



The Royal College of
Midwives

Evidence Based Guidelines *for* *Midwifery-Led Care in Labour*

Immersion in Water for Labour and Birth



Practice Points

Women's experiences of using water for labour and birth are generally positive in terms of feeling relaxed, involved in decision-making and being more in control (Richmond 2003; Hall and Holloway 1998).

The use of water as pain relief during labour has been found to be effective, resulting in less use of epidural/spinal for pain relief during labour (Cluett and Burns 2009).

It is not advisable to use any narcotic analgesia when women are in the pool. Use of Nitrous Oxide (Entonox) is routinely used in conjunction with water immersion.

Water immersion during labour is associated with no difference in type of birth, five minute Apgar Scores, neonatal infection and admission to neonatal units (Cluett and Burns 2009). There is some evidence to suggest that the length of the first stage may be reduced.

There is little to recommend the use of arbitrary points during labour to dictate when birth pools should or should not be used and no evidence to suggest that the use of water should be limited to a specific duration.

Two national surveys suggested that there was no evidence of a link between neonatal morbidity and mortality and immersion in water during labour (Gilbert and Tookey 1999; Alderdice et al. 1995).

Midwives should have access to training in the use of water for labour and birth, and protocols should be in place to support practice (RCOG/RCM 2006).

Quality assurance measures are important, and include the need for checking the quality of water reaching the pool, protocols for cleaning the pool, and infection control procedures (NICE 2007; Kingsley et al. 1999; Hawkins 1995).

The temperature of the woman and the water should be monitored hourly to ensure that the woman is comfortable and not becoming pyrexial. The temperature of the water should not be above 37.5° C (NICE 2007).

Immersion in Water for Labour and Birth

The use of water for labour and birth has been available in the United Kingdom since the 1980s. This approach to care can be provided using a variety of pools and in both the home and hospital settings. There is a body of information about the use of water immersion during labour and birth from around the world. Interpreting that information in the light of midwifery-led care in UK settings should be undertaken with caution, as there may be differences in practice. These differences include the use of pools with air jets (Schorn et al. 1993), restricted duration of bathing (Lenstrup et al. 1987) or whirlpool baths (Rush et al. 1996).

If women are considering water immersion it is important that information is provided prior to labour to allow time for consideration of this option (Richmond 1994).

Information on the experiences of nine women who had used water immersion during labour was obtained in a qualitative study (Hall and Holloway 1998). Women felt that the use of water had supported their feeling of being in control and their involvement in decision-making. A survey of 189 women who experienced water birth reported feelings of relaxation, relief, warmth and relief of pain on entering the pool (Richmond 2003). Amongst women who had a previous birth, water birth differed, as they felt more in control, more relaxed and found labour less painful. This is supported by findings from a retrospective study of 160 women who used immersion in labour; 84% of them stated that they would be very likely to repeat the experience, stating pain relief as the main reason for this (Cortes et al. 2011).

The Cochrane review of the use of water for labour and birth concludes that there was a significant reduction in the use of epidural/spinal analgesia amongst women who used water immersion during labour (Cluett and Burns 2009). There are twelve trials included in this systematic review involving more than 3000 women and many outcomes are considered, but they do not all contribute data for all outcomes. The difficulty with regard to achieving rigorous, transferrable good quality data in this field is recognised. Six studies found a significant reduction in the use of invasive analgesia amongst those who used water during labour, however, it is not possible to conclude whether this was due to the use of water alone or the environment and women centred approach to care that invariably accompanies this. This was also suggested by the authors of a randomised control trial not included in the review carried out in Brazil (da Silva et al. 2009). Using both observer-scored and self reported numerical scores the researchers found significant higher pain scores in those not using water immersion. However, the sample size was relatively small (108 women) and the differences in environment between the two groups (privacy and tranquillity for those using water and a communal environment for those not) suggest that the results cannot be linked to the use of water alone.

Cluett and Burns (2009) found no differences in regard to duration of the second stage of labour, instrumental vaginal delivery, caesarean section, perineal trauma, Apgar scores less than seven at five minutes, admissions to neonatal units or neonatal infection rates. Seven trials provided data on the duration of the first stage of labour and these showed a significant difference in favour of a shorter labour within the immersion group. The reviewers comment that evidence is not available related to the effects of water on the third stage of labour; other reviewers also call for more research into this aspect of care (MIDIRS 2008).

A further randomised controlled trial has been published that is not included in the Cochrane review. The use of water immersion has been compared with amniotomy and augmentation with oxytocin for nulliparous women experiencing dystocia in labour (Cluett et al. 2004). Whilst recruitment to the trial did not achieve the numbers planned, women allocated to water immersion received fewer epidurals and fewer amniotomies and oxytocin, with no difference in delivery method between the two groups. There were no differences in neonatal outcomes measured by Apgar scores and umbilical cord pH. There were 6 admissions to the neonatal unit in the water labour group compared to none in the augmentation group. The reasons for these admissions were documented as: cardiac defects (1), hypothermia (2), fever (1), suspected infection (1) and poor feeding(1). Scores for pain were lower amongst the water users, who also appeared more satisfied with the freedom of movement experienced. The researchers acknowledge that the trial was not large enough to detect differences in morbidity.

