National Clinical Practice Guideline **Care of Women Using a Birthing Pool for Labour and/or Birth**

National Women & Infants Health Programme

National Clinical Practice Guideline

Care of Women Using a Birthing Pool for Labour and/or Birth

INSTITUTE OF OBSTETRICIANS & GYNAECOLOGISTS

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

Guideline Development Group

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National Clinical Guideline
Care of Women Using a Birthing Pool for Labour and/or Birth

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Using a Birthing Pool for Labour and/or Birth
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Short summary:
Evidence-based recommendations for the care and management of women requesting to use a birthing pool for labour and/or birth, promoting a standardised approach nationally across all maternity settings, including the home birth setting.
Description:
This national guideline offers comprehensive, evidence-based standards for the care of women using a birthing pool during labour and/or birth, detailing eligibility criteria, assessment, monitoring, and specific requirements for water depth, temperature, and maternal hydration to optimise safety and comfort. It further outlines infection-prevention measures, governance, implementation, audit, and education strategies, promoting safe, trauma-informed, midwifery-led practice, shared decision-making, and consistent, auditable care across Irish maternity services.

[3] Records details of the document review or update, even if no changes are made.

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Algorithms

Figure 1: Overview – Care during Labour and Birth Using a Birthing Pool

- Confirm the woman's birth preferences and informed consent (HSE, 2022)[1]
- **Initial midwifery assessment to determine meeting pool eligibility criteria, confirm maternal/fetal wellbeing and provide ongoing care/management as per the *National Clinical Practice Guideline; Intrapartum Care for Women on the Supported Care Pathway, NWIHP/IOG (2025)***[2]
- If concerns regarding maternal/fetal wellbeing at any stage; the woman is requested and assisted to exit the pool
- Confirm whether Latent Phase or Active Phase of First Stage of Labour

First Stage of Labour

- Prepare the room, check pool and cleaning record(s) to ensure the pool and surrounding environment has been cleaned
- Run tap(s)/coldest and hottest setting as per local protocol
- Fill pool two-thirds with plain water to cover the woman's abdomen, i.e. at breast level when woman is sitting in the pool
- Water temperature should be dictated by the woman's comfort *(between 35-37^0 Celsius)* (but should **not** exceed 37.5^0 C)
- Encourage the woman to adopt positions most comfortable and effective for her
- Commence partogram and record maternal/fetal observations, uterine contractions and observe for SROM as per NWIHP/IOG (2025)[2]
- Encourage hydration (drink to thirst, alternate plain water with isotonic drinks), light diet, and 2 hourly passing of urine
- Other pain-relieving measures may also be used, e.g. Entonox, massage, music therapy, deep breathing
- If contractions reduce *(in frequency, strength & duration)*, the woman is advised to leave the pool, mobilise/use birthing aids, hydrate, pass urine and rest. Returning to the pool depends on contractions increasing/signs of labour progression
- Vaginal examinations and artificial rupture of membranes* *(if clinically necessary)* should be performed out of the pool
- Observe for signs *of delay 1st stage of labour; if so, exit the pool and provide care/management as per* NWIHP/IOG (2025)[2]
- Record time(s) of entry to and exit from the pool
- Observe maternal behaviour for cues for labour transition/second stage

* *May return to the pool if liquor is clear*

Second Stage of Labour

- Record maternal and fetal observations as per *NWIHP/IOG (*2025)[2]
- Record water temperature; should be adult body temperature, i.e. 37^0 Celsius for birth (but should **not** exceed 37.5^0 C)
- Encourage hydration (alternate plain water/isotonic drinks)
- Position as per maternal preference
- Hands-off/poised birth technique and maternal/involuntary pushing
- Observe for signs of *delay 2nd stage of labour; if so, exit the pool and provide care/management as per* NWIHP/IOG (2025)[2]
- Observe for the birth of the head, visualise for nape of neck, restitution of shoulders, and the birth of the body
- Woman's lower half of body remains under water. **If a woman inadvertently stands up when is vertex visible, birth must continue out of water**
- Once born, the baby is immediately and gently guided to the surface (headfirst) and placed into the woman's arms. **NB: *take care with the umbilical cord.* Following birth, the baby's head always remains above water**
- Observe the wellbeing of mother and baby and record Apgar Scores
- Keep mother and baby warm by adding warm water to the pool and drying the baby's head
- Facilitate safe skin-to-skin* contact, deferred cord clamping and breastfeeding (if chosen method of infant feeding)

* *Link to HSE video* – skin-to-skin contact with new-borns – HSE.ie

Third Stage of Labour

- Consider maternal/fetal wellbeing, woman's choice and birth preferences
- Recommend active management – administer uterontonic medication while in the pool, then **exit pool** for all follow-on care
- Physiological management – in **or** out of the pool
- Observe for signs of *delay 3rd stage of labour; if so, exit the pool and provide care/management as per* NWIHP/IOG (2025)[2]

1 National Consent Policy, Health Service Executive (2022)
2 National Clinical Practice Guideline; Intrapartum Care for Women on the Supported Care Pathway, National Women & Infants Health Programme/Institute Obstetrics & Gynaecology (2025)

Figure 2: Eligibility Criteria for Birthing Pool Use-Supported Care Pathway (Normal Risk) *

*A 'normal-risk' pregnancy is defined as a pregnancy where there are no identified risk factors, known or pre-existing conditions or complications requiring additional tests or adapted management[1]

Before a woman enters a birthing pool, her history is reviewed, and a full maternal and fetal wellbeing assessment is carried out[1]

The following is an example of eligibility criteria (not exhaustive) for 'normal risk'/women on the Supported Care Pathway;

- Singleton pregnancy
- Cephalic presentation
- Between 37^{+0} and 42^{+0} weeks' gestation
- Spontaneous onset of labour
- Normal fetal heart rate *(as per National Fetal Heart Monitoring Guideline, NWIHP/IOG, 2025)*[2]
- Normal maternal observations *(as per National Intrapartum Care for Women on the Supported Care Pathway)*[1]
- BMI less than/equal to 35kg/m^2
- Independently mobile and able to demonstrate the ability to get in and out of the pool unaided
- Spontaneous rupture of membranes for up to 24 hours, with clear liquor draining. (*Refer to the National Clinical Practice Guideline Prevention of Early-Onset GBS in Term Infants)*[3]

1 Vallejo N, Mc Cormack E, Rowland M, Dado MP, Healy M, Brosnan M. *et al.* National Clinical Practice Guideline: Intrapartum Care of Women on the Supported Care Pathway. National Women and Infants Health Programme and The Institute of Obstetricans and Gynaecologists.; 2025.

2. Rowland *et al.* National Clinical Practice Guideline: Fetal Heart Monitoring. National Women and Infants Health Programme and The Institute of Obstetricans and Gynaecologists.; 2025.

3. Dakin A, Loughlin L, Ferguson W, Babu S, Dempsey G, Meehan M, *et al.* National Clinical Practice Guideline: Prevention of Early Onset Group B Streptococcal Disease in Term Infants. [Internet]. National Women and Infants Health Programme and The Institute of Obstetricans and Gynaecologists.; 2023.

Key Recommendations

No.	Recommendations	Grade
General Recommendation		
1	In line with the National Maternity Strategy (2016) and providing choice and an equitable service to women, we recommend robust governance structures be in place to facilitate water immersion and birth at local level in all maternity settings.	*Best Practice*
First Stage of Labour		
2	We recommend that pregnant women be informed about using a birthing pool for labour and/or birth during the antenatal period and that evidence-based information be provided in hard copy, electronically, or via QR Code.	*Best Practice*
3	We recommend that women with uncomplicated pregnancies (i.e. 'normal risk'/on the Supported Care Pathway) should be offered the use of a birthing pool for labour and/or birth and that all care/management should be as per the *National Clinical Practice Guideline; Intrapartum Care for Women on the Supported Care Pathway, NWIHP/IOG (2025)*	*Best Practice*
4	We strongly recommend that midwives have access to mandatory training on water immersion for labour and birth nationally, through Centres of Midwifery Education/ National E-Learning Programme, and locally for skills and drills, and guidelines should be in place to support practice.	*1B*
5	We recommend that doctors involved in maternity care have access to training on water immersion for labour and birth via the National E-Learning Programme and attend local skills/drills updates as necessary.	*Best Practice*
6	We recommend ongoing assessment of a woman's suitability for water immersion. This assessment continues throughout pregnancy, including on presentation to the labour ward and throughout labour/birth, regarding a woman's suitability to use and/or remain in a birthing pool.	*Best Practice*
7	We recommend that midwives, as the primary caregivers for women using a birthing pool, be familiar with pool eligibility criteria and ongoing risk assessment so that they can confidently guide and support obstetric colleagues and all the multidisciplinary team (MDT) with decisions regarding a woman's suitability to use water immersion for labour and/or birth.	*Best Practice*

No.	Recommendations	Grade
8	We recommend that women are informed of the paucity of evidence in relation to opioids (e.g. pethidine) and water birth, in particular regarding potential neonatal side effects, i.e. risk of respiratory and reflex depression. Alternatives to opioids, such as mobility, use of shower/birthing aids, massage, deep breathing and relaxation techniques, should be encouraged.	*Best Practice*
9	If a woman requests IM opioid administration and subsequently requests to use a birthing pool, we recommend that a minimum of two hours, or longer (if a woman remains drowsy), should have lapsed prior to entering the birthing pool.	*Best Practice*
10	For women who have been administered more than one dose of pethidine in the previous 12 hours, we recommend consideration of alternative modalities of analgesia other than water immersion (in particular, if a woman is requesting to give birth in water).	*Best Practice*
11	We recommend that entry to a birthing pool be on an individual basis, i.e. based on an assessment of the frequency, strength, and duration of contractions, the woman's behaviour/coping abilities, and birth preferences; no arbitrary cervical dilatation is necessary before a woman can enter a birthing pool.	*Best Practice*
12	Once diagnosed as being in active labour, we recommend a partogram be commenced to document maternal/fetal wellbeing and labour progress.	*Best Practice*
13	If contractions reduce (in frequency, strength, and duration), we recommend that women exit the pool and be supported to mobilise, use the bathroom/shower, use birthing aids, and hydrate. They may re-enter the pool if contractions increase or show signs of labour progression.	*Best Practice*
14	We recommend that the pool water is at the level of the woman's breasts (xiphisternum) when the woman is in a sitting position in the pool, not above, to avoid overheating.	*Best Practice*
15	For labour, we recommend that the pool water temperature be dictated by the woman's comfort level (generally between 35 and 37 degrees Celsius) and that it does not exceed 37.5 degrees Celsius.	*Best Practice*
16	For the second stage/birth, we recommend adding water to adequately cover the woman's lower half of her body (if she adopts a kneeling/all-fours position) and to bring the water temperature to approximately 37 degrees Celsius (adult body temperature) but not exceed 37.5 degrees Celsius.	*Best Practice*
17	As per all 'normal risk' women in labour, we recommend maternal temperature, blood pressure and respiratory rate are recorded at least 4 hourly and maternal pulse at least hourly.	*Best Practice*
18	We recommend women drink to thirst to keep hydrated, alternate plain water with isotonic drinks to prevent hyponatremia and are encouraged to pass urine two hourly.	*Best Practice*

