish skin color, difficulty breathing, or limp muscle tone—and delay the use of smartphones until the first two hours after birth
- Elevate the head of the mother's bed to between 35 degrees and 80 degrees so that the baby isn't lying flat down on the mother's chest
- Educate the mother about safe breastfeeding and check frequently to be sure that the baby's neck is straight and nose and mouth are not blocked

Hospitals can develop their own safety protocols and take advantage of existing assessment tools that can help them to identify and respond quickly to infants that become unstable while skin-to-skin (Ludington-Hoe & Morgan, 2014; Davanzo et al., 2015).

What about after a Cesarean—are there any additional risks to keeping mothers and babies together?

It is important to know that some mothers may not be capable of independently caring for their infants immediately or for several hours after a Cesarean. For example, mothers who received strong sedatives or were sleep-deprived for many hours before the Cesarean may need supervision or assistance in caring for their newborns. The mother's level of awareness and her ability to remain awake when caring for and feeding an infant must be assessed and closely monitored by nursing staff, especially when a Cesarean follows a prolonged labor or when sedative drugs have been given (Mahlmeister, 2005).

What is the evidence for skin-to-skin care specifically for babies who are born by Cesarean?

Eight of the 46 trials included in the Moore et al. (2016) Cochrane review included people who had given birth by Cesarean. In all but one of the studies, skin-to-skin care began in the recovery room, and it usually started around 50 minutes after the birth and ranged from 30 to 80 minutes. One study began skin-to-skin care in the operating room and one study didn't provide any information about when skin-to-skin care began. The mothers received regional anesthesia (epidural or spinal) in seven of the trials

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and general anesthesia ("put to sleep") in one trial. None of the trials included people who were having emergency Cesareans and all of the infants were full term.

The researchers found that skin-to-skin care provides benefits to breastfeeding after Cesarean birth as well. The mothers who had received skin-to-skin care were 22% more likely to still be breastfeeding one and four months after the birth. All studies but one found an increase in exclusive breastfeeding at hospital discharge in mothers who had skin-to-skin after Cesarean births. Some mothers who had skin-to-skin care with their infants reported less pain after their Cesarean, but the evidence was not strong enough to show a clear effect of separation on pain. More research is needed to look at the potential benefits of skin-to-skin care beyond breastfeeding and potential harms of this practice in the Cesarean birth population.

We found four randomized trials on immediate skin-to-skin care during a Cesarean.

In 2012, Velandia et al. randomly assigned 37 families planning a Cesarean to immediate skin-to-skin care with the mother or immediate skin-to-skin care with the father. In both groups, the baby was placed skin-to-skin on the mother's chest within one minute after birth and stayed there for five minutes. Afterwards, the baby either remained on the mother's chest for 25 more minutes, or was switched to the father's chest for 25 minutes. After this time period, all the babies did skin-to-skin with their mothers for an additional 90 minutes. There were no adverse effects reported. Babies who spent skin-to-skin time with mothers breastfed significantly earlier than babies who had skin-to-skin with their fathers. This study was limited by its lack of a true control group and because they did not report any measurements on infant temperature, breathing, or heart rate.

The largest randomized controlled trial to examine immediate skin-to-skin care included 366 mothers having an elective Cesarean for a single baby between 37 and 42 completed weeks of pregnancy (Gregson et al., 2016). The outcome that the researchers were most interested in was breastfeeding rates, so people who expressed a desire to formula feed their infants were excluded from the study. Participants were randomly assigned to immediate skin-to-skin care in the operating room (182 people) or standard care (187 people). The group assigned to immediate skin-to-skin care received a KangaWrap Kardi to wear under the operation gown (a simple garment that was designed to help facilitate skin-to-skin care after Cesarean). After the birth, the baby was placed immediately on the mother's chest and the mothers were encouraged to keep the baby skin-to-skin as much as possible during the first 48 hours. The standard care group received the baby after the operation and mothers were encouraged to have at least one hour of skin-to-skin time. For ethical reasons, families in the control group were not denied skin-to-skin time with their newborns.

It turned out that most of the participants assigned to the control group also wanted to spend a considerable amount of time skin-to-skin with their newborns. Because of this crossover, or 'contamination' of the control group, there was no significant difference in the amount of time participants spent skin-to-skin between groups. However, the researchers did detect a trend towards improved breastfeeding outcomes in the group that received immediate skin-to-skin contact, which could represent a clinically significant difference In other words, if we put this into practice with large numbers of people, it could translate into a meaningful difference. When data from both groups were combined, they found that the length of time spent skin-to-skin was directly linked to the rate of continuing to breastfeed at 48 hours—with longer time spent skin-to-skin leading to a higher rate of continuing to breastfeed at 48 hours. However, we don't know if more time spent skin-to-skin was a direct cause of breastfeeding success, or if the mothers who were more motivated to breastfeed chose to spend more time skin-to-skin.

