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# Immersion in water: use of a pool by women in labour

By Wendy C Jessiman

It is now nine years since Jessiman and Bryers (2000) reviewed the experience of women and midwives' use of a purpose-designed hydrotherapy pool for labour and birth in a consultant-led unit at a hospital situated in Inverness. While at the time the pool was the most northerly facility of its kind another pool has been added to facilities in Wick and another is planned in Shetland. From September 1997 to December 2008, 1122 women have used the pool in the this hospital labour suite, and 110 of these women have given birth in the pool. This article examines how the service in Inverness has developed over the past 11 years and offers some possible explanations for changes in practice.

Since 2000 midwives and women have been guided by a number of publications advising that labour in water may help with the pain of contractions and that water birth may be available in their area (Royal College of Midwives (RCM), 2000; Burns, 2001; Cluett et al, 2004; Royal College of Obstetricians and Gynaecologists (RCOG)/RCM, 2006; National Institute of Health and Clinical Excellence, 2007; MIDIRS, 2008; RCM, 2008). In April 2006 the RCOG and the RCM published a joint statement regarding labour in water and water birth (RCOG/RCM, 2006). This statement outlined the information which should be recorded as part of an ongoing evaluation. The data which is routinely recorded in the hospital includes:

- Parity
- Gestation
- Spontaneous or induced labour
- Reason for entering the pool
- Time spent in the pool
- Reason for leaving the pool
- Mode of birth
- Apgar scores.

In addition, women and midwives are asked to rate their experience of the pool using a Likert scale, where one represents poor through to five which would represent an excellent experience.

In order to ensure data from the evaluation is disseminated, annual reports of the use of the pool have been sent to lead midwives and supervisors of midwives in NHS Highland and to clinical areas in the hospital in Inverness itself. In keeping with Burns (2004) this data and additional comments from women and midwives has proved invaluable in developing the service to date.

## A cautious start?

In the first two years of pool use midwives had felt that the uptake of the facility was poor (*Figure 1*) and one reason suggested for this was the use of conventional baths at that time. Women often laboured in the two antenatal/postnatal wards.

## Abstract

**Since 1997 women in a consultant-led unit in Inverness have had access to a purpose-designed pool for labour and birth. The number of women using the pool over the last 11 years has steadily increased and midwives have gained more experience and confidence in the use of the pool for labour and birth. This article describes the ongoing evaluation of the pool from September 1997 to December 2008 and identifies how the experience in Inverness varies from other units in the UK.**

Each ward had a conventional bath, where the use of the bath was unregulated. The organization of care at the time meant midwives on the wards were also providing care for a number of other women. Therefore women were not transferred in early labour, rather, a period of time would elapse before the decision was made to accompany the woman to labour suite.

In the year 2000 an audit of the use of conventional baths was undertaken in the maternity unit of this hospital. Over a period of 1 month, 22 women used the conventional baths during labour, 12 of these women were in spontaneous labour and 10 were undergoing an induction of labour. The gestation of pregnancy of these women ranged from 38 to 42 weeks. The women were considered to be in very early labour and only two women went on to use the purpose-designed pool in the labour suite. Midwives responsible for the care of these women agreed that the reason women were using the baths in early labour was primarily because of the location of the baths on the antenatal/postnatal wards.

As a result of a re-design of labour suite over the years, conventional baths are no longer available to women in the labour suite, but baths are still used on the wards by women in early labour. In 1995 Alderdice et al (1995) noted that there was no published data on the number of women who use conventional baths in labour in the UK; this position has not altered in the last 14 years.

## Guidelines

The hospital guidelines are informed by research, published audits, systematic reviews and the experience of women and midwives using the pool (*Table 1*).

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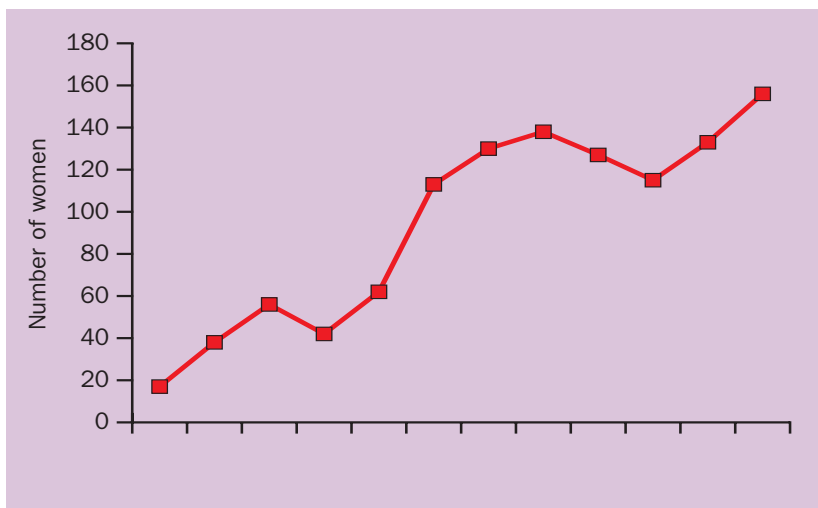