There are two other large studies from UK practice. Burns' (2001) review included a consecutive sample of 2357 low-risk women who used a birthing pool between 1990-1998 compared with a group of women, matched for key factors, who gave birth between 1991-1998 in the same centre. From two one-year sub-samples, women who used the pool were significantly more likely to give birth normally. Use of water during labour was associated with less epidural usage and more intact perinea. The second UK study involved 301 women who gave birth in water in one centre between 1989-1994 and matched controls (Otigbah et al. 2000). The study reported statistically significantly shorter first and second stages of labour and less perineal trauma for women having their first baby and less analgesia use for all water births. Otigbah and colleagues acknowledge the difficulties of researching new and less commonly used approaches to birth. Information on perineal outcome has to be interpreted with caution, as early reports failed to differentiate between births out of water following immersion in labour and the use of water throughout (Garland and Jones 1997). Interpretation of the data should also consider the variation in techniques and the extent to which a "hands-on" approach is used. A study comparing midwives' visual estimation of blood loss in "water" and on "land" found no significant difference in the accuracy of estimation in these two contexts (Lim 1994).

Eriksson et al.'s (1997) study of early versus late bathing (before and after 5cm cervical dilatation) found early bathing was associated with an increase in the average length of first stage and an increased need for oxytocin and epidural anaesthesia, although this study may have included women in both the latent and active phases of labour. There appears little to recommend the use of arbitrary points during labour to dictate when birth pools should or should not be used and no evidence to suggest that the use of water should be limited to a specific duration. However, if a woman's contractions diminish and labour progress is not evident, it may be helpful for her to exit the pool and walk around, eat and drink and stimulate effective contractions before re-entering the pool.

Andersen et al. (1996) reported more minor infectious morbidity for women but not for babies, and other studies report no significant differences for either the woman or her baby (Zanetti-Daellenbach et al. 2007, Forde et al. 1999; Eriksson et al. 1997; Schorn et al. 1993). A positive group B streptococcus carrier is not a contraindication for the use of the pool (Zanetti-Daellenbach et al. 2007).

Fetal hyperthermia has been linked with hypoxia (Johnson 1996, Rosevear et al. 1993) and, therefore, it is important for labouring women to avoid becoming pyrexial. This has resulted in recommendations to monitor maternal temperatures closely. Increases of one degree Celsius above the baseline should result in advice to discontinue use (Charles 1998). Water temperature should be comfortable for the woman but not exceed 37.5 degrees Celsius (NICE 2007).

Johnson's 1996 review of respiratory physiology suggests that, in a non-stressed fetus, it is unlikely that breathing will commence in the short time that the baby's head is underwater. Johnson sees no reason to prevent this option being offered to women. This is supported by the national UK survey (Alderdice et al. 1995), where the twelve cases of neonatal mortality were not considered to be due to the use of water, although, as the authors point out, the retrospective nature of the data collection must be noted. A surveillance study (British Isles) and postal survey (England and Wales) reported that perinatal mortality is not substantially increased when birth occurs in water compared to that for babies born by normal vaginal delivery out of water to women at low obstetric risk (Gilbert and Tookey 1999). Data collected for this survey was compared with that for non-water births from other series of low risk births in the United Kingdom. Similarly, perinatal mortality and risk of admission to special care for babies delivered in water were similar to those of low risk births out of water. Water aspiration was reported in two babies and snapped umbilical cord in five, although there is no data available about the incidence of the latter for non-water births. There have, subsequently, been further reports from midwives of the potential occurrence of snapped umbilical cords and the steps taken to detect and deal with this situation (Cro and Preston 2002).

There has been continued discussion of possible risks to babies in the paediatric literature, and calls for continued vigilance, audit and further research. One study included women who had over 24 hours with ruptured membranes: infants born to women using the pool had more Apgar scores of less than 8 at 5 minutes (Waldenstrom and Nilsson 1992).

As a good practice recommendation it is not advisable to use any narcotic analgesia when women are using the pool. Use of Nitrous Oxide (Entonox) is effective and routinely used in conjunction with water immersion.

Several maternity units in the United Kingdom have previously reported quality assurance measures related to monitoring water quality, protocols for the cleaning of equipment and infection control procedures (Hawkins 1995); these remain important (Kingsley et al. 1999). Training should be available for midwives to prepare them to provide this form of care, and units should develop protocols for this approach (RCOG/RCM 2006).

The use of water during labour and birth continues to be an area with limited high quality evidence and many researchers have called for further studies. An important area here is around the third stage. However, the use of water encourages a woman centred approach to care, complements the normalising agenda and is an important consideration in terms of maternal choice.

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The guidelines have been developed under the auspices of the RCM Guideline Advisory Group with final approval by the Director of Learning Research and Practice Development, Professional Midwifery Lead.

The guideline review process will commence in 2016 unless evidence requires earlier review.

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Appendix A

Sources

The following electronic databases were searched: The Cochrane Database of Systematic Reviews, MEDLINE, Embase and MIDIRS. As this document is an update of research previously carried out, the publication time period was restricted to 2008 to March 2011. The search was undertaken by Mary Dharmachandran, Project Librarian (RCM Collection), The Royal College of Obstetricians and Gynaecologists.

Search Terms

Separate search strategies were developed for each section of the review. Initial search terms for each discrete area were identified by the authors. For each search, a combination of MeSH and keyword (free text) terms was used.

Journals hand-searched by the authors were as follows:

- Birth
- British Journal of Midwifery
- Midwifery
- Practising Midwife
- Evidence-based Midwifery