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This study provides evidence that most mothers desire skin-to-skin time with their newborns as soon as possible after Cesarean, that it is possible to safely practice skin-to-skin care in the operating room, and that more time spent skin-to-skin may benefit breastfeeding.

In 2016, Armbrust et al. randomly assigned 205 people > 37 weeks' gestation who were planning a Cesarean to immediate skin-to-skin or routine separation. In the skin-to-skin group, the surgical drape was lowered, the infant was slowly delivered (sometimes called "walked" out of the uterus) by the doctor, and the father was given the option to cut the umbilical cord. The naked infant was briefly examined and placed on the mother's bare breast, and covered by a warm blanket. The baby remained skin-to-skin with the mother for the rest of the surgical procedure and into recovery— a total of one hour or more. In the routine separation group, the baby was taken away immediately for an assessment. The study found that mothers and fathers who experienced the lowered drape, option to cut the cord, and immediate couplet care rated their birth experience much higher than the group that had a routine Cesarean followed by immediate separation. Rates of breastfeeding were higher in the group that received immediate skin-to-skin (81% versus 69%), and those mothers experienced fewer problems breastfeeding. There were no adverse outcomes or differences in Apgar scores between groups.

Recently, a small pilot study randomly assigned 35 people to immediate skin-to-skin in the operating room or late skin-to-skin in recovery (Kollmann et al., 2017). They did not find any differences in Apgar scores, oxygen levels, heart rate, or temperature between groups, or in the mothers' reported pain perception. The authors recommend that a similar, but larger study be conducted.

Researchers have also looked at whether immediate skin-to-skin during Cesareans influences the rate of newborns transferred to the NICU for observation (Schneider et al., 2017). A retrospective study (looking back in time) included all non-emergency Cesareans between 37 and 42 weeks' gestation taking place from 2011 through 2015 at a single hospital in the Southwestern U.S. The first two years of data were from before the hospital began implementing immediate skin-to-skin during Cesarean and the last three years of data were from after the new skin-to-skin care practice went into effect. They found that fewer newborns were transferred to the NICU for observation after the skin-to-skin practice was implemented (1.8% versus 5.6%). There were no other policy changes over this time that would affect the difference in babies sent to the NICU. The authors point out that fewer babies being sent to the NICU for observation could reduce costs for hospitals, since NICU observations are not always reimbursable.

There are numerous quality improvement reports in the literature in which hospitals describe implementing immediate skin-to-skin care during a Cesarean (Smith et al., 2008; Hung & Berg, 2011; Brady et al., 2014; Moran-Peters et al., 2014; Sundin, 2015; Boyd, 2017). The hospitals that have implemented this new practice report on the many benefits that they witnessed for breastfeeding, maternal pain perception and anxiety, and maternal satisfaction. In some cases, skin-to-skin care was not given because the baby or mother was showing signs of instability; however, there were no overall adverse effects reported from implementing immediate skin-to-skin in the operating room.

In 2012, researchers at a Texas hospital did an "intervention" to help staff increase the rates of immediate skin-to-skin care. After doing formal training sessions on the benefits of skin-to-skin, the researchers videotaped 11 births (five vaginal, six Cesarean) in which immediate skin-to-skin was used, and then they showed these videos to staff. This helped the staff get engaged in problem-solving in how they could make the process work smoother. Before the intervention, about 58% of mothers and babies had immediate skin-to-skin care. In the months afterwards, the rate of immediate skin-to-skin care increased to 83%. Almost all of the increase was due to mothers who gave birth by Cesarean having immediate skin-to-skin in the O.R (the hospital did not routinely do skin-to-skin in the O.R. before the study) (Crenshaw et al., 2012).

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I would like to have skin-to-skin care as soon as possible after my Cesarean, but my hospital says they won't let me. Why is that?

One of the main perceived barriers to implementing skin-to-skin care after a Cesarean is because hypothermia (low temperature) in babies is more common after a Cesarean. Babies who are born via Cesarean are at higher risk of hypothermia because the operating room temperature is kept quite cold, mothers undergoing a Cesarean may have a lower body temperature, and babies were exposed in utero to drugs that may affect their temperature (Moore et al., 2012).

However, the research evidence that we have suggests that babies who undergo skin-to-skin care 30-50 minutes after a Cesarean are NOT at higher risk for hypothermia compared to infants who are kept in a warmer (Nolan & Lawrence, 2009; Gouchon et al., 2010). If a baby is not able to maintain its temperature during skin-to-skin with its mother, babies may be held skin-to-skin with father or another family member after a Cesarean (Erlandsson et al., 2007).

