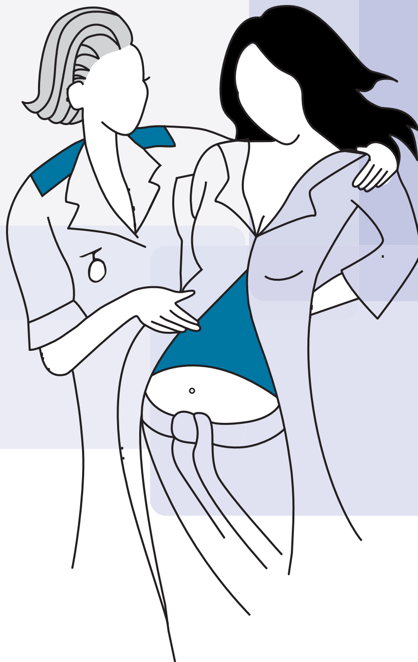
informedchoice

The **use of** water during **childbirth**



Since the early 1980s use of immersion in water during labour and birth has been increasingly promoted to enable women to relax, help them cope with pain, and maximise their feelings of control and satisfaction.[1-4] In 1992 the House of Commons Health Committee recommended all hospitals provide the option of a birthing pool where practicable.[5] Currently few women give birth in water but the option of immersion or showering during the first stage of labour is commonly available.[6,7]

This leaflet is based on the best available research evidence

midirs

In collaboration with NHS Centre for Reviews and Dissemination

Although problems have arisen which have been attributed to water use, the results of most formal evaluations have not clearly associated water use with harmful outcomes for mother or baby.[4,8-11] The lack of robust evidence of harm or benefit means that childbearing women and health practitioners alike are subject to conflicting opinion about the usefulness and safety of using water, particularly for birth.[12,13]

The scale of water use in England and Wales was described in 1993 in a survey of 219 maternity care provider units. The results showed that 89% had used purpose-made birthing pools during labour, although only four units reported 100 or more actual births in water.[6] In 2001, a national survey of maternity units in the UK reported that 51% (168/328) provided trained staff on hand for water births 24 hours a day.[14] However, there was no measurement of the rate of births in water.

How is water used during labour?

Water use ranges from informal, for example when a labouring woman decides to get into her bath at home before going to hospital, to formal use in a specially designed birthing pool. Informal use in a domestic bath or shower is often initiated by a woman herself to help her cope at home before labour is well established. Formal use implies either that a woman has actively chosen to use water as part of her plan for labour and/or childbirth or that a health professional, usually a midwife, has advocated use during established labour.

Why water use is advocated

Immersion in water is advocated during the first stage of labour to help a woman relax and cope with contractions, feel more in control, and to reduce intervention by health professionals.[3,15-18] During the second stage, proponents of waterbirth use it to allow perineal tissues to stretch spontaneously, birth to occur with minimum intervention, and to provide the baby with a gentler transition into extra-uterine life. Expectant management of the third stage is likely if a woman is in water.

Limitations on water use

Many health professionals consider that water use during the first stage of labour in uncomplicated pregnancy is unlikely to harm the mother or baby,[19,20] whilst others have concerns about water use at any point in labour.[12] Clinical guidelines may restrict water use to women considered at 'low' obstetric risk,[7] and other aspects of care may be prescribed, for example monitoring the temperature of the water, the degree of cervical dilatation at which to begin its use,[21] and whether the immersion is safe for all stages of labour.[6,22]

Problems associated with possible risk of infection or cross infection caused by amniotic fluid, blood, and faeces have been described[23,24] and some hospitals have restricted use of birthing pools to women who have tested HIV negative during pregnancy.[25] However, at a multi-disciplinary consensus meeting held in London in 1996, it was agreed that mandatory HIV testing for prospective users of birthing pools could be an extreme reaction to the perceived risks and that high standards of pool hygiene would be an appropriate way forward.[26]

It has been suggested that high water temperature can cause serious changes in feto-maternal haemodynamic regulation and fetal thermoregulation.[27] It has been reported that fetal tachycardia can be reduced by cooling the water[28] and most providers and clinical guidelines specify a temperature range within which the water should be maintained during the first and second stage of labour.[7,29]

The prospect of women giving birth in water has given rise to anxiety about how to deal with unexpected emergencies such as shoulder dystocia, the need to avoid the baby inhaling water and being unaware that the umbilical cord has been severed.[10] One response has been to limit water use to first stage only.[6]

There may be theoretical risks of increased blood loss, retained placenta, or water embolism, and professional advice is often to conduct the third stage out of water.[22] Because water adds to the difficulty of estimating blood loss accurately, it has been proposed that blood loss would be more appropriately estimated as being either more or less than 500mls[30] and that the overall physical condition of the woman should be used as the most important indicator to assess the impact of any bleeding.[31]

In summary, although by no means universally accepted, first stage water use is less controversial than immersion during the second or third stage of labour.[19,20,32]

The research evidence

The effects of water use during the first stage of labour on maternal and fetal outcomes have been evaluated in several randomised controlled trials[4,8,9,11,33] with sample sizes ranging from 938 to 1239.[33] No trial has been large enough to measure the effect of water use on important neonatal outcomes such as perinatal death or other serious neonatal or maternal morbidity. In addition, there has often been significant cross-over between study groups,[4,11] reducing the likelihood of identifying clear differences between women allocated to water use and those not.