Figure 1. Pool use September 2007–December 2008

Table 1. Current criteria for use of the pool	
For labour	At least 37 weeks pregnant Cephalic presentation Fetal heart rate within normal parameters Clear liquor No sedation in the last 4 hours
For birth :	As above No known or envisaged medical or obstetrical problems

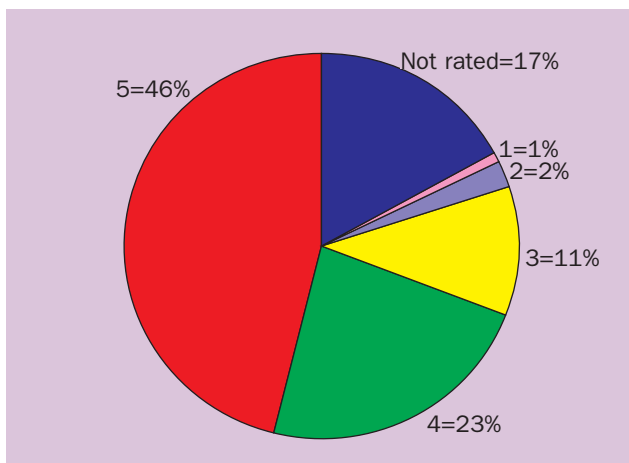


Figure 2. Women rate the pool 1–5 on a Likert scale (1997–2008)

Using the Likert scale provided, women consistently rate the pool very highly. Of the 931 women who used the scale to rate their experience of the pool 84% ( $n=778$ ) of women rated the pool four or five (Figure 2). Eighty-six per cent of midwives also rated the pool four or five ( $n=778$ ).

### Reasons for using the pool

Women and midwives associate the pool with labour and to a lesser extent with water birth. However the explicit reason for using the pool was not recorded in the first five years of using this facility. In the context of the evaluation it became important for midwives to establish why women wanted to use the

pool and, in particular, to quantify any hidden demand for water birth. Therefore, in 2003 midwives began to record women's reasons for using the pool (Table 2). Of the 802 women who used the pool between 2003 and 2008, seven reasons were given. In 22 cases this section was left blank.

While there are a variety of reasons for using the pool the main reasons are pain relief and relaxation. The Likert scale completed by women suggested that the anticipated benefit of pain relief and/or relaxation was achieved in 84% of women.

Table 3 gives the documented reasons for entering the pool for the 97 women who had a water birth (2003–2008). Of the 34 women who were considering a water birth between 2003 and 2008 at this hospital, 21 achieved a water birth (62%). A greater number of women who enter the pool for reasons of pain relief/relaxation go on to have a water birth (60 women).

The time spent in the pool varies from less than 10 minutes to over 255 minutes (Table 4). The average time spent in the water is 91 minutes (modal time 60 minutes). However short, the time spent in the pool is rated highly. The average time spent in the pool differs from the findings of a pilot study conducted by Woodward and Kelly (2004). A more recent study by Baxter (2006) did not record how long women spent in the pool. Perhaps what is critical for women is that they have control of when they enter the pool.

Midwives in this Inverness hospital continue to facilitate hydrotherapy whatever the reasons given by women for their use of the pool. Unlike the findings of Baxter (2006) and Garland (2000), the use of the pool is not restricted to women believed to be in established labour. The most recent MIDIRS *Informed Choice* leaflet (MIDIRS, 2008) states that it is not known at what cervical dilatation water immersion is most beneficial. In the Inverness hospital 82% of women ( $n=877$ ) entered the pool before cervical dilatation was five centimetres. The experience in the hospital has shown that only 1% of women ( $n=13$ ) who used the pool left because their contractions became less frequent. The timing of entry to the water may be more critical than midwives realize but until there is evidence of an optimum time period for immersion in water in the care of individual women, it is not appropriate to restrict this non-pharmacological pain relief according to the dilatation of the cervix.

In Scotland birth rates have fluctuated over the last nine years and there has been a steady increase in the number of women using the pool in the labour suite in the hospital under study (Figure 1). Although there have been only 110 water births over the 11 years, 90 of these have taken place in the last 4 years. When the pool was installed midwives were anxious about water birth, but the increase in this mode of birth has inevitably increased the experience of a greater number of midwives. Midwives have become more confident in water birth and student midwives have experience of water birth before qualifying.

