EVIDENCE BASED *Birth*®

SIGNATURE Articles

Evidence on: Birthing Positions

This article focuses on the evidence for birthing positions in the *second stage of labor*. The second stage of labor begins when the cervix is completely dilated (open) and ends with the birth of the baby. In research, the second stage is often divided into a *passive phase*, an *active phase*, and the actual birth of the baby—when the baby actually emerges (Roberts, 2002).

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The passive waiting phase of the second stage of labor is a period of rest (sometimes called "laboring down") when the baby rotates and descends toward the pelvic floor. The passive phase sometimes happens when the mother is fully dilated but waits for the urge to push. The passive phase does not occur in births where the care provider directs the mother to begin pushing efforts immediately upon reaching complete cervical dilation.

The active pushing phase is when the baby's head or bottom is on the pelvic floor and the mother either pushes spontaneously (after feeling an urge to push) or as coached by a care provider. Mothers with epidurals may feel an urge to push, or pressure, or no sensation at all—depending on the individual and the medications used. In some un-medicated births, the active pushing phase may be more accurately described as the *fetal ejection reflex*—where the mother waits for her baby to descend and then her body expels the baby with little or no conscious effort (Newton, 1987). Mothers sometimes describe this as "I wasn't pushing, my baby was just coming out!"

Whenever possible, we share if a study is looking at birthing positions specifically in the passive phase, active phase, or during the actual birth of the baby. We do not cover the evidence for other pushing options in this article—such as coached pushing vs. spontaneous pushing, or immediate pushing vs. delayed pushing.

Evidence on: Birthing Positions

How could upright positions benefit normal labor and birth?

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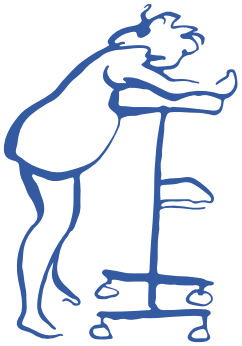
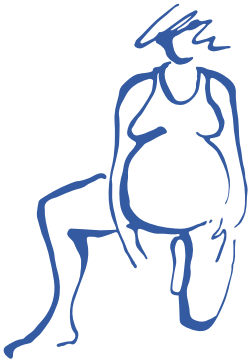
Upright birthing positions include:

Standing/squatting, supported by a partner or prop



Kneeling upright or on hand-and-knees



Using a birth seat

Evidence on: Birthing Positions

Researchers believe that giving birth in an upright position can benefit the mother and baby for several *physiologic reasons*. Physiologic refers to a healthy body's normal function. In an upright position, gravity can help bring the baby down and out. Also, when someone is upright to give birth, there is less risk of compressing the mother's aorta, which means there is a better oxygen supply to the baby. Upright positioning also helps the uterus contract more strongly and efficiently and helps the baby get in a better position to pass through the pelvis. Magnetic resonance imaging (MRI) studies have shown that compared to the back-lying position, the dimensions of the pelvic outlet become wider in the squatting and kneeling or hands-and-knees positions (Gupta et al., 2017). Finally, research has shown that upright birthing positions may increase maternal satisfaction and lead to more positive birth experiences (Thies-Lagergren, 2013).

However, despite these potential benefits of giving birth in an upright position, most people who give birth vaginally in U.S. hospitals report that they push and give birth lying on their backs (68%) or in a semi-sitting/lying position with the head of the bed raised up (23%). A small minority push and give birth in other positions such as side-lying (3%), squatting or sitting (4%), or hands-and-knees position (1%) (Declercq et al., 2014). In contrast, a U.S. home birth midwife told us that the majority of her clients spontaneously choose the hands-and-knees position (Personal communication, K. Brown, Feb. 8, 2018). In Europe, a study of nearly 3,000 people who had planned home births between 2008 and 2013 found that the majority (65%) gave birth in upright or side-lying positions (Edqvist et al., 2016).

It may be helpful to go over some of the terms that are used to describe non-upright birthing positions.

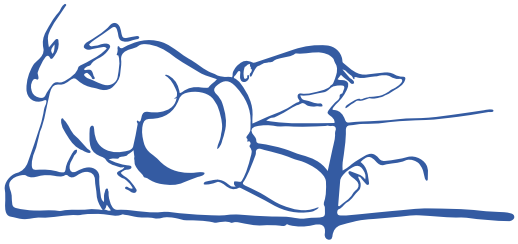
General terms that refer to lying on your back or side are called *recumbent and semi-recumbent positions* (http://bit.ly/2FBxdMQ). The side-lying position is not often described as recumbent or semi-recumbent in practice, but we include it in this group since most of the evidence on upright vs. non-upright positions puts the side-lying position with the other non-upright positions.