No.	Recommendations	Grade
19	If a woman becomes too warm (i.e. maternal temperature>/=37.5 degrees Celsius on two occasions, *30 minutes apart,* and/or increase in maternal/fetal heart rate), we recommend exiting the pool and using cooling strategies, e.g. applying a cold compress to the forehead/back of the neck and sipping iced water. Returning to the pool depends on the clinical situation, i.e. ruling out potential infection and the water being at a more comfortable temperature for the woman.	*Best Practice*
Second Stage of Labour		
20	As per all births, we recommend the presence of a second midwife for second stage during water birth.	*Best Practice*
21	We recommend that midwives are fully aware of fetal physiology, detailing the protection mechanisms which prevent the triggering of a premature breath while still under water.	*Best Practice*
22	We recommend that the woman be reminded to keep the lower half of her body underwater during a water birth. If a woman inadvertently lifts herself above the water and the vertex is visible, then the woman must remain out of the water for birth.	*Best Practice*
23	We recommend that a non-touch, hands-off/poised technique be adopted for birth.	*Best Practice*
24	Once the baby is born, it is gently and immediately lifted out of the water (headfirst and face down) into the woman's arms. To avoid too much tension being placed on the umbilical cord, it is sufficient to only have the baby's head and face above water, and we recommend caution that the baby's head/face never re-submerges underwater.	*Best Practice*
25	We strongly recommend that women adopt a birthing position that is most comfortable and effective for them.	*1A*
26	We recommend that women be encouraged to give birth instinctively. Prolonged breath holding and coached pushing are not recommended. However, once the head is born, with the next contraction, the woman should be encouraged to push in anticipation of the birth of the baby's shoulders and body. If there are any concerns or deviations from the normal labour/birth mechanism, the woman is requested to stand and be assisted to exit the pool *(See Appendices 7 & 8 for management of Shoulder Dystocia during water birth).*	*1B*
27	We do not recommend checking for a nuchal cord and strongly recommend avoiding undue traction on the umbilical cord as the baby is being born. Nuchal cords, or any cord around the body, can be resolved by carefully and gently unravelling in the water as the baby is guided to the surface.	*1B*
28	If umbilical cord avulsion occurs, we recommend clamping the cord immediately at the umbilicus, assessing the baby's condition, and taking appropriate actions, including a neonatologist review.	*Best Practice*
29	We recommend that the prevention and management of umbilical cord avulsion be included in midwives' training and education programmes on water immersion and birth.	*Best Practice*

No.	Recommendations	Grade
Third Stage of Labour		
30	We recommend that women be informed of both active and physiological management of the third stage of labour following a water birth. Active management is recommended for the third stage of labour.	*2B*
31	For active management of the third stage, we recommend that women be administered the intramuscular uterontonic medication while still in the pool and then be requested to exit the pool for follow on care/management.	*Best Practice*
32	If physiological management of the third stage is being conducted, this can be done either in or out of the pool. If the woman chooses to remain in the pool, we recommend adding warm water to maintain maternal and fetal thermoregulation.	*2B*
33	We strongly recommend that, while monitoring the physical wellbeing of both the woman and baby and awaiting signs of the third stage, the woman be supported to safely perform skin-to-skin contact and/or breastfeed, irrespective of the planned method of third-stage management.	*Best Practice*
34	We recommend that estimating blood loss (EBL) and managing a postpartum haemorrhage (PPH) following water birth be included in training and education programmes for midwives on water immersion for labour and birth.	*Best Practice*
35	We recommend continuous risk assessment in relation to EBL/signs of PPH following a water birth and to monitor maternal pallor, vital signs, interaction with her baby and not solely to rely on the colour of the pool water.	*Best Practice*
36	If a woman begins to show signs of clinical compromise, we recommend immediately removing the baby from the pool and simultaneously summoning help to assist with pool evacuation, including safe maternal airway maintenance. *(See Appendices 7 & 8 for Emergency Procedures during pool use)*	*Best Practice*
37	As per all women following birth, we recommend commencing an Irish Maternity Early Warning System (IMEWS) chart to support the recognition of a deteriorating woman.	*Best Practice*
38	Regular 'local' educational drills, such as maternal collapse and emergency evacuation from a birthing pool, are important, and we recommend MDT involvement. Birthing pool emergency procedures should be included in Practical Obstetric Multi-Professional Training (PROMPT)/equivalent training.	*Best Practice*
Infection Prevention and Control Recommendations		
39	We strongly recommend: a) The involvement of Hospital Infection Prevention and Control Team and Maintenance/Engineering Department(s) when planning a water birth service. b) Procuring high-quality pools and correct installation, including safe operation and maintenance of water supply systems. c) Developing robust Infection Prevention and Control Protocols, including decontamination and maintenance of pools, equipment and environment.	*1B*

No.	Recommendations	Grade
40	We recommend monitoring water quality as per national guidance and local Environmental Monitoring Committee/Infection Prevention & Control/Microbiology team(s) and ongoing audit/review of potential adverse outcomes in relation to infection prevention and control issues.	*Best Practice*
41	We recommend maintaining tap/water flushing, cleaning and water testing records.	*Best Practice*
42	Specifically, in relation to inflatable pools, we recommend: a. Following manufacturer instructions. b. If inflatable pools are shared among women, use a new, once-only 'liner' (checking for integrity), clear-fit cover, hose pipe, adaptor nozzle, and submersible pump.	*Best Practice*

Chapter 1: **Initiation**

The National Clinical Effectiveness Committee (NCEC) and Health Information and Quality Authority (HIQA) define clinical guidelines as systematically developed statements, based on a thorough evaluation of the evidence, to assist practitioner and patient decisions about appropriate healthcare for specific clinical circumstances, across the entire clinical spectrum.[1]

1.1 Purpose

This Guideline supports Health Care Professionals (HCPs), particularly midwives, in providing water immersion for labour and/or birth to women requesting to use a birthing pool. It provides comprehensive, evidence-based guidance for care and management of the first, second, and third stages of labour during birthing pool use, including infection prevention and control. It is intended to guide clinical judgement and not replace it.

1.2 Scope

Target Users

This Guideline is a resource for all healthcare practitioners (incl. midwives, midwifery students (under supervision), obstetricians, neonatologists, and allied healthcare professionals) working in the maternity services/settings involved in the care of pregnant women, in particular, intrapartum care. It is intended for use in all birth settings: maternity hospitals/units, Midwifery Led Units (MLUs)/Alongside Birthing Units (ABUs) and the home/community setting.

Target Population

Pregnant women classified as being of 'normal risk'/on the Supported Care Pathway, in spontaneous labour, at term (between 37^{+0} and 42^{+0} weeks' gestation).

1.3 Objective

To provide evidence-based recommendations for the care and management of women requesting to use a birthing pool for labour and/or birth, as well as promoting a standardised approach nationally across all maternity settings, including the home birth setting.

1 National Clinical Effectiveness Committee (NCEC) and Health Information and Quality Authority (HIQA) (2015) National quality assurance criteria for clinical guidelines. Version 2. Dublin: NCEC and HIQA. https://assets.gov.ie/11533/2d070cb758a44fcb8b56f28784b10896.pdf

1.4 Guideline development process

The Guideline Developers agreed to undertake this work under the direction of the Guideline Programme Team (GPT). An Expert Advisory Group (EAG) was commissioned by the GPT. Their role was to critically review the Guideline prior to submission to the National Women and Infants Health Programme (NWIHP) for final approval.

The Guideline Developers/Writers group is as follows:

- Paula Barry, Project Lead, Water Immersion for Labour/Birth, NWIHP, Dublin.
- Dr Julie Higgins, Designated Midwifery Officer, Integrated Home Birth Service, HSE West and Northwest.
- Dr Caroline Keegan, Midwife Lecturer, University of Galway.
- Carmel Cronolly, Advanced Midwife Practitioner, Supported Care Pathway, University Hospital Galway.
- Aoife Hamill, Clinical Skills Facilitator, Our Lady of Lourdes Hospital, Drogheda.

See Appendix 1 for EAG membership and Appendix 2 for Guideline Programme Process.

1.5 Stakeholder involvement

Stakeholders are people who have a common interest in improving health services. This includes persons that are responsible for delivering and those who receive services related to the clinical Guideline.

Stakeholders (listed below) included in the review of this Guideline.

Name	Role/Position	Location
Ruth Banks	Self Employed Community Midwife	Dublin
Dr Ethel Burns	Senior Midwifery Lecturer & International Water Birth Researcher & Expert	Oxford Brookes University, Oxford, UK
Dr Megan Cooper	Senior Lecturer and Course Coordinator, Midwifery Programmes	College of Nursing & Health Sciences Adelaide, South Australia
Tracy Doherty	Assistant Director of Midwifery & Nursing, Infection Prevention & Control	Our Lady of Lourdes Hospital, Drogheda
Angela Dunne	National Lead Midwife	NWIHP, Dublin
Margo Dunworth	Neonatal Nurse Lead	NWIHP, Dublin
Dearbhail Edmonds	Service User	Co. Kildare
Dr Lauren Kearney	Conjoint Associate Professor in Midwifery	School of Nursing, Midwifery & Social Work, The University of Queensland, Brisbane, Australia
Dr Claire Feeley	Midwifery Lecturer and Midwife	Maternal Health Research, Kings College, London, UK

Name	Role/Position	Location
Clare Kennedy	Assistant Director of Midwifery	NWIHP, Dublin
Prof. Deirdre Murphy	Consultant Obstetrician	Coombe Hospital, Dublin
Prof. John Murphy	Consultant Neonatologist and National Clinical Lead Neonatology	NWIHP, Dublin
Grainne Milne	Director of Midwifery	Our Lady of Lourdes Hospital, Drogheda
Dr Cliona Murphy	Clinical Director	NWIHP, Dublin
Orla Mongan	Registered Advanced Midwife Practitioner, Supported Care Pathway	Wexford General Hospital
Frances Rivers	Consultant Midwife	Kingston & Richmond NHS Trust, London, UK
Katherine Robinson	Midwifery Manager, Home from Home Unit	Ulster Hospital, Maternity Unit, Belfast
Mary Rowland	Assistant Director of Midwifery	NWIHP, Dublin
Dr Valerie Slavin	Assistant Director of Midwifery	Gold Coast University Hospital, Queensland, Australia
Barbara Slevin	Assistant Director of Nursing, Infection Prevention & Control	Antimicrobial Resistance Infection Control Committee, HSE, Dublin
Gilda Sottile	Lecturer in Water Birth Training	Health Intervention Research Institute, Milan, Italy
Dr Bethan Townsend	Midwife Researcher	Women & Children's Services, Sunshine Coast University Hospital and Health Service, Queensland, Australia

The EAG has representatives from a broad range of professional backgrounds. Relevant to this Guideline there are representatives from Obstetrics, Neonatology, Midwifery as well as a public, patient representative from the Patient Advocacy Service Ireland and the Irish Neonatal Health Alliance.

The review process for this Guideline began with a submission to the EAG in June 2024.

This was followed by a meeting with Ms Siobhan Canny (Director of Midwifery, HSE West and Northwest) who in her dual role as a member of the EAG and as present Chair of the Director of Midwifery national forum arranged for this Guideline to be reviewed by the Directors of Midwifery nationally in November 2024. As a result of the feedback received further edits were made.

Following this, the Guideline was reviewed by the Clinical Director NWIHP Dr Cliona Murphy and the National Lead Midwife Ms Angela Dunne in April 2025.

The Guideline was sent to the NWIHP/IOG Clinical Advisory Group for sign off in September 2025 and was again reviewed in November 2025; suggested edits were considered and completed by the Guideline Developers.

On the 23rd of February 2026 a meeting was held at NWIHP offices to discuss the final edits required to this Guideline. In attendance were, Prof. Keelin O'Donoghue, Ms Nicolai Murphy, Ms Paula Barry, Dr Carmen Regan, Dr Cliona Murphy, Ms Angela Dunne, Mr Kilian McGrane and Ms Mary Rowland.

The Guideline Developers are grateful to all those that provided feedback during the development of this Guideline.

1.6 Disclosure of interests

Guideline developers and reviewers bring a range of experiences and perspectives to the work of the National Guideline Programme. It is likely that both Guideline developers and stakeholders/reviewers will have a variety of interests, arising from different contexts and activities done in a professional or personal capacity. These can include employment and other sources of income, speaking engagements, publications and research, and membership of professional or voluntary organisations. The involvement of individuals with relevant content expertise is essential for enhancing the value of Guideline recommendations, but these individuals may also have interests that can lead to conflicts of interest, as may peer reviewers, patient representatives and researchers.

All interests should be declared if, in the view of a reasonable person, they are relevant, or could be perceived to be relevant, to the work of the Clinical Practice Guideline in question.[2] Declaring an interest does not mean there is a conflict of interest.