Probably the biggest barrier to skin-to-skin care after a Cesarean is the culture of the operating room itself. Several clinicians have reported the implementation of immediate skin-to-skin care (within 30 minutes after birth) in their hospitals' operating rooms (Smith et al., 2008; Hung & Berg, 2011). The authors noted that operating room staff members were initially skeptical, reluctant, and afraid to change their routine habits and behaviors. But after seeing the benefits of this family-friendly procedure, staff became supportive of the change.

For change to take place in a hospital, it requires that staff shift from a focus on "how it has always been done" to focusing on what the current evidence shows is best for mothers and babies. This transformation occurs through dedicated leadership, such as from caring nurses who drive process change in hospitals. Several years ago in Michigan, Dr. Tami Michele successfully converted Spectrum Health Gerber Memorial hospital over to routine skin-to-skin care after Cesarean. She started by approaching the anesthesia providers, since their workspace at the head of the mother's bed was most affected by the changes in monitoring mother/baby. She provided information on the benefits of skin-to-skin care after Cesarean and details about how procedures would change. Dr. Michele presented the change from the perspective of improving the Cesarean patient's experience. She brought everyone to the table—past patients, doulas, nurses, anesthesia providers, lactation consultants, clinical supervisors, childbirth educators, marketing directors, surgical staff, and hospital administration—so that the entire team felt ownership of the changes they were about to create.

It's important to address everyone's concerns to get staff completely on board with the new way of providing care. For example, physicians may think that they need the newborn's weight right away in order to complete required documentation; however, the record could be completed at a later time or documented as "weight pending due to skin-to-skin." Education for staff can be helpful to decrease anxiety around making changes. (Personal correspondence, Michele, 2017).

Other potential barriers to skin-to-skin care after a Cesarean include (Smith, 2008; Hung, 2011):

- The mother may not be capable of holding the baby due to nausea or other symptoms—in this case, another family member would need to do skin-to-skin with the baby
- Some hospitals may require a designated baby nurse to be in the O.R. or the recovery room (in addition to the mother's nurse) so a shortage of nurses may prohibit early skin-to-skin care
- Nurses may face a new requirement to learn to 'scrub-in' for Cesareans in order to safely receive the baby through the drape.

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- The mother's heart monitor stickers need to be placed on her sides, to leave a spot open on her chest for the baby
- The mother's gown needs to be placed so that it easily opens for the baby to lay on her bare chest
- The mother's blood pressure cuff and IV needs to be placed on the non-dominant arm
- The mother's oxygen monitor needs to be put on her toe instead of her finger
- The baby needs to be dried and covered with multiple warm blankets (potentially bubble wrap) and a cap
- If the skin-to-skin time is done very early (in the OR), the baby may need to be laid cross-wise across the mother's upper chest, above the blue drape
- Routine procedures, such as weight, measurement, and baby eye drops, need to be delayed
- Other routine baby procedures (APGAR scores, assessment, placing the ID bracelet) need to be done on the mother's chest
- Bathing needs to be delayed, with priority given to the skin-to-skin time

Is it possible for hospitals to keep mothers and babies together in recovery after a Cesarean?

Yes. For example, at Spectrum Health Gerber Memorial hospital in Michigan, mothers are admitted to the room they will be in during their hospital stay for a planned cesarean. The preoperative procedures are done there. After the surgery, the mother/baby return to that room and recovery takes place there. Family and friends are asked to wait until the surgical recovery time is completed. The mother and father continue skin-to-skin and initiate breastfeeding (if the baby had not already started breastfeeding during the surgery). The baby only goes to the nursery if there is a medical emergency (Personal correspondence, Michele, 2017).

Other hospitals have published quality improvement reports describing how they switched from routine separation to routine couplet care during recovery after Cesareans (Spradlin, 2009; Elliott-Carter & Harper, 2012). For example, let's look at the quality improvement report by Elliott-Carter & Harper, 2012.

Why did this hospital decide to make the change?

In 2011, nurses at Woman's Hospital in Baton Rouge, Louisiana, led a switch from routine separation after Cesareans to couplet care—keeping mothers and babies together. The hospital was motivated to change for several reasons, including a desire to stay competitive with other hospitals and repeated requests from clients to not be separated from their babies.

Perhaps most compelling, the staff felt it was simply "not fair" that mothers who gave birth vaginally were allowed to stay with their babies, while mothers who had Cesareans were automatically separated from their babies. The Cesarean rate at Woman's hospital was 40%, and they have more than 8,000 births per year. So making this change affected 3,200 families per year.

How did the hospital change to couplet care?

