

A Model Practice Template for Hydrotherapy in Labor and Birth

Endorsed by the following organizations:



EDITOR'S NOTE:

Care of women and families who desire access to hydrotherapy for labor and birth has been met with challenges as a result of differing recommendations for management. Several of the nation's leading maternity care organizations created the following guidance for developing practice guidelines to support access to hydrotherapy for families who desire this option.

In recent years, professional organizations that represent maternal-child health care providers have taken various positions on the recommended use of immersion hydrotherapy during labor and birth.¹⁻⁴ The resulting lack of consensus has made consistent and equitable access to this non-pharmacologic method for pain relief in labor challenging.

This model practice template was jointly developed by representatives from the American Association of Birth Centers, American College of Nurse-Midwives, Midwives Alliance of North America, National Association of Certified Professional Midwives, and other experts to offer guidance to health care professionals and institutions that provide or are implementing hydrotherapy services. This document is informed by the most current available information and resources that support best practices and serves as an outline of the various roles and responsibilities involved in providing hydrotherapy during labor and birth. Limited information has been published on the efficacy and safety of specific care practices before, during, or after hydrotherapy. However, this document is informed by the methodologically-sound, peer-reviewed studies that have been published to date. The format of this model practice template allows for adaptation depending on the setting and the maternity care professionals involved to support the development of individual practice guidelines and institutional policies and procedures.

I. PURPOSE

The purpose of this model practice template is to assist professionals caring for

women who labor and/or give birth in water.

II. DEFINITIONS

- A. *Warm water immersion*: Immersion in a tub with depth that allows for complete submersion of the abdomen to the breast level.
- B. *Water labor*: Use of warm water immersion during any stage of labor up to but not including the birth of the neonate.
- C. *Waterbirth*: Use of warm water immersion during the second stage of labor that results in the birth of a neonate entirely underwater, regardless of the location of delivery of the placenta.

III. OUTCOME STATEMENT

- A. Provide increased options for the woman regarding labor and birth and enhance the woman's satisfaction with the birth experience.
- B. In the case of water immersion only, enhance the comfort of the woman and ensure the safety of the woman and fetus throughout the first stage of labor.
- C. In the case of waterbirth, maintain the comfort of the woman and ensure the safety of the woman and fetus throughout labor and birth to achieve a normal, spontaneous, vaginal birth of a healthy newborn under water.

IV. BENEFITS

Warm water immersion during childbirth provides the woman in labor with alternatives to conventional pain relief strategies and birth methods. Respect for the woman's autonomy and choice is important. Immersion is strongly associated with and may result in the following:

- A. Increased mobility.⁵
- B. Reduced need for analgesia or anesthesia.^{6,7}
- C. Lower episiotomy rates.^{7,8}
- D. Decreased likelihood of third- and fourth-degree perineal lacerations.^{7,9,10}
- E. Facilitation of labor progress by diminishing stress and catecholamine production, which can enhance the



perception of pain and slow the progress of labor.¹¹

F. Greater levels of patient satisfaction.⁹

V. RISKS

In predominantly observational studies, investigators did not find increased rates of maternal, fetal, or neonatal morbidity or mortality associated with labor and birth in water.^{6,7,12,13} However, it is important to ensure that risks are explained to the woman before immersion, including the following:

