

Water Immersion in Queensland: Evidence, Access and Uptake

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Executive summary

Aim

This project aimed to review women's access to, and use of, water immersion during labour and birth in Queensland.

Procedures

In order to achieve the above aim the following were conducted:

- A literature review of the available research evidence. Outcomes of interest included maternal and infant well-being, women's experience of water immersion, and the economic impact of water immersion on the health system. We also examined eligibility criteria for water immersion and contraindications to its use.
- A review of current water immersion policies and guidelines. State-wide water immersion policies and guidelines within Australia were examined, along with facility-level water immersion policies and guidelines within Queensland.
- Position statements on water immersion in labour and birth by colleges representing relevant care provider groups (i.e., midwives, obstetricians) were reviewed.
- Data from the *Having a Baby in Queensland Pilot Survey, 2009* was analysed and an informal content analysis of online parenting forums was conducted.

Key findings

Evidence Review

Research supports the use of water immersion in first stage labour as being safe and effective for low risk women (Cluett & Burns, 2009). The use of water immersion in first stage labour is associated with a reduced first stage of labour and reduced use of epidural/spinal analgesia. Research has also determined that there are no increased adverse effects for mother or child to be associated with water immersion in birth in low risk women (Cluett & Burns).

The majority of women who use water immersion in labour and/or birth report positive experiences, predominantly due to an increased sense of control in how they manage their labour and birth. A small number of women did not enjoy the use of water immersion in labour and/or birth for various reasons including that the staff were not supportive of its use or that the water was too cold (Hall & Halloway, 1998; Maude & Fourer, 2007; Miller, Thompson, Porter & Prosser, 2010; Richmond, 2003).

Only one study has examined the economic impact of water immersion on the health care system. The use of water immersion in birth significantly reduced the incidence of perineal tears, with the incremental health care cost for each avoided perineal tear estimated as approximately AUD\$1,742.42 (Pagano et al, 2010). Cluett and Burns (2009), however, found no significant effects of water immersion use on perineal tearing.

While all of the policies and documents are consistent in their stated eligibility criteria, there is no published evidence base for eligibility criteria for the use of water immersion in all stages of labour, nor for contraindications to its use.

As highlighted in the most recent Queensland maternity services review (Hirst, 2005), many women using Queensland's maternity care system report feeling restricted in their options for non-pharmacological pain relief, particularly for the use of water immersion in labour and birth.

Policy review and consultation with care providers

Currently, there is no state-wide Queensland policy or clinical guidelines for the use of water immersion in labour or birth. The recently developed Normal Birth guidelines include sections on water immersion and water birth, and how to manage third stage labour in the water.

South Australia and Western Australia are the only states to have state-wide policies and guidelines. Alternative documents for all other states were reviewed, except Tasmania where we could not locate any documents to review.

Overall, the policies, guidelines, and documents were consistent with each other in terms of eligibility criteria and contraindications to use. However, they:

- lacked contemporary high quality evidence
- did not encourage care providers to ensure that all women were aware of the option of water immersion
- did not provide guidance for care providers about how to best facilitate women's informed decision making

Of the 61 birthing facilities in Queensland, 41% (n=25; 18 public, 7 private) could offer water immersion (i.e., they have a pool or bath). Of these, 15 (10 public, 5 private) facilities policy supported water immersion for labour only, whilst 10 (8 public, 2 private) supported water immersion in labour and birth.

Thirteen Queensland facility policies, used across 19 facilities, were received for review. Overall, policy and practice were not found to facilitate women's access to water immersion in labour and birth. Facility policies were found to be:

- out-of-date
- lack bath/pool specifications
- feature low quality evidence
- did not provide health care professionals with guidance regarding women's informed consent

Although many care providers supported women's access to water immersion in labour and birth, a number of care providers did not support women's access and withheld care from women who chose to use water immersion. Furthermore, 13 birthing facilities had a pool/bath for immersion during labour and/or birth but withheld access to women for a variety of reasons including occupational health and safety issues and inappropriate location.

Professional colleges

The Australian College of Midwives (ACM) position statement (2005) supports women's access to water immersion in labour and birth. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG, 2008) statement does not explicitly state their position on water immersion. Instead, it cites selective evidence that indicates water immersion is a mostly unsafe practice. Both statements fail to include statistics to enhance the reader's understanding of research findings (e.g., statements about water immersion being associated with increased risk did not state the actual magnitude of risk).

Review of maternity care consumer experiences

Findings from the *Having a Baby in Queensland Pilot Survey, 2009* revealed that over half (63%) of all labouring women (n=567) were not given the option of water immersion in labour.

Approximately one third (36%) of women wanted to labour in water and approximately one fifth (22%) of women wanted to birth in water, with very few women actually using water immersion in labour (12%) and/or birth (3%). Of those who did use water immersion, the majority (85%) perceived it to be helpful at relieving their pain.

The analysis of online parenting forums highlighted that many women have had a positive experience with the use of water immersion in labour and birth, and have found it to be an effective pain management strategy. A number of women indicated that they felt distressed when asked to exit the water to birth and many discussed possible ways to avoid this (e.g., remain on top of bath plug so that the bath could not be drained). There was also significant discussion about the lack of quality evidence-based information on the use of water immersion in all stages of labour, particularly for the benefit of partners and support people to better understand the woman's choice to use water immersion.

Summary and recommendations

Based on these findings, the Queensland Centre for Mothers & Babies (QCMB) recommends improving women's access to water immersion in Queensland. In particular, QCMB recommends:

1. Queensland Health develop a state-wide policy, and support the State-wide Maternity and Neonatal Clinical Network (SMNCN) to develop clinical guidelines on water immersion in all stages of labour (i.e., first, second, third).

The policy should:

- Support women's access to water immersion for each stage of labour (i.e., first, second, third)
- Ensure that the impact of the state-wide water immersion policy and guidelines is evaluated

The guidelines should include:

- Consensus guidelines for the installation of appropriate pools/baths

- Outline an efficient competency check for staff assisting women in labour and birth in water
 - Guidance for care providers about how best to support women's informed decision making
 - Include only evidence based eligibility criteria and contraindications to the use of water immersion. Highlight that subpopulations of women (e.g., BMI > 35) should not be universally prevented access to water immersion but dealt with on a case by case basis.
2. Universities should ensure care providers (e.g., midwives, obstetricians, general practitioners) graduate with the necessary knowledge and skills to support women using water immersion in labour and birth.
 3. Public maternity care facilities should implement the new state-wide policy and clinical guidelines. Private facilities and care providers should align their practice with that recommended in the state-wide policy.
 4. Position statements from professional colleges should be updated, and ideally, a joint position statement on water immersion should be developed.
 5. Maternity care consumer organisations should be involved with developing, implementing, monitoring and reviewing policy and guidelines on water immersion in Queensland.
 6. Further research be conducted into the effect of water immersion in each stage of labour for women and their babies, and develop evidence-based eligibility criteria for the use of water immersion.
 7. Further research be conducted into the economic impact of water immersion on the health care system.

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Glossary

Decision aid	A decision support tool that provides evidence-based information about all health care options and the outcomes associated with each, and supports patients and their care providers to make health decisions that best meet their individual needs, values and preferences (Stacey et al, 2011).
Epidural/spinal analgesia	Type of pain management where drugs are used to remove the sensation of pain from the lower half of the body.
First stage labour	From when the cervix starts to dilate to when it has fully dilated to 10cm.
Informed decision	When a woman is faced with a decision and: (1) has the opportunity to discuss all of the treatment options available (including expected outcomes, success rates and incidence side effects, along with the right to refuse treatment at any time) with her care provider(s) (2) makes a decision herself or in joint with her care provider, from all her available options (ACSQHC, 2009)
Level I Evidence	Evidence obtained from a systematic review of randomised controlled trials (NHMRC, 1999).
Level III-2 Evidence	Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case-control studies, or interrupted time series with a control group (NHMRC, 1999).
Nitrous oxide gas	A pharmacological gas inhaled through a mask or mouthpiece to manage pain.
Oxytocin	A hormone produced naturally in the body that is involved in labour.
Oxytocin infusion	A drug containing a synthetic version of oxytocin used to artificially commence or enhance contractions in labour.
Perineal tear	When the skin and/or muscles in the perineum separate due to injury sustained in childbirth. There are different types of tears which are usually described as being either first, second, third or fourth

degree depending on the degree to which the perineum tears (Queensland Health, 2012).

Physiological third stage	When a woman relies on her own production of oxytocin to birth her placenta.
Pregnancy Health Record	A personal record of a woman's pregnancy including her health history and preferences for birth.
Shoulder dystocia	When the baby's head has been born but the shoulders become stuck behind the mother's pelvis during birth (RCOG, 2007).
Second stage labour	From the complete dilation of the cervix (10cm) to the birth of a woman's baby.
Third stage labour	The time from the birth of the baby to the birth of the placenta.
Water birth	When the baby is born fully submerged in water (usually in a pool, tub, or bath).
Water immersion	When a pregnant women immerses herself in water where her abdomen is completely submerged during any stage of labour (first, second, third). This requires the use of a pool, tub, or bath. The women may be immersed in one or more stages of labour for any duration.

1.0 Project background

Pain is the most worrying factor in labour and birth for pregnant women for a variety of reasons (Armanasco & Thompson, 2010). There are a number of options for pain relief in labour and birth. These options include both pharmacological (e.g., epidural analgesia, nitrous oxide gas) and non-pharmacological (e.g., massage, aromatherapy, water) methods of pain relief.

Water immersion is a non-pharmacological form of pain relief for labour and birth that has been used for centuries in both clinical and non-clinical settings (Cluett & Burns, 2009). For the purposes of this report, water immersion refers to the act of a pregnant woman being immersed in water (up to and including at least the abdomen) during any stage of labour (i.e., first, second, or third).

Significant maternity care reforms at both the national and state level over the last few years have focused on the maternity care system providing more woman-centred care (e.g., the National Maternity Services Plan, 2010; Primary Maternity Services: A framework for Implementation, 2008; Delivering continuity of midwifery care to Queensland women: A guide to implementation, 2012; Normal Birth clinical guidelines, 2012). In particular, there is a commitment to provide greater access to a number of pregnancy, birth and post-natal care choices for Australian women. Considerable focus of the reform agenda is on providing women with less fragmented maternity care by providing more continuity of care options closer to home and more midwifery-led options for care.

These ideals are inextricably linked to water immersion because when giving women greater access to choices around who will provide their maternity care and where, it inevitably leads to the need for greater choices of how that care is provided (i.e., water immersion). There is currently very little known about the accessibility and use of water immersion as a pain relief option in labour and birth within the Queensland maternity care system.