It is important that interests are openly declared so they can be appropriately managed. Conflicts of interest can bias recommendations and ultimately be harmful to women and the health system. Disclosures of interests and appropriate management of conflicts of interest, when identified, are therefore essential to producing high-quality, credible health guidelines.[3]

The Guidelines International Network (GIN), a global network of Guideline developers that aims to promote best practices in the development of high-quality guidelines, developed a set of 9 principles to provide guidance on how financial and non-financial conflicts of interest should be both disclosed and managed. It is recommended that Guideline developers follow the GIN principles.[4]

2 NICE (2019) Policy on declaring and managing interests for NICE advisory committees https://www.nice.org.uk/Media/Default/About/Who-we-are/Policies-and-procedures/declaration-of-interests-policy.pdf

3 Traversy G, Barnieh L, Akl EA, Allan GM, Brouwers M, Ganache I, Grundy Q, Guyatt GH, Kelsall D, Leng G, Moore A, Persaud N, Schünemann HJ, Straus S, Thombs BD, Rodin R, Tonelli M. CMAJ. 2021, 193(2):E49-E54. DOI: 10.1503/cmaj.200651 https://www.cmaj.ca/content/193/2/E49

4 Holger J. Schünemann, Lubna A. Al-Ansary, Frode Forland, *et al.* ; for the Board of Trustees of the Guidelines International Network. Guidelines International Network: Principles for disclosure of interests and management of conflicts in guidelines. Ann Intern Med. 2015;163:548-553. doi:10.7326/M14-1885. https://www.acpjournals.org/doi/10.7326/m14-1885

For this National Clinical Practice Guideline, all Guideline developers are asked to complete a conflict of interest declaration form. The response to declared interests will be managed by the Guideline programme team, in accordance with GIN principles. Conflicts of interest may be reported in the published Guideline and declarations of interest can be made available.

Paula Barry is Clinical Lead for Water Immersion/Birth at the National Women and Infants Health Programme (NWIHP) and is leading the establishment of a birthing pool service within the maternity setting in Ireland. Paula conducted the first research study on water immersion for labour and birth in the Irish setting, which was published in 2020. She was part funded by the Nursing and Midwifery Practice Development Department to carry out this research.

1.7 Disclaimer

These guidelines have been prepared to promote and facilitate standardisation and consistency of good clinical practice, using a multidisciplinary approach. Information in this Guideline is current at the time of publication.

The ultimate judgement regarding a particular clinical procedure or treatment plan must be made by the Clinician in light of clinical data presented by the woman and the diagnostic and treatment options available.

Clinical material offered in this Guideline does not replace or remove clinical judgment or the professional care and duty necessary for each specific woman.

Clinical care carried out in accordance with this Guideline should be provided within the context of locally available resources and expertise.

This Guideline does not address all elements of standard practice and assumes that individual clinicians are responsible for the following:

- Discussing care with women in an environment that is appropriate and which enables respectful confidential discussion. This includes the use of interpreter services where necessary
- Advising women of their choices and ensure informed consent is obtained
- Provide care with professional scope of practice, meeting all legislative requirements and maintaining standards of professional conduct
- Applying standard precautions and additional precautions, as necessary, when delivering care
- Documenting all care in accordance with local and mandatory requirements.

1.8 Use of language

Within this guidance we use the terms 'woman' and 'women's health'. However, it is important to acknowledge that people who do not identify as cis-gender women are excluded from this descriptor, including people who identify as transgender, gender diverse and gender non-binary[5]. While there has been a trend to remove the word 'woman/women' and use 'gender neutral' language in policy and practice in relation to women's reproductive health and wellbeing, there is no evidence base to inform this change.[6] We also appreciate that there are risks to desexing language when describing female reproduction.[7] [8]

Services and delivery of care must be appropriate, inclusive and sensitive to the needs of people whose gender identity does not align with the sex they were assigned at birth. This includes training and education regarding diverse pathways to pregnancy and the use of practices which affirm the sexual and gender identities of all people using Obstetrics and Gynaecology services. Finally, all those using maternal and reproductive healthcare and services should receive individualised, respectful care including use of the gender nouns and pronouns they prefer.[7]

Language use is key to effectively communicate options, recommendations, and respectfully accept a woman's fully informed decision[9]. With this in mind, the use of birth is preferable to the term delivery in all circumstances and is used consistently where possible throughout the guidelines. It is acknowledged that in some circumstances (e.g. in the case of a medically indicated intervention or surgery) and in some contexts, substituting with the term delivery is considered appropriate and this term may be used instead.

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1.9 Adopting a trauma-informed approach to maternity care

Many women accessing maternity services may have experienced historical or current trauma prior to, or during pregnancy – including emotional, physical, sexual abuse, rape and torture. The perinatal period (pregnancy, birth and the postpartum) can be a time when previous trauma is triggered[10]. Maternity care procedures which may seem routine and 'non-invasive' to healthcare professionals (HCPs), e.g. abdominal palpation or providing breastfeeding support can be triggering for some women with a history of trauma, as can intimate procedures such as vaginal examinations[11].

Trauma-informed care (TIC) is a developing approach to healthcare which recognises the importance of psychological safety, and the need to prevent or resist re-traumatisation of individuals[12]. It is based on four key principles (known as the 4Rs): (1) realisation of trauma; (2) recognition of trauma; (3) responding to trauma and (4) resisting re-traumatisation[13,]. A trauma-informed approach to maternity care means that all staff in an organisation have an understanding of the impact of trauma on individuals, families and organisations[14]. While a universal approach is yet to be agreed, within clinical practice and research, many organisations recognise the need to move towards becoming trauma-informed in the provision of maternity care[15]. Such an approach requires commitment, investment and transformation within maternity services.

In simple terms, HCPs should recognise the impact of women's previous or current history of trauma (whether disclosed or not) and adopt a universally sensitive approach to care provision that recognises the impact of trauma on service users and HCPs. Examples of this include ensuring clear communication and consent is sought before any procedures/interventions, ensuring women are provided with dignity and respect at all times.

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Chapter 2:
Clinical Practice Guideline

Background

Introduction

Water birth and water immersion in labour are two distinct phenomena. However, they are often confounded.[5] Some women use a birthing pool as a strategy to manage pain during labour and leave the pool before giving birth, i.e. water labour, while others go on to give birth in water, referred to as water birth. During water birth, the baby is born under warm water and immediately and gently brought to the surface.

Birthing pools provide an alternative to pharmacological analgesia for women seeking to experience a more physiological approach to birth, and the use of water immersion to ease the discomfort and pain of labour is well established.[6] It was popularised in the 1980s by Michel Odent[7] and has gradually increased in use and acceptance in most high-income countries.[8] In the UK, it is estimated that up to 20% of women use water immersion[9,] and of these, 10% of women go on to have a water birth (9/100 women), which equates to approximately 60,000 water births per annum.[10]

Care during water immersion is primarily provided by midwives, a practice consistent with the midwifery philosophy that supports physiology and the midwife-woman relationship. Birthing pools can be located in maternity hospitals/units, midwifery-led units (MLUs), alongside birthing units (ABUs), and include inflatable pools commonly used by women having home births. Presently, 12 maternity units in the Republic of Ireland (ROI) have birthing pools, and several more are planning their introduction. Up to 50% of women use a birthing pool in the home birth setting.[11] Generally, in hospitals/units, plumbed pools are utilised, while inflatable pools are used during home birth.

Evidence

Warm water immersion during labour is safe for women and unborn babies and has demonstrated positive effects on maternal outcomes.[12] Such benefits include a decrease in epidural use (15.9% vs 48.9%; 0.20, [0.12-0.32])[13], significantly shorter labours (P=0.04) with less need for augmentation (41.7% vs 84.7%; P<0.0001)[14] and a significant increase in physiological birth (P<.001).[15] Concerning women's birth experiences, a study conducted in Ireland on water immersion by Barry *et al.* (2020)[13] reported a greater sense of control (P=0.017) and higher birth satisfaction rates (P<0.001) among women who used a birthing pool compared with women who did not. Edwards *et al.* (2023)[14] also reported significantly higher maternal satisfaction rates among women who used water immersion (P=0.01).

Water birth has been somewhat controversial over the years, with concerns regarding potential adverse events include difficulty estimating and treating haemorrhage, perineal laceration, newborn infection, umbilical cord avulsion, and aspiration or need for respiratory support.[14,16,17] According to Burns *et al.* (2022)[6], many of these concerns are based on case studies or studies lacking controlled comparisons. The National Institute for Clinical Excellence[16] has revised its stance on water birth. It now recommends not just using water for labour, it recommends birth in water as an option for healthy women with uncomplicated pregnancies, recognising that it may be linked to a reduced risk of severe perinatal trauma and PPH, as well as lower rates of NICU admissions. An increased risk of umbilical cord avulsion was observed; however, the absolute risk remains small.

Several large-scale studies, including systematic reviews and meta-analyses, have examined the safety and efficacy of water birth.[6,14,18-20] Overall, these studies showed no increase in adverse maternal or neonatal outcomes in relation to water birth compared to conventional 'land' birth for women with uncomplicated pregnancies.

Sanders *et al.* (2024)[18] examined maternal and neonatal outcomes among women who had a vaginal birth either in or out of water following water immersion for labour in a low-risk cohort of women. They analysed retrospective and prospective data over seven years from 2016-2022, with 26 maternity units in the UK comprising 73,229 participants. The primary maternal outcome included obstetric anal sphincter injury (OASI) by parity, and neonatal composite primary outcomes included fetal or neonatal death, admission to the neonatal intensive care unit (NICU), respiratory support and antibiotic administration in the first 48 hours following birth. Rates of primary outcomes were no higher among water births compared with birth out of water; rates of OASI among nulliparous women was 4.8% vs 5.3%, and for multiparous women was 1.1% vs 1.7%. Rates of composite outcomes among babies born in water were 2.7% vs 4.4% for babies where women left the pool to birth on 'land'. There were greater odds of association of umbilical cord avulsion among water birth women/babies (1.0% vs 0.3%, uOR 3.39, one-sided 95% CI $-\infty$ 5.27; aOR 3.89, one-sided 95% CI $-\infty$ to 6.88). No babies who had cord avulsion died, received a blood transfusion, or had therapeutic hypothermia administered for treatment of neonatal encephalopathy.

McKinney *et al.* (2024)[19] conducted a systematic review and meta-analysis, including 321,641 participants, that examined maternal and neonatal outcomes associated with water birth compared to land birth. They included randomised (N=4) and non-randomised studies (N=48) from around the world that assessed maternal and neonatal outcomes in women who gave birth conventionally, 'on land', or while submerged in water. Primary outcomes included maternal infection; secondary outcomes included rates of postpartum haemorrhage (PPH), perineal trauma, umbilical cord avulsion, Apgar scores, NICU admission rates and neonatal mortality within 30 days of birth. Based on data from observational studies, McKinney *et al.* (2024) reported that water birth was not associated with an increased probability of maternal infection compared to land birth (OR 0.93; 95% CI [0.76-1.14]). Women giving birth in water had decreased odds of PPH (OR 0.80; 95% CI [0.68-0.94]). Neonates born in water had increased odds of cord avulsion (OR 1.75; 95% CI [1.38-2.24]) and decreased odds of low Apgar scores (OR 0.69; 95% CI [0.58-0.82]), neonatal infection (OR 0.64; 95% CI [0.42-0.97]), neonatal aspiration requiring resuscitation (OR 0.60; 95% CI [0.43-0.84]) and neonatal intensive care unit admission (OR 0.56; 95% CI [0.45-0.70]). They did not find any marked difference in rates of perineal trauma (P=0.75) or OASIS (P=0.08), or neonatal mortality in the first 30 days following birth (P=0.54). Analysis of RCTs did not find substantial differences in odds of maternal and neonatal complications between water and land birth, which the authors attributed to the limited number of trials available.

Edwards *et al.* (2023)[14] conducted a systematic review and meta-analysis of six RCTs involving 706 participants. The review aimed to compare maternal and perinatal outcomes following water birth. The primary outcome was a perinatal composite outcome, and the secondary outcome included maternal and individual perinatal outcomes. The researchers reported labour augmentation and epidural were significantly less common with water birth (41.7% vs 84.7%, P<0.0001) and (10.5 vs. 72.4%, P <0.001). Rates of PPH, perineal trauma, mode of birth and perinatal outcomes did not differ between the groups. Maternal satisfaction and pain scores were significantly higher among women with water birth (P=0.01) and (P=0.003), and the length of labour overall was significantly shorter (P=0.04). The composite perinatal outcomes could not be calculated due to a lack of individual data. However, researchers reported that no perinatal outcomes differed significantly between the groups. This study had similar results to an earlier Cochrane Review on water immersion conducted by Cluett *et al.* (2018)[12], in that no difference was seen in mode of birth or NICU admissions and no evidence of increased maternal or neonatal adverse outcomes in water birth compared to land births. The researchers concluded that their study demonstrated improved maternal outcomes with water birth, possibly with no increased risk of adverse neonatal outcomes. However, they stated that the study was too small and underpowered to demonstrate clear neonatal safety with water birth, so they recommended further research.