Recumbent and semi-recumbent positions include:

Supine position - lying flat on your back, the head of the bed may be elevated

Lithotomy position - lying on your back in a supine position with hips and knees flexed, thighs apart, and legs supported in raised stirrups

Lateral position - lying on your side



Another possible way to classify birthing positions is whether the body weight is on or off the sacrum, or the large tailbone at the base of the spine. Positions that take the weight off the sacrum and allow the pelvis to expand might make spontaneous birth (birth without the use of vacuum or forceps assistance) more likely (Edqvist et al., 2016). For a video showing how flexible sacrum positions can make birth easier, watch this video (http://bit.ly/2FB1I8D).

Flexible sacrum positions take the weight off the tailbone:

- Kneeling
- Standing
- Hands-and-knees
- Side-lying
- Squatting
- Using a U-shaped birth seat

Non-flexible sacrum positions put weight on the tailbone:

- Supine (back-lying) with or without the head of the bed raised up
- Semi-sitting in bed
- Lithotomy position in stirrups

Non-upright positions may be beneficial in some cases. For example, the *McRoberts' position* (http://bit.ly/2FBxY8E)—where the mother lies back with her legs flexed and pulled tightly into her abdomen—can help correct a shoulder dystocia (when the baby's shoulders get stuck after the head has already emerged).

Why do most people give birth on their backs?

Many caregivers around the world still prefer non-upright positions today, even though current obstetric textbooks state that it is beneficial, especially for first-time mothers, to push in upright positions (Kilpatrick & Garrison, 2012)

It is thought that most people giving birth are encouraged to push in a back-lying or semi-sitting position—one that puts weight on the tailbone—because it is more convenient for the care provider during the birth of the baby.

Also, when the mother is lying or semi-sitting in bed, it is easier for caregivers to access her abdomen to monitor the fetal heart rate electronically. Among people who experienced labor in the U.S. in 2012 and 2013, the majority were given electronic fetal monitoring (EFM) either continuously (60%) or for most of the time during labor (20%) (Declercq et al., 2014). Despite its widespread use, continuous

electronic fetal heart rate monitoring is not evidence-based in most cases (http://bit.ly/2FAYfnw). When continuous EFM has been compared with *intermittent auscultation* (listening to the baby's heart rate at regular intervals with a handheld device), continuous EFM has been linked to lower rates of newborn seizures but has not improved rates of cerebral palsy or infant death. Also, mothers who are attached to continuous EFM during labor have higher rates of Cesareans and forceps/vacuum-assisted births (Alfirevic et al., 2017).

The use of continuous EFM often means that mothers cannot move freely or change positions easily during labor, and that they may lose the option of water immersion in a birth pool for pain management. However, not *all* types of continuous EFM restrict mothers from movement and the option of water immersion. We now have wireless, waterproof continuous monitors available in some hospitals. These monitors (like the Novii (http://bit.ly/2FAyDXA)) are an option for mothers who want to use the shower or birth pool and labor/birth in multiple positions, but whose care providers want continuous or intermittent electronic fetal monitoring. Mobile monitors are designed to free up mothers, but they are not a perfect replacement for intermittent auscultation. Mobile monitors can shift on the mother's abdomen during movement, which may lead hospital staff to discourage position changes.

Care providers may also be more comfortable with the lying or semi-sitting position because this is how most are trained to attend births (Gupta et al., 2017). Also, as the presenter explains in this popular video (http://bit.ly/2FyUcb4) by the Head of Midwifery Education at the University of South Wales, while the supine position is not beneficial for normal vaginal birth, it is the easiest way to position Noelle, a popular birthing mannequin (http://bit.ly/2FByIdW), to simulate birth for medical, midwifery, and nursing students.

The focus on non-upright birthing positions in training is likely a major reason why many care providers are uncomfortable with attending upright births. One of our reviewers spoke with a care provider who had the opportunity to ask a room full of medical students in the Southeastern U.S. if any of them had ever seen an upright birth on their OB rotation. Not a single medical student had seen a baby born in an upright position. If a physician has only been trained in birth with the mother in the lithotomy position, they may not feel that they can safely handle complications if the mother were in an upright position.

