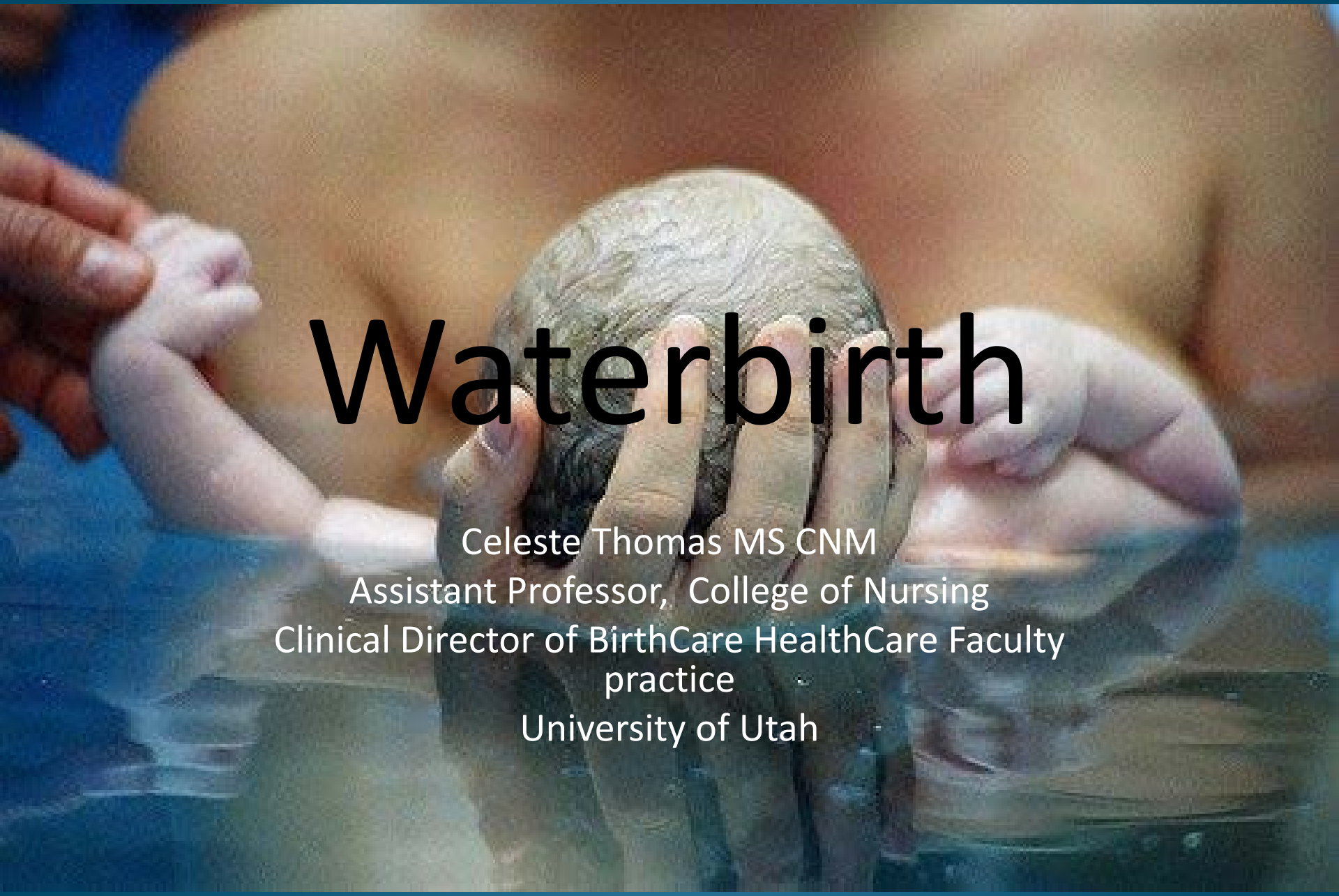

Waterbirth

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Definitions

Warm water immersion: Immersion in a tub with depth that allows for complete Submersion of the abdomen to the breast level.