1.1 Project aim

The aim of this project was to review women's access to and use of water immersion in labour and birth within Queensland. To meet this aim, the following objectives were addressed:

- to review the current evidence on water immersion and its outcomes
- to map current practice and policy in Queensland maternity facilities
- to report on Queensland maternity consumers' access to and use of water immersion
- to develop recommendations for improving information about, and access to, water immersion for women in Queensland, if necessary

1.2 Project methodology

Numerous sources of information were used in the process of this review. We conducted:

- A review of the literature on the use of water immersion in all stages of labour. Measures of interest included maternal and infant well-being, women's experience and economic impact.
- A review of state-wide water immersion policies and guidelines within Australia, and a review of facility-level water immersion policies and guidelines in Queensland.
- A review of position statements by the professional colleges representing relevant care provider groups (i.e., midwives, obstetricians).
- An analysis of data from the *Having a Baby in Queensland Pilot Survey, 2009*.
- An informal content analysis of online parenting forums.

Details on the specific methodology for each objective are presented in more detail in each relevant section.

2.0 Evidence review

2.1 Aim

The aim of the evidence review was to establish the evidence base for the use of water immersion in labour and birth. This review allowed us to determine the extent to which existing documents (i.e., policies, guidelines) are aligned with best evidence on the use of water immersion.

Specifically, we wished to review evidence about the effect of water immersion on maternal and infant health outcomes, women's experience of labour and birth, and the economic impact on the health care system. Also of interest was evidence about the differential effects of water immersion on sub-populations of women (e.g., women with specific obstetric risk factors).

2.2 Method

Literature was sourced from various databases including PubMed, Wiley Online Library, Science Direct, the Cochrane library and Google Scholar. Inclusion criteria for the review included existing systematic reviews and randomised controlled trials. Qualitative studies were consulted to assess women's experience with water immersion. Outcomes of interest were several measures of infant and maternal well-being, women's experience of labour and birth, and cost effectiveness.

Search terms (used alone or in combination with others) included water immersion in labour and birth, water birth, infant and maternal health outcomes, infant and maternal morbidity, non-pharmacological pain relief in labour and birth, women's experience of water immersion, women's experience of water birth, cost effectiveness, eligibility and contraindications for water immersion in labour and birth, and economic impact.

Findings from the review on the use of water immersion in labour and/or birth are summarised below.

2.3 Findings

2.3.1 Maternal and infant well-being

A recent Cochrane review (Cluett & Burns, 2009) reported on 12 randomised controlled trials (RCTs) which compared water immersion with either no immersion, or with another non-pharmacological form of pain management, during labour and/or birth in samples of low-risk women. The review concluded that the use of water immersion in the first stage of labour is associated with reduced use of epidural/spinal analgesia (38% in immersion group versus 42% in no immersion group) and a shorter first stage of labour (mean difference = 32.4 minutes) [Level I Evidence]. The review also concluded that there was no evidence that water immersion is associated with increased adverse outcomes (e.g., assisted vaginal delivery rates, caesarean section rates, use of oxytocin infusion, perineal trauma, maternal infection, Neonatal Intensive Care Unit [NICU] admissions) to newborns or women during labour and birth. No further conclusions could be drawn due to the lack of available data.

Included in the Cochrane review is the only Australian randomised control trial conducted on the use of water immersion (Eckert, Turnbull & MacLennan, 2001). Two-hundred and seventy-four low-risk women were randomly allocated to receive either water immersion or standard care during first stage labour at a South Australian hospital. Contrary to the Cochrane Review, this study found no difference in the use of pharmacological pain relief between the two groups. No difference was found between the groups in terms of length of labour, and maternal and infant health outcomes and infectious morbidity. More infants in the water immersion group required resuscitation however, this finding was only apparent when all methods of resuscitation were analysed together (e.g., individual use of oxygen, bag, and mask; intermittent positive pressure ventilation) and not separately. Those who were randomised to the standard care group rated their overall experience of childbirth as being more positive 24-48 hours after birth. This difference was not apparent at 8 months postpartum. Groups did not differ on satisfaction with care and postnatal distress.

2.3.2 Women's experiences of water immersion in labour and birth

When assessing the effect of water immersion on women's well-being, it is integral to consider women's experiences with its use in labour and birth. Qualitative research is useful for this purpose due to its ability to provide rich contextual data.

Three qualitative studies were found to have examined women's experiences of water immersion in labour. Hall and Hallway (1998) analysed women's experiences of labour in water using in-depth interviews of nine English women who had used water immersion. Eight participants viewed the use of water immersion as beneficial, primarily because it allowed them to be more in control of their birthing experience. This feeling of being in control was associated with the ability to manage pain, release inhibitions, and feel confident in making decisions. On the contrary, two women felt that they needed to exit the water to regain their sense of control.

Richmond (2003) used a questionnaire and recorded interviews to examine women's experience of water birth. One-hundred and eighty-nine mothers who birthed in water at one of five English birthing centres were interviewed. Overall, 81% of mothers reported having a positive experience with water birth. When asked what they particularly liked about their water birth, women described that it was relaxing and calming, the buoyancy was helpful, and they felt physically supported by the water. The mothers also enjoyed being able to immediately hold their baby and felt more in control. The most common dislikes of water birth included that the mother felt cold, the staff were not supportive, and that contractions reduced.

In New Zealand, Maude and Foureur (2007) conducted unstructured interviews with five women who had used water for labour and birth either at home or in a hospital. These women all reported a positive experience of using water, with the feeling of 'all-encompassing warmth' as the primary reason for this. It also allowed them to feel relaxed and created a separation from others, which offered them a sense of privacy. Women's responses also indicated that the use of water did not remove their pain but rather helped them cope with it.

The above studies demonstrate that the majority of women who use water immersion in labour and/or birth have positive experiences. This was commonly due to an increased sense of control. A small number of women did not enjoy or benefit

from the use of water immersion for various reasons (e.g., they felt more in control out of the water, felt too cold in the water). However, the representativeness of these women's experiences cannot be assured due to the small sample sizes and study design, in particular the selection of participants who had actively chosen to use water.

2.3.3 Economic evaluation

Pagano et al. (2010) assessed the cost effectiveness of water immersion during second stage labour compared to no immersion in terms of perineal tearing in low-risk women in Italy. Study findings suggested that water birth resulted in less tearing of the perineum. The incremental health care cost for each avoided perineal tear (due to water birth) was estimated as €1395.70 (approximately A\$1,743.42 in March, 2012) [Level III-2 Evidence]. Level I evidence has not determined a significant effect of water immersion use on perineal tearing (Cluett & Burns, 2009).

Whilst no further studies have analysed the cost effectiveness of water immersion versus labouring and birthing out of water, the associated outcomes of water immersion (e.g., less frequent use of epidural/spinal analgesia) suggest that the reduced burden on the health care system may be substantial. Without further evidence, however, the extent and potential implications of the economic impact of water immersion in labour and birth remains unclear.

2.3.4 Eligibility criteria for water immersion and contraindications to its use

Currently there is no clear evidence base to define the eligibility criteria for water immersion and the contraindications for its use in all stages of labour. This is because all studies in the Cochrane Review were conducted with samples of 'low risk' women. Consequently, the differential effects of water immersion on sub-populations of women, including those at risk of obstetric complications, could not be determined from the available evidence.

2.3.5 Queensland maternity services review

The most recent review of Queensland maternity services (Hirst, 2005) asked for community submissions detailing experiences with the use of maternity services in Queensland. Overall, 441 submissions were received with 229 from consumers. The remainder were from care providers, maternity care organisations, research groups and support organisations.

A number of these submissions highlighted that women felt restricted in their choices for alternative pain relief options, particularly with the use of water immersion in labour. Women reported frustration and confusion about the fact that they could more easily gain access to opiates than a bath when, for the duration of their pregnancy, they had been instructed to avoid analgesic pain relief. According to Hirst (2005), a number of women also indicated that they were unable to use the available water immersion facilities for reasons that could not be explained to them (e.g., merely because plugs had been removed from the baths).

3.0 Policy review and consultation with care providers

3.1 Aim

The aim of this review was to establish the current state of policy and practice in Queensland (at state and facility levels) pertaining to the use of water immersion in labour and birth. Policies for states and territories outside of Queensland were also sourced to better understand the alignment of Queensland policies with those in the broader Australian context. In addition, care providers at each facility were consulted to gain a better understanding of current practice.

3.2 Method

The state health department and local facility websites were reviewed to identify publically available policies on water immersion. Representatives from all Queensland birthing facilities were then contacted by email and/or telephone between November 2011 and February 2012. Each hospital and birth centre was asked to describe the water immersion facilities they offered and to provide a copy of their policy on water immersion, if available. Also of interest was the location and size of the pools, and approximate usage of water in labour and/or birth by women birthing in their facility.

3.3 Findings

3.3.1 State health departments

3.3.1.1 Queensland

Currently, Queensland Health has no active published policy on the use of water immersion in labour and birth. A previous document entitled 'Water Immersion during Labour – Minimum Standards' was released by Queensland Health in 2000 (Queensland Health, 2000. See Appendix A for an overview of the state policy review). This document summarised the available evidence, provided minimum standards surrounding its use (in terms of facilities, staffing, informed decision making, indications for removing a woman from the bath), and provided guidelines for its use. Despite being over ten years old, our consultation with care providers in Queensland indicated that seven facility policies continue to refer to this document.

The evidence supporting the standards within the policy document is outdated, with much of it refuted by more recent research (e.g., the document states poor infant health outcomes are associated with water birth however, this is no longer supported by the evidence. Cluett & Burns, 2009).

The document also recommends that facilities conduct annual client satisfaction surveys and notes that Queensland Health will collect data from facilities annually to evaluate the practice from a state-wide perspective. This does not appear to have been acted upon, with no facility data available to assess the impact of water immersion access on maternal and infant well-being, and the health care system.

3.3.1.1.1 Normal birth clinical guidelines

The State-wide Maternity and Neonatal Clinical Network (SMNCN) recently published guidelines on Normal Birth (Queensland Health, 2012) which included sections on water immersion and water birth. The inclusion of such options for

women demonstrates that water immersion is becoming increasingly recognised as an effective pain relief option for women in labour and birth.

The guidelines included the following sections:

- **Water immersion**

The most recent Cochrane Review was included and informed consent was encouraged to be obtained in the antenatal period. The guidelines also featured a number of limitations including the citation of secondary references as 'evidence' for various recommendations. These included other guidelines that lacked evidence (i.e., RANZCOG position statement, West Australian guidelines) which were referenced for the benefits and risks of water immersion, inclusion criteria and practice recommendations. The RANZCOG position statement is inadequate due to the lack of quality evidence (see section 4.3.2 below), whilst the West Australian clinical guidelines contain varying levels of evidence. Furthermore, the West Australian clinical guidelines in turn reference the South Australian clinical guidelines providing circular evidence. Instead, a literature review should have been conducted to ensure that such statements are supported by recent high quality evidence. If there was no available evidence, a consensus approach that represents all schools of thought should have been utilised (NHMRC, 1999).