- A. Umbilical cord avulsion (tearing). This may occur if too much traction is placed on the cord during waterbirth. Avulsion can typically be managed with little or no negative sequelae if recognized and treated immediately to minimize blood loss. Failure to respond immediately with effective management could result in the need for a neonatal blood transfusion.^{7,14–16}
- B. Hyperthermia. Elevation of maternal core temperature can result in maternal hyperthermia, which can lead to fetal tachycardia.¹⁷ In the absence of infection and with early recognition and intervention, this should resolve upon leaving the tub or cooling the water.^{16,17}
- C. Perineal laceration. Waterbirth is associated with a decreased rate of third- and fourth-degree perineal lacerations^{7–9,18}; however, waterbirth may slightly increase the risk of less significant perineal trauma.¹⁸
- D. Infection. In studies of water labor and waterbirth, investigators have not demonstrated increased overall rates of maternal or neonatal infection following immersion during any stage of labor regardless of the status of membranes during hydrotherapy.^{6,7,13,18} However, if the tub is not cleaned properly or harbors unusual organisms such as *Pseudomonas* or *Legionella*, the woman and/or neonate could acquire an atypical infection.^{16,19–21}
- E. Neonatal water aspiration. In case reports, researchers demonstrated that when secondary apnea is present (due to fetal hypoxia), neonates may exhibit a gasping reflex at the time of waterbirth that can result in the inhalation of water and potentially make resuscitation and ventilation more challenging.^{13,16,22} If an indeterminate fetal heart rate pattern is detected, further evaluation is indicated.
- F. Mortality. As with conventional birth, the potential exists for death of the woman or neonate. No maternal deaths have been reported, and only isolated fetal deaths have been attributed to immersion during labor or birth.^{12,13,16–18}

VI. STANDARD REQUIREMENTS TO FACILITATE HYDROTHERAPY

During the prenatal period, health care providers should discuss the potential use of water during labor and/or birth with all low-risk women as part of an overall discussion and education regarding evidence-based options for pain relief.²³ If a woman desires water

immersion and/or waterbirth, the health care provider should engage in an ongoing process of informed consent and shared decision making with the woman regarding this option.²⁴ The woman and health care provider should discuss the state of the science, risks and benefits of water immersion and waterbirth, and factors that increase the potential for optimal perinatal outcomes; they should review potential barriers to the use of these options based on the woman's unique health history (refer to contraindications outlined in section VIII) and preferences. During the informed consent process, the woman and health care provider should discuss issues that include the limited research that is available about waterbirth; the optimal timing and duration of immersion hydrotherapy; and emerging areas of outcomes research, such as seeding the newborn microbiome after waterbirth and any effect of labor or birth in water beyond the standard perinatal outcomes assessed in studies to date.

VII. ELIGIBILITY CRITERIA

Women who meet the following criteria are eligible to use warm water immersion during labor and/or birth:

- A. Cephalic presentation.
- B. Singleton.
- C. 37 0/7 weeks' gestation or greater.
- D. Category I fetal heart rate or Category II fetal heart rate after review by the maternity care team and with consideration of stage of labor and associated maternal and fetal factors, including baseline fetal heart rate, regular rhythm, and presence or absence of recurrent fetal heart rate decelerations from the baseline.^{25,26} Based upon birth setting and maternal and/or fetal risk factors, fetal heart rate can be evaluated using intermittent auscultation and/or waterproof electronic fetal monitoring during water immersion. Interpretation of fetal heart rate assessment should be consistent with established guidelines, such as those published by the American College of Nurse-Midwives,²⁶ the Association of Women's Health, Obstetric and Neonatal Nurses,²⁷ and the National Institute of Child Health and Human Development.²⁸

VIII. CURRENT PREGNANCY AND LABOR CONDITIONS IN WHICH WATER IMMERSION OR WATERBIRTH IS NOT RECOMMENDED¹⁹

- A. Abnormal vaginal bleeding.
- B. Maternal fever $> 38.0^{\circ}\text{C}$ (100.4°F).
- C. Any condition that requires continuous fetal monitoring that cannot be obtained during immersion.
- D. Active herpes simplex lesion, hepatitis B or C, HIV.
- E. Musculoskeletal issues or reduced mobility that may prevent the woman from leaving the bath quickly if necessary.
- F. Epidural analgesia or anesthesia.
- G. Intrapartum hemorrhage.
- H. Pregnancy complications or conditions that can complicate birth or transition of the neonate to extrauterine life.
- I. Administration of opioid or other sedating medications within one hour of hydrotherapy

initiation or longer in case of persistent risk to maternal mobility, airway protection, or ability to follow instructions.