Water labor: Use of warm water immersion during any stage of labor up to but not including the birth of the neonate.

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.

Why water labor and birth?

Demand: Women want it

Evidenced-based *benefits*

Exceptional *Patient Care Experience*

Financial benefit

Research opportunities

Who provides waterbirth?

Over two-hundred and fifty US Hospitals

Sampling of University Hospitals:

- University of Utah
- University of Colorado, Denver
- Oregon Health Sciences University Hospital
- University of Michigan
- University of Vermont, Fletcher Allen Hospital
- Cheshire Medical Center/Dartmouth-Hitchcock, NH

Sampling Community Hospitals:

- Intermountain Medical Center, Murray, UT
- Davis Hospital in Ogden, Utah
- Southwest Washington Medical Center
- Hackettstow Community Hospital, NJ
- Heartland Medical Center, IL
- Healtheast St. Joseph Hospital, MN
- Mortan Plant Hospital, FL
- Chesire Medical Center, NH
- Feather River Hospital, CA

ACOG Committee Opinion: Immersion in Water During Labor and Delivery

November 2016

- Immersion in water during the first stage of labor may be associated with shorter labor and decreased use of spinal and epidural anesthesia and may be offered to healthy women with uncomplicated pregnancies between 37 0/7 wks and 41 6/7 wks of gestation.
- There are insufficient data on which to draw conclusions regarding the relative benefits and risks of immersion in water during the second stage of labor and delivery. Therefore, until such data are available, it is the recommendation of the College that birth occur on land, not in water.
- A woman who requests to give birth while submerged in water should be informed that the maternal and perinatal benefits and risks of this choice have not been studied sufficiently to either support or discourage her request. She also should be informed of the rare but serious neonatal complications associated with this choice.
- The opinions expressed in this document should not be interpreted in such a manner as to prevent the conduct of well-designed prospective studies of the maternal and perinatal benefits and risks associated with immersion during labor and delivery.
- Facilities that plan to offer immersion during labor and delivery need to establish **rigorous protocols for candidate selection; maintenance and cleaning of tubs and pools; infection control procedures, including standard precautions and personal protective equipment for health care personnel; monitoring of women and fetuses at appropriate intervals while immersed; and moving women from tubs if urgent maternal or fetal concerns or complications develop**.

ACNM Position Statement

- Warm water immersion hydrotherapy during labor provides comfort, supports relaxation, and is a safe and effective non-pharmacologic pain relief strategy that promotes physiologic childbirth.
- High quality research demonstrates the use of hydrotherapy for pain relief during labor does not increase risk for healthy women or newborns when evidence-based, clinical guidelines are followed.
- Results from observational research on warm water immersion hydrotherapy during birth are less conclusive. Researchers indicate that women who experience uncomplicated pregnancies and labors with limited risk factors and evidence-based management have comparable maternal and neonatal outcomes whether or not they give birth in water.
- **Women should be given the opportunity to remain immersed during labor and birth if they wish to do so within the context of a shared decision-making process with their health care providers. This process includes ongoing maternal and fetal assessment as labor progresses.**
- To make an informed choice for the use of hydrotherapy, women should have access to information regarding the state of the science, including strengths and limitations, and documented benefits and risks of available pain relief options including water immersion and or water birth as demonstrated in the published literature.
- Women should have access to qualified maternity care providers who provide safe immersion hydrotherapy during labor and birth using evidence-based, clinical guidelines, regardless of the women's geographic location, socioeconomic or insurance status, or birth setting.