Burns *et al.* (2022)[6] undertook a systematic review and meta-analysis to examine intrapartum interventions and maternal and neonatal outcomes following immersion in water during labour and birth. The review incorporated 36 studies, including 157,546 participants. The studies included six RCTs, 13 prospective, and 17 retrospective observational studies from around the world from 2000. Researchers found water immersion significantly reduced the use of epidural (OR 0.17; 95% CI [0.05-0.56]), reduced the likelihood of episiotomy (OR 0.16; 95% CI [0.10-0.27]), lessened maternal pain (OR 0.24; 95% CI [0.12-0.51]), and was less likely to involve PPH (OR 0.69; 95% CI [1.21-1.79]). There was an increase in maternal satisfaction rates (OR 1.95; 95% CI 1.28-2.96) and odds of intact perineum (OR 1.48; 95% CI [1.21-1.79]) with water immersion. Similar to Mc Kinney *et al. (2024)*[19],a water birth was associated with increased odds of cord avulsion (OR 1.94; 95% CI [1.30-2.88]). However, the absolute risk remained low (4.3 per 1000 vs 1.3 per 1000 births). In the review by Burns *et al.* (2022)[6], 21 studies provided data on 5 min Apgar scores (N=98, 372) with no significant difference between cohorts (OR 0.63 95% CI [0.38-1.05]). There were no differences in any other identified neonatal outcomes. The researchers attributed an increase in cord avulsion during water birth to a swift rise of the baby to the water surface, which may result in heightened tension and damage to the umbilical cord. For this reason, they recommended caution when handling the infant and the umbilical cord to prevent undue traction. They also recommended that care providers should be prepared to treat cord avulsion should it arise.

Bovbjerg *et al.* (2022)[20] used a retrospective cohort design with propensity score matching to address confounding variables to investigate maternal and neonatal outcomes following water birth in the USA from 2012-2018. They included over 35,000 'low risk' participants (17,530 in each cohort with propensity score matched on more than 80 co-variables) and used logistic regression analysis to compare outcomes between the matched water birth and land birth groups. Water birth was associated with improved or no difference in outcomes for most measures, including neonatal death (aOR 0.56; 95% CI [0.31-1.0]). Maternal outcomes for water birth with the matched data were associated with lower adjusted odds of PPH (aOR 0.79; 95% CI [0.75-0.83]). Water birth was associated with lower adjusted odds of severe perineal trauma (0.90 [0.81-0.99]). Water birth was associated with increased adjusted odds of uterine infection (1.25 [1.05-1.48]) but was not associated with infection levels requiring hospitalisation. The absolute risk of uterine infection was 0.31% in the water birth group and 0.25% in the land birth group (risk difference of 6 per 10,000 additional infections among water births). Neonates in the matched water birth group had lower odds of NICU admission (aOR 0.84; 95% CI [0.78-0.90]). Neither NICU admission in the first six weeks nor neonatal infection in the first six weeks was associated with water birth. Water birth in the matched analysis was associated with a significant increase in the relative odds of umbilical cord avulsion (1.57, [1.37-1.82]). The absolute risks of avulsion were low, 0.57% for water

birth and 0.37% for land birth (risk difference 20:10,000 additional cord avulsions among water birth). They reported no deaths of a neonate following umbilical cord avulsion.

Vanderlean *et al.* (2018)[21] conducted a systematic review and meta-analysis examining outcomes of babies born in water compared to conventional 'land' birth. The review included 39 studies, with 12,592 babies reported to have been born underwater. Studies included five RCTs, two non-randomised controlled trials, 22 cohort studies and 12 matched cohort studies. Outcomes investigated were Apgar scores, need for resuscitation, neonatal infections, NICU admission, cord avulsion rate and neonatal mortality. The odds of necessity for resuscitation between water birth and conventional birth were similar (OR 0.77; 95% CI [0.39-1.54]). NICU admissions favoured water birth (OR 0.70; 95% CI [0.55-0.90]), and there was no significant difference in the odds of neonatal death between water and land birth (OR 0.83; 95% CI [0.19-3.39]).

Summary

Recent large-scale studies, show water immersion for labour and birth to be as safe as conventional 'land' birth for women with uncomplicated pregnancies (i.e. women classified as being of 'normal risk'). Water immersion enhances physiological birth and increases maternal satisfaction. Studies show no increased risk for neonates, with the possible exception of umbilical cord avulsion. However, the risk of umbilical cord avulsion is small and can be managed through training on appropriate water birth techniques and incident management, should it occur.

Recommendations relevant to this Guideline can also be found in:

- National Clinical Guideline: Antenatal Midwifery Care of the Woman on Supported Care Pathway, NWIHP/IOG (pending 2026)[22]
- National Clinical Guideline: Intrapartum Midwifery Care of the Woman on the Supported Care Pathway, NWIHP/IOG (2025)[1]
- National Clinical Guideline: Fetal Heart Rate Monitoring. NWIHP/IOG (2025)[2]
- National Clinical Practice Guideline Prevention and Management of Primary Postpartum Haemorrhage. NWIHP/IOG (2022)[23]
- National Clinical Practice Guideline: Prevention of Early Onset Group B Streptococcal Disease in Term Infants. NWIHP/IOG (2023)[3]
- Infection Control Guiding Principles for Buildings, Acute Hospitals and Community Healthcare Settings. AMRIC/HPSC (2024)[24]
- Infection Prevention and Control National Clinical Guideline No. 30. DoH (2023) [25]
- National Standards for the Prevention and Control of Health-Associated Infections in Acute Healthcare Services. HIQA (2017)[26]
- Guideline for the Prevention and Control of Infection for Water Systems in Healthcare Facilities. HSE/HPSC (2015)[27]
- National Guideline for the Control of Legionellosis in Ireland. HSE/HPSC (2009)[28]

Section 1: First Stage of Labour

Introduction

The following section discusses water immersion in relation to the first stage of labour. Clinical Questions 2.1-2.4 below discuss the evidence in relation to birthing pool eligibility criteria, use of opioids and water birth, the timing of entering a birthing pool and thermoregulation (including maternal/fetal/pool water). A clinical practice guide for each of the four questions has been provided, and key recommendations are included at the end of each clinical question.

Clinical Question 2.1: Who is suitable to use a birthing pool (Eligibility Criteria)?

Evidence Statement

Recent large-scale studies support water immersion for labour and birth for women with uncomplicated pregnancies.[6,14,18-20]

Women who labour in water report less pain (OR 0.24; 95% CI [0.12-0.51])[6] and higher birth satisfaction rates (OR 1.95; 95% CI [1.28-2.96]).[6] In relation to maternal outcomes, rates of infections were found to be no higher when women used water immersion (OR 0.93; 95% CI [0.76-1.14]), and rates of perineal trauma and OASI were similar (P=0.75) and (P=0.08)[19]. Concerning PPH rates, a recent systematic review and meta-analysis by Mc Kinney *et al.* (2024)[19] reported women giving birth in water to have decreased odds of PPH (OR 0.80; 95% CI [0.68-0.94]). Similarly, Burns *et al.* (2022)[6] reported a significant reduction in PPH for women using water immersion in their systematic review and meta-analysis of 157,546 women (OR 0.69; 95% CI [1.21-1.79]).

Specifically, in relation to neonatal outcomes and water birth, the most recent systematic review and meta-analysis by Vanderlaan *et al.* (2018)[21] examining outcomes of babies born in water in comparison to conventional 'land' birth did not find evidence of any increased odds of poor neonatal outcomes in relation to water birth. This review included 39 papers, and 12,592 babies were reported to have been born in water. Studies included five RCTs, two non-randomised controlled trials, 22 cohort studies and 12 matched cohort studies. The necessity for resuscitation between water birth and conventional birth was similar (OR 0.77; 95% CI [0.39-1.54]). NICU admissions favoured water birth (OR 0.70; 95% CI [0.55-0.90]), and there was no difference in the odds of neonatal death between water and land birth (OR 0.83; 95% CI; [0.19-3.39]). Reassuring neonatal outcomes was also reported by Sander *et al.* (2024)[18], whose primary outcome included neonatal mortality and morbidity. Their rates of neonatal composite outcomes among babies born in water were 2.7% vs 4.4% for babies where women left the pool to give birth on 'land'. Similar, reassuring outcomes were reported in two other large systematic reviews and meta-analysis by McKinney *et al.* (2024)[19] and Burns *et al.* (2022)[6] comparing water to land birth. McKinney *et al.* (2024)[19] reported decreased odds of low Apgar scores (OR 0.69; 95% CI [0.57-0.82]) and neonatal intensive care unit admissions (OR 0.56; 95% CI [0.45-0.70]) for babies born in water. Burns *et al.* (2022)[6] found no difference in 5 min Apgar scores (OR 0.63; 95% CI [0.38-1.05]) for babies born in water compared to 'land' birth.

An association between umbilical cord avulsion and water birth has been reported.[6, 19-21] A rate of 1.0% vs 0.3% for babies born on 'land' was reported by Sanders *et al.* (2024).[18] Reassuringly, they reported that no baby who had cord avulsion died, received a blood transfusion or therapeutic hypothermia for the treatment of neonatal encephalopathy. Burns *et al.* (2022)[6] reported a rate of 4.3 per 1,000 water

births vs 1.3 per 1000 'land' births (OR 1.94; 95% CI [1.30-2.88]). Mc Kinney *et al.* (2024)[19] reported rates of 0.5% for water births vs 0.2% for land births, i.e. 1 more per 1,000 births. Bovbjerg *et al.* (2022)[20] reported a risk difference of 20:10,000 additional cord avulsions among water birth. Similar to Sanders *et al.* (2024)[18], *Bovberg et al. (2022)*[20] reported no increase in neonatal morbidity or mortality secondary to cord avulsion. Cord avulsion during water birth is attributed to the swift rise of the baby to the water's surface, which may result in heightened tension and damage to the umbilical cord.[14, 20] Therefore, caution is recommended when handling the infant and the umbilical cord during water birth.[6]

With regard to 'uncomplicated pregnancies,' most studies characterised their sample as 'low risk,' though descriptions vary. A criticism of water birth research is the lack of consistency in definitions of 'low-risk' pregnancy and 'healthy' women. This lack of consistency makes it difficult to compare studies of water birth to identify best practices.[21] The most common specific eligibility criteria appear to be gestational age (term), singleton pregnancy, and cephalic presentation without maternal or neonatal complications.

A content analysis conducted by Garcia *et al.* (2023)[29] of water birth policies from six countries, including 22 water birth guidelines, was reviewed and showed varied definitions of 'low risk' and varied practices concerning pool eligibility criteria. Similar to Vanderlann (2018)[21], the most consistent variables were term gestation (37-42 completed weeks), singleton pregnancy and cephalic presentation with reassuring maternal and fetal status. A history of Caesarean section, increased body mass index, use of opioid medication and adequate labour progress were found to vary, with limited supporting evidence provided. The need for intravenous (IV) access or use of Group B Streptococcus (GBS) antibiotic prophylaxis was included in the eligibility criteria in some units. Meconium stained liquor was an exclusion in most documents, however, not supported by evidence. The authors of this paper identified variations across guidelines and examples of restrictive policies for water birth based on opinion or perceived risk rather than evidence from research. Similar findings were reported in a mixed-method study of midwives' experiences providing a water immersion service in Australia.[30] Participants highlighted perceived research limitations and varying definitions of 'low risk' as impacting guideline development and women's ability to exercise choice and autonomy concerning water immersion.

Clinical Practice

Robust governance structures should be in place to facilitate water immersion and birth at local level in all maternity settings.

The following eligibility criteria are reflective of criteria included in the research studies discussed in detail in the Introduction/Background to this Guideline and the Evidence Statement above in relation to water immersion for 'normal risk' women. It is important to acknowledge that this list is not exhaustive. Each woman needs to be assessed individually, considering the present clinical situation, history/pregnancy to date and birth preferences.