The fact that most people in the U.S. have epidurals for birth also contributes to the higher use of back-lying positions. Care providers may perceive that upright birthing positions are not possible with an epidural, and mothers with epidurals—especially high-dose, or "heavy" epidurals—may be unable to get themselves into upright positions without trained help. Some epidurals can block the mother's feeling to such an extent that the care provider might apply manual pressure to the inner part of the vagina to help with pushing efforts—a procedure that is most often done with the mother in the lithotomy position (Personal communication, S. Voogt, January 2018).

Finally, there are system pressures in hospitals that limit caregivers from truly supporting birthing people. Too few nurses and increased computer duties limit nurses' ability to perform intermittent auscultation or to provide hands-on support for different birthing positions—especially for mothers with epidurals who require extra assistance. A mother with an epidural may need two assistants to help her balance in certain positions, which is not possible if a hospital is short-staffed on nurses, or if the nurse is supposed to be charting on the computer every five to ten minutes for medical, legal, and insurance reasons. If hospitals were willing to invest in more hands-on care to support birthing women, we would likely see more auscultation and more staff support for position changes during labor.

Evidence on Birthing Positions

It's important to look at evidence on birthing positions based on whether or not people had epidurals, because different positions may have different effects depending on whether or not you have an epidural.

For people *without* epidurals, which birthing positions are best supported by evidence?

In a recent 2017 Cochrane review and meta-analysis, Gupta et al. combined the results of 32 randomized, controlled trials that included more than 9,000 birthing people in hospital settings. In these studies, people were randomly assigned to either upright or non-upright positions during the second stage of labor. Studies could still be included in the meta-analysis if they assigned people to upright positions during the passive second stage of labor but not during the active pushing phase. In other words, some people assigned to upright positions may have been upright for the passive second stage of labor but lying down for active pushing and/or birth.

The researchers defined upright positions as sitting on a birthing stool or cushion, kneeling, hands-and-knees, and squatting. They defined non-upright positions as side-lying, semi-sitting, and lithotomy.

In comparison with non-upright positions, people who were randomly assigned to upright positions in the second stage of labor were:

- 25% less likely to have a forceps or vacuum-assisted birth
- 25% less likely to have an episiotomy
- 54% less likely to have abnormal fetal heart rate patterns
- 20% more likely to have a second-degree tear; the absolute risk was 15.3% for people in upright positions vs. 12% for those in non-upright positions *
- 48% more likely to have estimated blood loss greater than 500 mL; the absolute risk was 6.5% for people in upright positions vs. 4.4% for those in non-upright positions **

* The lower risk of episiotomies with giving birth in upright positions was offset by a higher risk of second degree tears. However, since other researchers have found strong evidence that natural tears heal easier and are less traumatic to tissue than episiotomies (Jiang et al., 2017), a higher second degree tear rate in exchange for a lower episiotomy rate may be an acceptable trade-off for some people. Also, it may be possible to reduce the risk of perineal tears with upright positions by changing the methods used in the second stage of labor (e.g., directed vs. spontaneous pushing).

** Researchers found that people in the upright group were more likely to have an estimated blood loss greater than 500 mL. The authors questioned the accuracy of this finding because the blood loss was based on care provider estimates, which is not an accurate way of measuring blood loss. There were no differences in the need for blood transfusions between groups. Some researchers consider that, in well-nourished people, there is little impact from blood loss of 500 mL—an amount equal to a routine blood donation (Begley et al., 2015). However, in low-income countries where mothers may be poorly nourished and anemic, this amount of blood loss can be harmful.

It's interesting to note that in research on planned home birth in the U.S.—where upright birthing positions are probably more common—an estimated 16% of people lose greater than 500 mL of blood postpartum (Cheyney et al., 2014). In hospital births—where the majority of people give birth in back-lying positions—we see a similar rate (15%) of people with postpartum blood loss greater than 500 mL when *expectant management* (defined below) is used in the third stage of labor, and a rate of 5% when

active management is used (Begley et al., 2015). So, upright vs. non-upright birthing positions may not have much of an effect on blood loss. The way care providers handle the third stage of labor, on the other hand, seems to have more of an impact on the amount of postpartum blood loss.