Overall the percentage of women using the pool related to the total number of births in the consultant-led unit has remained small. However, it has risen from 2% of the total births in 1998–2000 ( $n=131$ ) to 7% in 2006–2008 ( $n=410$ ).

Not all women want to use the pool and not all women meet the criteria to use the pool. In their application of the

criteria with regard to who might benefit from immersion in water, midwives have interpreted the guidelines and facilitated women in using the pool. A review of eligibility criteria is now taking place.

## Reasons for leaving the pool

Fifteen of the reasons for women leaving the pool are summarised in *Table 5*. These are similar to those found by Brown (1998), Forde et al (1997) and Baxter (2006).

The temperature of the water has been discussed in the published literature over the years (Anderson, 2004; Alderdice et al, 1995; Rosser, 1994). Some women felt too hot in the pool. Of the 28 women who said they felt too warm or too hot, two were found to have a pyrexia (38°C and 37.9°C).

Reasons for leaving the pool are common to many of the published audits already referenced, and these include fetal heart indications and the presence of meconium. Additional miscellaneous reasons included:

- Feeling dizzy
- Expecting visitors
- Skin going wrinkly
- Hand shrivelled
- 'Felt like a prune'
- Compound presentation
- Vomited in the pool.

## To micturate or not to micturate?

There are guidelines that suggest women should be given the option of whether they wish to leave the pool to micturate (Burns and Kitzinger, 2005). Some guidelines encourage women to leave the pool to micturate (Freeman and Griew, 2007). A small number of women left the pool to pass urine and did not return. The current guidelines in this consultant-led unit do not make any recommendations regarding micturition in or out of the pool. Although immersion in water is known to increase diuresis, Garland (2000) makes no suggestion that women leave the water for micturition. Rather, reasons for leaving the pool with regard to water contamination are limited to faecal contamination, blood, and 'murky water'.

## Primiparous and multiparous women

Generally speaking there are more primiparous women who use the pool than multiparous women. In this hospital in 2005 and in 2007 more than twice as many primiparous women used the pool as multiparous women (*Figure 3*). This is unlike the experience of other units (Burns and Greenish, 1993; Brown, 1998; Garland and Jones, 1994; Baxter, 2006) where similar numbers of primiparous and multiparous women have used the pool for labour.

The need for large scale research to be conducted in labour in water and water birth was identified by Alderdice et al (1995). This may be the answer to the question posed in the MIDIRS leaflet 'what is stopping midwives from offering labour in water and water birth?' (MIDIRS, 2008). Fourteen years on from Alderdice et al (1995) women and midwives await the large-scale research required to rigorously evaluate the physiological effects and clinical outcomes of hydrotherapy. In the meantime

**Table 2. Reason for entering the pool (2003–2008)**

Reason for entering the pool	Number of women
Pain relief	615
Pain relief and relaxation	67
Wishes pain relief and a water birth	34
Maternal request	31
Relaxation	19
To establish contractions	8
Hydrotherapy in first stage/likes water	5
Total	779

Note: In 1 case an old pool data collection form was used and no reason for entering the pool was recorded

**Table 3. Reason given by women who had a water birth for using the pool (2003–2008)**

Initial reason for entering the pool	Number of water births
Wishes pain relief and a water birth	21
Pain relief	48
Maternal request	6
Relaxation and pain relief	4
Likes water	1
Relaxation	1
Total	81

Note: Left blank in 16 cases

**Table 4. Time spent in the pool (1997–2008)**

Time spent in the pool (minutes)	Number of women
<10	5
10–20	77
21–30	98
31–60	306
61–120	319
121–255	199
>255	30
Total	1122

Note: Left blank in 88 cases

women and midwives must interpret the available evidence both in labour in water and water birth. The Joint statement from the Royal Colleges (RCOG/RCM, 2006) has helped to demonstrate the ongoing commitment to women to support them in their use of water but evidence from larger studies is urgently needed.