The Queensland Health Normal Birth guidelines incorrectly states that there is no significant effect of water immersion on labour duration. The latest Cochrane review concluded that water immersion is associated with a reduced first stage of labour (Cluett & Burns, 2009). Also, the guidelines recommend that the water temperature be kept between 35-37°C. However, research has demonstrated that water temperature is best dictated by maternal comfort (Geissbuehler, Eberhard & Lebrecht, 2002). Finally, broad statements that are not supported by evidence were made about the type of women eligible for the use of water immersion (e.g., body mass index less than 35) instead of recommendations that the risks and benefits of water immersion be assessed on a case-by-case basis or of the right of women to make informed decisions regarding access to water in labour and birth.

- **Water birth**

The water birth section clearly outlines that, although there is no evidence to encourage water birth, there is also no evidence to discourage its practice. It did not indicate that, in the context of such scientific uncertainty, women's informed decision making should be privileged. This section also referenced the West Australian water immersion guidelines (which, in turn, referenced the South Australia guidelines) as evidence to support a number of statements and did not include guidance for care providers about how to best gain women's informed consent.

- **Third stage management**

The third stage section included guidelines for both physiological and active management, with subsections on water immersion. Within these subsections, the West Australian guidelines (which, in turn, referenced South Australia guidelines) were again referenced as evidence. For physiological management, spontaneous expulsion of the placenta and membranes is encouraged to occur in water, while active management requires women to leave the water.

The publication of these guidelines has increased the resources available to clinicians to support the practice of water immersion in all stages of labour. However, they are poorly referenced in some cases, and include eligibility criteria and contraindications to use that are not supported by evidence.

3.3.1.2 Other states and territories

Western Australia and South Australia both have clear policy directives and associated clinical guidelines supporting the use of water immersion in labour and birth (Western Australia Department of Health, 2009a & 2009b; South Australia Department of Health, 2010). These documents are publically available and encourage care providers to ensure that women give their informed consent to the use of water immersion in labour and birth. They also make reference to a plain language information resource (e.g., parent information brochure). The West Australian guidelines included guidance for care providers about how to facilitate women's informed decision making and allowed for physiological third stage to take place in the water.

New South Wales does not currently have a water immersion policy but the '*Towards Normal Birth*' policy directive recommends that one will be published in the near future. This policy directive outlines the goals of having all birthing facilities offer access to water immersion in labour, for all women to receive information about water immersion for labour and birth, and for all clinicians to report confidence in promoting and supporting the use of water for pain relief. These goals were set to be achieved by 2015 (New South Wales Health, 2010).

Victoria does not have a state-wide policy on the use of water immersion in labour and birth. However, Southern Health, the largest public health service in Victoria, has a water immersion in labour and birth guideline (Southern Health, 2009). This document is relatively similar to those described above with regards to eligibility criteria, contraindications to use, and required care provider training. The guidelines highlight that given the available evidence birth in water should not be encouraged or discouraged, and women's informed decision making should be respected.

The Northern Territory does not currently have a state-wide policy. Alice Springs hospital uses the South Australian policy, while the Royal Darwin Hospital has its own policy (i.e., Royal Darwin Hospital, 2009). The Royal Darwin Hospital's water immersion policy is clear and comprehensive, and includes a review date. It encourages care providers to ensure that women have both read an information brochure and viewed a DVD on the use of water immersion prior to giving consent in the antenatal period. This was one of two policies sourced through this review that suggested the water temperature be dictated by the comfort of the mother (provided that it does not increase maternal temperature or lead to fetal distress). This recommendation is supported by Geissbuehler, Eberhard and Lebrecht (2002), who found mothers were able to self-regulate their body temperature and bathing duration to ensure that their and their baby's body temperature remained within the physiological range.

The Australian Capital Territory does not have a state-wide policy on the use of water immersion in labour and birth. The Canberra Hospital policy was instead reviewed (The Canberra Hospital, 2006). This was the second and only other policy to allow the water temperature to be dictated by maternal comfort (Geissbuehler,

Eberhard, and Lebrecht, 2002), and to accommodate physiological third stage to take place in the water. This was the only policy reviewed to include a separate list of contraindications, one for labour and one for birth. For example, women receiving medication for pre-eclampsia and women considered at high risk of shoulder dystocia were excluded from water immersion in second stage only.

Water immersion policy or related documents could not be found for Tasmania.

Overall the policies were consistent with each other in their criteria for use and guidelines for care during water immersion in labour and birth, and most featured a plain language information brochure for women. However, none of the policies had been reviewed since the publication of the most recent Cochrane review (Cluett & Burns, 2009). Additionally, care providers were not actively encouraged to ensure that all women were aware that water immersion was an option they could access in labour and/or birth, nor were they typically given guidance on how to facilitate women's informed decision making about the use of water immersion. There was also no information available on the implementation of these policies or how these policies have affected access to, and use of, water in labour and birth.

3.3.2 Queensland hospitals and birth centres

There are 61 facilities (i.e., public hospitals, public birth centres, private hospitals) across Queensland that provide birthing services. All 61 facilities responded to our request for information regarding their policies and usual practices around water immersion in labour and birth (see Appendix B for facility correspondence record).

It was established that 25 (41%: 18 public, 7 private) hospitals and birth centres could offer water immersion (i.e., they had a pool or bath). Of these, 15 (60%) facilities policy supported water immersion in first stage only, while 10 (40%) also supported water birth. Table 1 presents a breakdown of water immersion availability by facility type and stages of labour offered.

Table 1: Water immersion availability by facility type and stages of labour it is offered for

	Labour only	Labour and birth	Not offered	Total
Public Hospital	10	3	28	41
Public Birth Centre	-	5	-	5
Private Hospital	5	2	8	15
<i>Total</i>	15	10	36	61

Twenty-seven facilities reported having a water immersion policy. Thirteen policies, covering 19 facilities¹, were received for review (see Appendix C for an overview of the facility policy review).

The information in the policies received was relatively consistent. The majority of policies included information on:

¹ Some of the received policies covered a health district and thus applied to more than one facility. Some facilities used another facility's policy.

- the facility level training and credentialing required for midwives to assist women who labour in water
- the processes required for women to give their informed consent
- the eligibility criteria for the use of water immersion and contraindications to its use
- recommendations for infection control around the use of water immersion
- prohibiting third stage of labour in water

The following additional information was also observed:

- There was inconsistency across policies as to whether information was provided on the bath/pool specifications required to ensure women can fully benefit from water immersion. This is considered an important inclusion as 11 facilities reported having pool/baths that could not be offered to women because they were too small, inaccessible in an emergency or in an inappropriate location (e.g., the postnatal ward).
- Some facilities had water immersion equipment but no available policy for its use in labour and/or birth. Women were therefore unable to access water in labour and/or birth.
- Consultation with care providers revealed that many were supportive of increasing women's access to water immersion in labour and/or birth.

All policies were compared to current best evidence to ascertain the level of alignment.

The following sections further elaborate on these findings.

3.3.2.1 Midwifery training and credentialing

Nine of the 13 policies explicitly stated that midwives had to complete additional educational packages and demonstrate competence before being able to support women in water during labour and/or birth. Four policies provided a complete description of the care provider competency requirements.

The recommended process for facility level credentialing was extensive with policies stating that midwives are required to complete various tasks including self-directed learning packages (about the use of water immersion in general and how to support women who choose to use it), workshop/conference attendance, and observation and involvement in a designated number of labours and/or births involving the use of water immersion. The qualification gained from this training was often only valid for one facility, meaning that should a midwife work at a number of facilities, she/he would have to complete the training package at each facility.

The inclusion of these requirements suggests that policy-makers believe that midwives require additional skills to be able to support women labouring in water, despite it being considered a core midwifery skill by the national professional college for midwives (Australian College of Midwives, 2005).

3.3.2.2 Informed consent

All reviewed policies mandated that women give their informed consent to the use of water immersion in labour and/or birth but did not always provide clear instructions or recommendations on when and how women should be informed. There was also no information given on women's rights to access water if they fell outside the eligibility criteria.

Seven policies outlined that women should receive verbal and written information in the antenatal period, whilst six policies required that women receive either verbal or written information sometime before entering the water (including in early labour). No policy included recommendations for the type or quality of information (i.e., non-directive evidence-based information. Stacey et al, 2011) best suited to inform women about water immersion in labour and birth.

The majority of public birthing facilities in Queensland offering water immersion in labour and/or birth have either an information sheet or brochure for women. Generally these information sheets/brochures are similar across facilities. Brochures from two facilities were received for this review, both of which featured the same content.

The brochures featured the same eligibility criteria and contraindications to the use of water immersion as contained in facility policies. They listed possible adverse effects of water immersion as unrealistic labour expectations, infection, and infant inhalation of water, despite there being no quality evidence to support such statements. Overall, the brochures did not present a balanced, non-directive and evidence-based view of water immersion in labour or birth. As such, the brochures are an inadequate source of information to enable women to make an informed choice about the use of water immersion in labour and birth.

3.3.2.3 Eligibility criteria and contraindications

Hospital and birth centre policies were found to be relatively consistent in their stated eligibility criteria and contraindications for the use of water immersion in labour and birth (see Appendix D for a list of eligibility criteria and contraindications commonly listed in facility policies). As previously mentioned, there is currently no evidence base to determine eligibility criteria for the use of water immersion in labour and birth, and contraindications to its use. Instead, current guidelines appear to be based on the historical or practical issues of water immersion (e.g., maximum maternal weight staff can be expected to handle should maternal collapse occur) and expert opinion.

Women classified as low-risk were eligible to access water immersion and this applied to both first stage (labouring) and second stage (birthing) in water. Low risk was typically classified as being at term (37-42 weeks), having a singleton pregnancy with cephalic presentation, and having no physical impairments to inhibit unassisted entry/exit to the bath or pool. The policies recommended that there should also be no indications of an obstetric complication (e.g., past history of labour or birth complications).

Contraindications commonly included in hospital and birth centre policies generally included previous history of shoulder dystocia, breech, face or brow presentation, infectious serology, induction of labour, abnormal progression of labour, recent use of narcotics, and a lack of available trained health care providers.

Eligibility criteria and contraindications were generally applied to all stages of labour. As a result, women are currently being denied access to the use of water in first stage labour based on contraindications for second stage labour despite there being no evidence base for either.

3.3.2.4 Infection control

Level 1 evidence has demonstrated water immersion in first stage labour is not associated with increased risk of maternal and neonatal infection. A lack of data prevents any associations for water immersion in second stage labour being made (Cluett & Burns, 2009). Despite this, one of the 13 reviewed policies explicitly listed increased risk of maternal and neonatal infection as a risk of water immersion in labour and birth. One policy referenced research evidence on the actual risk of infection associated with water immersion in labour.

Six of the 13 policies recommended that women be asked to leave the bath so that it may be emptied and refilled in the event of excessive contamination (e.g., from faecal matter). One policy required women to exit the water permanently should excessive contamination occur.