Expectant management of the third stage of labor means that the care provider takes a 'hands-off' approach, and the mother delivers the placenta spontaneously by pushing or with the help of gravity or, sometimes, with nipple stimulation. In contrast, with active management the care provider usually gives the mother a drug to make the uterus contract, clamps the cord, and gently pulls on the cord while pressing on the uterus to deliver the placenta. It would be interesting to see research comparing active management of the third stage of labor in upright vs. non-upright positions, to see if gentle "tugging" on the cord puts upright mothers at greater risk of postpartum blood loss, due to the effects of gravity.

The Gupta et al. (2017) meta-analysis does not provide details on how mothers were treated during the third stage of labor, or whether people remained upright for the third stage after giving birth in upright positions. Without these important details, it is difficult to draw conclusions about the effect of upright birthing positions on postpartum blood loss.

The Cochrane meta-analysis found no differences between groups as far as Cesarean rates, severe perineal tears, mothers' need for blood transfusion, number of babies admitted to neonatal intensive care units, or perinatal deaths. Three out of four trials that measured pain found a reduction in pain with upright birthing positions. They also found that when people gave birth in upright positions, their labors were shortened by about six minutes; however, the evidence for this outcome was of very low quality. When they left out the poorer quality studies, there were no differences in length of labor between groups.

Another meta-analysis that compared upright and non-upright birthing positions in people without epidurals came out independently but within a few months of the Cochrane meta-analysis (Deliktas & Kukulu, 2017). This meta-analysis included fewer studies (22 vs. 32) but found similar results as far as a decrease in risk of vacuum or forceps-assisted birth and episiotomy, and an increase in risk of postpartum blood loss. There were no differences between the upright and non-upright groups for any other health outcomes.

We found one randomized trial that was too new to be included in the 2017 reviews. This study involved 102 first-time mothers giving birth without epidurals in Turkey (Moraloglu et al., 2017). The mothers were randomly assigned to push and give birth in a standing/squatting position with a bar, or the lithotomy position with the head of the bed raised 45 degrees. The study showed that the people who stood, then squatted down with a bar to push during contractions, had shorter second stages of labor by about 34 minutes. They also experienced less pain, were less likely to receive artificial oxytocin (Pitocin) to augment labor, and had higher satisfaction with the birth experience, compared with the group that pushed and gave birth while back-lying in a raised bed. There were no differences between groups in postpartum blood loss.

For people *with* epidurals, which birthing positions are best supported by evidence?

More than 60% of people giving birth to a single baby in the U.S. use epidural or spinal analgesia (ACOG, Practice Bulletin No. 177, 2017). A recent Cochrane review looked at evidence for upright vs. non-upright birthing positions among people with epidurals (Kibuka & Thornton, 2017). Studies could be included if people were randomly assigned to upright vs. non-upright positions during the second stage of labor, but not necessarily for the active pushing phase or actual birth. Combined, there were 879 people from five

randomized, controlled trials. The trials all took place in hospitals in the United Kingdom or France. One of the studies involved people with traditional epidurals, three studies included people with low-dose, or 'walking' epidurals, and one did not report the type of epidural.

The meta-analysis found that in people with epidurals, being upright during the second stage of labor made no difference in the rate of Cesareans, forceps/vacuum-assisted births, or the length of the pushing stage. There was also no difference in perineal tears requiring stitches, abnormal fetal heart rate patterns, low cord pH, or NICU admissions. The authors looked but did not find any useful data on blood loss greater than 500 mL, prolonged second stage of labor, Apgar scores, perinatal death, need for ventilation, or maternal satisfaction with the birth. The Cochrane authors concluded that, at this time, there is not enough evidence to recommend specific birthing positions for people with epidurals.

There are three other randomized, controlled trials that looked at birthing positions in people with epidurals, but were not included in the Cochrane meta-analysis. The Cochrane reviewers are still awaiting further information from the trial authors before they decide to add these studies to their review.

In the first study, 199 participants giving birth at a hospital in Spain were randomly assigned to a "traditional model of birth" or an "alternative model of birth" (Walker et al., 2012). People assigned to the traditional model began pushing in the lithotomy position immediately after they reached ten centimeters, and also gave birth in the lithotomy position. People assigned to the alternative model delayed pushing and gave birth in a specific type of side-lying position.

The group assigned to delayed pushing was instructed to change position every 20-30 minutes after reaching full dilation and begin active pushing efforts only after feeling a strong urge to push. Hospital staff assisted them in moving into different positions like sitting, kneeling, side-lying, or hand-and-knees. If, after 2 hours in the passive phase, the epidural prevented people from feeling an urge to push, they were asked to start pushing with each contraction.

