What a difference a pool makes: Making choice a reality

By Liz Baxter

Abstract
In recent years it became increasingly apparent that women accessing services at Corbar Birth Centre in the High Peak wanted the choice of using water for labour and birth. The Birth Centre responded by undertaking a large project, which resulted in practice development and the introduction of a permanent birthing pool. Clinical audit was implemented to evaluate the new service and assess the perceived risks and benefits of immersion in water during labour and birth on specific outcomes. This article describes how the project evolved and aims to share the findings from the March 2001 to April 2004 audits comparing ‘pool users’ with ‘pool births’ and reflects on the experience of the midwives.

The Royal College of Midwives (RCM) 2001 refer to ‘woman-centred care’ as ‘the term used for a philosophy of maternity care that gives priority to the wishes and needs of the user, and emphasizes the importance of informed choice, continuity of care, user involvement, clinical effectiveness, responsiveness and accessibility’. With this philosophy of care embedded in the practice of every High Peak team midwife, the introduction of the birthing pool has been a great success and responsible for a 35% increase in the unit’s birth rate from 120 births in 2000 to 163 in 2003.

Data collected over the last three years has revealed an increasing trend in pool use, with findings from the 2003 audit revealing that of the 163 women who delivered at the Birth Centre, 129 (79%) used the pool during labour, of which 92 (71%) chose to remain in the pool for the birth (Figure 1). These figures are much higher than those reported by the RCM Position Paper (RCM 2000), which suggested that between 15% and 60% of women attending units, which provided pool facilities, would choose to use those facilities.

The project
The project was originally inspired through the request of a pregnant woman to use her own hired pool at the Birth Centre, and the author’s subsequent motivation to develop an equitable service. An important aspect in the success of this innovation in practice was the team approach, which fostered ownership of the project by involving all interested parties (Cross, 1996; Dickinson, 1998), including service users as recommended in The Children’s National Service Framework (DH, 2003, 2004) publications. The project was multifaceted and involved professional development, financial management, audit, risk assessment, the development of practice-based protocols and the production of a client information leaflet.

Initially a market survey was undertaken using a questionnaire to identify the level of client demand for a birthing pool, the results were extremely positive; therefore a portable pool was installed on a three month trial basis. However, due to the pools popularity, which was evident from the women’s positive verbal feedback and data analysed from a client survey undertaken during the trial period, the portable pool remained until a permanent pool was installed in March 2001. Funding was received from Stockport NHS Trust, local charities, donations and fund raising events organized by clients and staff.

Practice development
As with any change, several midwives were apprehensive, however, the majority were enthusiastic and therefore became the driving force behind this change in practice (Lancaster, 1999). Two colleagues and the author who had prior experience of waterbirth, agreed to provide a 24-hour on call rota during the trial period to enable colleagues to have access to support and guidance while becoming more familiar and experienced in waterbirth.

Theoretical training sessions were organized and facilitated by the author and funding was received for three colleagues to attend an external study day on waterbirth. As the midwives gained experience and confidence in waterbirth, cascade training became established and normal practice. This has resulted in all midwives acquiring the skills, knowledge and competence to care for women who wish to use the pool during labour and birth (RCM, 2000; NMC, 2004a).

Figure 1. Corbar births 2003
Data collection
A client satisfaction survey and clinical audit were chosen as the methods for data collection, as the information gathered would enable us to evaluate the use of the pool from both a maternal and clinical perspective. Whilst a structured questionnaire was developed specifically aimed at gathering information from women on their experience of using the pool, a proforma was designed for the midwives to complete, which captured information on specific outcomes so that the associated risks and benefits of immersion in water during labour and birth could also be evaluated, as recommended by the RCM (2000). The survey and audit took place during the period of March 2001 and April 2004.

