

GUIDELINES FOR WATER IMMERSION AND WATER BIRTH



ARIZONA DEPARTMENT
OF HEALTH SERVICES

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ACRONYMS

ADHS	Arizona Department of Health Services
AROM	Artificial Rupture of Membranes
EPA	Environmental Protection Agency
PROM	Premature Rupture of Membranes
MCDPH	Maricopa County Department of Public Health

DEFINITIONS

Biofilm: A thin, slimy film of bacteria that adheres to surfaces that is in regular contact with water. This can develop in any place where there is water, especially stagnant water - in pipes, overflow drains, shower heads, jets, etc.

Blackwater: Wastewater containing feces, urine and flush water from flush toilets, anal cleansing water or toilet paper.

Cleaning: The necessary first step of preparing the pools. The physical action of scrubbing with detergents and surfactants and rinsing with water removes large numbers of microorganisms and debris from surfaces. If the surface is not cleaned before disinfecting, the process is compromised.

Components: Birth pool, pump, hose, adaptors, liners

Critical Item: Any item that enters sterile tissue or the vascular system. If not sterile, there is a high possibility of infection. Example - needles and some instruments.

Decontamination: Removes pathogenic microorganisms from objects so they are safe to handle, use or discard.

Disinfection: The necessary second step of preparing the pools to be used safely. A process that eliminates many or all pathogenic microorganisms on inanimate objects.

Dwell Time: The amount of time a disinfectant must be in contact with a surface to kill the microbes. All disinfectants are tested and labeled for the specific amount of time.

Graywater: Wastewater streams generated from households or office buildings other than the wastewater from toilets. Sources of graywater include sinks, showers, baths, clothes washing machines or dishwashers.

Legionella: *Legionella* is a type of bacterium found naturally in freshwater environments. It can become a health concern when it grows and spreads in human-made water systems.

Legionellosis: Legionellosis is a respiratory disease caused by *Legionella* bacteria. Sometimes the bacteria cause a serious type of pneumonia (lung infection) called Legionnaires' disease. The bacteria can also cause a less serious infection called Pontiac fever that has symptoms similar to a mild case of the flu.

Non-critical Item: Any medical item that comes in contact with intact skin. Sterility of these items is not critical. For example - stethoscope, blood pressure cuff, etc.

Pools: Considered part of a midwife's equipment, but they are not a medical device.

Sanitization: The process of cleaning and disinfecting.

Semi-critical Item: Any medical item that comes in contact with mucous membranes or non-intact skin. Some bacteria present on these items will not be harmful. These items should be cleaned and disinfected or discarded. For example - doppler, pool liner, pool.

Water Immersion: A depth of water which ensures the mother's belly and bottom to be submerged fully in water while she sits or kneels. It is suggested that water immersion creates a buoyancy effect and produces hormonal changes which enhance labor. After approximately 30 minutes, the body releases an increase of oxytocin which lasts approximately 90 minutes.

WATER BIRTH GUIDELINES

In Arizona, approximately 1300 deliveries are facilitated by midwives each year. The exact number of water births is not known.

In early 2016, Arizona experienced two legionellosis cases in infants, both after water births. Since these cases were confirmed cases of legionellosis within 10 days of birth, it suggests that these babies were exposed to *Legionella* through water during birth. After investigating these two cases, infection prevention gaps were identified, indicating the need of education for midwives. Some gaps identified during the investigation include using a jetted Jacuzzi, and leaving the water in the birthing tub for a week at 98⁰F. To increase the knowledge and decrease the risk of *Legionella*, the Arizona Department of Health Services (ADHS) and Maricopa County Department of Public Health (MCDPH), along with the Licensed Midwife Advisory Committee, have taken this initiative to develop educational resources and guidelines to assist Licensed Midwives conducting water births.