3.3.2.5 Second stage labour

Of the 13 policies received, six were for facilities that provided access to water immersion in labour only. These six policies described “unplanned” water birth (also referred to as “unexpected” and “emergency” water birth) as a possible risk of using water immersion in labour. This is despite high quality research demonstrating that water birth is not associated with increased adverse outcomes for mother or child (Cluett & Burns, 2009).

All of the six policies that provided access to water for labour only included the same eligibility criteria and contraindications described by policies allowing water immersion in first *and* second stage labour. This may be due to the perception of the “risk” of unplanned water birth. Including eligibility criteria and contraindications for first and second stage labour prevents women from making an informed choice about the use of water immersion in first stage labour. This is on the basis of criteria that is not evidence-based and appears to be grounded in a fear of water birth which is also not supported by evidence (Cluett & Burns, 2009).

3.3.2.6 Third stage labour

One policy supported women’s choice to complete the third stage of labour in the water, provided they had a physiological third stage. Nine policies stated that women must exit the water prior to the birth of the placenta and three did not explicitly state the protocol for third stage. Cited reasons for asking women to exit the bath for third

stage labour were the theoretical risk of water embolism² and that water could inhibit care providers ability to assess postpartum blood loss. There is no evidence to support or explain the validity of these reasons.

3.3.2.7 Evidence base

Out of the thirteen policies, eight were created before the most recent Cochrane review on the use of water immersion in first and second stage labour (i.e., Cluett & Burns, 2009). Of the three policies created after the most recent Cochrane review, one referred to it. Two policies did not feature their publication date. Policies that did not feature this Cochrane review instead cited low quality or superseded evidence to support their recommendations and guidelines.

Seven policies also referenced the inactive Queensland Health water immersion minimum standards document, despite it being publicly unavailable, outdated and lacking quality evidence.

3.3.2.8 Bath/pool specifications

Two of the thirteen reviewed policies contained standards for the birth/pool specifications required for effective and safe use of water immersion in labour and birth. These outlined the need for a non-slip surrounding surface, the ability for three care providers to access the woman at once (in case of emergency where a hoist needs to be used to remove the woman from the bath), hand rails, and an easy entry/exit point for women. There was no mention of suitable size and location requirements. No sources of evidence were cited to support each of these specifications.

Consultation with care providers from various facilities revealed that of the 61 birthing facilities in Queensland, 13 had a pool or bath for immersion during labour and/or birth that they were unable to offer to women due to bath/pool specification issues. Reasons provided are presented in Table 2.

² Water embolism occurs when water enters the mother's blood stream. It has never been observed or experienced, and is purely a theoretical risk (Wickham, 2005).

Table 2: Reasons provided as to why women could not access water immersion facilities in labour and/or birth, and number of facilities these applied to

Reason	Number of facilities
Have domestic sized baths which are unsuitable for women to labour or birth in.	4/13
Pools or baths are located outside of the birth rooms, which requires women to relocate whilst in labour should they wish to use them. These facilities reported that as a result, the pool or bath was largely not utilised.	3/13
Pools and baths had been removed or were in the process of being removed. Staff reported this was due to 'Occupational, Health and Safety' (OH&S) reasons; if a woman collapsed in the bath they would be unable to get her out safely resulting in increased risk to either the woman or the staff caring for her.	4/13
Women were not allowed to access water immersion facilities for reasons that were unknown to the contacted care provider.	2/13

A further two facilities had purchased hospital grade portable birth pools for the use of water immersion in labour. One of these facilities did so after their request for plumbed-in baths was denied.

3.3.2.9 Lack of policy

Six hospitals reported not having a water immersion policy despite having at least one pool or bath. Consultation with care providers suggested that this was because very few women used the pool or bath because it was an inappropriate size (e.g., a domestic bath) or inconveniently located (i.e., away from the birth suites).

3.3.2.10 Care provider support for water immersion

In consulting with health care providers it was apparent that many supported the use of water immersion in labour and/or birth, and expressed interest in increasing women's access to water immersion. Two facilities expressed a lack of funding was preventing them from installing appropriate baths, two had plans to increase access in the near future, and four reported midwives championing increased access to water immersion facilities.

While many care providers were supportive of women's access to water immersion in labour and birth, there were a number who were not. Two facilities indicated that some care providers (i.e., obstetricians, visiting medical officers [VMOs]) refused to provide care to women who chose to use the available water immersion facilities and instead told women to either not use water immersion or to find another care provider who would support their choice.

4.0 Professional colleges

4.1 Aim

The aim of this section was to establish whether care providers' (i.e., midwives, obstetricians) representative professional bodies support the use of water immersion in labour and birth.

4.2 Method

Position statements on the use of water immersion in labour and birth from the Australian College of Midwives and the Royal Australian and New Zealand College of Obstetricians and Gynaecologists were obtained from the relevant college's website.

4.3 Findings

4.3.1 The Australian College of Midwives (ACM)

The current policy on water immersion by the ACM was published in 2005 and does not feature a date for review³. Water immersion in both labour and birth for low risk women is supported by the Australian College of Midwives.

The ACM position statement highlights that supporting women labouring and birthing in water is a core midwifery skill, and as such all midwives should receive appropriate training in this area. The statement encourages health care providers to give women written evidence-based information and a copy of the facility's policy to enable them to make an informed decision about the use of water immersion.

The position statement did not provide references to substantiate the information provided. For example, it was stated that "...water immersion during first stage of labour significantly reduced epidural/spinal analgesia requirements". However, no data or references were provided to explain the extent of the reduction. The statement did not include recent research findings (e.g., water immersion has been associated with a reduced length of first stage labour. Cluett & Burns, 2009).

4.3.2 The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG)

RANZCOG's water immersion position statement was released in 2008 and is due for review in 2014. The position statement does not explicitly state a formal college position on the use of water immersion in labour and birth. Instead, it cites outdated and contested research that emphasises negative outcomes which are not supported by contemporary evidence.

The evidence presented is not comprehensive and omits many of the studies included in the most recent Cochrane review (e.g., Ohlsson et al, 2001; Da Silva, De Oliveira & Nobre, 2009). The evidence cited in the position statement is instead drawn from a number of low quality studies (e.g., Nguyen, Kuschel, Teele, & Spooner, 2002; Cro & Preston, 2002). This biases the review, given the vast

³ Since reviewing this position statement, and before the publication of this report, the ACM have placed it under review.

difference in findings between high and low quality studies on the use of water immersion.

The RANZCOG statement did not substantiate research findings with the use of statistics. For example, it was stated that “complications that have been reported to occur in the setting of water birth include drowning...” However, no statistics are provided to demonstrate what percentage of water births result in drowning. Furthermore, this statement is not supported by research (Cluett & Burns, 2009).

5.0 Review of maternity care consumer experiences

5.1 Aim

The aim of this section was to capture the experiences of water immersion use by maternity care consumers in Queensland and Australia, and to gain insight into their perspectives on the use of water in labour and birth.

5.2 Method

The experiences of women's access to, and use of, water in labour and birth were obtained from two sources.

1. Data collected in the *Having a Baby in Queensland Pilot Survey, 2009* were analysed to capture women's access to, and experiences of, water immersion in Queensland. Further information about the methods of these surveys can be found elsewhere (Miller et al., 2010).
2. The experiences and opinions of birthing women were examined through a content analysis of forums located on seven popular Australian parenting websites (i.e., Bub Hub, Essential Baby, Belly Belly, Kidspot, Kari Club, Mother and Baby, Huggies). These forums were sourced by conducting a search through Google within Australian pages only. Search terms included parenting websites, mother's websites, pregnancy and baby forums, women's magazines, birth and mother forums, and motherhood celebrity blogs. The search yielded 13 forums, with seven featuring content on water immersion in labour and birth. The main themes that arose from these forums are summarised and presented.

5.3 Findings

5.3.1 Findings from the Having a Baby in Queensland Survey

In the *Having a Baby in Queensland Pilot Survey, 2009* of 693 recent maternity care consumers, women who had had a labour (n=567) were asked if they had a choice of using a bath or pool in labour (Miller et al, 2010). The findings are presented in Table 3.

Table 3: Choice of a pool or bath in labour among women who had a labour

	All who had a labour (n=567)	
	n	%
No, but didn't want to be in a pool or bath	218	39
No, but wanted to be in a pool or bath	133	24
Yes, but didn't get in a pool or bath	139	25
Yes, and I got in a pool or bath	66	12
Missing	11	

These survey results identified that over half (63%) of women were not given the choice of using a pool or bath in labour. Approximately one third (36%) of women wanted to labour in water but only a few (12%) were able to.

Women who had a vaginal birth were also asked if they had a choice to birth their baby in a bath or pool (Miller et al, 2010). The findings are presented in Table 4.

Table 4: Choice to have baby in a pool or bath during birth among women who had a vaginal birth

	All women who had a vaginal delivery (n=468)	
	n	%
Yes	80	17
No, but didn't want to	282	61
No, but wanted to	104	22
<i>Missing</i>	2	

The majority (83%) of women who had a vaginal delivery were not given the choice to birth their baby in a pool or bath (Miller et al, 2010).

Women were also asked where they were when their baby was born (i.e., bed, floor, shower, in water, other). Three percent of women reported being in water when their baby was born (Miller et al, 2010).

These survey results identified that over one fifth of women wanted to birth in water but were unable to, and that very few women actually birthed in water.

Women were also asked what pain relief methods they used in labour and birth, and how effective they perceived them to be. Of those who responded (n=651), 11% used a bath or birth pool for pain management⁴. When asked about its perceived effectiveness at relieving pain, 59% of women replied that it was very helpful, 26% that it was somewhat helpful, and 15% that it was not helpful (Miller et al, 2010). Therefore, 85% of women who used water in labour reported it being a useful form of pain management.

An open-ended question gave women the opportunity to write anything else they wished to say about whether they had a choice to have their baby in a pool or bath. Of the 183 (24%) participants who responded to the open-ended question, 99 (54%) responses were relevant to the use of water in labour and birth. Below are examples of women's comments⁵:

"I feel very fortunate to have had the opportunity for a water birth. I felt in control the whole time & got to 'catch' the baby once she was born. Amazing!!"

"The pool was very effective and should be available for everyone. I could only do it because I was in [midwifery group practice]."

⁴ This question was not specific to pain management methods used in their place of birth. Accordingly, some of the women responding to this question may have used water immersion prior to being admitted to their place of birth.

⁵ Comments have been partially modified to correct for grammatical errors only.

“I think that this option should be available to all women who choose this as it was very relaxing & calming during the contractions.”

“I had a posterior birth and found the bath too uncomfortable.”

5.3.2 Informal content analysis of online parenting forums

The women who contributed to online parenting forums about water immersion in labour and/or birth described overwhelmingly positive personal experiences. Women also expressed that they felt water immersion was an effective pain management strategy. They often expressed the perception that the buoyancy provided by the water allowed them to change positions in an energy conserving manner, whilst the soothing effects of the water made them feel ‘cocooned’ from the distractions of a medical setting, which allowed them to better concentrate on the progression of their labour.