Water immersion should be discussed at antenatal classes/visits, and women should be provided with written evidence-based information. Midwives, as the primary caregivers to women using a birthing pool, should have attended mandatory training, be familiar with the eligibility criteria, and be confident in ongoing risk assessment. The midwife's role is to provide guidance and support to obstetric colleagues and the wider MDT regarding a woman's suitability for water immersion. Doctors involved in obstetric care should also attend water birth training/updates and participate in local skills/drills sessions.

As with all pregnant women, clinical situations can change; therefore, assessment is ongoing throughout pregnancy, including on presentation to the labour ward and during labour/birth, regarding a woman's suitability to use and/or remain in a birthing pool. In addition to following water immersion guidelines, sound clinical judgement is essential for the safe and successful provision of care to women seeking to use a birthing pool.

See Appendices 3 and 4 for examples of a Water Immersion Education/Training Programme (including practical skills and drills) and Appendices 5 and 6 for examples of a Competency Assessment Tool that can be used by midwives gaining experience in water immersion/birth.

Figure 2: Eligibility Criteria for Birthing Pool Use – Supported Care Pathway (Normal Risk) *

*A 'normal-risk' pregnancy is defined as a pregnancy where there are no identified risk factors, known or pre-existing conditions or complications requiring additional tests or adapted management[1]

Before a woman enters a birthing pool, her history is reviewed, and a full maternal and fetal wellbeing assessment is carried out[1]

The following is an example of eligibility criteria (not exhaustive) for 'normal risk'/women on the Supported Care Pathway;

- Singleton pregnancy
- Cephalic presentation
- Between 37^{+0} and 42^{+0} weeks' gestation
- Spontaneous onset of labour
- Normal fetal heart rate *(as per National Fetal Heart Monitoring Guideline, NWIHP/IOG, 2025)*[2]
- Normal maternal observations *(as per National Intrapartum Care for Women on the Supported Care Pathway)*[1]
- BMI less than/equal to 35kg/m^2
- Independently mobile and able to demonstrate the ability to get in and out of the pool unaided
- Spontaneous rupture of membranes for up to 24 hours, with clear liquor draining. (*Refer to the National Clinical Practice Guideline Prevention of Early-Onset GBS in Term Infants)*[3]

Recommendations

1. In line with the National Maternity Strategy (2016) and providing choice and an equitable service to women, we recommend robust governance structures be in place to facilitate water immersion and birth at local level in all maternity settings.
2. We recommend that pregnant women be informed about using a birthing pool for labour and/or birth during the antenatal period and that evidence-based information be provided in hard copy, electronically, or via QR Code.
3. We recommend that women with uncomplicated pregnancies (i.e. 'normal risk'/ on the Supported Care Pathway) should be offered the use of a birthing pool for labour and/or birth and that all care/management should be as per the *National Clinical Practice Guideline; Intrapartum Care for Women on the Supported Care Pathway, NWIHP/IOG (2025)*
4. We strongly recommend that midwives have access to mandatory training on water immersion for labour/birth nationally, through Centres of Midwifery Education/National E Learning Programme, and locally for skills and drills, and guidelines should be in place to support practice.
5. We recommend that doctors involved in maternity care have access to training on water immersion for labour and birth via the National E-Learning Programme and attend local skills/drills updates as necessary.
6. We recommend on-going assessment of a woman's suitability for water immersion. This assessment continues throughout pregnancy, including on presentation to the labour ward and throughout labour/birth, regarding a woman's suitability to use and/or remain in, a birthing pool.
7. We recommend that midwives, as the primary caregivers for women using a birthing pool, be familiar with pool eligibility criteria and ongoing risk assessment so that they can confidently guide and support obstetric colleagues and all the MDT with decisions regarding a woman's suitability to use water immersion for labour and/or birth.

Clinical Question 2.2: Opioids and water birth: What is known and do they have a role?

Evidence Statement

The National Institute Clinical Care Excellence (NICE) (2025)[16] recommends that women are informed that the use of opioids (i.e. pethidine) provide limited pain relief and may have significant side effects for both them (drowsiness, nausea/vomiting), and their baby (short term respiratory depression and drowsiness, which may last several days). Opioids readily cross the placenta and have potential to cause reduced fetal heart variability, neonatal sedation and respiratory depression following birth.[31] The plasma half-life of pethidine is 3-7 hours in the woman and 8-24 hours in the neonate[32] and once metabolised by the liver, it's active metabolite 'norpethidine' has a half-life of up to 20 hours in the woman and up to 48 hours in the neonate. Additionally, according to Philips *et al.* (2017)[31] norpethidine can accumulate in both the mother and fetus. A Cochrane Review[33] of 61 studies involving more than 8,000 women showed that opioids appeared to provide some relief from pain for women but were associated with drowsiness, nausea and vomiting. There was no clear evidence of adverse effects of opioids on the newborn. They reported that many of the studies were of low or very low quality, with insufficient numbers of women/

babies to detect differences between groups. None of these studies included water immersion/birth; the only non-pharmacological analgesia mentioned were Transcutaneous Electrical Nerve Stimulation (TENs) and inhaled analgesia (Entonox).

Upon reviewing international guidelines, it appears that pethidine is used in some units that offer water immersion.[29] Due to its potential to cause drowsiness, most recommend waiting a minimum of 2 hours (or longer) following pethidine administration before a woman enters a pool, as also advised by NICE (2025).[16]

In relation to neonatal outcomes and the safety of opioid use during water birth, the Guideline Development Group has identified a gap in the literature. Given the paucity of evidence regarding the potential side effects of opioids on an unborn baby during water birth and considering pethidine's long half-life, there is a need to assess the risk of respiratory and reflex depression in the baby, particularly for women who have received repeated doses of pethidine.

The Guideline Development Group suggest that anything which might override the 'diving reflex' or cause respiratory distress in a baby born into water requires careful consideration. Although opioids continue to be used in units where women choose to give birth in water, the full extent of their effects on neonates born in water does not appear to have been clarified. For this reason, women must be made aware of the lack of evidence to facilitate informed decision-making.

Clinical Practice

Women need to be made aware of the limited evidence regarding opioid use and water birth. Alternatives to opioids should be promoted, such as mobility, the use of birthing aids, showers, massage, and music or relaxation techniques. If a woman opts for pethidine and later desires to use the birthing pool, at least two hours should have passed (or longer if she remains drowsy). Consideration should also be given to alternative methods of pain relief, aside from water immersion, for women who have received more than one dose of pethidine in the past 12 hours.

Recommendations

8. **We recommend that women are informed of the paucity of evidence in relation to opioids (e.g. pethidine) and water birth, in particular regarding potential neonatal side effects i.e. risk of respiratory and reflex depression. Alternatives to opioids, such as mobility, use of shower/birthing aids, massage, deep breathing and relaxation techniques, should be encouraged.**
9. **If a woman requests IM opioid administration and subsequently requests to use a birthing pool, we recommend that a minimum of two hours or longer (if a woman remains drowsy), should have lapsed prior to entering a birthing pool.**
10. **For women who have been administered more than one dose of pethidine in the previous 12 hours, we recommend consideration of alternative modalities of analgesia other than water immersion (in particular if a woman is requesting to give birth in water).**

Clinical Question 2.3: Entering a birthing pool – is there a 'best' time?

Evidence Statement

According to the RCOG/RCM (2006)[34], the evidence on the timing of immersion into the water during the first stage of labour is not robust enough to set criteria. Cluett *et al.* (2018)[12] identified only one study on timing/early versus late entry to a pool (defining it as pre/post 5 cm dilated in their review). Although the authors[35] of this study reported an increase in augmentation, they failed to report on overall birth mode, and the study, published in 1997, is now considered outdated. Henderson *et al.* (2014)[36] found no relation between cervical dilatation at pool entry and duration of labour in their study of a sample of 2,505 women. They acknowledged that cervical dilatation is just one aspect indicating labour progress and that effacement and application of the presenting part and uterine contractions are equally important. The National Clinical Care Guideline on Intrapartum Care for Women on the Supported Care Pathway[1] consider 4 cm as active first stage of labour. However, they acknowledge that labour can vary between women, some may have a longer 'latent' phase, and therefore it is necessary to take an individualised approach to care and management.

UK water birth midwifery experts Diane Garland (2017)[8] and Dr E Burns *et al.* (2022)[6] recommend that there be no arbitrary figure of 'cm's' dilatation necessary prior to entering a birthing pool. According to Feeley and Burns (2021)[37], water is a non-invasive and removable form of analgesia. Because all women are different and labours vary, there should be no standard starting point for water immersion. Women need to be individually assessed, and birth preferences are taken into consideration to accommodate women as much as possible, also considering that some maternity units presently only have one birthing pool.

Clinical Practice

Before entering a birthing pool, a full assessment is conducted regarding labour diagnosis. Consideration needs to be given to women who only want to use water for early labour, perhaps as a stepping stone before opting for other pharmacological analgesia. Others may want to go on to have a water birth. Assessment of uterine activity/contractions, the woman's behaviour and birth preferences, and cervical changes need to be taken into consideration before entering a birthing pool. Once diagnosed as being in active labour, a partogram should be commenced to document maternal/fetal wellbeing and labour progress.

If the water relaxes the woman too much and contractions appear to reduce (in frequency, strength, and duration), it can be suggested that the woman leave the pool for a period of time to mobilise, use other birthing aids, rest, use the bathroom, and hydrate. The woman may re-enter the pool once contractions increase or labour progresses. If necessary, an alternative plan can be made as clinically indicated.

As many maternity units only have one birthing pool, accommodating all women who request to use a pool may be challenging. This may result in situations where using the birthing pool may not be possible or available to them. Women should be made aware of this during the antenatal period.

Recommendations

11. We recommend that entry to a birthing pool be on an individual basis, i.e. based on an assessment of the frequency, strength, and duration of contractions, the woman's behaviour/coping abilities, and birth preferences; no arbitrary cervical dilatation measurement is necessary before a woman can enter a birthing pool.
12. Once diagnosed as being in active labour, we recommend a partogram be commenced to document maternal/fetal wellbeing and labour progress.
13. If contractions reduce (in frequency, strength, and duration), we recommend that women exit the pool and be supported to mobilise, use the bathroom/shower, use birthing aids, and hydrate. They may re-enter the pool if contractions increase or show signs of labour progression.

Clinical Question 2.4: Are maternal and fetal thermoregulation and pool water temperature important?

Evidence Statement

According to the RCOG/RCM (2006)[34,] there has been controversy with regard to temperature of the water in a birthing pool, with criteria recommending differing estimates ranging between 34-37 degrees Celsius[38] to a Swedish study which recommends that women be encouraged to self-regulate, i.e. a temperature that feels right for them.[39] The consensus appears to be to regulate water temperature as dictated by the woman's level of comfort *(generally between 35-37 degrees Celsius)*[37,40], but to not exceed 37.5 degrees Celsius.[16] This is because labour contractions generate heat, and the unborn baby is approximately a degree hotter than its mother. Therefore, it is important not to overheat, potentially causing a woman to become hyperthermic and tachycardic, leading to fetal hyperthermia and possible cerebral compromise. Additionally, for many years, the rationale for pool water temperature being approximately 37 degrees Celsius is based on the assumption that the newborn should be born into water of a similar temperature to that in utero *(normal adult body temperature*), with the aim of preventing initiation of respiration in the newborn while underwater.[40]

The recording of hourly maternal temperature is common practice in some maternity units/guidelines, albeit with limited supporting empirical evidence. The Guideline Developer Group has reviewed these routine practices. It is making the recommendation that due to lack of supporting evidence and from collaboration with midwives' experts in water birth nationally and internationally (including internationally published water birth researchers), the recording of maternal temperature should be as per all 'normal risk' women, i.e. at least four hourly, with hourly maternal pulse[1] unless concerns arise.