Over the past decade, immersion in water for delivering the baby is becoming more popular in many countries. Benefits of water immersion include increased relaxation, mobility, and pain relief. The safety of water immersion during labor has been established by research, and does not result in reduced APGAR scores, increased neonatal or maternal infections, or increased NICU admissions (Cluett and Burns 2009). Several studies have shown that water births do not pose increased risks to mother or baby if properly planned and attended by a licensed care provider (Deckker 2014, Young 2013, Demirel 2013). However, a few cases of neonatal infection with *Legionella* or other bacteria have been reported, but with proper use of pools can be minimized (Fritschel 2015). This guideline provides a review of information on labor and birth in water to maximize the safety for women choosing the option of immersion in water for labor and/or birth.

The aim of this guideline is to provide information on the use of water immersion for labor and/or birth. These recommendations are not intended to dictate an exclusive course of management or treatment. They must be evaluated with reference to an individual client's needs, resources and limitations unique to the place of birth and variations in client choices.

It is recommended to discuss a water birth plan with patients prior to the onset of the labor and make them aware of possible bacteria or other organisms that could be present in the water. The importance of following the midwife's instructions properly regarding standing or leaving the birth pool should be emphasized. The potential risks associated with birth in water such as aspiration of water by mom or baby, bacteria or illness, cord avulsion, and thermoregulation of mom and baby should be addressed.

This document can be used as a guide to address the benefits, risks and alternatives of water immersion during labor and birth.

Recommended Criteria for the Use of Water Immersion

- Mother has elected and made an informed choice regarding water birth
- Single gestation at or >37 weeks who is low risk and within the midwife's scope of practice

Contraindications for Birthing in the Pool

- Any condition in the Arizona Midwifery Board Rules requiring transfer of care
- Presence of thick meconium
- Excessive intrapartum bleeding
- Elevated maternal temperature greater than 100.4° F (38° C)
- Non-reassuring fetal heart rate patterns
- The midwife's ability to manage complications
- Active herpes, carrier of MRSA, or untreated skin infection should not enter the pool
- Rupture of membranes without active labor
- Use of agents producing sedation
- At the request of the client or the midwife's discretion

WATER IMMERSION

It is best if the mother is in active labor, as assessed by the midwife, before the mother enters the water. If used during latent stage, pool should be disinfected and a new liner should be used for active labor. A pool should not be used during latent labor in cases of PROM.

Maternal vital signs and fetal heart rate should be monitored regularly as per standard of care and reevaluated after each change in water temperature. Since sitting in the pool can be dehydrating, the mother should be encouraged to remain hydrated, drinking water and electrolytes. The mother should be encouraged to empty her bladder regularly on the toilet. Fecal matter or other contamination should be removed from the water immediately. If the water becomes significantly contaminated, the mother should leave the pool unless birth is imminent.

The midwife should prepare a safe birth environment outside the pool in case evacuation of the birth pool is necessary, such as having towels and a blanket or mattress near the pool. Special attention should be provided to prevent slipping, and towels and/or a mop should be nearby.

Management of second stage of labor during water immersion

- Birth should be allowed to happen spontaneously with minimal stimulation of the fetal head, including checking for a nuchal cord.
- The cord should never be clamped or cut while the head is still under water. If a tight cord delays the birth, the mother must stand or step out of the pool.
- Once the head is above the water, it must not be allowed to go back under the water.
- Infant's head should be brought to the surface immediately after birth, taking care to prevent cord avulsion. The rest of the infant's body should remain submerged to promote temperature regulation.
- If the cord is short, preventing the infant's head from comfortably sitting above the water, the mother may need to quickly vacate the pool.

Management of third stage of labor during water immersion

- If bleeding is minimal, third stage may be managed in the pool.
- If the water becomes clouded with blood so that estimation of blood loss is not possible, the mother and infant should be quickly removed from the pool. Maternal vital signs and the mother's emotional and physical response should also be considered in decision to leave the pool.