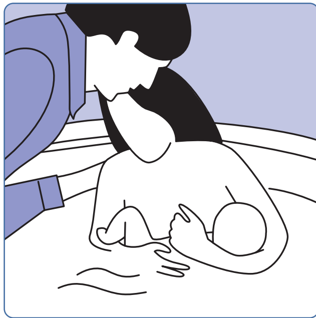
A systematic review[34] of three trials indicated no statistically significant differences in the use of augmentation of labour, duration of first stage, use of pain relief, incidence of perineal trauma, rate of meconium-stained liquor or in neonatal outcomes. The recommendation from the review was that routine use of immersion in water should be used with care and that formal water use should be limited to controlled trials, or situations in which there is an ongoing audit of possible complications.

Some practitioners consider it unethical to deny the choice of using water and therefore retrospective comparison has been made of women who have used water with those who have not.[35,36] However, there are considerable difficulties in interpreting such studies because of the possibility of the results being inherently biased. In the same way, findings of cohort studies which suggest benefit for water use in terms of pain relief and increased rate of cervical dilatation,[37-40] or those which indicate differences in rates of maternal and neonatal infection,[41-43] are also open to criticism.

Many reports about immersion in water are case series[1,17,44-54] and focus on perceived benefits of water use for the mother, her

baby and birth attendant. These include shorter labour,[44] less use of pharmacological analgesics,[39,45] less intervention by care givers,[17] lower rate of perineal trauma,[52-54] and increased satisfaction with the experience of labour and birth.[46] By contrast, some case reports have highlighted serious problems such as fetal overheating,[27,28] neonatal sepsis[24] or death.[55]

Overall reviews of the evidence[18,20,56,57] conclude that appropriately large-scale research is still required to evaluate rigorously the physiological effects, clinical outcomes, and economic impact of water use.



What we don't know

Evidence about water use is heavily dependent on case series and relatively small-scale studies, therefore the evidence about efficacy and effectiveness is lacking.

Outstanding issues which require evaluation include:

- **is water use causally associated with an increase in perinatal mortality or serious perinatal morbidity?**
- **does water use reduce the need for pharmacological pain relief?**
- **is there any difference in the risk of infection for mother or baby?**
- **at what dilatation should a woman be advised to begin water use?**
- **does immersion in water affect the length of labour?**
- **is perineal outcome affected by immersion in water?**
- **if water has an effect on important physical/psychological outcomes for mothers or babies, are there particular women who should avoid using water during labour?**
- **are there women or babies who would be most likely to benefit from water use?**

Implications for maternity services

Water use during the first stage of labour is offered by the majority of maternity care provider units in the UK[6] and water birth is supported by just over half.[43] It is a care option some women wish to use.

Introduction of, and sustained support for, water use may have considerable implications for service governance.[58] However, not all costs fall to providers of care; a substantial cost burden of water use is likely to be borne by labouring women themselves during informal use in domestic baths and showers. In addition some women are prepared to hire specially designed pools for use in their home or in a maternity unit. Although installation and maintenance of a specially designed pool in a maternity unit involves obvious financial cost, this may be offset if there is a reduction in analgesia and anaesthetic use.[37]

There is evidence that formal water use implies that at least one midwife will be in constant attendance during the first stage of labour and that at least two will be in attendance for birth.[7]

This level of staffing may be difficult to sustain and may have implications for equity of care for women who do not use water.[19]

Clear strategies for the training, preparation and support of staff who offer use of water during labour are recognised as essential.[7,31,37,59] Key components of these include clarification of the roles of different maternity health professionals, multi-disciplinary development of local protocols, development of guidelines for clinical practice, and short-term secondment of midwives to learn alongside practitioners skilled and experienced in water use.

Implications for practice

Using water during labour and/or birth is still of interest to women and midwives and other maternity care workers should be informed about potential advantages and disadvantages. Current practice is likely to be informed and influenced by shared experience and personal observation. Disproportionate weight may therefore be placed on perceived disadvantages or advantages and credibility given to outcomes which may not be associated causally with water use.

- **Immersion in water during childbirth is a care option which some women wish to use and which health professionals have a responsibility to discuss using clear and balanced information.**
- **As with any labour or birth, it is essential to maintain systematic, contemporaneous records and to monitor and record routine observations about the well-being of the mother and the fetus. These data should be used to audit care and gather information about outcomes.**
- **Water temperature should be measured regularly using a thermometer and recorded. The water temperature should be comfortable for the woman and should be not more than 37°C during the first stage of labour and between 36-37°C in the second stage.**
- **Maternal faeces, meconium and blood clots should be removed from the water using a sieve, and effective cleaning of pools before/after use should be carried out to minimise risk of infection or cross-infection.**
- **Birth in water: the baby should born fully submerged and be brought gently and without delay to the surface so that he/she can make their first respiratory efforts in air.**
- **Rigorous research is required to address basic questions about the safety and effectiveness of using water during labour.**

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