Clinical audit was appropriately utilized to evaluate this new service, as clinical audit is increasingly seen as an essential component of professional practice (NICE, 2002). The data collected was evaluated and compared against standards set from the latest research and evidence available and new local guidelines (Leicester Primary Care Audit Group 2004) and compared the 102 women who laboured in the pool, who will be referred to as 'pool users' with the 229 women who gave birth in the pool, referred to as 'pool births'. This comparison was chosen as a literature review revealed a deficit in evidence comparing 'pool users' with 'pool births'. An example of an early study on women using the pool and women staying in for delivery was discovered but unfortunately the data failed to distinguish between the 2 groups of women (Burns and Greenish (1993). It was therefore important that we differentiated between 'pool users' and 'pool births', to generate a different source of evidence. The following information was requested:

- Parity
- How they had been informed about the pool's availability
- If they used the pool for the first stage of labour or did they deliver in the pool and if so, was it their original intention to deliver in the pool and if not, what changed their mind
- The overall effectiveness of the warm water on relaxation and pain-relief
- The proforma requested details on:
  - Dilatation of the cervix on leaving the pool
  - Reasons for leaving
  - Outcome of labour
  - Estimated blood loss (EBL)
  - Perineal trauma
  - Analgesia
  - Neonatal apgar score

Findings
Parity
Parity was defined to evaluate if the pool appealed more to primigravidae or multigravidae women, particularly as this would have an impact on midwifery hours providing one to one care to pool users, primigravidae having the largest impact. Figure 2 illustrates that the pool was used equally by both primigravidae and multigravidae, as found by Burns (2001), therefore meeting the target set for this standard.

Providing information about the pool
This standard stated that all women should be offered information on the option of using water in labour and birth and all women who expressed an interest should be given verbal/written information (RCM 2000). The measured outcome demonstrated that 295/331 (89%) women who had used the pool received verbal and/or written information about the pool from their midwife during an antenatal appointment or antenatal class. These results identified a need to further develop our procedures for providing women with information but also presented evidence that for the majority of women who had used the pool, information had been provided and therefore enabled those women to consider the pool as an option for pain relief prior to labour (Audit Commission 1997). Perhaps this is the reason for so many women requesting to use the pool.

'Pool births' versus 'pool users'
Figure 3 illustrates the number of 'pool births' versus 'pool users' and demonstrates an anticipated linear increase in 'pool births', resulting in 71% of women giving birth in the pool during 2003-2004, compared to 56% during the trial period. We believe that this reflects the increased competence and skills of the midwives in pool births, as suggested by some of the responses given by women as to why they chose to remain in the pool. Of the 229 women who gave birth in the pool during 2001-2004, 64 (28%) had not intended to do so or had been undecided. These women were asked to comment on their decision to remain in the pool. A selection of the comments are recorded below:
...it felt like the natural thing to do.

'I felt so relaxed and in control with the midwife and my husband supporting me.'

...she was going to be born and I didn't want to move, as I was so relaxed.'

...my midwife conveyed confidence and competence, which gave me the confidence to deliver my baby in the pool.'

'I felt more relaxed in the pool and the atmosphere was great.'

...although I hadn't intended to deliver in the pool I now can't imagine giving birth any other way, it was so much more comfortable than being on a bed.'

'effective pain-relief'

'The midwife suggested it, so I stayed in, it was great!'  

...2nd stage very quick, no time to get out and glad I didn't.'

Reasons for leaving the pool
During the trial period it was noted that a hasty immersion could result in slowing down contractions, therefore prolonging labour, which concurred with the findings of Eriksson et al (1997) and Harper (2000) and resulted in some women leaving the pool. It was therefore recommended and implemented into the guidelines that women should not enter the pool unless in established labour (Garland 2000). Figure 4 details the cervical dilatation of women leaving the pool prior to birth and demonstrates that for those left, the majority had remained in the pool until reaching the transitional or second stage of labour. By grouping similar categories together, the seven main reasons for leaving were:  

- delayed 1st stage of labour/poor contractions  
- Prolonged 2nd stage of labour  
- Fetal heart rate decelerations/tachycardia  
- Meconium stained liquor  
- Pharmacological analgesia  
- Too hot  
- Maternal choice

These findings are similar to those found by Brown (1998) and Forde et al (1999) and demonstrate that this particular standard set against the guidelines, which recommend that women should be asked to leave the pool if a deviation from the norm is detected, were appropriately adhered to. Therefore providing evidence of safe and competent care (NMC, 2004b).

