



## Frequently Asked Questions about Waterbirth

In this article, we answer frequently asked questions that we didn't have room to include in the Evidence Based Birth<sup>®</sup> Signature Article on Waterbirth ([evidencebasedbirth.com/waterbirth](http://evidencebasedbirth.com/waterbirth)).

### What is Waterbirth?

During *water immersion in labor*, people get into a tub or pool of warm water during the first stage of labor, before the baby is born. In a *waterbirth*, people remain in the water during the pushing phase and actual birth of the baby. The baby is then brought to the surface of the water after it he or she is born (Nutter et al., 2014a). A waterbirth may be followed by the birth of the placenta in or out of the water. The use of water during labor and/or birth is also sometimes referred to as *hydrotherapy*.

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### What is the History of Waterbirth?

Although there are some accounts of waterbirths that occurred in ancient times or in various cultures, waterbirth did not emerge as a widespread practice until the 1980s and 1990s.

- In 1805, the first research account of a waterbirth was published in a French journal.
- In 1980, the first U.S. waterbirth was documented, and water immersion during labor became more popular due to reports of increased pain relief, easier movement, and a more holistic experience (RCOG/RCM 2006).

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- In 1983, Dr. Michal Odent published a widely-cited article in the *Lancet* describing 100 waterbirths that occurred in a hospital in France.
- In 1989, [Waterbirth International](http://bit.ly/2GuL6w1) (<http://bit.ly/2GuL6w1>) was established in Santa Barbara, California. This 501-c-3 non-profit foundation has assisted with the installation of birthing pools in more than 200 hospitals in the U.S. as well as in dozens of other countries.
- In 1991, Dr. Rosenthal published a research study describing 483 waterbirths that occurred in a birth center in California.
- In 1992, the United Kingdom House of Commons released a report stating that all women should have the option of laboring and giving birth in the water (RCM, 2006).
- By 1993, all labor units in England and Wales had offered immersion in water during labor and/or birth, and nearly half had installed birthing pools. During this time period, less than 1% of births in England and Wales occurred in the water ([Gilbert & Tookey, 1999](#)).
- In 1994, the Royal College of Obstetricians and the Royal College of Midwives released statements endorsing waterbirth as an option, as long as birth attendants had the appropriate skills and confidence to assist people who wanted to give birth in the water. Their statements were updated and reaffirmed in 2000 and 2006 (RCM, 2006).
- In 1995, the United Kingdom hosted the first International Waterbirth Congress in London. During this conference, 19,000 cases of waterbirth were presented to 1,500 attendees from around the world.
- In 1996, the University of North Carolina School of Nursing, together with Waterbirth International, hosted the first U.S. waterbirth conference in Greensboro, North Carolina.
- In 2000, Waterbirth International hosted an International Waterbirth Congress in Portland, Oregon.
- In 2004, the U.S. Food and Drug Administration (FDA) notified Waterbirth International that they needed to file a request for portable birth pools to be classified as medical devices.
- In 2005, the American Academy of Pediatrics released an opinion statement rejecting waterbirth ([Batton et al., 2005](#)).
- In 2012, a joint meeting was called by the FDA to determine if birth pools are Class 1 medical devices. To read the ACNM's summary of this meeting, [click here](http://bit.ly/2GwfEOC) (<http://bit.ly/2GwfEOC>). The FDA has not yet released a decision.
- In 2014, the American College of Obstetricians and Gynecologists and the AAP released a joint statement (very similar to the 2005 AAP statement), rejecting waterbirth.
- In 2016, ACOG and the APP released a new statement that replaces the 2014 statement, showing a strengthening of support for water immersion during labor and a softening on waterbirth.

## Who is eligible for a waterbirth?

There is little-to-no research evidence to answer this question—most of this is based on clinical opinion. However, most studies out there have used the guidelines of “37+ weeks, head down, single infant, with no medical complications,” and have found very good results for mothers and infants.

We have listed below some of the common criteria that are sometimes used to risk a person out of waterbirth, along with the little evidence that we have:

- Hypertension—Water has been shown to lower blood pressure, and water immersion during labor may be helpful to bring down high blood pressure ([Cluett & Burns, 2009](#)). However, no researchers have looked at whether it is safe for people who have high blood pressure to have a waterbirth.