- J. Clinical judgment of the attending provider that the woman's condition or the fetal status prohibits ongoing immersion.

IX. PRECAUTIONS

- A. Performance of infection control measures in accordance with separate guidelines (see section XVII).
- B. Universal personal protective equipment should be used according to facility guidelines.
- C. Any break in maternity care professional or patient skin integrity must be covered with an occlusive waterproof dressing.
- D. Emergency equipment must be readily available in the room with the laboring woman.
- E. If the water becomes contaminated with feces or debris, the woman may be asked to leave the tub temporarily until it is removed or the water can be changed and the tub cleaned.
- F. Prolonged heating of standing water may encourage bacterial contamination. Protocols should include a process for regularly scheduled emptying and cleaning of the tub.
- G. After each use, the tub and all reusable equipment must be thoroughly cleaned and allowed to dry before next use per institutional guidelines.

X. SUGGESTED ADDITIONAL EQUIPMENT FOR INTRAPARTUM WATER IMMERSION

- A. Water thermometer.
- B. Waterproof Doppler and ultrasound gel at tub side for intermittent auscultation or waterproof telemetry on the unit for continuous fetal monitoring if available within the facility.
- C. Small net, strainer, or basin.
- D. Small handheld or waterproof mirror.
- E. Waterproof flashlight.

XI. STAFF ROLES

- A. Responsibilities of the maternity care provider
 - 1) Maintain current knowledge of the advantages, precautions, contraindications, and current literature regarding the use of immersion hydrotherapy.
 - 2) During the prenatal period, provide all pregnant women with information about the benefits, risks, and potential harms of hydrotherapy during labor and birth along with other pain relief options. Use an informed consent document to ensure consistency in the presentation of this information. This information should be reviewed again before use of the tub during labor as indicated.
 - 3) Offer families the option of hydrotherapy and assess the woman's desire for this option through an ongoing process of assessment and shared decision making.
 - 4) Counsel the woman on the risks and benefits of water immersion for labor and birth and the institutional protocols for use of the tub.

- 5) Perform ongoing assessment of the woman's condition to determine if labor and/or birth in the water are indicated.
- 6) Ensure adherence to evidence-based guidelines for use of water immersion or waterbirth.
- 7) Provide shared decision making and ongoing assessment of the evolving process and progress of labor; discuss changes in status that may indicate the need to discontinue use of the tub.
- 8) Provide direct supervision of care and birth of the neonate.

B. Responsibilities of the registered nurse

- 1) Assess the woman's understanding of the risks and benefits of water immersion for labor and birth and her understanding of institutional protocols for use of the tub; confirm her desire for use of tub for labor and birth.
- 2) Before immersion, ensure the woman meets eligibility criteria outlined in section VII.
- 3) Maintain the safety of the woman in the tub while providing care and support in collaboration with the attending provider. This includes ongoing assessment for changes that may occur that alter the woman's eligibility for continued use of water immersion. Care includes assessment of maternal and fetal status consistent with standards of care for a woman in labor.^{25,29}
- 4) Maintain safe tub conditions, including hourly assessment of water temperature. Remove debris and change bath water as needed or as stated in facility protocol.
- 5) Establish and maintain safe route of exit from tub to bed and vice versa, and ensure there are no potential hazards (eg, wet floor, equipment).
- 6) Ensure availability of additional personnel to facilitate safe exit of the woman from tub if indicated.

C. Responsibilities of non-licensed personnel

- 1) In an out-of-hospital birth setting, non-licensed personnel may help to support a woman using water immersion for labor and or birth. This birth assistant's role may extend to monitoring the status of the woman and fetus while in the tub under the supervision of the attending provider. The role of the birth assistant should be consistent with her or his established skill and training and institutional or practice guidelines.
- 2) It is recognized that family members and doulas may provide social and emotional support to the woman while she is in the tub. They should be instructed by a member of the health care team on how to call for assistance should they have any concerns or see signs of impending birth. If the woman wants to exit the tub, a health care provider should be informed before she does so.