When people in the delayed pushing group were ready to begin pushing efforts, trained staff assisted them in moving into a specific side-lying position. In this position, the lower leg remained extended on the bed and the upper leg rested flexed on the stirrup. This placed the foot of the upper leg in a higher position than the knee to allow the upper hip to rotate. The mother's upper body was placed in a neutral position and supported with pillows, if necessary.

The researchers found that people who delayed pushing and gave birth in a side-lying position experienced fewer assisted vaginal births (20% vs. 42%) and a higher rate of intact perineum (40% vs. 12%) compared to people who pushed immediately and delivered in a lithotomy position. In this study, assisted vaginal birth refers to the use of vaccum, forceps, or fundal pressure—when staff apply pressure with their hands to the mother's abdomen in the direction of the birth canal. There was no difference between groups in the rate of first-, second-, or third-degree perineal tears, so the lower rate of episiotomy (21% vs. 51%) in the side-lying group accounts for the higher rate of intact perineum in that group.

This study provides evidence that in people laboring with epidurals, delayed pushing with position changes and active pushing and delivery in the side-lying position may reduce the rate of assisted vaginal birth, the length of the active pushing phase, and the rate of perineal trauma without adding risks for mothers or babies. However, as the next study found, it may be possible to achieve these benefits using only delayed pushing and position changes in the passive phase of the second stage of labor.

The second study, also conducted in Spain, randomly assigned 150 people to position changes every five to 30 minutes in the passive phase of the second stage of labor or to the supine position for the entire second stage (Simarro et al., 2017). Both groups were instructed to delay pushing and everyone eventually gave birth in the lithotomy position. The people assigned to position changes during the passive phase of the second stage of labor had better outcomes than the group that was supine for the entire second stage, even though everyone gave birth in the same back-lying position. The group that changed positions had fewer Cesareans (1% vs. 10%) and fewer cases of vacuum/forceps (24% vs. 39%). They also experienced shorter second stages of labor (95 minutes vs. 124 minutes) and fewer episiotomies (18% vs. 31%).

The third trial was a very large randomized, controlled trial on birthing positions conducted by a group in the United Kingdom (U.K.) called the Epidural and Position Trial Collaborative Group (The Epidural and Position Trial Collaborative Group, 2017). The research group compared upright vs. side-lying birthing positions in first-time mothers with a low-dose epidural.

Between 2010 and 2014, a total of 3,236 people were enrolled in the study from 41 maternity care centers in the U.K. To be included in the study, the first-time mothers had to be over the age of 16, carrying a single, head-down baby at 37 weeks or greater, planning to give birth vaginally, and in the second stage of labor with low-dose epidural medication. Since people weren't randomized to upright or non-upright positions until the second stage of labor, this research doesn't apply to positioning with epidurals in the first stage of labor. The upright group was assigned to be moving on foot, standing, sitting, kneeling, or in any other upright position. The non-upright group was assigned to side-lying with the hospital bed raised up 30 degrees.

About 80% of participants assigned to both the upright and side-lying groups were able to move around, meaning that they had true low-dose epidurals. For the most part, people used their assigned pushing positions.

The researchers found that fewer people assigned to upright birthing positions experienced spontaneous vaginal birth compared to people in the lying-down group (35% vs. 41%). Strangely, this was a very low spontaneous vaginal birth rate in both groups. The majority of participants in this study gave birth by Cesarean or with vacuum/forceps. We were surprised to see such high rates of intervention in this study—the rate of vacuum/forceps births was 51%-55% and more than half (55%-59%) of people received an episiotomy. These numbers are strangely high. In the U.S., for example, the overall rate of vacuum/forceps births is only around 3% (Martin et al., 2017).

It's not clear why people assigned to upright birthing positions were less likely to have spontaneous vaginal births in this study. The researchers did not find a difference between groups in rates of failure to progress or fetal distress leading to vacuum or forceps. They also did not find differences in any other health outcomes. It could be that people with low-dose epidurals have a greater chance of giving birth spontaneously when they use a side-lying position for the second stage of labor rather than an upright position. However, the findings from this study should be taken with caution—they may not apply to settings with more support for spontaneous vaginal birth (where there is less use of vacuum or forceps).