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- Meconium—Typically, people who have meconium-stained waters are asked to leave the tub prior to birth. It is thought that meconium may indicate a stressed baby who might be more likely to gasp underwater (Nutter et al., 2014b). However, there are degrees of meconium staining from “light” to “thick,” so the exclusion criteria are not entirely straightforward.
- High body mass index—There is really no evidence to guide this issue. Keeping heavier people from having waterbirth comes from the clinical opinion that it may be more difficult to help a heavy mother out of the tub if there is an emergency. However, it is important to remember that these mothers are not medicated and may feel lighter since water creates buoyancy. The buoyance and the fact that the mother has not had pain medication may help to make movement and position changes easier (Stark et al., 2008).
- Twins and breeches—These populations are typically excluded from waterbirth studies, so there is little-to-no data on the safety of waterbirth for twins and breeches. In 1995, one physician proposed that breech is an indication for waterbirth because the water helps prevent premature urges to push, and there may be cord protection and better temperature maintenance in the water (Ponette, 1995). However, this theory has not been tested by research.
- Ruptured membranes—Be aware that “ruptured membranes” is a normal part of the labor and birth process— it is expected that membranes will rupture. Some studies have excluded people due to ruptured membranes, but this appears to be less about safety and more about making sure that the two study groups are similar. People with ruptured membranes have usually been included in waterbirth studies, so the evidence that we have on the safety of waterbirth probably applies to them, too. However, we were not able to find research evidence on waterbirth in cases where the mother’s membranes rupture before regular contractions begin.
- Gestational diabetes and diabetes—People with these conditions may be asked to leave the tub before the birth because of a higher risk of shoulder dystocia (shoulder getting stuck behind the pubic bone) if there has been poor control of blood sugars, excessive weight gain, or a large infant is anticipated. However, there is no evidence that looks at whether it is easier to manage shoulder dystocia in the tub or on dry land. Some midwifery guidelines recommend having the mother change positions in the tub in the event of a dystocia. If that does not immediately resolve the problem, the mother can be assisted in leaving the tub so that the care provider can perform additional maneuvers (Nutter et al., 2014b).

### Why do people leave the tub?

In a large Italian study, 36% of people who entered the tub left before the birth, mostly at their own request, or for slow progress in labor or fetal heart rate abnormalities (Henderson et al., 2014). In another large prospective study that took place in the United Kingdom, 42% of people who entered the pool left before birth, mostly for additional pain relief or slow progress in labor (Burns et al., 2012). A recent U.S. study of water immersion during labor found that 30% of people left the tub before the birth (Vanderlaan, 2017). Of these, 21% left because of medical indications (such as slow progress in labor) and 9% left so they could access other pain relief options.

### Does getting in the water too early slow labor down?

There are reports of people leaving the tub because of slow progress in labor (Henderson et al., 2014; Burns et al., 2012). However, there is no evidence-based rule as to the best time to get in the tub. The “four centimeters” cut-off (don’t get in the tub before four centimeters dilation) seems to be an arbitrary guideline that does not have evidence to back it up yet. In the research evidence we have on waterbirth,





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some researchers told people not to get into the tub until “active labor,” but most researchers didn’t say when laboring people were encouraged to get in the tub.

### Is it okay for the partner to get in the tub?

There is no research evidence on this practice.

### What is the best water temperature for the different stages of labor?

The only evidence we have on water temperature comes from one case report. In this report, physicians found higher fetal heart rates in several laboring people who had too warm of a bath. Most of them got out of the tub, and the fetal heart rates slowed down. One person stayed in the tub, and after the water temperature was lowered, the fetus’s heart rate went back down to normal ([Rosevear et al., 1993](#)).

It is also thought that the water temperature should not be allowed to cool down at the time of birth, because based on lamb studies, it is thought that cooler temperatures might stimulate the infant to breathe before its face is brought up into the air ([Johnson, 1996](#)). Based on this information, and consistent with other published guidelines, researchers recommend that the water temperature should never be greater than 100 degrees Fahrenheit (37.5 C) and may be adjusted according to the mother’s preference within a narrow range of 98.0 to 100 degrees Fahrenheit or 37.0 to 37.5 Celsius ([Nutter et al., 2014b](#)).

### Is there any research on waterbirth for Vaginal Birth after Cesarean (VBAC)?

There is little to none. Most of the research studies on waterbirth excluded people who were having VBACs. In one study, researchers looked at the first 1,000 waterbirths that took place in their hospital, starting in 1982 ([Eldering & Selke, 1997](#)). They compared the waterbirth group to a similar, matched group of people who had spontaneous births on land. People with a history of Cesarean made up 4% of the waterbirth group. The study found no difference in newborn health outcomes and a decrease in request for pain relief and use of episiotomies in the waterbirth group. However, because there were only 40 people who had VBACs in the water, the numbers are too small to draw any conclusions.

Another study reported that some of the participants had waterbirth VBACs ([Thoeni et al., 2005](#)). There were no complications out of the 60 people who had VBACs in the water. Again, these numbers are too small to provide good evidence.

In 2006, Garland published a small clinical audit in MIDIRS Midwifery Digest about the use of water immersion during VBAC ([Garland, 2006](#)). Out of 92 people who were interested in a VBAC waterbirth, only 15 people labored in the water, and only four of them actually remained in the water for the birth. So this audit is too small to give us information on the safety of VBAC waterbirths.