**Table 5. Reason for leaving the pool 1997–2008**

Reason for leaving the pool	Number of women
Wishing further analgesia	423
Rectal pressure, urge to push, expulsive contractions, second stage	126
Reassessment, vaginal examination, artificial rupture of membranes, CTG	115
Following a water birth	110
Wanted to mobilize	51
Maternal request/had enough	50
Too warm/too hot	28
Toilet (includes 9 specifically 'pass urine')	25
Uncomfortable	14
Tired	12
Contractions (slowed going off/less frequent)	13
Meconium (includes 1 'possible meconium')	10
Fetal heart indications	10
Spontaneous rupture of membranes	5
Did not like the pool	4
Total	996

Note: In 76 cases no reason was recorded

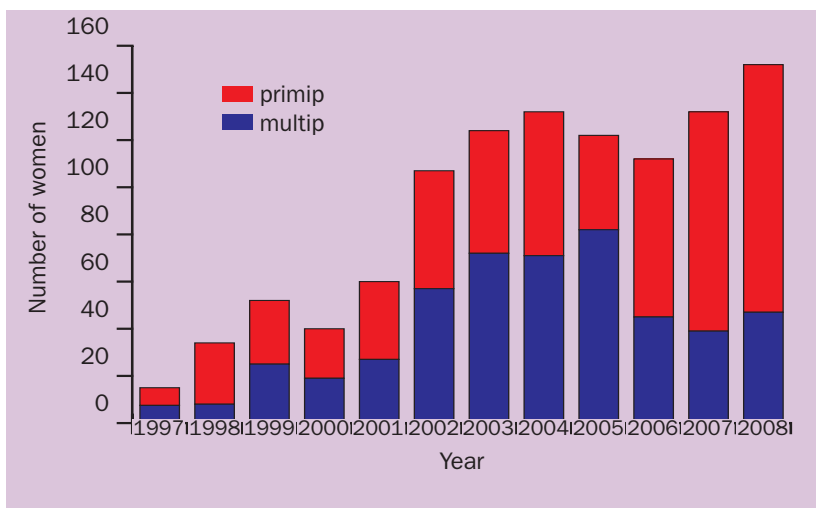


Figure 3. Primiparous and multiparous users of the pool 1997–2008

The *Pathway for Normal Maternity Care* was published in March 2009 (NHS Quality Improvement Scotland, 2009). This is a strand of the Scottish Government’s Keeping Childbirth Natural and Dynamic (KCND) programme, where the principles of caring for women in the first stage of labour include:

- Range of non-pharmacological pain-relief
- If slow/no progress in labour consider immersion in water (Cluett et al, 2004)
- Refer to local guidance on water birth if labouring in water.

Immersion in water for labour and birth are important in this pathway and these principles of care in pool use have been evident over a number of years at the hospital in Inverness.

## Conclusion

This evaluation of the use of the pool in a consultant-led unit at a hospital in Inverness has much in common with other published audits. However there are some differences in that almost twice as many primiparous women use the pool than multiparous women. The reason for this is not known but it may be associated with the less restrictive criteria for using the pool and the greater number of primiparous women who use it.

If the number of women giving birth in water is used as a measure of the success of a facility then this ignores the positive experience of others who use the pool. This measure could also make the pool appear less accessible to women and midwives, reinforcing water birth as the criteria for entry to the pool and not women’s choice.

The pool is used by only 7% of the total number of women giving birth in the hospital. This figure, when viewed by those unfamiliar with the criteria for the use of the pool and the concept of individualized care, may see this as an expensive resource. Nevertheless in the context of supporting women it is a valuable addition to the provision of choice for labour and birth.

Debates on water birth have overshadowed immersion in water in labour (Jessiman and Bryers, 2000) and in proposing the motion ‘all women in labour should have the choice of water birth’ Miller (2006: 484) argues that if midwives are really committed to restoring normality in birth then every woman without major complications should be offered the opportunity to labour and give birth in water (Miller, 2006). Magill-Cuerden (2006) queries why midwives require additional training in water birth if water birth is normal (Magill-Cuerden 2006; RCOG/RCM/Royal College of Anaesthetists/Royal College of Paediatrics and Child Health, 2007). Perhaps part of the reason for this is the lack of unequivocal evidence for practice in this field. Midwives by education and experience are risk averse in so far as they are mindful of the care they give, the evidence which supports that care and the possible implications of their and women’s decisions. Therefore the introduction of an alternative medium for birth with equivocal evidence which is considered within the normal sphere of practice, means that midwives need opportunities for further education (NMC, 2004) to ensure they and the women in their care are fully informed.

In keeping with the published evidence a review of criteria is now needed in order to ensure women who wish to use the pool can do so. A national audit of the experience/benefits of hydrotherapy would be invaluable for women and midwives caring for women in pools across the UK. Together with large-scale clinical trials this would begin to establish the evidence base for practice.

**BJM**

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## Key Points

- Over an 11-year period at an Inverness hospital 1122 women have used the pool and 110 women have given birth in the pool. There have been 90 water births in the last 4 years.
- While there are a variety of reasons for using the pool the main reasons are pain relief and relaxation.
- Women on average spend 91 minutes in the pool and 84% rate the pool as very good to excellent.
- Midwives use the available evidence to support women in their choice to labour or give birth in the pool.

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