Clinical Practice

Room temperature should be maintained at an ambient temperature of approximately 21-22 degrees Celsius. The pool water should be comfortable for the woman during labour, not exceeding 37.5 degrees Celsius. Water temperature is checked before a woman enters the pool and thereafter is dictated by the woman. If a woman leaves the pool for a length of time (e.g. to use the bathroom, have a shower, mobilise/use other birthing aids), the water temperature should be re-checked, and warm water added as necessary before re-entering the pool. During the second stage of labour, in preparation for birth, the pool water should be topped up to adequately cover the woman's lower half of her body (in particular

if adopting a kneeling/all four's position) and also to bring the water temperature to approximately 37 degrees Celsius, but no more than 37.5 degrees. To mitigate against the risk of cross-infection, a digital, 'non-contact' infrared thermometer is recommended for checking water temperature. This should be used per the manufacturer's instructions, following gentle agitation of the pool water. As with all 'normal risk' women, maternal temperature, blood pressure, and respirations should be recorded at least 4 hourly and maternal pulse recorded hourly.

Additionally, women are encouraged to 'drink to thirst' to keep hydrated and to alternate plain water with isotonic drinks/coconut water to avoid hyponatremia. Women in labour are more prone to hyponatremia by the very nature of being pregnant (because of a lower baseline plasma sodium, an impaired ability to excrete water and secondary to the anti-diuretic effects of oxytocin). For this reason, it is important to ensure the woman dictates oral intake, i.e. 'drink to thirst'; a light diet can be encouraged if tolerated, and women should be encouraged to pass urine two hourly.

To avoid overheating and excessive salt loss through perspiration, the pool water level should not be above the woman's breasts (xiphisternum). If a woman's temperature rises (>/=37.5^0 C) on two occasions, she is advised to exit the pool and take cooling measures, e.g. apply the cool cloth to her forehead/neck and sip iced water. Returning to the pool depends on the clinical situation (i.e. rule out signs of infection-maternal, such as pyrexia, increase in respiratory rate, maternal/fetal tachycardia) and the water is at a more comfortable temperature for the woman.

Recommendations

14. **We recommend the level of the pool water to be at the level of the woman's breasts (xiphysternum) when the woman is in a sitting position in the pool, and not above, to avoid overheating.**
15. **For labour, we recommend that the temperature of pool water is dictated by the woman's comfort level** *(generally between 35-37 degrees Celsius*), **and that water temperature should not exceed 37.5 degrees Celsius.**
16. **For second stage/birth, we recommend water being added, to adequately cover the woman's lower half of her body (if adopting a kneeling/all fours position) and to also bring the water temperature to approximately 37 degrees Celsius (adult body temp) but not exceed 37.5 degrees Celsius.**
17. **As per all 'normal risk' women in labour, we recommend maternal temperature, blood pressure and respiratory rate are recorded at least 4 hourly and maternal pulse at least hourly.**
18. **We recommend women drink to thirst to keep hydrated, and to alternate plain water with isotonic drinks, to avoid hyponatremia and are encouraged to pass urine two hourly.**
19. **If a woman becomes too warm (i.e. maternal temperature>/=37.5 degrees Celsius on two occasions,** *30 minutes apart*, **and/or increase in maternal/fetal heart rate), we recommend exiting the pool and using cooling strategies, e.g. applying a cold compress to the forehead/back of the neck and sipping iced water. Returning to the pool depends on the clinical situation, i.e. ruling out potential infection and the water being at a more comfortable temperature for the woman.**

Section 2: Second Stage of Labour

Introduction

The following section discusses water immersion in relation to the second stage of labour, i.e. water birth. Clinical Questions 2.5-2.7 below discuss the evidence regarding the physiological processes that protect an unborn baby against water inhalation during water birth, OASI, and umbilical cord avulsion following water birth. A clinical practice guide for each of the three questions has been provided, and key recommendations are included at the end of each clinical question.

Clinical Question 2.5: What physiological processes offer the unborn baby protection against inhalation of water during water birth?

Evidence Statement

Several studies report that water birth does not increase the risk of mortality or morbidity for the newborn.[5,6,21,41-44] In relation to admissions to NICU for suspected water aspiration, results are similar across all studies comparing babies born in water to conventional 'land birth'.[20,41,42,44] Bovbjerg *et al.* (2021)[20] conducted a propensity-scored study comparing 17,000 water births to 17,000 'land births'. Results showed that the water birth group had lower odds of neonatal transfer to NICU (aOR 0.84 [95% CI 0.78-0.90]) and respiratory distress syndrome (0.93 [0.86-0.99]). A recent large Systematic Review by Burns *et al.* (2022)[6] found no difference in transient tachypnoea of the newborn (TTN) or suspected respiratory distress of the newborn (OR 0.34;95% CI 0.05 to 2.43; random effects; Q=18.1 $p<0.001$; I^2 =89%). McKinney *et al.* (2024) [21] conducted a systematic review and meta-analysis including 321,641 participants. They reported decreased odds of neonatal aspiration requiring resuscitation (OR 0.60; 95% CI [0.43-0.84]) and neonatal intensive care admissions (OR 0.56; 95% CI [0.45-0.70]) for babies born in water.

According to Vanderlaan *et al.* (2020)[42], when rare adverse outcomes occur in relation to babies born in water, it is thought not to be related to water birth 'per se' but a departure from established safe guidelines. For this reason, robust evidence-based guidelines and training/education are essential. Others have made similar recommendations.[34,45] In relation to the prevention of triggering the first breath underwater, various mechanisms are thought to protect the healthy, term neonate from water aspiration.[40] Such mechanisms include:

1. Hormonal

a. Increase Prostaglandin Production

During physiological birth, the fetus is subjected to hormonal changes that suppress fetal breathing movements, normally occurring in the later stages of pregnancy. During pregnancy, the fetus will practice a regular rhythmical movement pattern of the intercostal and diaphragmatic muscles.[46] At 24-48 hours before the onset of normal labour, prostaglandin E2 levels rise in both the woman and fetus, which in turn slow down movements or "practice breaths". As labour becomes established, the fetus slows the rate of active fetal breathing to conserve oxygen.[47] After 4 cm of dilation, it is thought that prostaglandin levels are much higher, preventing any fetal breathing movement from taking place from that point forward and continuing throughout the labour and birth process. Johnson (1996)[47] states, "If the muscles are inhibited from working, the fetus cannot gasp or inhale." Additionally, in utero, fetal lungs, i.e. alveoli sacs, are filled with fluid maintained by osmotic pressure, and this fluid remains in the

upper airway, having a protective influence. Lung fluid is absorbed when the first breath is taken and is usually completed between 6-24 hours following birth.[40]

b. Increase in 'Stress Hormones'

In utero, the fetus can adapt to a mild hypoxic state and has an adaptive mechanism for coping during labour. This is due to increased 'stress' hormones.[65] The fetus compensates by slowing the metabolic rate and increasing the blood flow to vital organs such as the brain and heart. The overarching goal of this mechanism is to conserve oxygen while maintaining homeostasis to sustain life.[47]

2. The Dive Reflex

Aquatic mammals, such as whales and dolphins, give birth underwater, with the newborn not breathing until it reaches the surface.[48-50] This is facilitated by the 'diving' reflex, which also exists in humans.[51] It is thought that this dive reflex may serve as a protective mechanism to prevent water aspiration in neonates and babies up to at least six months of age.[48,52,53] According to Harper (2014)[45], understanding this mechanism in relation to water birth is essential. The dive reflex normally present in the newborn will initiate obstructive expiratory apnoea and close the larynx in response to the triggering of chemoreceptors by foreign substances, such as water near the vocal cords. A high concentration of chemoreceptors at the back of the newborn larynx allows it to close to any unrecognisable substance. The glottis closes and stops the fluid/substance from passing into the respiratory tract. Garland (2017)[40] uses the analogy of how a newborn breastfeeds, sucking, swallowing and breathing all at once, yet maintaining a clear airway. In other words, during water birth, the baby has an innate ability to swallow naturally but not inhale water.

It is thought that during a water birth, this dive reflex is further engaged by stimulating facial skin receptors, which activate as the baby's face comes in contact with water. These receptors convey stimuli along the trigeminal nerve (the fifth cranial nerve) to the glottis to close, preventing water aspiration into the airways.[40]

3. Force of Gravity

A trigger for breathing is the presence of gravity, which asserts equal pressure on the face and stimulates the innervation of the trigeminal nerves around the nose and mouth. During water birth, the full force of gravity is reduced. Gravity stimulates the baby through pressure sensors, particularly on the top of the head and face. These are not triggered until the baby is lifted out of the water.[40] Therefore, the birth must be completely underwater and water depth sufficient to cover the woman's lower half of her body.[45]

Factors that are hypothesised to stimulate/'trigger' the first breath (Garland, 2017)[40]

- Change in the environment, i.e. moving from water into air
- Change in temperature from water (37 degrees Celsius) to room (21-22 degrees Celsius)
- Effect of the full force of gravity
- Touch or stimulation
- Bright lights
- Noise

Clinical Practice

As per all births, a second midwife should be in attendance for birth. The pool, the room and surrounding environment are prepared keeping in mind the impact the environment plays on the stimulation of the baby at birth. The room lighting should be dim, with minimum noise, and be heated to 21-22 degrees Celsius. The birth is conducted quietly using a non-touch approach. To avoid stimulating the trigeminal nerve, the midwife should avoid touching the baby's head or face during birth. Checking for a nuchal cord is also not recommended. Any loose nuchal cords or other entanglements can be resolved by carefully and gently unravelling in the water as the baby is born and guided to the surface.

The pool water temperature during birth should be maintained at a comfortable 37 degrees Celsius and no more than 37.5 degrees Celsius. Fetal chemoreceptors may be stimulated by a sudden increase or decrease in temperature, so it is important that the baby is born into a temperature similar to the fetal environment/in utero.

During the second stage of labour, the lower half of the woman's body should remain submerged. If the woman lifts herself above the water and the vertex is visible, she must be assisted in exiting the pool and continuing to birth 'on land'. This is due to exposure of the fetal head to cold air, the sudden change in temperature, and exposure to atmospheric pressure, which may stimulate chemoreceptors initiating gasping on the perineum. To mitigate against this, the woman is reminded to remain underwater when birth is imminent. Warm water can be added to the pool to ensure the correct temperature (approx. 37 degrees Celsius) and also to ensure water sufficiently covers the woman's lower half of her body (if adopting a kneeling/all fours position) so the baby is born fully submerged into water.

Once born, the baby is gently and immediately brought headfirst and face down *(to facilitate drainage of secretions from the baby's mouth and nose)* into the woman's arms. Its head/face must never be resubmerged. As per 'land' births, the baby is assessed for wellbeing, and Apgar scores are recorded.

Recommendations

20. **As per all births, we recommend the presence of a second midwife for second stage during water birth.**
21. **We recommend that midwives are fully aware of fetal physiology, detailing the protection mechanisms which prevent the triggering of a premature breath while still under water.**
22. **We recommend that the woman is reminded to keep the lower half of her body under water during water birth. If a woman inadvertently lifts herself above the water and the vertex is visible, then the woman must remain out of the water for the birth.**
23. **We recommend a non-touch, hands-off/poised technique is adopted for birth.**
24. **Once the baby is born, it is gently and immediately lifted out of the water (headfirst and face down) into the woman's arms. To avoid too much tension being placed on the umbilical cord, it is sufficient to only have the baby's head and face above water, and we recommend caution that the baby's head/face never re-submerges underwater.**

Clinical Question 2.6: Does water birth increase risk of Obstetric Anal Sphincter Injury (OASI)?

Evidence Statement

Recent large-scale studies show that water birth incurs no increase in severe perineal trauma[6,18,19,41], reduces episiotomy rates [13,36], and positively affects perineal integrity.[6,54,55] It is thought that warm water increases vasodilation and tissue elasticity[56], positively reducing perineal trauma. Additionally, during a water birth, non-directive/non-coached pushing is used, and the woman is encouraged to go with her urges to gently birth her baby.[8] Women in water usually adopt upright positions/kneel for birth, which has been shown to reduce severe perineal trauma.[57]

Some retrospective research expressed concern that water birth may predispose women to OASI[58,59]. Cortes *et al.* (2011)[58] reported a doubling of OASI in their study (2.5% vs 1.2%), attributing the increase to difficulty visualising the perineum and the 'hands-off approach' used. However, more recent prospectively collected data analysis found no association between water birth and OASI. Burns *et al.* (2020)[60] study of 2,908 water births reported an OASI rate of 1.9%. (95% CI [1.4-2.4]), less than the UK national average of 3.5%.[61] A systematic review and meta-analysis[6] of 157,546 participants examining the safety of water immersion compared to land birth found no increase in OASI and had increased odds of intact perineum (k=17, n=59 070; OR 1.48:95% CI[1.2-1.79]) with water immersion. Seed *et al.* (2023[41] had similar rates of OASI in water vs land births (4.0%) respectively in each cohort. Bailey *et al.* (2020)[54] reported OASI rates of 2.8% for water vs 2.9% for land birth. Sanders *et al.* (2024)[18] reported OASI rates among nulliparous women of 4.8% vs 5.3% and rates for multiparous women of 1.1% vs 1.7% for water compared to 'land' birth.