Many women reported experiencing significant distress when instructed or requested to exit the bath in order to give birth due to untrained staff members or hospital policy prohibiting water birth. There was a desire to ‘work around’ such policies by many of the women, with extensive discussion among women about effective strategies for achieving a desired water birth in the face of unsupportive policies or practices (e.g., using one’s body to prevent the plug from being removed).

The lack of support and available facilities for water immersion were cited by some women as a contributing factor in their decision to have a home birth. Such women valued the unrestricted use of water in labour and birth offered in a home birth.

Another factor identified through the forum analysis was that many women’s partners and support people did not approve of their choice for water immersion in labour and/or birth. This was despite being presented with information that suggested it is a safe option. Often this was described as being due to partners and/or support people believing water immersion to be dangerous for the baby because of an increased risk of drowning, despite there being no evidence to suggest this to be a likely event (Cluett & Burns, 2009).

Finally, analysis of the forum posts indicated a number of questions women have regarding water immersion, highlighting key consumer information needs. These included:

- Why would I want to have a water birth?
- Where can I access water immersion in labour/birth?
- How is the baby monitored during labour/birth in water?
- How is the mother monitored during labour/birth in water?
- If I get in the water and I like it so much that I don’t want to get out what will happen?
- What prevents the baby from drowning during a water birth?

6.0 Discussion and recommendations

6.1 Key strengths and limitations of the current state of practice and policy regarding water immersion in Queensland

6.1.1 Key strengths

Strengths identified in this review include the development of the Normal Birth clinical guidelines which included sections on water immersion and water birth, and how to manage third stage labour in the context of water immersion. This demonstrates that water immersion is becoming increasingly recognised as an option that should be available to women for all stages of labour.

A further strength is the presence of external policies (e.g., Northern Territory Department of Health and Families, 2009; Southern Australia Department of Health, 2010; The Canberra Hospital, 2006; Western Australia Department of Health, 2009a & 2009b) that can provide sound models for the development of a state-wide Queensland policy. The '*Towards Normal Birth*' document also provides a good example of measurable goals to increase women's access to water immersion in labour and birth (New South Wales Health, 2010).

A number of care providers were very supportive of women having access to water immersion facilities and expressed interest in increasing access.

There is demand amongst maternity care consumers to have better access to water immersion facilities for labour and birth (Hirst, 2005, Miller et al, 2010).

6.1.2 Key limitations

There is no accessible, current Queensland state-wide policy and clinical guidelines on the use of water immersion in labour and birth, and facility policies were not found to adequately support women's access to water immersion for labour and birth. The Normal Birth clinical guidelines included low quality evidence and a significant misinterpretation of evidence findings.

Facility policies require midwives to engage in time consuming facility level education, despite supporting women in labour and birth in water being a core midwifery skill (ACM, 2005). This training was often also facility specific, meaning that midwives have to redo the training for each facility they work within.

Specifications for pools and baths that were most appropriate to facilitate water immersion were not included in all policies. A number of facilities report having water immersion facilities that they cannot offer women because they do not meet the appropriate specifications. However, there is no consensus or evidence as to what are appropriate specifications for baths/pools. This represents an inefficient use of resources.

Women's informed consent to use water immersion was encouraged in all policies; however, guidance was not given to care providers about when and how to ensure that women are informed, or what to do if women request water immersion despite guideline recommendations not being met. Information brochures about the use of water immersion in labour and birth that are distributed to women in a number of facilities were not found to be adequate for facilitating informed decision-making.

A number of policies for hospitals and births centres were found to include guidelines that were not evidence-based (e.g., stating the use of water immersion as being associated with poor infant health outcomes). Some hospitals had no policy or guidelines associated with the use of water immersion, despite having water immersion facilities.

Whilst many care providers were supportive of women's access to water immersion in labour and birth, some were reported to withhold care from women who chose to use the available water immersion facilities in labour and/or birth. Instead, women had to forgo the use of water immersion or find a care provider who would support their choice for water immersion.

The position statements of both the ACM and RANZCOG were found to be unsatisfactory for various reasons including long review dates, a lack of statistics to enhance the reader's understanding, and a lack of high-quality, up-to-date evidence.

A quarter of Queensland birthing women retrospectively reported having wanted to labour in water and just over a fifth had wanted to birth in water. However, consultation with care providers and the content analysis of online parenting forums revealed that many of these women were unable to access water immersion facilities for various reasons including hospital policy, untrained staff and inadequate water immersion facilities. Women also indicated through online parenting forums that they felt that there was a lack of quality information regarding the use of water immersion in labour and birth, especially for the benefit of their partners or support people in order for them to understand the woman's choice to use it.

Research has not yet established evidence-based eligibility criteria for the use of water immersion or the contraindications to its use. There is also very little known about the economic impact of water immersion in all stages of labour on the health care system.

6.2 Goals to increase access to water immersion

From the findings of this review, three goals have been identified to increase women's access to water immersion in Queensland. These goals are:

1. All women receive timely information about the use of water immersion for all stages of labour (i.e., first, second, third) to enable them to make an informed decision about water immersion.
2. Every birthing facility in Queensland offers access to water immersion.
3. A state-wide policy on the use of water immersion in each stage of labour.

6.3 Recommendations

The following recommendations are provided in order to achieve the above three goals (see Figure 1).

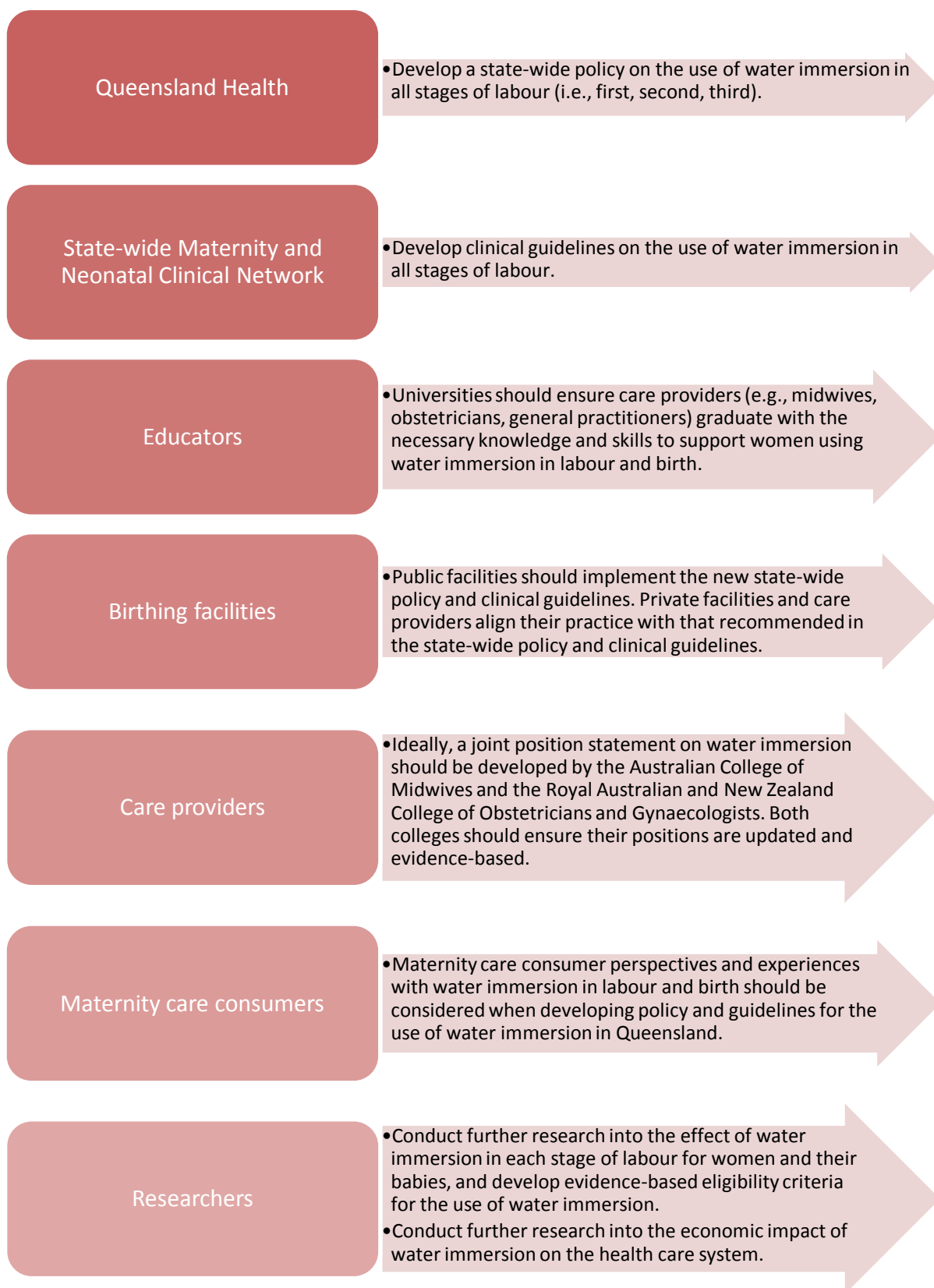


Figure 1. Recommendations to increase women’s access to water immersion for labour and birth in Queensland.

Recommendation 1: Queensland Health should develop a state-wide policy on water immersion; and support the State-wide Maternity and Neonatal Clinical Network (SMNCN) to develop clinical guidelines on water immersion in all stages of labour (i.e., first, second, third).

In line with best practice recommendations for the development of policies and clinical guidelines, the documents must be comprehensive, evidence-based and woman-centred. These documents must be accessible by the general public. The process of the development of these policies and clinical guidelines is important and all stakeholders should be included in the development of them, including maternity consumer groups, to ensure engagement that leads to successful implementation at the district level.

In particular, the policy needs to:

- Support women's access to water immersion for each stage of labour (i.e., first, second, third)

Level I evidence supports the use of water immersion in first stage labour, and has demonstrated no association between use in second stage labour and adverse effects for mother or child (Cluett & Burns, 2009). There is currently no evidence regarding water immersion in third stage labour.

Women should be provided with access to water immersion during third stage labour, as per the Normal Birth clinical guidelines (Queensland Health, 2012). They should be supported to make informed decisions about the use of water immersion during third stage labour, including being made aware of both the existence of concerns among some care providers related to potential risks (e.g., undetected (or delays in detecting) post-partum haemorrhage) and the lack of current research evidence to support the existence of these risks. Women should also be informed that some people (e.g., MIDIRS, 2008) have argued that health care providers should be able to assess a woman's overall physical condition as an indicator of excessive blood loss or other potential issues whilst the mother remains in the water (Garland, 2006; Geissbuehler, Stein & Eberhard, 2004).