Eligibility Criteria

- Cephalic presentation
- Singleton
- 37 0/7 weeks gestation or greater
- Reassuring FHR[7]

Contraindications

- Abnormal vaginal bleeding
- Maternal fever > 38 degrees C
- Any condition that requires continuous fetal monitoring that cannot be obtained during immersion
- Active herpes simplex lesion, Hep B or C, HIV
- Musculoskeletal issues or reduced mobility that may prevent a woman from leaving the bath quickly is necessary
- Epidural analgesia or anesthesia
- Intrapartum hemorrhage
- Pregnancy complications or conditions that can complicate birth or transition of the neonate to extrauterine life
- Administration of opioid or other sedating medications within 1 hour of hydrotherapy initiation or longer in case of persistent risk to maternal mobility, airway protection, or ability to follow instructions
- Clinical judgement of the attending provider that the woman's condition or the fetal status prohibits ongoing immersion. [7]

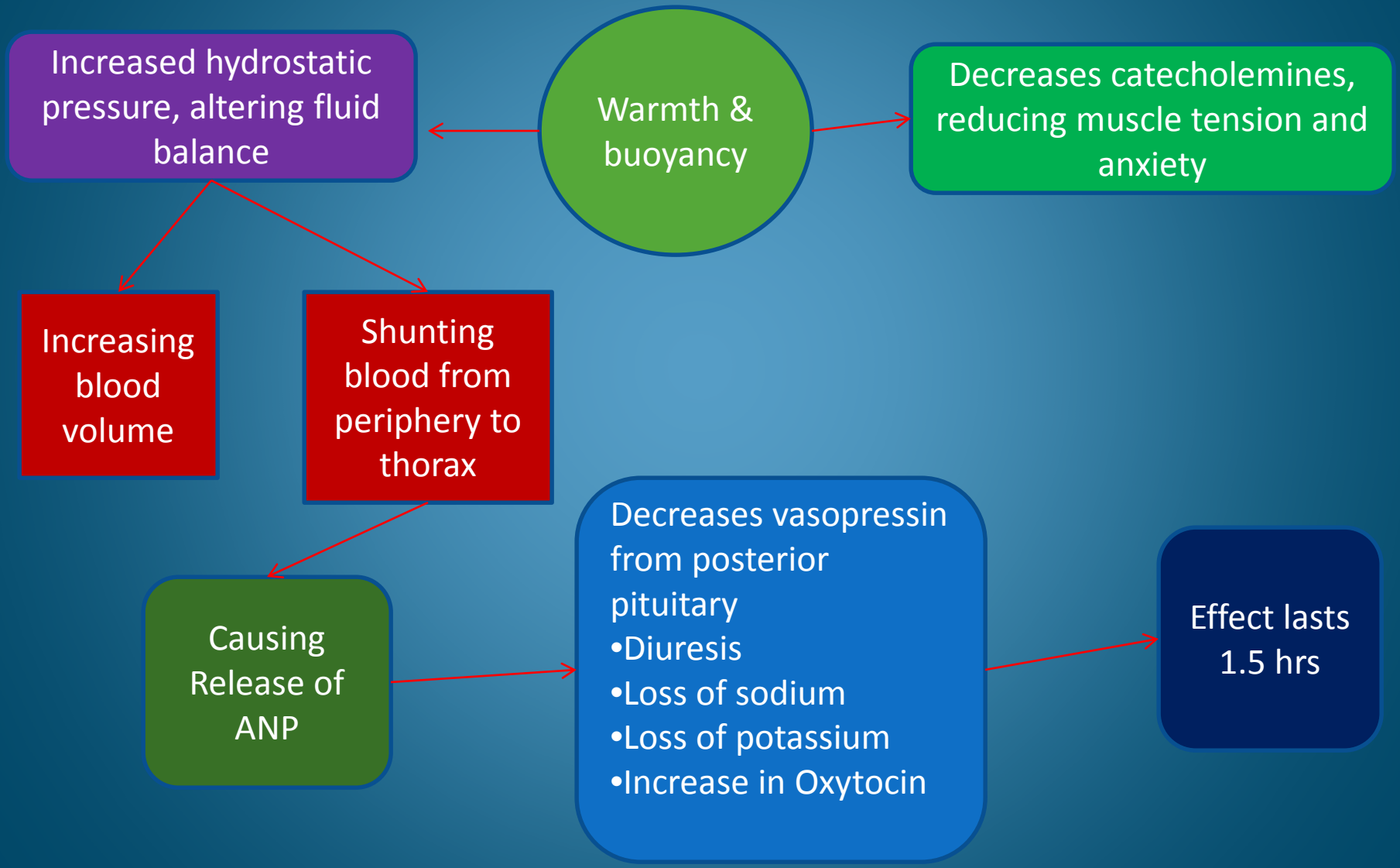
Prenatal Preparation

- Documented *informed consent* ideally prenatally
  - Risks and benefits
- *Risk assessment* and determination of eligibility by provider
- Negative *prenatal labs* for infection
- Patient *teaching*

Benefits

- Increased mobility[1]
- Reduced need for analgesia or anesthesia[2,3]
- Decreased likelihood of 3rd and 4th degree perineal lacerations[3,4,5]
- Facilitation of labor progress (shorter labors) by diminishing catecholamine production which can enhance the perception of pain and slow labor[6]