Clinical Practice

The midwife observes for signs of second stage, such as a change in the woman's behaviour, e.g. becoming more vocal at the height of contractions, bearing down, the appearance of the 'purple' anal cleft line or the Rhomboid of Michaelas, vulval gaping, anal dilation/passing of bowel motion, a heavy show, and/or visibility of the vertex. The woman is encouraged to adopt a position most comfortable for her (preferably not supine). The midwife may, with the woman's consent, observe the woman's perineum with an underwater mirror and torch. Breath-holding and prolonged pushing are discouraged. The woman is encouraged to 'go with her body' and bare down instinctively and guided as necessary with the aim of achieving a controlled, gentle birth of the baby's head and body.

Recommendations

25. **We strongly recommend that women adopt a birthing position that is most comfortable and effective for them.**
26. **We recommend that women be encouraged to give birth instinctively. Prolonged breath holding and coached pushing are not recommended. However, once the head is born, with the next contraction, the woman should be encouraged to push in anticipation of the birth of the baby's shoulders and body. If there are any concerns or deviations from the normal labour/birth mechanism, the woman is advised to stand and be assisted to exit the pool. (See Appendices 7 & 8 for care/management of Shoulder Dystocia during water birth)**

Clinical Question 2.7: How to minimise the risk of umbilical cord avulsion during water birth?

Evidence Statement

Studies have reported an association between umbilical cord avulsion and water birth.[6,18-20] It is thought that this unintended outcome could be due to inadvertent traction on the umbilical cord as the baby is guided up to the water's surface and is not related to birth in water.[6] Avulsion can be managed with little or no sequelae if recognised promptly and treated immediately to minimise blood loss. Whilst a reassuringly rare event, umbilical cord snap is not unique to water birth; it can also occur during land births, although exact rates are unknown.[6]

Burns *et al.* (2022)[6], in their systematic review and meta-analysis of over 157,000 participants, found that water birth was associated with increased odds of cord avulsion (OR 1.94; 95% CI [1.30-2.88]), although absolute risk remained low (4.3 per 1000 vs 1.3 per 1000) and reassuringly no babies in any of these studies required NICU admissions or blood transfusion secondary to the incident of cord avulsion. McKinney *et al.* (2024)[19] reported rates of 0.5% for water births vs 0.2% for land births, i.e. one more per 1,000 births, and Sanders *et al.* (2024)[18] reported a rate of 1.0% vs 0.3% for babies born on 'land'. Similar to Burns *et al.* (2022)[6], Sanders *et al.* (2024)[18] reported that no baby who had cord avulsion died or received a blood transfusion or therapeutic hypothermia for treatment of neonatal encephalopathy. Bovbjerg *et al.* (2021)[20], in a propensity-scored study of 17,000 women who had a water birth compared to a matched 'land' birth cohort (N=17,000), reported a risk difference of 20:10,000 additional cord avulsions among water birth. No increase in neonatal mortality or morbidity was reported due to this unintended outcome.

The risk of cord avulsion during water birth can be mitigated by midwives being aware not to apply undue traction as the baby is being guided to the surface and to do so gently and with caution. This can be further supported by robust water birth guidelines, midwifery education/training, and discussions with women before entering a birthing pool.[6,18,19]

Clinical Practice

The midwife needs to anticipate umbilical cord avulsion as part of the management of water birth. For nuchal cord or cord around the baby's body, similar to birth on 'land', the cord can be loosened and unwrapped as the baby is born. Undue traction mustn't be placed on the umbilical cord as the baby is gently guided to the water's surface into the woman's arms. Having the baby's head out of the water is sufficient so its body can remain submerged to maintain thermoregulation and help prevent cord avulsion. The midwife should assess/visualise the entire length of the cord from the baby's umbilicus to the woman's introitus to inspect its integrity. Women should also be reminded not to inadvertently pull or apply traction on the cord while awaiting delivery of the placenta. As with all births, cord clamps should be readily available. Should a cord avulsion occur, the cord is clamped immediately at the umbilicus, and the baby's condition is assessed. Actions are taken accordingly, including a neonatologist review.

Recommendations

27. We do not recommend checking for a nuchal cord and strongly recommend avoiding undue traction on the umbilical cord as the baby is being born. Nuchal cords, or any cord around the body, can be resolved by carefully and gently unravelling in the water as the baby is guided to the surface.
28. If a umbilical cord avulsion occurs, we recommend clamping the cord immediately at the umbilicus, assessing the baby's condition, and taking appropriate actions, including a neonatologist review.
29. We recommend that the prevention and management of umbilical cord avulsion be included in midwives' training and education on water immersion and birth.

Section 3. Third Stage of Labour

Introduction

The following section addresses water birth and the management of the third stage of labour. Clinical question 2.8 will examine the pertinent literature regarding managing the third stage of labour in relation to water birth. Clinical question 2.9 will examine evidence relating to estimating blood loss following water birth. A guide to clinical practice will be given, and recommendations will be made following both questions.

Clinical Question 2.8: How should the third stage of labour be managed during a water birth?

Evidence Statement

In its Intrapartum Care Guidelines, the National Institute of Clinical Excellence (2025)[16] recommends that women be advised that active management of the third stage of labour is associated with a lower risk of bleeding and/or blood transfusion for the general childbearing population. However, they acknowledge that some women will request physiological management and, therefore, recommend providing women with the benefits and risks associated with active and physiological management to individualise care and support a woman's choice.

In relation to the third stage in labour and water birth, many recent studies[6,14,18-20] included blood loss and postpartum haemorrhage in their study outcomes, comparing water to conventional 'land' birth. Some of these studies did not disclose the type(s) of management of the third stage of labour; therefore, comparing outcomes is difficult. Nevertheless, most studies reported similar[14,18] or lower rates[6,19,20] of PPH for women who used water immersion. Bailey *et al.* (2019)[54] included the method of third-stage management in their study and found that, despite over 55.0% of the water birth cohort having physiological management, PPH rates were similar between groups (for >500mls; 9.7% water birth vs 7.8% land birth, and for >1000mls; 1.3% water birth vs 2.7% land birth).

Neiman *et al.* (2019)[62], in a comparative study, reported a minor increase in PPH in the water birth group (n=5[8.6%]) compared to women in the water labour group (n=3[5,2%]) (P=0.045). The authors noted that there was no significant clinical effect on outcomes for the women in the water birth group as there were no instances of blood transfusion for women in the water birth group, and there were no differences between the study groups in antepartum and postpartum haemoglobin or haematocrit levels. Burns *et al.* (2022)[6] conducted a systematic review and meta-analysis of 36 studies including 157,546 participants; they reported a significant reduction in rates of PPH in women who used water immersion (OR 0.69; 95% CI [1.21-1.79]). A prospective observational study[41] in Australia of 1,665 women, 400 used water immersion, showed no significant difference between water and land birth (P=0.201).

Another aspect of management of the third stage following a water birth is whether it should be conducted in or out of the pool. Feeley and Burns (2021)[63] recommend that if a woman has had a water birth and physiological management is planned for the third stage, it is most appropriate for the woman to remain in the water. Their recommendation is based on the belief that causing as few disruptions as possible promotes an oxytocin-friendly environment by avoiding disturbing the mother-baby dyad and enhancing endogenous oxytocin secretion. Fahy *et al.* (2010)[64] discuss a similar 'holistic psychophysiological' package of care to help reduce PPH in healthy women following normal birth. This involves zero separation, skin-to-skin contact between mother and baby, breastfeeding and maintaining a calm, quiet environment.

There is a paucity of evidence in relation to active management of the third stage while in a birthing pool.[65] Therefore, if active management is being conducted, the woman should be requested to exit the pool for the third stage of labour.[8] In relation to a prolonged third stage, as per the World Health Organisation (2023)[66], the National Institute of Clinical Excellence (2025)[16] and (NWIHP/IOG, pending, 2025)[1], prolonged third stage with physiological management is longer than 60 minutes, and prolonged third stage with active management is longer than 30 minutes.

Clinical Practice

Active management of the third stage is recommended, and for this to take place safely, it is recommended that this be carried out 'on land'.

The cord is left unclamped for at least 1 minute unless there is concern about the cord's integrity or concerns about maternal or neonatal wellbeing and clamped before 5 minutes as part of active management. The intramuscular uterontonic medication may be given before the woman exits the pool by asking her to lift her leg out of the water or assisting her to sit on the internal pool step, exposing her leg. The woman is then assisted to exit the pool carefully and moved to the bed or floor mat. Dry towels, warm blankets and pillows are provided. The baby should remain skin-to-skin, and breastfeeding should be initiated (if the chosen method of infant feeding). The midwife observes signs of placenta separation, and the placenta and membranes are delivered by controlled cord traction (CCT). The estimation of blood loss is recorded, and concerns are noted and managed appropriately.

During physiological management of the third stage, women can be encouraged to remain in the pool. Interfering by talking, making loud noises, or asking the woman to exit the pool may interfere with the high-release oxytocin that occurs naturally following birth. This may have negative consequences, such as an increase in bleeding. It is, therefore, important to maintain a quiet and calm environment.

Warm water should be added to the pool to maintain the water temperature at 37 degrees Celsius, to maintain the thermoregulation of the mother and the newborn. There should be sufficient lighting to visualise blood loss. Safe skin-to-skin contact should be encouraged, and breastfeeding may

commence (if it's the chosen method of infant feeding). The umbilical cord should remain unclamped until pulsation has ceased, or ideally until after delivery of the placenta. The midwife observes for signs of placental separation (cord lengthening, small acute blood loss, cramping) and can gently encourage the woman to work with her body to expel her placenta. The placenta and membranes are expelled spontaneously or by maternal effort, without stimulating the uterus, and placed in a kidney dish/bowl. Estimation of blood loss is recorded, recognising that this may be difficult with dilution in water. For this reason, assessment of the woman's physical wellbeing and her interaction with her baby are essential. If there is evidence of a physical compromise or a potential PPH suspected, the baby is removed from the woman immediately. The woman is assisted in exiting the pool safely, and active management of the third stage is reverted to and if necessary, local PPH protocol is implemented.

Women who prefer to leave the pool for physiological management of the third stage should be safely supported to do so, and all care/management should continue 'on land'.

Recommendations

30. **We recommend that women be informed of the active and physiological management of the third stage of labour following a water birth. Active management is recommended practice for managing the third stage of labour.**
31. **For active management of the third stage, we recommend that women be administered the intramuscular uterontonic medication while still in the pool and then be assisted to safely exit the pool for follow on care/management.**
32. **If physiological management of the third stage is being conducted, this can be done either in or out of the pool. If the woman chooses to remain in the pool, we recommend adding warm water to maintain maternal and fetal thermoregulation.**
33. **We strongly recommend that, while monitoring the physical wellbeing of both the woman and baby and awaiting signs of the third stage, the woman be supported to safely perform skin-to-skin contact and/or breastfeed, irrespective of the planned method of third-stage management.**

Clinical Question 2.9: How to estimate blood loss (EBL) following a water birth?