One of the first things the hospital did was put together a leadership team to plan for the change. This team included nurse managers from labor and delivery, postpartum, and newborn care, as well as pharmacists and materials management. The team communicated the plan to other groups (such as medicine).

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One of the team's challenges was finding a large enough space where mothers and babies could recover together after a Cesarean. They ended up choosing overflow labor and delivery suites that were big enough to accommodate the couplet. They also modified the existing recovery room (PACU) so that it could be used in case the overflow rooms were full. They moved curtains to make each patient's space big enough for both mothers and infants to recover together, and they put a radiant warmer for the infant in each recovery space.

The team had to make several other small changes. They had to train the recovery (PACU) nurses in neonatal resuscitation. They made sure baby blankets were placed in the heated blanket warmer, and that appropriate medications for both mothers and babies were stocked in each room.

Perhaps most importantly, staff made a commitment to provide care where the mothers and babies were, instead of always taking the baby away to the nursery. Although taking the baby to the nursery was easier and more convenient for the staff, they realized that keeping the couplet together was best for mothers and babies. It took about six weeks from the beginning of this process until couplet care was fully implemented.

How did it go for this hospital in Louisiana?

In the first year after starting couplet care, the percentage of infants who were separated from their mothers dropped from 42% to 4%. Nurses stated that everyone was extremely satisfied with the change—including staff, physicians, and mothers. Nurses report that mothers are able to have skin-to-skin contact earlier, and that the first breastfeeding session goes smoother. Inspired by the bonding they witnessed between mothers and babies, nurses decided to delay administration of erythromycin ointment and the vitamin K shot until after the initial breastfeeding.

As nurses from the Woman's Hospital said, "If a hospital that delivers 8,000 infants annually can find a way to decrease the separation of mothers and newborns, concerned nurses everywhere should be able to implement this type of care."

So what is the bottom line?

In summary, the research we have so far demonstrates that "very early" skin-to-skin care after a Cesarean is safe and beneficial. More research is needed on "immediate" skin-to-skin care, or care that is initiated in the operating room, but the available research is promising. The low rates of skin-to-skin after Cesarean and reports from researchers suggest that families and care providers may face multiple barriers to skin-to-skin care after Cesareans. However, evidence has shown that it is possible—*and best practice*—for mothers and babies to stay together after a Cesarean. It should be the expectation that hospitals not currently supportive of skin-to-skin care after Cesarean begin steps immediately to make the changes necessary to support this best practice.

If a hospital staff member tells people giving birth that it is "impossible" for them to stay together with their babies after a Cesarean, that statement is false. Making the switch from routine separation to couplet care can be done—many hospitals have already done so. Although couplet care may be more inconvenient for staff in the beginning, in the end, keeping mothers and babies together after a Cesarean is what is best.

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If you want to read more research:

- This short film from the United Kingdom documents the benefits of delayed cord clamping and immediate skin-to-skin after Cesarean.
- This beautiful teaching film, entitled "Skin to Skin in the First Hour After Birth: Practical Advise for Staff after Vaginal and Cesarean Birth," (http://bit.ly/2AmzK9O) was created in 2011 by the Healthy Children Project
- This research paper describes a 'natural' approach to Cesarean (http://bit.ly/2AvL2sY), where the parents are involved as active participants in the birth and the baby is transferred directly onto the mother's chest for early skin-to-skin.
- This is a popular video of a "natural Cesarean" (http://bit.ly/2jfFxe5) that took place in England.
- These researchers describe how critically ill babies had a higher mortality rate (http://bit.ly/2zpOBTV) when they were separated from their mothers after birth.
- These researchers found higher cortisol (stress) levels in infants (http://bit.ly/2yJLEhx) who were not held by their mothers after birth.
- In this small randomized, controlled study, researchers experimented with keeping mothers and babies together after a Cesarean. Not surprisingly, the intervention group had earlier first mother-baby contact, earlier first feedings, and more stable infant body temperatures (http://bit.ly/2yk8KXF).
- In this landmark study, researchers randomly assigned mother-baby pairs to several different groups, including mother-baby separation for two hours after birth. Mothers and babies who were separated for two hours had a higher risk of poor maternal/infant bonding outcomes one year later (http://bit.ly/2m8z5Xh). This risk was not alleviated by "rooming in" for the rest of the hospital stay.
- In this animal study, baby horses were separated from their mothers for one hour after birth (intervention group) or left undisturbed with their mothers (control group). The separation increased the risk for poor bonding and other adverse social outcomes (http://bit.ly/2hXknOd).
- If you Google "hospital", "couplet care" and "cesarean" you will find a large number of hospitals that already offer this mother-friendly and baby-friendly practice (http://bit.ly/2hWcDMt).

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