Evidence on birthing positions for people with and without epidurals

The *Swedish Birth Seat Trial* was carried out at two hospitals in Sweden between 2006 and 2009 (Thies-Lagergren, 2013). The study included 1,020 mothers giving birth vaginally for the first time between 37 weeks and 41 weeks 6 days. Nearly half (45%) of the participants used epidurals for pain

relief during labor. Mothers were randomly assigned to either give birth on the BirthRite® seat (http://bit.ly/2FBk5a8) or in any other position.

The author found that the birth seat resulted in a shorter second stage of labor by an average of 6-13 minutes and less use of artificial oxytocin for augmentation of labor. This study found no difference in the rate of forceps or vacuum assistance. People who gave birth on the birth seat were at increased risk of postpartum blood loss; however, the blood loss did not have an effect on hemoglobin levels 2-3 months postpartum. There was no difference between the groups as far as perineal tears, but the birth seat was linked to fewer episiotomies—2% of the mothers who gave birth on the birth seat had an episiotomy compared to 14% of those who gave birth in other positions. The study did not find a difference in health outcomes for mothers or infants other than the increase in postpartum blood loss. However, the participants who were assigned to give birth on the birth seat were more likely to report that they felt "powerful, protected and self-confident"—which led to greater satisfaction with childbirth.

What evidence do we have on birthing positions from observational studies?

We found three recently published observational studies on birthing positions in the second stage of labor—two from Sweden and one from Italy. The first study from Sweden looked at strategies care providers can use in the second stage of labor to improve health outcomes (Edqvist et al., 2017). Midwives treated 296 first-time mothers with a three-part protocol called "woman-centered care" and 301 first-time mothers with standard care. The use of epidurals in the study was 61%. The group that received woman-centered care used 1) spontaneous pushing (pushing efforts were not coached or directed), 2) flexible sacrum birthing positions (kneeling, standing, hands-and-knees, side-lying, birth seat), and 3) birth of the baby's head and shoulders in two separate contractions. The midwives who practiced standard care didn't receive any special instructions.

The researchers determined that the odds of second degree tears were less likely in the people who received woman-centered care compared to those who received standard care. However, since this was a three-part protocol, we do not know which part of the protocol contributed to the lower second-degree tears.

An earlier study also from Sweden looked at the effect of delivery position on the rate of obstetric anal sphincter injury (OASIS) (Elvander et al., 2015). These severe tears, also called third- and fourth-degree perineal tears, are related to long-term maternal complications, such as anal incontinence, sexual dysfunction, pain, and a reduced quality of life. The researchers included over 100,000 people from a birth record database in the study. The database included midwives' records of which position the mother used during the actual birth. More than half (57%) of the first-time mothers used epidurals and 26% of the people who had given birth before used epidurals. Everyone included gave birth vaginally to a single baby without an episiotomy. They found that the lowest rates of severe perineal tears occurred among people who delivered in a standing position, and the highest rates of severe tears occurred among those who delivered in the lithotomy position.

In another study, researchers in Italy explored what effect birthing positions may have on urinary incontinence (Serati et al., 2016). They conducted phone interviews 12 weeks after the birth with 296 people who chose an upright position to deliver and 360 people who chose a back-lying or side-lying position. To assess urinary function, the mothers were asked questions like: How often do you leak? How much urine do you usually leak? When does the urine leak?

The survey data showed that delivering in upright positions was related to a lower episiotomy rate (30% vs. 41%) but a slightly higher rate of third- and fourth-degree perineal tears compared to delivering in the supine position (1.35% vs. 0%). Their episiotomy rate is very high; the increase in severe perineal tears with upright delivery positions may not hold in settings with lower rates of episiotomy. The lower episiotomy rate with upright birthing positions, however, seems to hold in both high and low-episiotomy settings (Thies-Lagergren, 2013).

Importantly, the Italian researchers found that supine delivery positions increase the risk for postpartum urinary incontinence and in particular of stress urinary incontinence, defined as involuntary leakage on effort or exertion or sneezing or coughing. It's possible that this increase in the risk of urinary incontinence maybe related to the higher rates of episiotomies with supine positions.

Positions during pushing vs. actual delivery

Over the past few years, I have traveled across the U.S. speaking and giving presentations at various regional conferences. In my discussions with professionals and parents in a variety of geographic locations, I have heard that many providers may be willing to support pushing in upright positions (passive or active second stage), but few obstetricians will attend an actual birth or "delivery" during an upright position. For example, physicians and nurses may support someone pushing in a squatting position, but when the baby is about to emerge, they may insist the birthing person get on their back for the "traditional" delivery position. Generally, this is due to the fear of the unknown—since most providers and nurses are not trained in upright birth, and rarely (if ever) see them, they do not feel comfortable attending births in that manner.