Women's perception of relaxation and pain-relief
Women were requested to rate the effectiveness of the warm water on helping with relaxation and/or birth using a visual analogue scale on a scale of 0-10, with '0' being 'no help' and '10' being 'extremely helpful'. The scorings from the 2003-2004 audits are illustrated in Table 1 below and are consistent with the author's previous findings. These findings demonstrate the high perceptions of relaxation with 93% of women scoring ≥7 and 80% scoring ≥7 for the effectiveness of the warm water on helping with pain-relief, findings supported by Odent (1983), Brown (1998), Hartley (1998) and Garland (2000). Therefore, the data supports the proposition by Garland and Jones (2000) that waterbirth is an effective method of pain relief.

Outcome of labour
Of the 331 women who used the pool, 314(95%) had a normal vaginal birth. However, 25/331(7.5%) had been transferred during labour to a consultant unit and of those transferred 5(1.5%) had a caesarean section, 13(4%) an instrumental delivery but 7(2%) had a normal vaginal birth. Therefore the caesarean section rate and the instrumental
delivery rate for 'pool users' is extremely low and lower than anticipated for this standard.

**Estimated blood loss**

Before 2003, only the EBL of 'pool births' was analysed from the data to determine if remaining in the pool increased the risk of postpartum haemorrhage (PPH). During this period only 7/137 (5%) 'pool births' had a recorded EBL ≥500mls, 2 were attributed to having a manual removal of placenta (MROP), whilst the remaining 5 were linked to uterine atony but responded to the administration of syntometrine, with no further actions required. It would therefore appear that the incidence of PPH following a 'pool birth' is very small as suggested by Garland and Jones (1997).

During 2003, only 2/92 (2%) 'pool births' had an EBL ≥500mls, which were attributed to a MROP; however, 4/37 (11%) 'pool users' had an EBL ≥500mls, 1 following an instrumental delivery, 1 uterine atony and 2 following an episiotomy, therefore interventions appear to be the cause of PPH, rather than the effects of using the pool. Following the introduction of the pool, there has been an increasing number of women choosing to have a physiological 3rd stage of labour resulting in further practice development, with no recorded increase in the incidence of PPH.

**Incidence of perineal trauma**

Perineal trauma was audited as the literature review revealed a deficit in comparisons between pool births and pool users, as previous studies (Garland and Jones, 1994, 2000) have compared the perineal trauma of women who have had a pool birth with women who have had a 'dry birth'. Guidelines recommend that episiotomies are not to be performed in the pool. Of the 229 'pool births', 87 (38%) resulted in an intact perineum, 75 (32%) sustained a first-degree/labial tear, 66 (29%) a second-degree tear but only one a third-degree tear following a rapid second stage of labour and a baby weighing over 4.5 kilograms. No episiotomies were performed in the pool, therefore demonstrating compliance with guidelines.

Of the 102 'pool users', 97 had a vaginal birth, of which 14 (14%) resulted in an intact perineum, 21 (21%) sustained a first-degree/labial tear, 31 (32%) a second-degree tear but similar to the 'pool births', only one sustained a third-degree tear but 30 (31%) required an episiotomy. Therefore women who had a 'pool birth' had a reduced incidence and severity of perineal trauma compared to 'pool users', although the incidence of a second-degree tear is similar for both groups. Figures 5 and 6 illustrate these findings.