Newborn Resuscitation

- Waterborn babies may experience a slower transition in the first minutes postpartum.
- Be prepared for the possibility that it might be difficult to keep the newborn's airway open and assure a good seal when resuscitating the infant while the mother is in the pool. The ventilations must be effective in order for them to work.
- Either have a firm surface nearby or have a CPR board with heating pad, towels and saran wrap (for warmth) prepared near the pool.
- If mother can evacuate pool quickly, it may be possible to leave cord intact.
- If you have to move the infant, you will most likely have to cut the cord. Milking the cord from the introitus or base of placenta can be effective before cutting the cord.
- Follow NRP guidelines for compromised baby.
- Dry the baby's face prior to mouth to mouth or bag/mask if needed.

If contractions slow significantly or stop, the mother should leave the pool until labor is well reestablished. If the midwife requests the mother exit the pool, the mother should comply and leave the pool immediately. If the midwife cannot auscultate fetal heart rate, the mother should leave the pool. AROM should not be performed in the water, unless birth is imminent. Reasons why the midwife may ask the client to exit the water are given below:

Reasons for Leaving the Pool

- Elevated maternal temperature or abnormal vital signs
- Slow progress, reduction in effective or frequency of contractions
- Non-reassuring fetal heart rate pattern or inability to adequately assess fetal heart rate
- Lack of descent during second stage
- Water temperature too hot or cold
- Fecal matter or other contamination that cannot be removed, unless birth is imminent
- Short umbilical cord
- Excessive bleeding
- Use of agents causing sedation
- At the request of the client or the midwife's discretion

POOL SETUP AND CLEANING RECOMMENDATIONS

Recommended Birth Pools and Components

- Portable pools designed and manufactured for use as birth pools for which the manufacturer has provided cleaning and disinfecting instructions. These pools should be used with liners.
- Single-use disposable pools.
- Pools with removable jets and a pipeless system.
- The pool should be deep enough for water immersion.

Pools Not Recommended

- Pools/tubs with piped recirculating water systems of any type that have heaters, jets and/or overflow drains that cannot be easily cleaned. These features may harbor biofilms.
- Examples include Spa-in-a-Box, Soft Tub, and jetted tubs in client's home.
- Client's home baths are not recommended due to the presence of recirculating and heating systems in the tub as a place where biofilm develops
- If the client's home bath is used for water labor or water birth, clean and disinfect the tub. A pool liner is highly recommended.

Pool Management

Portable Pools

Setting up

- Clean and disinfect the pool before installing the liner and after use.
- Use Environmental Protection Agency (EPA) approved tuberculocide disinfectants.
- Fill pool when midwife arrives or discuss with midwife to follow proper filling protocol

Filling the Pool

- Allow the hot water to run for 3 minutes before filling the pool. This clears the hose and pipes of stagnant water and sediment.
- Do not use gray water or recycled water to fill the birth pool.
- Municipal water is generally considered safe if not left in the pool for more than 6 hours.

- Well water is generally considered safe if not left in the pool for more than 6 hours. Make sure the water has been tested within the past year. If refilling the pool, use a new liner if there is visible contamination.

Emptying the Pool

- Dispose of all debris - blood clots and feces.
- Use a submersible or external pump.
- Empty blackwater into toilet.
- Dispose of liner, debris net, etc.
- Clean and disinfect all semi-critical and non-critical items used in the birth pool, especially if they have come in contact with blackwater.

Storage

- Store according to manufacturer's instructions and where the pool will remain dry and free of soil or other environmental debris.

Non-portable Pools

Setting up

- Disinfect pool before filling.
- Use a disposable liner if you have a jetted pool.
- Run hot water for 3 minutes before filling the pool.

Emptying the Pool

- Dispose of all debris - blood clots and feces - before it can flow into the drain pipe.
- Empty the pool every 6 hours.
- If you are going to refill the pool for the same client and there is visible contamination, clean and disinfect pool.

Disinfecting the Pool

- Follow the CDC and/or manufacturers recommendations for disinfecting pool.
 - You can also use a 1:10 mix of chlorine bleach:water. The dwell time is 5 minutes to disinfect the pool.
 - Because hypochlorites and other germicides are substantially inactivated in the presence of blood, large spills of blood require that the surface be cleaned before an EPA-registered disinfectant or a 1:10 (final concentration) solution of bleach is applied.
 - For current list of EPA-registered disinfectant, visit the [EPA website](#).