The desire for some medical staff to have the delivery happen in a "controlled" manner (non-upright position) is so strong that some women in the U.S. have shared stories of either being coerced or forcibly put into non-upright positions during childbirth. In 2016, Caroline Malatesta won a landmark court case in Alabama in which she sued her hospital for malpractice and fraud. At Ms. Malatesta's birth, the hospital nurses forcibly turned her onto her back (she was in a hands-and-knees position) during the delivery, and held the baby's head in for 6 minutes until the doctor could arrive, causing a severe, lifelong, maternal nerve injury. The jury awarded a $16 million verdict in Ms. Malatesta's favor, finding that forcing a birthing person into a delivery position against their will violates the nursing standard of care, especially for un-medicated or "natural" births.

The use of forcing women into the care provider's preferred position has also been described as "obstetric violence."In their paper describing Ms. Malatesta's case in the *Journal of Perinatal and Neonatal Nursing*, Pascucci and Adams (2017) state:

> Obstetric violence is, in its simplest form, a form of violence against women that occurs in the childbirth setting. It is an attempt to control a woman's body and decisions and may involve coercion, bullying, threats, and withdrawal of support, as well as other violations of informed consent and physical force. Obstetric violence might manifest as forcing a woman supine because that is the doctor's preferred position for birth... Forcing someone into a particular delivery position could be viewed by the courts as negligence or battery (Pascucci and Adams, 2017).

It is best practice for hospitals, obstetric providers, and nurses to support women in their right to choose positions for pushing and delivery. This does not mean that providers cannot encourage certain positions (or frequent switching of positions) if they feel that they would be helpful in specific situations—but it is not appropriate to use coercion or force to achieve a delivery position for the sake of the provider's comfort.

What are some of the current practice guidelines on birthing positions?

In the U.S., the American College of Obstetricians and Gynecologists (ACOG) recommends that, for most people giving birth, "no one position needs to be mandated nor proscribed" (2017). In a Committee Opinion called "Approaches to Limit Intervention During Labor and Birth," ACOG states that it is normal for people in labor to assume many different positions, and that no one position has been proven best. They cite the fact that many care providers encourage a supine position during labor even though it has known adverse effects, including low maternal blood pressure and more frequent abnormal fetal heart rates. They go on to say that continuous EFM has not improved outcomes for women with low-risk pregnancies, and that care providers should "consider training staff to monitor using a hand-held Doppler device (intermittent auscultation)...which can facilitate freedom of movement and which some women find more comfortable." The statement concludes with a general recommendation that care providers can support frequent position changes during labor to enhance maternal comfort and promote optimal positioning of the baby, as long as they do not hinder monitoring and there are no complications.

In 2012, three U.S. midwifery organizations –American College of Nurse Midwives (ACNM), Midwives Alliance of North America (MANA), and National Association of Certified Professional Midwives (NACPM)—came together to create a consensus statement on supporting healthy, physiologic childbirth (U.S. Midwives, 2012). They stated that freedom of movement in labor and the woman's choice of birth position are essential to this goal.

The Royal College of Midwives (RCM) in the U.K. recommends the use of active and upright positions to assist with labor and delivery. In their guidelines, they urge midwives to be proactive in demonstrating and encouraging different positions in labor, since women often "choose" to do what is expected of them, and the most common image of the laboring woman is "on the bed." Since the environment is key to freedom of movement, RCM suggests that there should be a variety of furniture and props available in the room to encourage people to try different positions: bean bags, mattresses, chairs, and birth balls. They recommend that midwives support mothers with suggestions on how to remain upright even if they're in a situation that might limit mobility—such as with traditional EFM, intravenous (IV) fluids, and different medications for pain relief.

In a publication by the World Health Organization (WHO) called "Care in Normal Birth," the WHO concludes that women in labor should adopt any position they like, while preferably avoiding long periods lying supine (WHO, 1996). They recommend that birth attendants need training in supporting births in other positions than supine, since much of the positive effect of upright birthing positions depends on the birth attendant's experience with the position and willingness to support the mother's choice of position.

Summary of the Benefits and Risks

In summary, evidence from randomized trials suggests that *for people without epidurals*, upright positions during the second stage of labor provide several benefits: a lower risk of abnormal fetal heart rate patterns, less pain, and less use of vacuum/forceps and episiotomy. Upright birthing positions may also shorten the second stage of labor and reduce the use of augmentation with synthetic oxytocin.