- Greater levels of patient satisfaction and quality of life in the postpartum period[4]

Why Does Water Work?



Burns, E., Cluett, E.R. (2009). Immersion in water in labour and birth. *Cochrane Database of Systematic Reviews 2009*. 2, No.CD000111

Review of 11 RCT (3,146 women)

Results

- Significant reduction in epidural anesthesia
- Increased maternal satisfaction with pushing
- No difference in assisted vaginal birth, c/s rates, perineal trauma or maternal infection, fetal/neonatal infection rates, apgar scores less than 7 at 5 minutes, NICU admissions

"There is **no evidence of increased adverse effects** to the fetus/neonate or woman from laboring in water or waterbirth."

Risks

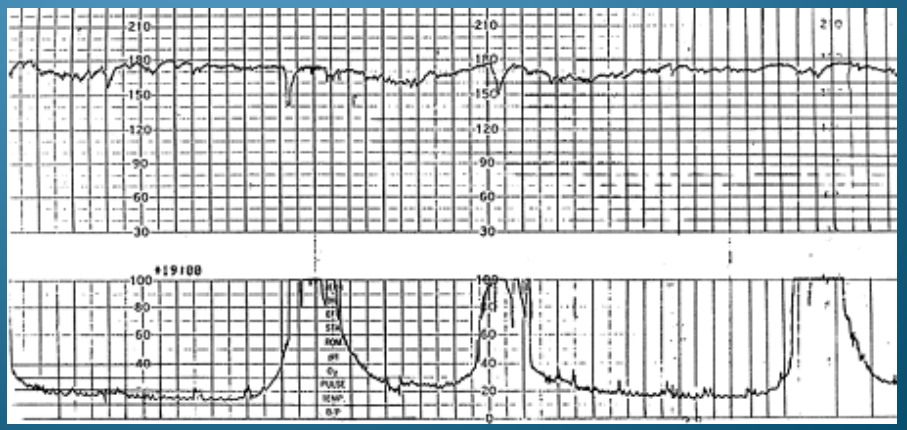
- Umbilical cord avulsion
- Hyperthermia
- Perineal laceration
- Infection
- Neonatal water aspiration

Umbilical Cord Avulsion

- May occur if too much traction is placed on the cord during waterbirth.
- Can typically be managed with little to no negative sequelae if recognized and treated immediately to minimize blood loss[8]

Hyperthermia

- Higher temperatures contribute to
  –Fetal transient tachycardia
- Tub water temp should be kept between 95-101 degrees
- No long term effects
- Resolves with maternal temp decrease



Perineal laceration

- Waterbirth is associated with a decreased rate of 3rd and 4th degree lacerations but may slightly increase the risk of less significant perineal trauma[9]

What about Infection?