XII. MANAGEMENT OF LABOR IN WATER

- A. Before immersion, ensure the woman is a candidate for warm water immersion based on inclusion and exclusion criteria (sections VII and VIII).

- B. The tub should be filled using ordinary tap water without additives (eg, salt, essential oils, sanitizers).
- C. The water temperature should be assessed hourly.
 - 1) During the first stage of labor in water, the water temperature should never exceed 37.7°C (100°F) and may be adjusted to cooler temperatures per the woman's preference.
- D. The woman in labor may enter or leave the water at any point with assistance.
 - 1) Record the times that the woman enters and leaves the tub.
 - 2) The woman should be instructed to use proper body mechanics when entering and exiting the tub and do so only with staff or a support person attendance.
 - 3) If complications or changes occur in the maternal or fetal condition that require further assessment or treatment outside of the tub, share this information with the family and assist the woman out of the tub.
- E. Positioning for comfort in the tub is dependent on the preferences of the woman and the judgment of the provider in consultation with the woman.
- F. Provide hydration in the form of oral liquids or intravenous (IV) fluids as indicated. All IV or saline lock sites should be covered with an occlusive, water-resistant dressing while the woman is in the tub.
- G. The well-being of the woman and fetus are assessed and managed in accordance with practice protocols for any other woman during labor, including monitoring maternal vital signs, assessing the fetal heart rate,^{25,26} and initiating intrauterine resuscitation strategies when indicated (eg, maternal position changes and IV fluid bolus for fetal heart rate changes or Category II fetal heart rate).
 - 1) A waterproof Doppler or waterproof electronic fetal monitoring equipment should be used to assess the fetal heart rate.
 - 2) Waterproof electronic fetal monitoring equipment may be used to verify or clarify if an indeterminate fetal heart rate pattern is present, and this can guide management.
 - 3) Management of indeterminate fetal heart rate patterns depends on multiple factors. Intrapartum resuscitation techniques such as position change, hydration, and correction of hypotension or tachysystole are instituted as necessary.
- H. Vaginal examinations may be performed underwater when necessary.
- I. Intermittent maternal self-administration of nitrous oxide during labor and birth in water is acceptable when available.

XIII. MANAGEMENT OF THE SECOND STAGE OF LABOR

- A. The woman may choose any position in the tub for pushing during the second stage of labor that feels comfortable and that is deemed safe by the attending provider or registered nurse. The health

care professional may request adjustments to the position to facilitate observation of progress and/or to maintain assessment of maternal and fetal well-being.

- B. Water temperature
 - 1) During the second stage of labor, the water temperature should never exceed 37.7°C (100°F) and may be adjusted based on the woman's preference within a narrow range of 36.1°C to 37.7°C (97.0°F to 100°F).
- C. Maternal and fetal well-being should be assessed and documented as they would be for a conventional birth.²⁵
- D. Fetal heart rate and contraction pattern are assessed in accordance with standard of care recommendations, generally every 5 to 15 minutes.^{25,28}
- E. Supporting birth of the neonate
 - 1) The woman should be supported in the use of spontaneous, physiologic pushing.
 - 2) The health care provider may use a hands-off or hands-poised position to facilitate birth by controlled, spontaneous, pushing efforts; a hands-on method of birth management may be employed when indicated.
 - 3) It may not be necessary to feel for the presence of a nuchal cord if the birth of the body quickly follows the head. Loose nuchal cords and other entanglements can be resolved as the neonate is born underwater before the first breath (see section XVI).
 - 4) The time of birth will be noted when the neonate's entire body is outside of the woman.
 - 5) The neonate must be born completely underwater without exposure to air until the face is brought gently and directly to the surface. The neonate's head must not be resubmerged under water after it has been brought to the surface.
 - 6) If a woman raises herself out of the water and exposes the head of the fetus to air, she should be assisted/supported to remain out of the water to avoid the potential risk of the neonate gasping underwater with resubmersion.
 - 7) After birth, assist in bringing the neonate directly and gently to the surface (within 5–10 seconds) to minimize tension on the umbilical cord and to reduce the possibility of avulsion. Cord clamps should be readily available.
 - 8) Maintain warmth of the neonate through skin-to-skin contact with the woman and submersion of the neonate's lower extremities, abdomen, and chest. Dry the neonate's exposed head to reduce heat loss.
 - 9) Apgar scores should be obtained at one and 5 minutes after birth per routine.
 - 10) In the presence of stable newborn status and transition to extrauterine life, care of the cord can follow best practices to support delayed cord clamping.
 - 11) If neonatal resuscitation measures are indicated and this is not possible without cutting the cord,