### What makes the risk of cord tearing likely greater in waterbirth than on a land birth?

Researchers have hypothesized that there may be an increased risk of cord tearing from unnecessarily rapid or extra forceful traction on the cord as the baby is lifted out of the water. It is important for care providers to learn how to avoid excess traction as they calmly help the mother guide the baby’s head out of the water. In their review on umbilical cord tears, [Schafer \(2014\)](#) suggests there is a strong instinct to bring the baby out of the water immediately after birth, which can lead to rapid cord traction without regard for cord length or tension. Cords may tear if they are too short to reach the surface of





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the water, or if too much traction was placed on the cord. If the cord does tear and it is diagnosed right away, the care provider can clamp the newborn's cord quickly enough to avoid excess blood loss. In the small number of cord snaps that have been documented in waterbirths, there is a relationship between delayed recognition of the cord tear and newborn bleeding. If the water is cloudy after birth, the limited visibility might prevent a midwife from noticing the newborn bleeding from a torn cord. In these cases the delay in diagnosis led to excess blood loss.

Recommendations for preventing cord tears include:

- Recognize the potential for umbilical cord tears.
- Be familiar with the signs that it has occurred.
- Lower the water level slightly just before birth so that the baby does not have to travel as far to get out of the water, but keep the water level high enough so that the entire baby can be born underwater.
- Have cord clamps immediately available in case the cord tears.
- Assist the mother in bringing the newborn to the surface calmly and gently.
- Avoid excess cord traction.
- Thoroughly examine the newborn and cord immediately after birth.

### Is the tap water different from the amniotic environment, and how could this affect the baby?

Tap water is more hypotonic than amniotic fluid, meaning that it will pull water into a cell, causing it to stretch and swell. That's what is happening when your fingers get wrinkled after soaking in bath water—the skin becomes too swollen to fit smoothly on your fingertips. Because of this, many years ago, a physician proposed that maybe salt should be added to the tub water, but this was never put into practice ([Barry, 1995](#)).

### Is there any evidence that the mother can get a water embolism if the placenta is birthed in the water?

In 1983, Dr. Odent mentioned this as a hypothetical risk, but no cases have ever been described.

### Why do people seek waterbirth?

In a qualitative study that took place in Taiwan during 2001-2002, researchers interviewed nine people who had a waterbirth to better understand why people chose waterbirth ([Wu & Chung, 2003](#)).

The participants in this study chose waterbirth for three main reasons:

1. **They were not satisfied with other labor and birth options.** They disagreed with the high rates of Cesarean and other interventions that took place in the hospital, such as forceps deliveries, episiotomies, IV medications, not being allowed to eat or drink, and bans on vaginal birth after Cesarean. Participants said that they felt like the current maternity care system treated them like objects in a factory line. Those who had given birth before described negative birth experiences, where their feelings and emotions were neglected; they were threatened, had painful, unnecessary Cesareans, or in general received a lack of up-to-date, evidence-based care.





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- 2. They wanted to demonstrate their autonomy.** Participants wanted to choose a childbirth method that was outside of the system. They described wanting to escape the “domination” of the obstetricians in the hospitals. They researched midwifery care and waterbirth and had confidence in these options; they trusted their midwives.
- 3. Family support, especially from the husband, was very important as the mothers planned their waterbirth.** However, some relatives had worries or objections, and wanted the mother to birth in a hospital. The mothers employed several strategies to achieve their goal of a waterbirth with or without their family’s support. They explained the benefits of waterbirth to their relatives, and they gave written materials on waterbirth to their husbands. Some mothers hid their decisions from relatives and only told them about the waterbirth after their baby was born.

Another study looked specifically at why people with a prior Cesarean chose water VBAC ([McKenna & Symon, 2013](#)). Researchers conducted in-depth interviews with eight mothers who had just experienced water VBAC at one midwife-led center in the United Kingdom. They found that the women pursued water VBAC for two main reasons: in the hope of preventing a repeat of the events that previously led to a Cesarean, and to avoid a repeat of a negative birth experience. This small sample reported high satisfaction with the labor and birth experience, a greater sense of control, improved feelings of comfort and freedom of movement, and better pain relief. Some of the women had difficulty getting information about water VBAC and felt that it wasn’t ‘an actual choice’, but rather ‘a secret that you have to actively go after.’

### Why doesn’t the newborn breathe underwater during a waterbirth?

Most of our knowledge related to this topic points back to a classic research article published in 1996 by Johnson, a physiologist ([Johnson, 1996](#)). Johnson explained that before birth, fetal breathing movements occur about 40% of the time. These fetal breathing movements are blocked at the larynx (voice box) during inspiration, and partially blocked during expiration. Normally, very little amniotic fluid is actually inhaled with these breathing movements while the baby is still in utero. About 48 hours before spontaneous labor, these “practice” fetal breathing movements stop—possibly because of a surge in levels of a hormone called prostaglandin E2 ([Johnson, 1996](#)).