In conclusion, women should be provided with the opportunity to make an informed decision about the use of water immersion for all stages of labour.

- Ensure that the impact of the state-wide water immersion policy and guidelines is evaluated

The policy should outline the need for hospitals and births centres to better facilitate the collection of data on women's use of water immersion and related health outcomes so that it can be evaluated from a state-wide perspective. Such data collection will better enable improved assessment of the impact of this policy on women's access to water immersion, and the associated maternal and infant health outcomes experienced.

Queensland Health, in partnership with QCMB, should conduct further research in three years time to measure the up-take of these recommendations. Of particular interest would be women's access to water immersion in all stages of labour, the amount of women who made an informed choice about whether or not to use water

immersion, and the number of facilities that have appropriate water immersion facilities.

The clinical guidelines should include:

- **Consensus guidelines for the installation of appropriate pools/baths**

A number of hospitals experienced significant costs when removing baths/pools that did not meet occupational health and safety (OH&S) criteria or were believed to not efficiently provide the benefits of immersion to women. These costs could have been avoided had the immersion facilities been properly assessed before installation.

There is currently no evidence base for ideal bath/pool specifications to enable the most efficient use of water immersion during labour and birth. Until such research is conducted consensus guidelines should be created in collaboration between maternity care consumers and maternity consumer organisations, care givers, OH&S officers, and policy makers. Also, looking at facilities with a good up-take of water immersion could be a useful strategy to identify bath/pool specifications and other information that may impact on its use. These guidelines should include minimum size and capacity requirements for baths and pools, and the correct OH&S instructions to ensure appropriate purchase and installation to minimise financial loss due to investment in inadequate facilities. Appropriate bath location (i.e., in the birth suites) should also be outlined in the guidelines.

All Queensland birthing facilities should be able to offer women access to water immersion in labour. It is understood that there may be resource implications for some birth facilities to provide access to water immersion. As such, the state policy should outline low-cost short term options for implementing water immersion facilities (e.g., the use of portable hospital-grade birth pools). Whilst there may be initial costs of increasing water immersion facilities within Queensland hospitals and births centres, the consumer demand for it combined with the potential associated cost savings make it an investment worthy of consideration (Miller et al, 2010; Pagano et al, 2010).

To prevent the costs associated with the removal of inadequate facilities and to better facilitate women's access to water immersion, Queensland Health should ensure that all new hospitals where maternity care is provided, and all refurbishments of maternity wards, include installation of appropriate baths for use in labour and birth. This is a vital component of providing women with a full range of birth options as mandated by various national and state documents (e.g., National Maternity Services Plan, 2010; Normal Birth clinical guidelines, 2012).

- **Outline an efficient competency check for staff assisting women in labour and birth in water**

The state-wide guidelines should outline an efficient method for birthing facilities to be confident that care providers are competent in assisting women in water in labour and birth, whilst not withholding women's access to water immersion due to lengthy accreditation procedures. We recommend that hospitals and birth centres ensure that staff members are competent in water immersion as per their qualifications (e.g., Bachelor of Midwifery) obtained at an educational institution and are competent in associated obstetric emergency procedures (e.g., maternal and newborn resuscitation).

Until university education ensures that students can access the education and clinical exposure to develop competence in assisting women in labour and birth in water, facilities should ensure that staff training and credentialing processes are as efficient as possible. This should include highlighting the key knowledge components and skills to have for assisting women in water that one would not already know from assisting women in land births, and providing access to the most recent evidence on the use of water immersion in labour and birth.

- **Guidance for care providers about how best to support women's informed decision making**

Women's informed and autonomous decision-making regarding water immersion must be facilitated and respected. All women should be made aware of the option of water immersion, irrespective of whether it is offered in a particular facility, and be provided with comprehensive information that allows them to make decisions based on their individual needs, values and preferences.

Guidance must also be given to care providers about how to best support women to engage in informed decision-making about water immersion (e.g., type of information required, timing of information provision). This should also include information for care providers about how to provide both evidence-based practice and woman-centred care. This guidance is especially important for situations where a woman feels that the options best supported by evidence are not what are best for her and her baby.

Women require evidence-based, well-communicated information to inform their choices. This information is not only important for women, but must also be accessible by partners and support people. The information must use principles of health and risk communication so that the information is communicated in a way that maximises understanding. The risks and benefits of water immersion as they pertain to the individual woman should be discussed, along with the implications of choosing water immersion for their labour and birth (e.g., some methods of fetal heart rate monitoring cannot be used in the water).

It is recommended that an independently developed decision support tool (e.g., Jones & Hayes, 2012) be used by care providers to facilitate this process, or an informative source of media such as a DVD (e.g., Farrington, 2006). Decision support tools have been found to help patients better understand their options, have more realistic expectations of possible risks and benefits, make choices that are consistent with their personal values, and have the potential to address women's requests for quality information. They also have a positive effect on communication with their care provider (Stacey et al, 2011).

The timing of when women are informed about water immersion is also important. Informing women of their options for the first time whilst in labour is not good practice as it places time constraints on the woman's ability to make an informed choice. In line with the Recommended Minimal Antenatal Schedule provided in the Queensland Health Pregnancy Health Record (Queensland Health, 2010), care providers should support women to indicate their preferences for water immersion in the birth preferences section of the Pregnancy Health Record by 34 weeks' gestation, following routine discussion of their pain relief options in labour at the 30-32 week

antenatal appointment. It is during these appointments that clinicians should ensure women receive clear and balanced information to enable informed decision-making.

As birth is different for every woman and pregnancy, and thus not predictable, it is likely that a woman's preferences may change during labour. In this instance, informed decision making should still take place. Having previously discussed all of the available options during antenatal appointments will greatly assist in making an informed choice. This is because her care provider will most likely only need to remind her of her available options rather than describing each in depth. This process will be greatly aided by continuity of carer, where the woman is familiar with her care provider/s.

The guidelines should also include the development of a plain language information source (e.g., a parent information brochure) that details the contents of the policy in a manner that is easy to understand to ensure that all women better understand the policy and guidelines that surround the use of water immersion in labour and birth in Queensland. In doing so, they can form more accurate expectations about the options available to them and the care associated with them thus enabling them to make more informed decisions.

- **Include only evidence based eligibility criteria and contraindications to the use of water immersion. Highlight that subpopulations of women (e.g., BMI > 35) should not be universally prevented access to water immersion but dealt with on a case by case basis.**

Eligibility criteria and contraindications to the use of water immersion should only be included in policies and guidelines when they are supported by evidence. While practical issues may dictate some eligibility criteria (e.g., maternal weight), these should be dealt with on a case by case basis rather than making sweeping statements that prevent women from accessing water immersion and its benefits. It should also be distinguished as to what stage of labour each contraindication applies to.

Where possible, instead of using evidence on risks/contraindications to universally prevent some subpopulations of women (e.g., women with a previous caesarean section) from access, incorporate this information in the informed decision making process with women. If there is no evidence on the relative risks and benefits of water immersion for certain subpopulations, this should also be clearly communicated to women to enable them to make an informed decision about the use of water immersion.

Recommendation 2: Universities should ensure care providers (e.g., midwives, obstetricians, general practitioners) graduate with the necessary knowledge and skills to support women using water immersion in labour and birth.

The informal content analysis and consultation with care providers revealed that some women were unable to access water immersion due to the lack of credentialed staff. The skills and knowledge for midwives to support women who labour and birth in water is a core aspect of their role (ACM, 2005). Educational institutions (i.e., universities) should ensure midwives graduate with the necessary knowledge and skills to perform this core component of their work.

Facility policies outlined extensive procedures for midwives to become credentialed at a facility level to assist women in using water immersion. To ensure women's access to water immersion is not compromised by untrained staff, hospitals and birth centres should make sure that their credential processes are time efficient and do not include redundant information that has been previously taught when gaining tertiary qualifications (e.g., Bachelor of Midwifery).

Many women seek care from private obstetricians regardless of their risk profile (Miller et al, 2010), and would benefit from their primary care provider being competent in assisting women using water immersion during labour and birth. As such, it is essential that obstetricians have access to the necessary skills and knowledge to support women using water immersion in labour and birth. This would involve giving medical students and obstetric training staff access to the research evidence for water immersion in labour and birth (e.g., setting assignments where students and trainees have to source the latest high quality evidence on its use) and support in the clinical setting. In doing so, obstetric staff will be encouraged to use the most up to date research as the primary source to inform their practice.

Recommendation 3: Public maternity care facilities should implement the new state-wide policy and clinical guidelines. Private facilities and care providers should align their practice with that recommended in the state-wide policy.

The existence of a state-wide policy and clinical guidelines would replace the need for individual public facilities to develop policies, and would improve both access and equity for women across the state, irrespective of where they live. It would also support and promote standardisation, and therefore safety and quality, across all Queensland facilities.

Private care providers (i.e., midwives, obstetricians) and private hospitals should align their practice with the state-wide policy and clinical guidelines to ensure standardised evidence-based practice.

Furthermore, it is in the best interest of all facilities to ensure that if they have pools or baths they have a corresponding water immersion policy that care providers follow, regardless of how frequently such facilities are used. This acts as a risk management strategy to prevent the legal implications of not having such a policy, should an issue arise.

Recommendation 4: Position statements from professional colleges should be updated, and ideally, a joint position statement on water immersion should be developed.

Positions statements for care providers' representative professional colleges were found to be inadequate. Both ACM and RANZCOG should have current evidence-based position statements that should be similar to, and consistent with, the state-wide policy. Level 1 evidence supports the use of water immersion in first stage labour and shows no adverse outcomes for mother or child to be associated with its use in second stage. As such, an evidence-based position statement would support women's access to water immersion in first stage labour and encourage women's informed decision making to dictate its use in second and third stage labour.

This statement must be evidence-based with reference to high quality research, include the use of statistics to enhance the reader's understanding, and feature an upcoming date in which the document will be subject to review. These documents would ideally be produced as joint, as seen in the United Kingdom (RCOG, 2006) where colleges of obstetrics and midwifery produced a clear position statement that outlined current research findings pertaining to its practice (e.g., appropriate water temperature monitoring, required midwifery training). This would further promote a model of collaborative care, whilst allowing for more consistent information and practice.

Although the current ACM statement outlines that supporting women in labour and birth in water is a core midwifery role (ACM, 2005), some midwives may feel they need extra support in this area. This may be especially important during the transition from extensive facility level credentialing to educational institutions taking on the training of midwives to perform this key component of their work. As such, it is suggested that pre-conference workshops be offered by midwives experienced with the use of water immersion in labour and birth.

Recommendation 5: Maternity care consumers, and representative consumer organisations, should be involved in developing, implementing, monitoring and reviewing policy and guidelines on water immersion in Queensland.

Women feel restricted in their choices for pain relief during labour, particularly with the use of water immersion, and do not understand why they can more easily access pharmaceutical pain relief (Hirst, 2005).