the cord should be clamped and cut, and the neonate removed from the water immediately.

XIV. MANAGEMENT OF THE THIRD STAGE OF LABOR

- A. The third stage of labor may occur in or out of the tub depending on the status of the woman and neonate, provider skill and comfort, and duration of third stage.
- B. Management of third stage of labor should proceed consistent with standards of care to reduce risk of postpartum hemorrhage. For women at greater risk of postpartum hemorrhage, the third stage should be managed out of the water to support management and accurate quantification of blood loss.
- C. In cases where the health care providers note increasing darkening or discoloration of the water or any indication of increased bleeding, the woman should be immediately removed from the tub for continued evaluation and treatment. While most elements of the management of the third stage of labor, including active management, can be safely implemented in the tub, initiation of some treatments such as bimanual compression and accurate quantification of blood loss should be performed out of the tub.
- D. Quantified or estimated blood loss should be recorded in the medical record. If the third stage is completed out of the water, quantification should occur according to institutional standards.
- E. Postnatal observations of the woman and neonate should be performed in accordance with institutional policies. Most postpartum assessments can be conducted with the dyad in skin-to-skin contact with the woman in the tub.
- F. Evaluation and repair of perineal lacerations are ideally accomplished on a bed for optimal visualization.

XV. EVALUATION AND CARE OF THE NEONATE

- A. The neonatal resuscitation guidelines of the American Heart Association should be utilized to assess the neonate,²⁹ and Apgar scores should be obtained at one and 5 minutes after birth per routine. If neonatal resuscitation measures are indicated and this is not possible without cutting the cord, the cord should be clamped and cut, and the neonate removed from the water immediately.
- B. Make certain the neonate remains close to the woman (skin-to-skin) and partially submerged to help maintain body temperature. Dry the neonate's exposed head to reduce heat loss.
- C. If neonatal tachycardia (heart rate >160 bpm), bradycardia (heart rate < 100bpm), hyperthermia (temperature >38°C [100.4°F]), hypothermia (temperature <36°C [97.0°F]), tachypnea (respirations >60 per min), grunting, or retracting is noted, the neonate should be taken out of the tub for further assessment.

XVI. COMPLICATIONS

As when caring for any woman in labor, the health care professional is responsible for using clinical judgment to respond appropriately when complications arise. If deviations from normal during immersion are observed, the woman should be asked to exit the tub and assisted out of the water for further assessment as necessary to perform standard care assessments and interventions.

- A. *Tight nuchal cord.* If a tight nuchal cord cannot be reduced, and the somersault maneuver is ineffective, the woman should be assisted to stand above the water so the cord can be clamped and cut to facilitate birth out of the water. Under no circumstances should a nuchal cord be clamped and cut under water. The woman should remain standing to give birth to the rest of the body and to avoid submersion of the neonate's head after birth.
- B. *Shoulder dystocia.* If a shoulder dystocia occurs in the tub and cannot be resolved with position change, assist the woman out of the tub to complete the birth. Once the neonate's head is exposed to air, it should not be re-submerged.
- C. *Excessive bleeding*
 - 1) The presence of excessive bleeding into the water should prompt the immediate evaluation of the source.
 - 2) In the case of excessive bleeding, assist the woman out of the tub for further evaluation. Initiate quantification of blood loss to more accurately assess blood loss volume.
 - 3) If cord rupture is suspected, the cord should be immediately clamped at the umbilicus and cut. Cord clamps must be readily available. If cord rupture is confirmed, the newborn should be removed from the tub for assessment.
- D. *Loss of consciousness.* Emergency procedures must be enacted immediately, and the woman should be removed from the tub quickly and safely. Assign one person to ensure the woman's head remains above the water surface at all times and activate the emergency response team to help lift the unconscious woman out of the tub and to initiate emergency evaluation and treatment.