**When an infant is born in the water, researchers have proposed several factors that prevent the newborn from inhaling water:**

- Skin receptors on the face have not yet come into contact with air ([Harned et al., 1970](#))
- Endorphins are released by the brain ([Johnson, 1996](#))
- Hormones (including prostaglandins, progesterone, estrogen, and adenosine) are released by the placenta ([Johnson, 1996](#))
- A warm temperature of about 37 degrees Celsius ([Johnson, 1996](#))
- Mildly low oxygen levels ([Johnson, 1996](#))
- Chemical receptors detect water and close the airway (the so-called “dive reflex”) ([Johnson, 1996](#))

**Factors that help stimulate breathing:**

- Facial skin receptors come into contact with oxygen and carbon dioxide in the air ([Harned et al., 1970](#))
- Cooler temperatures ([Johnson, 1996](#))
- Severely low oxygen levels (can lead to gasping) or high levels of carbon dioxide ([Johnson, 1996](#))





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- Morphine-type drugs can override the dive reflex, and it is recommended that narcotics should be avoided for a minimum of four hours before birth ([Nutter et al., 2014b](#))
- It is thought that prevention of breathing during a waterbirth can be overridden by drugs such as those used to induce labor ([Johnson, 1996](#))

## Are breathing problems after a water birth similar to breathing problems after a land birth?

You can read in detail about the effects of waterbirth on newborns at our Signature Article, “Evidence on: Waterbirth,” located at [ebirth.com/waterbirth](http://ebirth.com/waterbirth).

Newborns can sometimes have problems breathing or fluid in their lungs after birth—in water or on land. In 2012, researchers from New Zealand ([Carpenter & Weston, 2012](#)) tried to determine whether breathing problems and fluid in the lungs looks the same after waterbirths and land births.

In a retrospective case-control study, they collected medical records and X-rays for two groups:

1. 14 infants who had breathing problems after waterbirth between the years 2000-2006.
2. 24 infants (matched group) who had breathing problems after a land birth.

The X-rays were reviewed by 25 volunteers who were blinded to whether the baby was born in water or on land. The volunteers included 11 neonatologists, six neonatal trainees, six neonatal nurse specialists, one radiologist, and one pediatrician.

They found that less than half (42%) of the health care professionals accurately picked whether the X-ray came from a baby born in the water or on land. An equal number of professionals rated the X-ray as “don’t know” for land birth and water birth babies (27% vs. 27%). Land birth babies were more likely to be correctly recognized than waterbirth babies (59% vs. 38%). Also, a higher percentage of waterbirth babies were more likely to be graded as having “severe” respiratory changes compared to land birth babies (48% vs. 16%).

When they compared medical records of the waterbirth and land birth babies, the only differences between these two groups was that more water birth babies had to go on a ventilator (4 vs. 0). There were no differences between groups in birth weight, gestational age, Apgar scores at 1 minute, heart rate at 6 hours, respiratory rate at 6 hours, age at first feed, time on respiratory support, or length of NICU stay.

The researchers concluded that although breathing problems that may occur after water birth are similar to breathing problems that may occur after land birth, the X-rays are more likely to be graded as having severe changes. They suggested that this study be repeated in other settings, and that researchers should collect an accurate denominator so that we can learn how often breathing problems happen after waterbirths compared to land births.

## What research is needed?

Overall, there is a need for more evidence to support waterbirth practice. Hospitals, birth centers, and providers who offer waterbirth should consider participating in the American Associations of Birth Centers (AABC) registry. The AABC registry collects prospective data on women who are planning waterbirths. To learn more about joining this study, [click here](http://bit.ly/2GuPvPO) (<http://bit.ly/2GuPvPO>).





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We need researchers to look at the following issues:

- What effect does water have on the elasticity of the perineum and how can we reduce the risk of minor tears during waterbirth?
- Is it better to birth the placenta in or out of the tub?
- What is the best way to estimate blood loss in the water?
- How does waterbirth affect the infant microbiome, breastfeeding rates, newborn temperatures, mother-infant bonding, and newborn behaviors such as crying?
- What is the evidence for exclusion criteria used for waterbirth? For example, many providers exclude people who are overweight or obese from waterbirth, but what is the evidence for this practice?
- Is birth in water safe for people planning VBACs?
- What are the best infection control policies?
- What are the differences between babies born on land who develop fluid in the lungs, and babies born in water who develop fluid in the lungs? [Replication of the Carpenter & Weston (2012) case control study]
- What is the experience of a modern-day mother during waterbirth?
- How many people have access to waterbirth? What are the barriers to access?
- What are the best ways for midwives, nurses, and physicians to train in waterbirth techniques?
- What is the economic impact of using waterbirth?

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