In terms of risks of upright birthing positions, studies have found an increase in second-degree tears from upright birthing positions, but some would consider that a reasonable trade-off for a lower rate of episiotomies. Also, it may be possible to reduce the rate of tears by using evidence-based pushing

methods in the second stage of labor. An observational study found lower odds of second-degree tears when upright or side-lying positions were combined with a policy of spontaneous (non-directed) pushing and delivering the baby's head and shoulders in separate contractions. Upright birthing positions appear to increase the rate of blood loss >500 mL; however, there is no evidence that this increase results in more need for blood transfusions.

The evidence from randomized trials for *people with epidurals* is less conclusive. So far, researchers have not identified clear benefits or risks from birthing in upright vs. non-upright positions. However, there is some evidence that giving birth in a supported side-lying position may reduce the length of the active pushing phase, the rate of episiotomy, and the use of forceps, vacuum, or fundal pressure. Those benefits are more likely when the side-lying position is combined with position changes in the passive phase of the second stage of labor and waiting for the urge to push. One randomized trial found that the use of a birth seat may shorten the length of the second stage of labor, result in less synthetic oxytocin for labor augmentation, and lead to fewer episiotomies and greater satisfaction with childbirth. These potential benefits must be balanced against the risk of more postpartum blood loss; however, the increased blood loss did not lead to worse health outcomes for the participants in this study.

Since most of the studies on birthing positions are restricted to healthy, low-risk people, these findings may not apply to women with more complicated pregnancies. Future research should avoid grouping the side-lying position with the other non-upright positions, since side-lying allows for more flexibility in the sacrum area, so it may be more beneficial.

Bottom Line

The bottom line is that people giving birth with or without an epidural have the right to push *and give birth* in whatever position is most comfortable for them.

Evidence *and* ethical guidelines support this bottom line! Both the Committee on Ethics of the American College of Obstetricians and Gynecologists (ACOG) and the American Nurses Association (ANA) have issued statements affirming the importance of patient autonomy. *Personal autonomy* is defined as the belief that all people have inherent worth and dignity and, thus, the capacity for self-determination (for self-governance and freedom of choice) (ACOG, 2015). The Code of Ethics for Nurses recognizes specific patient rights, in particular, the right to self-determination, and holds that nurses have an obligation to preserve, protect, and support the moral and legal right of patients (ANA, 2015).

It would be an ethical violation for care providers to restrict a laboring woman's freedom of movement or coerce her into specific labor or delivery position. This is especially true with un-medicated or "natural" childbirth, since movement and positioning are proven pain management strategies that, for some, could mean the difference between coping vs. suffering.

Given the evidence and ethical guidelines, medical schools and residency programs should begin training medical students and resident physicians on how to support women in various birthing positions. Nursing schools should also ensure that their students are trained in upright birthing positions, so that future labor and delivery nurses will be equipped to uphold the ethical and evidence-based standards of their profession.

Physicians should advocate for a birth environment that supports women's choice in their birthing position. If physicians feel that their training and experience are inadequate for managing complications at an upright birth, they could reach out to local midwifery colleagues for support on this matter, as midwives are trained and experienced at upright birth.

Finally, doulas can also nurture a supportive environment for a variety of birthing positions. A confident doula could support the mother's wishes by asking the laboring person, immediately before births, which position she wishes to give birth in. After she answers, the doula could tell the mother out loud in front of hospital staff, "You and your baby are safe and we are all on a team to support you and to honor your wishes."

Resources

- GynZone (http://bit.ly/2FD59bS) offers many resources, including a Birth Positions app (AppStore and Google Play)
- This video (http://bit.ly/2FA3T9m) of birthing position options
- This video (http://bit.ly/2FzswCR) of birthing positions specifically for people with an epidural
- This poster (http://bit.ly/2FDLhp7) with images of birthing positions from the Royal College of Midwives
- This video (http://bit.ly/2FB2qzA) of a wireless, waterproof monitor, and these links to the Novii (http://bit.ly/2FAyDXA) and GE (http://bit.ly/2FAByzL) monitoring products
- These links to the BirthRite Birthing Seat (http://bit.ly/2FBk5a8) and the CUB (Comfortable Upright Birth) Seat (http://bit.ly/2FA0uaC)

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