**Apgar Scores**

Comparisons have been made on the apgar scores of babies born in the pool, with those whose mothers only laboured in the pool during 2003 to 2004. This would enable us to identify any increased risk to the neonate following a 'pool birth'. Of the 92 'pool births', 90 (98%) babies had an apgar score of ≥7 at 1 minute, which is higher than the target of 94% set against the findings from an audit by Brown (1998). All babies scored ≥9 at 10 minutes. Of the 37 babies born out of the pool, 31 (84%) had an apgar score of ≥7 at 1 minute and 36 (97%) scored ≥9 at 10 minutes. One baby had a poor apgar score at 10 minutes, however this baby was born following shoulder dystocia and was transferred to the neonatal unit where a diagnosis of meconium aspiration was made. Therefore, less than 1% of babies who's mothers laboured or gave birth in the pool spent time in the neonatal unit. These findings support those of Gilbert and Tookey (1999) and Cluett et al (2004) that immersion in warm water during labour/birth appears to have no adverse effect on the neonate.

**Analgesia**

During 2003-2004 82/92 (89%) women who had a 'pool birth' used entonox and/or transcutaneous nerve stimulation (TENS) as the only other form of analgesia during labour, whilst 8 (8%) used only the pool, compared to 26/37 (70%) 'pool users' using only entonox and/or TENS and 2 (5%) only the pool. Local guidelines recommend that women should not enter or re-enter the pool if pethidine has been administered within the last 4 hours. Of the total 163 births that took place during this period, only 3 doses of Pethidine were administered to 'pool users', one dose more than 4 hours prior to using the pool and two prior to transfer. These results support the findings of Garland and Jones (2000) that
immersion in warm water during labour reduces the need for pharmacological pain relief.

**Reflection**

Midwives who were initially apprehensive about the introduction of the pool now happily reflect on their positive experiences of the excellent outcomes achieved by women who have used the pool for labour and birth, which is in line with findings reported by previous authors. They have been particularly impressed with the pool as an alternative form of pharmacological pain relief (Alderdice et al, 1999) and mobility (Brown 1998; Garland 2000; Kitzinger, 2000) achieved by the women. The midwives now willingly share their acquired new skills and knowledge with students and midwives who elect to come to the unit to gain experience of pool births.

**Conclusions**

The results of this evaluation are very encouraging and have provided evidence to support the benefits, rather than the risks, of immersion in warm water for labour and/or birth. However, one could argue that the benefits may be perceived as a result of providing continuity of care throughout labour (Hodnett et al 2003). This is indeed an important factor but in most cases because of the high level of relaxation achieved by women in the pool, the midwife finds herself in the position of being a quiet observer, as women progress instinctively through labour in an atmosphere, which is calm, secure and unrushed. Women are therefore empowered to believe in their natural ability to achieve a normal birth, without the need for pharmacological analgesia or intervention. We have found that women who have used the pool reflect overwhelmingly on their positive birthing experience (Hall and Howard, 1998; Burns, 2001; Campbell, 2004). One can therefore surmise that the pool has enabled the midwives to further promote normality and choice and enhance women's experience of care, which is known to influence their emotional well-being, their relationship with their baby and their future parenting relationships (DH, 2004). These findings truly test the midwives' ability to provide women with 'women-centred care'.

The option of using the pool therefore offers women increased choice; control and continuity of care (DH, 1993, 2004; Audit Commission, 1997) and the midwives enhanced skills and increased job satisfaction. The introduction of the pool is also considered to be the reason behind the 35% increased birth rate at the birth centre, which improves the viability of any small midwife-led unit that in today's financial climate is repeatedly under threat of closure. Locally, women's expectations are that they will use the pool during labour; it has therefore become standard practice to partially fill the pool prior to an admission, so that women arriving in advanced labour still have access to the pool if it is available.

_BJM_


---

**Key Points**

- Women progress instinctively through labour in an atmosphere, which is calm, secure and unrushed, empowering her to believe in her natural ability to achieve a normal birth.
- Of the women surveyed 71% chose to remain in the pool to deliver.
- The majority (95%) of women who used the pool had a normal vaginal birth.
- Women who remained in the pool for birth had a reduced incidence and severity of perineal trauma.
- The majority (98%) of babies born in the pool had an Apgar score of 7 at 1 minute, with all babies scoring ≥9 at 10 minutes.
- Immersion in warm water during labour/birth reduces the need for pharmacological pain relief.