There is *no increase in maternal or neonatal infection rates* with waterbirth

(Cochrane review, 2009)

What about GBS Infection?

Frei, R., Holzgreve, W., Hosli, I., Lapaire, O., Maertens, A., Zanetti-Dallenbach, R. (2006). Waterbirth: is the water an additional reservoir for group B streptococcus? *Archives of Gynecology and Obstetrics.* 273(4), 236-238

- Prospective trial looked at bed birth versus waterbirth
- Both groups were tested and treated per CDC recommendations

Conclusion: Newborns showed no difference in GBS colonization

- Positive trend toward decreased colonization of newborns (**wash-out effect**)

Neonatal aspiration

What if the Infant breathes underwater?

The First Breath

Dive reflex

- Larynx has 5 times as many chemoreceptors than the tongue
- Closes the glottis
- Results in apnea
- Results in swallowing
- Protects breast feeding babies

The First Breath

What initiates neonatal respiration?

- Stimulation of trigeminal nerve receptors in the face by air/gravity
- pH change in the CSF
- Spontaneous closure of shunts in the heart
- Pulmonary circulation begins
- Pulmonary amniotic fluid re-absorption into vascular circulation
- Lymphatic system absorbs remainder of fluids

Johnson P, “Birth Under Water –to breathe or not to breathe” British Jnl OB-Gyn 1996 Vol 103 pp 202-208

Newborn Assessment

Severely hypoxic babies are severely depressed – hypoxemia.

- Aware from FHTs
- Dopplers and monitors are safe to use in the pool

Hypoxemic babies will not have the normal reflexes and protections – these are the babies who should not be delivered underwater as they are at risk for gasping

*About 1% of all babies will develop TTN regardless of birth location.

U of U Waterbirth Study - Data Capture

Maternal Data Points:

- 1. Labor duration- 1st, 2nd and 3rd stages
- 2. Mode of delivery
- 3. Degree and severity of perineal lacerations or episiotomy
- 4. Occurrence of postpartum hemorrhage
- 5. Maternal infection- chorioamnionitis or postpartum endometritis
- 6. Shoulder dystocia
- 7. Use of analgesia or anesthesia in labor

Fetal Data Points:

- 1. Non reassuring fetal heart rate events
- 2. Presence and character of meconium in the amniotic fluid

Newborn data points:

- 1. Apgar scores
- 2. Umbilical cord pH- arterial and venous samples, if available
- 3. Respiratory distress (GFR-grunting, flaring, retracting) or Transient Tachypnea of the Newborn
- 4. Neonatal infection (documented by cultures)
- 5. NICU admission (longer than 6 hour observation)
- 6. Hypo or hyperthermia as per standard protocol
- 7. Resuscitative efforts, character and duration


Little Earthling Photography

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2. Cluett ER, Burns E. Immersion in water in labour and birth. Cochrane Database Syst Rev. 2009(2):CD000111. doi: 10.1002/14651858.CD000111.pub3.6 Volume 00, No. 0, October 2016

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355-365.

6. Benfield RD, Hortobagyi T, Tanner CJ, SwansonM, Heitkemper MM, Newton ER. The effects of hydrotherapy on anxiety, pain, neuroendocrine responses, and contraction dynamics during labor. Biol Res Nurs. 2010;12(1):28-36. doi: 10.1177/1099800410361535

7. (2017), A Model Practice Template for Hydrotherapy in Labor and Birth. Journal of Midwifery & Women's Health, 62: 120–126. doi:10.1111/jmwh.12587

8. Schafer, R. (2014), Umbilical Cord Avulsion in Waterbirth. Journal of Midwifery & Women's Health, 59: 91–94. doi:10.1111/jmwh.12157

9. Bovbjerg ML, Cheyney M, Everson C. Maternal and newborn outcomes following waterbirth: the MANA statistics project 2004 to 2009 cohort. J Midwifery Womens Health. 2016;61(1):11-20.
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