- Clean and disinfect all semi-critical and non-critical items used in the birth pool, especially if they have come in contact with blackwater.

Preparation, Filling, and Refilling the Pool

- The pool should be cleaned and disinfected as per the guidelines - **Pool Setup and Cleaning Recommendations.**
- The midwife should direct the filling of the pool. The pool should not be filled before active labor and the water should be changed after 6 hours.
- For portable tubs, a new, disposable liner should be used for each birth. It should remain unopened until pool is ready to be filled.
- A new unused potable water hose should be used each time the pool is filled.
- Hot water should be run from the tap for 3 minutes before connecting the hose and adding water to the pool.
- If well water is used to fill a pool, it should be tested by the Centers for Disease Control & Prevention (CDC) recommended Elite laboratory within 12 months of the EDD.
- The midwife should be able to easily reach the mother from at least two sides of the pool.
- No additives should be added to the water.

Depth and Temperature of Water

- In order to facilitate the physiological response to water immersion and protect the infant from being born in the air and resubmerging into water, the water must completely cover the mother's abdomen, but not reach to the level of her neck.
- The temperature of the water must be comfortable for the mother and below 100.4° F (38°C). This temperature is important to prevent maternal and fetal hyperthermia. The water temperature should be assessed before entry to the tub and after adding water and documented in the chart.

Quality Assurance

- The EPA recommends weekly flushing of the pipes by heating the water to 160° F and flushing for 30 minutes.
- Well water should be tested every year.
- Establish a way to monitor and log quality controls and staff performance for cleaning and disinfecting the pool.

Recommended Cleaning Agents

- If a cleaning agent kills *Mycobacterium tuberculosis*, it should kill most if not all organisms of concern, if used according to manufacturer’s instructions. Make sure cleaning agent is compatible with pool material. [See resources](#).
- Store cleaning agents according to manufacturer’s instructions.

Birth Pool Documentation Logs

Create written evidence-based practice specific procedures for cleaning and maintaining birth pools according the recommendations in this document.

Public Health

Consult with Public Health if a baby or mom becomes infected with a waterborne illness.

Arizona County Contact Information

County	Day Time Hours	After Hours
Apache	928-337-4364	928-337-4321
Cochise	520-432-9400	800-423-7271
Coconino	928-679-7272	928-255-8715
Gila	928-402-8811	928-701-1610
Graham	928-428-1962	928-965-8921
Greenlee	928-865-2601	928-865-4149
La Paz	928-669-1100	928-669-2281
Maricopa	602-506-6767	602-747-7111
Mohave	928-753-0714	928-718-4927
Navajo	928-524-4750	928-241-0960
Pima	520-724-7770	520-743-7987
Pinal	520-866-7325	520-866-6239
Santa Cruz	520-375-7900	877-202-0586
Yavapai	928-771-3134	928-442-5262
Yuma	928-317-4450	928-317-4624

MIDWIFE SAFETY

Each center should train all staff midwives and anyone involved in the use of water during labor and/or birth on all facility specific procedures developed for water birth and retain records of employee training. Some topics to include in training include the following, but are not limited to:

- Use appropriate personal protective equipment as per CDC and OSHA recommendations.
- Any midwife or attendant with non-intact skin should cover the area. If the midwife has a draining wound that cannot be contained, she should not attend a water birth or clean the pool afterward.
- Bath mats should not be used inside the pool.
- If the area surrounding the pool becomes wet, clean and disinfect the area.
- No electrical equipment to be used in or near where it could fall into the pool.
- Consider using good body mechanics such as not leaning over the edge of the pool for long periods of time and using kneeling pads when necessary.

SOURCES

Arizona Administrative Code Article 1. Licensing of Midwifery. Available at:

http://apps.azsos.gov/public_services/Title_09/9-16.pdf

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www.cdc.gov/legionella/downloads/hot-tub-disinfection.pdf

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EPA

List of tuberculocide products: www.epa.gov/oppad001/list_b_tuberculocide.pdf

List of disinfectants: <https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants>

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