Women that have had access to water immersion, and have used it, generally perceive it to be very helpful in managing their pain whilst allowing them to feel more relaxed and in control of their birthing experience (Hall & Holloway, 1998; Maude & Foureur, 2007; Miller et al., 2010; Richmond, 2003). Although little research has been conducted into women's experiences with the use of water immersion in labour and birth, our review shows consistent positive findings across a variety of research methods (e.g., qualitative literature, QCMB surveys, Queensland maternity service review, and an informal content analysis of online parenting forums).

As previously highlighted, consumers' experiences with water immersion in labour and birth should be considered when discussing water immersion in Queensland (e.g., through the collection of survey data from all facilities). It is also important to include the consumer voice and perspective on the decision-making committees working on the planning and developing, implementing, evaluating and monitoring new maternity services in Queensland. Consumer representation is an integral part of any effective consumer and community engagement strategy.

Recommendation 6: Conduct further research into the effect of water immersion in each stage of labour for women and their babies, and develop evidence-based eligibility criteria for the use of water immersion.

Level I evidence supports the use of water immersion in first stage labour, and has found no adverse effects for mother or child to be associated with its use in second stage labour (Cluett & Burns, 2009). The limited evidence on the safety of water

immersion is often the sole factor driving the current policies and practices that often impede access to water immersion for women. However, at the same time there is no evidence that its use is dangerous. This context of scientific uncertainty about the benefits and risks of water immersion makes informed decision-making by women particularly important (Stacey et al, 2011).

Further research is required in water immersion on each stage of labour, particularly in the third stage. It is essential that this research be as well-designed as possible considering the ethical considerations of offering and withholding water immersion. Different shaped/sized pools and baths, and their effect on women's efficient use of water immersion in labour and birth should also be incorporated into future research.

Research also needs to focus on differential outcomes of water immersion for different subpopulations of women (e.g., women with a previous caesarean section). These findings should be documented and disseminated so that woman and their care providers can make informed decisions about the use of water immersion on a case by case basis and according to a woman's individual needs and preferences.

There is also currently very little research evidence on women's experiences with water immersion in labour and birth. QCMB should continue to conduct patient experience surveys that include questions about preference for, access to, and use of water immersion in each stage of labour. Queensland Health, birthing facilities (i.e., hospitals, birth centres) and QCMB should continue to collaborate in order for this data to be used to inform quality improvement efforts. In doing so, maternity care consumer experiences can better inform the policies and practice surrounding the use of water immersion, as well as information materials for other maternity care consumers.

Current guidelines generally state that water immersion is only for the use of women without identifiable risk factors. However, what constitutes being 'low risk' is currently not well defined by research. Furthermore, health care providers often have varying opinions about what this definition is and the type of care best associated with it (Hatem et al, 2008). As such, research needs to establish an evidence-based eligibility criterion for the use of water immersion in all stages of labour.

Recommendation 7: Conduct further research into the economic impact of water immersion on the health care system.

There is a need to examine the economic impact of water immersion in labour and birth on the health care system in an Australian context. These evaluations should examine any associated 'hidden costs'. For example, the amount saved by the reduction in the use of epidural/spinal analgesia found to be associated with water immersion in the first stage of labour (Cluett & Burns, 2009), along with the costs of installation, maintenance and staff training in order for a net cost or net saving to be calculated.

7.0 Conclusion

Level I evidence supports the use of water immersion in first stage labour, and shows no increased adverse effects to mother and child to be associated with its use in second stage labour (Cluett & Burns). Its use in the first stage of labour has been associated with a reduction in the use of epidural/spinal analgesia and a shortened first stage of labour. Women report their experience with water immersion to be positive, particularly for its ability to help manage their pain and give them a sense of control (Hall & Holloway, 1998; Maude & Foureur, 2007; Miller et al., 2010, Richmond, 2003).

In Queensland, access to water immersion facilities for labour and birth is currently poor. Many women who want to labour and birth in water are not given this opportunity (Miller et al., 2010).

There is no current state-wide policy for the use of water immersion in labour and birth. In general, facility policies were found to be outdated, lack bath/pool specifications, feature low quality evidence, and did not provide health care professionals with guidance regarding women's informed consent.

In order to increase access to water immersion in Queensland a number of steps need to be taken. A state-wide water immersion policy needs to be developed and every Queensland birthing facility should offer access to water immersion in labour and birth. All women should receive balanced, non-directive, evidence-based information about the use of water immersion for all stages of labour to enable them to make an informed decision about its use.

The Queensland maternity care system needs to address the demands and needs of its consumers, and provide all women with better access to water immersion for all stages of labour.

8.0 References

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9.0 Appendix

Appendix A: Overview of state policy review

Policy/ guidelines	Used by	Position on water immersion	Content						Quality of evidence	Other notes
			Review date	Direction to ensure women are aware it is an option?	Refer to consumer resource?	Adequate guidelines for ensuring informed consent?	Description of care provider training/ competence requirements?	Description of necessary bath/pool specifications?		
Water Immersion During Labour – Minimum Standards November 2000	Queensland	Neutral on water immersion during labour and does not support use during birth	None stated.	x	x	x	✓	✓	Poor	Policy is no longer active.
Normal Birth clinical guidelines April 2012	Queensland	Support water immersion in labour and birth	April 2017	x	x	x	x	x	Poor	Cochrane Review was included but various other low quality evidence was also referenced. Third stage in water is supported.
Government of Western Australia Operational Directive <i>and</i>	Western Australia	Support water immersion during labour and	None stated.	x	✓	✓	✓	x	Good	Provides a website links for examples of good pools.

WA Labour and Birth in Water Clinical Guidelines		birth.								Third stage is water is supported.
October 2009										
Policy for First Stage Labour & Birth in Water	South Australia	Support water immersion during labour and birth	June 2013	x	✓	x	✓	x	Good	
February 2011										
Towards Normal Birth 2010	New South Wales	Support water immersion during labour and birth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No policy for New South Wales, only this document that states a policy will be made.
The Use of Baths During Labour	The Canberra Hospital	Support water immersion in labour and birth.	May 2008	x	x	x	✓	x	Poor	No policy for the Australian Capital Territory.
May 2006										
Warm Water Immersion in Labour and Birth	The Royal Darwin Hospital	Support water immersion in labour. Water immersion in birth is only supported in the birth centre.	September 2011	x	✓	x	✓	x	Good	No policy for Northern Territory.
September 2009										
Water Birth – Immersion in Water During Labour and	Victorian public health care provided by	Support water immersion in labour	August 2012	x	x	x	x	x	Poor	No policy for Victoria; however, Southern Health is the largest

Birth Guideline September 2009	Southern Health	and birth.	provider of public health care.
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Appendix B: Correspondence with Queensland birthing facilities⁶

Facility	Policy?	Received for review	Bath/ Pool	Labour	Birth	Training for staff	Extra information
Atherton Hospital	No	No	No	No	No	No	If given the financial support for pools/baths, they would offer water immersion in labour.
Ayr Hospital	No	No	No	No	No	No	
Biloela Hospital	No	No	No	No	No	No	
Bundaberg Hospital	Yes	Yes	Yes	Yes	No	Yes	Hospital has four birthing rooms and the last room has a large bath. However, the last room tends not to be used as much as the other rooms.
Caboolture Hospital	Yes	Yes	Yes	Yes	No	No	Hospital follows the RBWH birth centre policy. Hospital has seven large corner baths that are located in the ensuites attached to each of the 7 birth rooms. Care provider estimated that roughly 15% of women use water immersion in labour.
Cairns Base Hospital	Yes	Yes	Yes	Yes	Yes	- ^a	Hospital has two large oval fixed baths in the birth suite (in separate rooms, not in birth rooms) at present. With the redevelopment (in about 18 months) they will have an oval bath in three of the nine birth suites and one in each of the four rooms in the birth centre (in about 3 years). Care provider estimated that approximately 35% of women use water immersion in labour. They also mentioned that very few water births take place, despite the facility supporting women's choice to have one.

⁶ This table may feature different information to QCMB's *Birthplace* website as it is ever changing and as such cannot always match the information provided by care providers at the time of the review conducted for this report.

Cairns Private Hospital	Yes	No	Yes	Yes	No	Yes	We have one deep bath of triangular shape. It has access from 1 full side and part of the second. It is located in our birth suite and is only used for water immersion – not for water birth.
Charleville Hospital	No	No	No	No	No	No	
Charters Towers Health Centre	Yes	Yes	Yes	No	No	No	Hospital follows the Toowoomba Birth Centre policy. Hospital staff put in a request to have a pool installed but it was not approved. A \$1000 inflatable pool and all the relevant equipment (e.g., thermometer, disposable liners) have since been purchased. However, it is currently not utilised due to an inability to provide care for birthing women because of limited staff resources due to the high incidence of emergency cases at the hospital.
Chinchilla Health Service	No	No	No	No	No	No	The bath is not located in the maternity area of the hospital (but in the next area over) and as such, is not used often. Women often use the shower instead.
Cunnamulla Hospital	No	No	No	No	No	No	No longer a birthing facility.
Dalby Hospital	Yes	No	Yes	Yes	No	Yes	Hospital has one bath with side door for rapid draining in an emergency. It is deep and large enough to fit two people comfortably in it. Care provider estimated that approximately 5% of women use the pool or bath in labour. However, the hospital hasn't been able to offer women access to it until recently due to the drought and associated water restrictions.
Emerald	Yes	Yes	Yes	Yes	No	Yes	Hospital has a larger than standard sized

Hospital							spa bath that is accessible from three sides. It used to have spa jets but they have now been sealed. Women are encouraged to use it in labour.
Gladstone Hospital	No	No	No	No	No	No	
Gold Coast Birth Centre	Yes	Yes	Yes	Yes	Yes	Yes	The birth centre has two round deep sunken tubs. Care provider estimated that approximately 40% of women labour in water and 20-30% birth in water. Peer training is offered to inexperienced midwives by experience midwives.
Gold Coast Hospital	No	No	No	No	No	No	In 2013, all 18 birth rooms in the new hospital will have round sunken tubs. Water immersion in labour and birth will be offered.
Goondiwindi Health Service	No	No	No	No	No	No	
Gympie Hospital	No	No	No	No	No	No	Currently do not have a bath, but would love to install one if they received financial support to do so.
Hervey Bay Hospital	No	No	No	No	No	No	
Innisfail Hospital	No	No	No	No	No	No	
Ipswich Hospital	Yes	Yes	Yes	Yes	No	Yes	Received old version of water immersion policy. A staff member is currently producing a new version. Hospital has three large big deep round baths. Care provider estimated that almost all of the Midwifery Group Practice patients labour in water, and that approximately 30% of standard care patients do.
John Flynn Gold Coast	Yes	No	Yes	Yes	Yes	Yes	Hospital has two large round deep baths. Also distributes a DVD about the use of