XVII. INFECTION CONTROL PRINCIPLES

Depending on the setting or type of institution, infection control policies and procedures will vary. These guidelines reflect the scant available data on the use and cleaning of tubs for the purpose of intrapartum immersion hydrotherapy.³⁰ The following principles are offered as guidance for the development of needed policies:

- A. Clean the hydrotherapy tub after each use.
- B. Before cleaning, don non-sterile, single-use gloves.
- C. Drain the hydrotherapy tub, remove all debris from the tub, and dispose of debris in an appropriate receptacle based on the type of waste.

- D. Manually wash all interior surfaces of the hydrotherapy tub using a mild non-abrasive detergent solution and a clean towel or disposable cloth.
- E. Rinse the tub with warm water to remove all detergent residue.
- F. Apply a disinfecting agent to all interior surfaces of the hydrotherapy tub using a spray application and ensure all surfaces are thoroughly wetted with the disinfectant. The minimum time that the germicidal agent must remain in contact with the tub surface to achieve the appropriate level of disinfection is prescribed by the product manufacturer and is indicated on the product label. Only use disinfecting agents that are US Environmental Protection Agency (EPA)-registered as effective against HIV, hepatitis B, and hepatitis C. Consult with the preventive medicine department for approval to use products that are not EPA-registered.
- G. After achieving appropriate disinfection, rinse the hydrotherapy tub with hot water to remove the remaining chemical residue and allow surfaces to air dry.
- H. Clean and disinfect all multicient use equipment in contact with the bath water (eg, waterproof thermometers, mirrors) as outlined in F.

DISCLAIMER

This document is specific to considerations regarding hydrotherapy during labor and/or birth and is provided as an educational aid to members of the endorsing organizations and interested maternity care providers. This model practice template is not intended to dictate an exclusive course of management or to substitute for individual professional judgment. It presents recognized methods and techniques of clinical practice that maternity care providers may consider incorporating into their practices. The needs of an individual client or the resources and limitations of a particular setting or type of practice may appropriately lead to variations in clinical care. The information in this document is gleaned from published literature available through April 2016. This document will be reviewed against newly available scientific evidence and/or every 5 years after initial publication.

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Co-Editors

Lisa Kane Low, CNM, PhD, FACNM, FAAN
Associate Professor, University of Michigan School of Nursing
President, American College of Nurse-Midwives

Elizabeth Nutter, CNM, DNP
Major, United States Army
Representative, American College of Nurse-Midwives

Organizational Contributors

Colleen Batson-Donovan, CPM
Director, Division of Health Public Policy and Advocacy
Midwives Alliance of North America

Cynthia B. Flynn, CNM, PhD, FACNM
Representative, American Association of Birth Centers

Lesley Meenach Rathburn, CNM, FNP, MSN
Director, Charleston Birth Place
President, American Association of Birth Centers

Maria Christina Johnson, CNM, MS, FACNM
Director of Professional Practice and Health Policy
American College of Nurse-Midwives National Office Staff

Kaye Kanne, CPM
Representative, National Association of Certified Professional Midwives

Jenna Shaw-Battista, CNM, PhD, FACNM
Representative, American College of Nurse-Midwives

Individual Expert Contributors

Roma Allen, MSN, RNC-OB
Carrie F. Bonsack, CNM, DNP
Shaunti Meyer, CNM, MA, MS
Catherine Ruhl, CNM, MSN

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