Private Hospital							water in birth entitled <i>Birth in Water at John Flynn Hospital</i> .
Kingaroy Health Service	No	No	No	No	No	No	Hospital would love to be able to offer water immersion, but are unable to due to inadequate facilities. They only have one bath that is in a bathroom shared between two birth suites. However, the bath is too small for water birth. It is only successful for very small women to labour in and as such is very rarely utilised.
Logan Hospital	No	No	No	No	No	No	Hospital only has one bath in the antenatal/postnatal ward. Use is only allowed for early labour and is not encouraged. Very, very few women use it.
Longreach Hospital	No	No	No	No	No	No	The hospital has discussed making it available but there is no official plan yet.
Mackay Base Hospital	Yes	Yes	Yes	Yes	No	Yes	Hospital has four baths in the main unit. These are fixed corner baths with one sided access.
Mackay Birth Centre	Yes	Yes	Yes	Yes	Yes	Yes	Birth centre has two fixed corner baths with one sided access.
Mareeba Hospital	Yes	Yes	Yes	Yes	Yes	Yes	Hospital has one birthing pool and one regular bath tub – both are deep. Both of these options are very popular due to the caseload midwifery model of care. Care provider estimates that a high proportion of women use the bath and pool in both labour and birth.
Mater Misericordiae Health Services South Brisbane (Private)	Yes	Yes	Yes	Yes	No	Yes	Hospital has twelve baths which are fixed and rectangular shaped located in the birth suites. One of these baths cannot be used due to the emergency hoist not being able to get into the room. A further four birth suites are available without baths. Hospital got a quote to get rid of the one

							<p>bath that didn't meet workplace health and safety (WPHS) standards but it was too expensive, so it is used to store the birth balls and bean bags.</p> <p>Care provider stated that feedback from women suggests that there are a couple of Visiting Medical Officers (VMO) who tell women upfront that they do not support water immersion in labour or birth, and to find another obstetrician to care for them if they want to access water immersion.</p>
Mater Misericordiae Health Services South Brisbane (Public)	Yes	Yes	Yes	Yes	No	Yes	<p>As per Mater Misericordiae Health Services South Brisbane (Private).</p> <p>Water births are not offered at this hospital. If one occurs an incident report is generated. Care provider estimated that approximately ten unintended water births occur each year.</p> <p>Mater Mothers' Hospital is putting together a water birth working party this year as part of the normal birth campaign.</p>
Mater Misericordiae Hospital Gladstone	No	No	No	No	No	No	<p>Birth suite staff inquired about introducing the use of water immersion during labour but were told that it wasn't possible at this time.</p>
Mater Misericordiae Hospital Mackay	Yes	No	Yes	Yes	No	Yes	<p>All three birth suites have long deep baths. Care provider estimates that very few women labour in water.</p>
Mater Misericordiae Hospital Rockhampton	No	No	No	No	No	No	
Mater Private Hospital	No	No	No	No	No	No	

Redland							
Mater Women's and Children's Hospital Townsville	No	No	No	No	No	No	
Mt Isa Hospital	No	No	No	No	No	No	Hospital had to have their bath removed due to failure to meet OH&S standards. However, there are future plans to install one that does meet the standards.
Nambour Hospital	Yes	Yes	Yes	Yes	No	No	Hospital has one deep bath in a separate room to the birth suites. Care provider estimated that usage is currently inconsistent and quite low. However, the care provider stated that the hospital is certainly not against water immersion.
North West Brisbane Private Hospital	No	No	No	No	No	No	
Pindara Private Hospital	No	No	No	No	No	No	The hospital used to have a spa bath but it was removed for OH&S reasons.
Proserpine Hospital	No	No	No	No	No	No	Hospital used to have a bath but it was removed because it didn't meet workplace health and safety standards or the infection control standards.
Redcliffe Hospital	No	No	No	No	No	No	
Redland Hospital	Yes	No	Yes	Yes	No	Yes	Care provider could not locate water immersion policy. The hospital has two conventional baths located in their six bed birth suite. Care provider estimates that approximately 30% of women use water immersion. Care provider also suggested that the baths are too small for water immersion in labour and are not particularly safe to get in and out of.

Rockhampton Hospital	No	No	No	No	No	No	
Roma Hospital	No	No	No	No	No	No	Hospital has one standard bath in postnatal room. However, the care provider estimates that it is not well used.
Royal Brisbane & Women's Hospital	No	No	No	No	No	No	Care provider said that there are baths but they are not allowed to be used.
Royal Brisbane & Women's Birth Centre	Yes	Yes	Yes	Yes	Yes	Yes	A guideline was provided as there is no water immersion policy. RBWH no longer uses policies for clinical matters. Birth centre has deep round baths in the birth suite.
St Andrew's Ipswich Private Hospital	Yes	No	Yes	No	No	- ^a	Hospital had fixed large round baths located in an ensuite attached to each birth suite. A few midwives offer use of the bath during labour but they do not offer water birth. Care provider estimates that between 10 and 20% of women are "allowed" to use water at all and that is mostly for the use of the shower.
St George Hospital	No	No	No	No	No	No	The hospital has one birthing room that has a standard sized bath. Care provider stated that women don't use it and midwives don't recommend/encourage its use because it is too small.
St Vincent's Hospital Toowoomba	Yes	No	Yes	Yes	No	Yes	Hospital has standard sized baths in the ensuites attached to the birth rooms. Care provider stated that water immersion is offered in labour, but birth must be on the bed.
Stanthorpe Health Service	No	No	No	No	No	No	
Sunnybank Private Hospital	Yes	No	Yes	Yes	No	Yes	Hospital has a water immersion policy but it cannot be distributed due to restrictions from Healthscope.

							Hospital has one standard sized bath. Care provider stated that it is not a popular choice as women prefer epidurals.
The Sunshine Coast Private Hospital	Yes	Yes	Yes	Yes	Yes	Yes	Two large round baths located in the two birthing rooms. Care provider estimates that approximately 30% of women use it in labour and a very small percentage of women for birth. Also stated that water birth numbers may increase when the staff from Nambour Selangor move over to this hospital.
The Wesley Hospital	No	No	No	No	No	No	
Theodore Hospital	No	No	No	No	No	No	
Thursday Island Hospital	No	No	No	No	No	No	Hospital has a birth pool but it cannot be offered properly. No facility training – relies on midwives' previous experience only.
Toowoomba Birth Centre	Yes	Yes	Yes	Yes	Yes	Yes	Two deep fixed birth pools. Care provider stated that they are the deepest in Australia at 1m deep and are located in the birth rooms. Estimated that 60% of women use them in labour and 50% in birth.
Toowoomba Hospital	No	No	No	No	No	No	Staff are currently training to offer water immersion in the near future. The hospital currently owns two inflatable pools.
Townsville Birth Centre	Yes	Yes	Yes	Yes	Yes	Yes	Birth centre will soon have free standing birth pools. Two midwives are currently training to support women in labour in water with these pools. Care provider estimated that approximately 80% of women use water immersion in labour and 40% in birth.

Townsville Hospital	Yes	Yes	Yes	Yes	Yes	Yes	Hospital has six corner baths. Care provider estimates that approximately 10% of women use it in labour and 1% in birth. The hospital has seen a recent increase in use due to more midwives completing their water immersion training package.
Tully Hospital	Yes	Yes	Yes	Yes	No	Yes	Uses the Cairns Base Hospital policy. Hospital has one large fixed bath with rails for ease of entry and exit. This bath is located in a birth room. Care provider stated that they have only seen the bath used once or twice.
Warwick Health Service	No	No	No	No	No	No	

^a information unavailable at the time of the review

Appendix C: Overview of facility policy review

Policy/ guidelines	Position on water immersion	Content						Quality of evidence	Other notes
		Review date	Direction to ensure women are aware it is an option?	Refer to consumer resource?	Adequate guidelines for ensuring informed consent?	Complete description of care provider training/ competence requirements?	Description of necessary bath/ pool specifications?		
Bundaberg Health Service District February 2007	Support water immersion in labour only	No date	x	x	x	✓	✓	Poor	Immersion can only be used for 1- 2 hours at a time
Cairns & Hinterland Health Service May 2007	Support water immersion in labour and birth	May 2014	x	x	x	x	x	Good	
Central Queensland Health Service District October 2009	Support water immersion in labour only	October 2012	x	✓	x	x	x	Poor	
Darling Downs – West Moreton Health Service	Support water immersion in labour and birth	Septembe r 2012	x	x	x	x	x	Poor	

District								
September 2010								
Gold Coast Health Service District	Support water immersion in labour and birth	March 2010	x	x	x	x	x	Poor
March 2008								
Ipswich Hospital 2003	Supports water immersion during labour only	No date	x	x	x	✓	x	Poor
Mackay Base Hospital and Mackay Birth Centre	Support water immersion in labour and birth	October 2012	x	x	x	✓	x	Poor
October 2009								
Mareeba Hospital	Support water immersion in labour and birth	April 2011	x	x	x	x	x	No evidence given
April 2008								
Mater Mother's Hospital	Support water immersion in labour only	No date	x	x	x	x	x	Poor
No date.								
Royal Brisbane Women's Hospital (Birth	Support water immersion during labour and birth	March 2014	x	x	x	x	x	Poor

Centre)										
March 2010										
Sunshine Coast and Cooloola Health Service District April 2003	Support water immersion during labour only	"As required"	x	x	x	✓		x	Poor	Mentions the need for a bath with three sided access and non-slip walking surface, but does not go into detail about size etc
The Sunshine Coast Private Hospital November 2009	Supports water immersion in labour. Individual obstetrician's judgement determines access in birth.	November 2013	x	✓	x	x		✓	Poor	Consent form includes an information sheet and references a patient information brochure
Townsville Health Service District Birth Suite/Birth Centre May 2008	Supports water immersion during labour and birth	December 2010	x	x	x	x		x	Good	

Appendix D: Eligibility Criteria for, and Contraindications to, the use of water immersion in labour and birth as listed in state and facility policies

Eligibility Criteria

- Uncomplicated singleton pregnancy
- At term (37 weeks)
- Cephalic presentation
- No indications for continuous electronic foetal monitoring
- Established labour

Contraindications

- BMI < 35/weight > 100kg
- Maternal infection (e.g., active herpes)
- Previous history of shoulder dystocia
- Narcotics in the previous 4 hours
- Pre-eclampsia
- Insulin dependent diabetes
- Alcohol/substance abuse
- Intrapartum haemorrhage
- Onset of hypertension blood pressure (> 90 mmHg)
- Abnormal labour progression or poor uterine activity
- Epilepsy
- Inability to provide one to one care/inadequate staff levels
- Woman is unable to be mobile e.g., stand, enter/exit bath unassisted
- Woman requires narcotics e.g., epidural
- Epidural catheter in situ
- Syntocinon infusion
- Meconium stained liquor (for most hospitals)
- Large baby on palpitation (for some hospitals)
- Previous uterine scar (for some hospitals)

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