Evidence Statement

According to Garland (2017)[8] and Feeley and Burns (2021)[37], visual blood loss is an educated guess during birth and often results in actual blood loss being underestimated or overestimated. During 'land birth', sanitary pads, incontinence sheets, and draw sheets can be assessed, and blood loss can be weighed to get a more accurate EBL. This can be more challenging in water, as blood dilutes/mixes in pool water. Garland (2017)[8] discusses pool water colour in terms of EBL, i.e. the 'rosé' colour is standard, the 'blackcurrant/sangria' colour is becoming more concerning, and the woman should be requested to exit the pool. Dark red/'claret' is abnormal, and the woman should be immediately assisted to exit the pool and assistance requested. Garland (2017)[8] also acknowledges that other indications are also indicative of a PPH: the woman's pallor, vital signs, behaviour and interaction with her baby should be observed as indicators of excessive blood loss. In an online eLearning module on estimating blood loss following water birth, Burns *et al.* (2023)[67] discuss the importance of the visibility of various

landmarks, e.g. visibility of the woman's legs and feet, visibility of the base of the pool, the speed of the blood flow and the density of clot formation. This eLearning module provides valuable information on how to assess blood loss, further developing on the colour of pool water theory. As per all women giving birth, other potential risk factors for PPH are observed, i.e. maternal history, prolonged labour and/or a baby weighing over 4kgs.[23]

Clinical Practice

Similar to all births, all risk factors that may predispose a woman to a PPH are observed for. If a woman becomes unwell/shows signs of clinical compromise (e.g. feeling faint, poor pallor, increase in respiratory rate, tachycardia), irrespective of EBL, help should be summoned, and the woman should be assisted to exit the pool for follow-up care/management, and implementation of local PPH protocol, as necessary. Cognisance should always be given to protection of the woman's airway, as water adds a risk factor. For this reason, airway maintenance should always be delegated to one specific midwife/doctor. The baby should be removed from the pool immediately if a woman becomes in any way compromised. Educational skills and drills are recommended, i.e. maternal collapse and emergency evacuation from a birthing pool. These skills and drills should involve the MDT.

See Appendix 9 for a pictorial guide/example of blood loss in water and Appendices 7 and 8 for emergency evacuations from a birthing pool in a hospital/unit and the home birth setting.

Recommendations

34. We recommend that estimating blood loss (EBL) and managing a postpartum haemorrhage (PPH) following water birth be included in training and education programmes for midwives on water immersion for labour and birth.
35. We recommend continuous risk assessment in relation to EBL/signs of PPH following a water birth and to monitor maternal pallor/vital signs, interaction with her baby and not solely to rely on the colour of the pool water.
36. If a woman begins to show signs of clinical compromise, we recommend immediately removing the baby from the pool and simultaneously summoning help to assist with pool evacuation, including safe maternal airway maintenance. (See Appendices 7 & 8 for Emergency Procedure during water birth).
37. As per all women following birth, we recommend commencing an Irish Maternity Warning Score (IMEWS) chart to support recognition of a deteriorating woman.
38. Regular 'local' educational drills, such as maternal collapse and emergency evacuation from a birthing pool, are important, and we recommend MDT involvement. Birthing pool emergency procedures should be included in Practical Obstetric Multi-Professional Training (PROMPT)/equivalent training.

Section 4: Infection Prevention and Control in relation to birthing pool use for labour/birth

Introduction

The following section discusses infection prevention and control in relation to birthing pool use for labour and/or birth in the hospital and community setting. Clinical question number 2.10 will describe the most relevant literature on potential infection prevention and control concerns and how to minimise the risk of cross-infection to mother and baby when providing a birthing pool service. A clinical guide to practice will be provided, followed by key recommendations.

Clinical Question 2.10: How to minimise the risk of cross infection to mother and baby when providing a birthing pool service?

Evidence Statement

Infection prevention and control, including the risk of cross-infection to the woman and/or baby, are sometimes cited as a cause for concern in relation to providing a birthing pool service.[17,45,68] According to Bovbjerg *et al.* (2016)[44], these infection-related concerns are primarily based on case reports, surveys, or small-scale studies without control groups.[69-73] According to Vanderlaan and Hall (2020)[42] and Seed *et al.* (2023)[41], many of these reports of infections such as legionella or pseudomonas appear to have resulted when a deviation from water birth protocols occurred in relation to decontamination and maintenance of pools, use of 'jets'/Jacuzzi baths, and use of unclean water.

Current evidence does not show increased infection sequelae from water immersion/water birth[6,19,21]. McKinney *et al.* (2024)[19] conducted a systematic review and meta-analysis including 321,641 participants and reported neonates born in water to have decreased odds of neonatal infections (OR 0.64; 95% CI [0.42-0.97]) and neonatal NICU admission (OR 0.56; 95% CI [0.45-0.70]). Seed *et al.* (2023)[41] reported that 2.06% of babies in their study were observed for suspected neonatal infection, compared to 6.17% of babies born on land. Sidebottom *et al.* (2020)[74], whose primary study outcome was to explore NICU admissions, showed lower admission rates for babies born in water (odds ratio [OR] 0.3, 95% CI [0.2-0.7]).

In relation to maternal infection, Bovbjerg *et al. (*2021)[20] observed an increase in uterine infection but not hospitalisation for infection. The absolute risk of uterine infection was 0.31% in the water birth group and 0.25% in the land birth group. Maternal infection rates were reported to be similar between women who gave birth in water compared to conventional 'land' birth in a systematic review and meta-analysis conducted by McKinney *et al.* (2024)[19] (OR 0.93; 95% CI, [0.76-1.14]).

Nonetheless, according to the Department of Health (2023)[25] water borne infections could potentially be a serious threat to patient safety. Because bacterial and protozoan microorganisms can proliferate or remain viable in moist environments or aqueous solutions in healthcare settings such as sinks, clinical hand wash basins, baths, shower trays, drains, hydrotherapy and spa pools, acting as reservoirs of multidrug resistant organisms (MDROs). For this reason, the importance of robust infection prevention and control standards and surveillance should never be underestimated. With this in mind, several national guidance documents have been published to guide practice and mitigate against potential infection prevention and control risks.[24,25,27,28] Recommendations from these documents have been incorporated into the 'Clinical Practice' aspect below for this Clinical Question.

Clinical Practice

Water is more prone to bacteria growth after it leaves the public water distribution system and enters a building's plumbing. This is due to warmer temperatures, water stagnation, and smaller pipes, valves and fittings. Biofilm* *(a community of bacteria and other microorganisms embedded in a protective layer of entrained 'slime-like' debris, attached to a surface) forms on valves, fittings and pipe walls, which feed* bacteria. Large systems/buildings such as hospitals have complex piping networks, making them especially prone to biofilm/bacterial growth. For this reason, it is essential that consideration and due diligence with regard to the prospective purchase of birthing pools and the assessment of pools already in use needs to be taken to ensure that the associated plumbing and electrical systems meet relevant safety standards. Standards development must incorporate guidance from local hospital Infection Prevention and Control team and Maintenance/Engineering Department(s) and consider the birthing pool manufacturer's instructions.

Legionnaire's disease is a potentially fatal form of pneumonia. It is a common bacterium found in natural water sources such as lakes, rivers or reservoirs. It can also be found in purpose-built water systems and multiply if water is stagnant at warm temperatures. It is important to control risks by avoiding water stagnation in water tanks and pipes. For this reason, it is essential to have a water flushing protocol in place and for staff to refer to same for frequency and procedures in relation to water flushing/running of pool taps. In relation to therapeutic pools in healthcare facilities, it is recommended that facilities are formally managed to ensure that patients utilising these facilities are not exposed to potential pathogens (such as Legionella) and avoid acquiring a healthcare-associated infection. This is achieved by regular maintenance, chemical disinfection, and periodic water quality monitoring, and it requires local infection prevention and control teams and the involvement of the maintenance/engineering department (s).

Plumbed birthing pools must be high quality and have an easy-to-clean, non-slip finish. They should have minimal surface-mounted fittings and be seamless, one-piece constructs. Overflow drains and hand-held hoses/shower heads are not recommended. Hand grips should be bonded directly into the pool fabric rather than mounted on the rim. To prevent cross-transmission risks between pool users, the pool, surrounding area and all equipment used must be thoroughly cleaned and disinfected daily and following use, as per local guidelines. All equipment used must be disposable or withstand disinfection. Equipment such as mirrors and sieves should be used for single use only. Digital infrared 'non-contact' thermometers that are suitable for recording water temperature, should be used to minimise potential cross-transmission from placing thermometers directly into the pool water. Alternatively, individual/once only thermometers specifically for recording water temperature/*in baths*, can be used. If the water becomes contaminated by faecal matter during use, it is removed immediately using the sieve. If it is heavily contaminated, emptying the pool and refilling it with fresh water is recommended. Midwives and all healthcare staff should always use standard precautions when caring for patients. The use of personal protective equipment (PPE) is determined through the Point of Care Risk Assessment (PCRA). In addition, long gauntlet gloves are recommended.

In the community/home birth setting, inflatable pools can be used by people who wish to use water immersion. It is essential to refer to the manufacturer's instructions and local protocols. When planning a home water birth, home birth midwives may provide guidance in relation to birthing pools; however, the overall responsibility for arranging private hire/purchase of a birthing pool and its subsequent assembly and maintenance lies with the woman and her birth partner. Hire or purchase must be from a reputable firm; paddling pools are unsuitable. During home births, women are advised to fill their pools using a domestic hot water system at the onset of labour. Pre-fill pools and keeping warm using water heating pumps are not recommended, as these provide ideal growth conditions for water-borne pathogens. If there are issues with the domestic water supply or a 'boil water notice' is in place, women are advised to seek advice from their household water supplier and discuss concerns with their home birth midwife.

See Appendix 10 for further information on planning a home water birth, including an example of an assessment tool which may be used to guide the home birth midwife/Designated Midwifery Officer 'Use of an Inflatable Pool at Home – Check List' (Appendix 11).

See Appendices 12 and 13 for Cleaning and Maintaining Birthing Pool protocol(s), which includes guidance on:

- Daily procedure
- Following use
- Plumbed and inflatable pools

It is recommended to refer to the pool manufacturer's instructions for both plumbed and inflatable birthing pools.

Recommendations

39. We strongly recommend:
    a) The involvement of Hospital Infection Prevention & Control Team and Maintenance/ Engineering Department(s) when planning a water birth service.
    b) Procuring high-quality pools and correct installation, including safe operation and maintenance of the water supply systems.
    c) Developing robust Infection Prevention and Control protocols, including decontamination and maintenance of pools, equipment and environment.
40. We recommend monitoring water quality as per national guidance and local Environmental Monitoring Committee/Infection Prevention & Control/Microbiology team(s) and ongoing audit/review of potential adverse outcomes in relation to infection prevention and control issues.
41. We recommend maintaining water/tap flushing, cleaning and water testing records.
42. Specifically, in relation to inflatable pools, we recommend:
    a) Following manufacturer instructions.
    b) If inflatable pools are shared among women, use a new, once-only 'liner' (checking for integrity), clear-fit cover, hose pipe, adaptor nozzle, and submersible pump.

Chapter 3: **Development Of Clinical Practice Guideline**

3.1 Literature search strategy

A comprehensive literature review was undertaken, including national and international publications. The focus was on reviewing recent evidence related to water immersion for labour and birth. The guideline developers assessed the quality of this evidence for each outcome according to criteria such as study design, risk of bias, size, and effect during development.

The literature search analysed international guidelines from countries where birthing pools are integrated into practice: the UK, Europe, Canada, the USA, New Zealand and Australia. In addition, a review of the Cochrane Central Register of Trials was undertaken. A wide range of sources, including literature from peer-reviewed journals, systematic reviews, randomised clinical trials and prospective studies, are provided as evidence to support the recommendations for each clinical question.

The use of the PICO tool (T) format – Population, Intervention, Comparison, Outcome, (Time) enabled a clear focus on the clinical question (NCEC, 2013). Electronic databases MEDLINE, EMBASE, and CINAHL were utilised. The search was limited to English, peer-reviewed articles between 2000 and 2024. Search phrases varied according to clinical questions. Key terms included 'water immersion', 'water birth', 'water labour' and 'birthing pools'; keywords were combined with Boolean operators to focus the search further.

The results yielded from these searches were reviewed. A detailed literature review was subsequently carried out, including national and international clinical practice guidance on relevant subject areas. Nationally, this Guideline was cross-referenced with water immersion guidelines from maternity hospitals/units such as The Coombe Hospital, Rotunda Hospital, Our Lady of Lourdes Hospital, Sligo University Hospital, Wexford General Hospital and Cork University Maternity Hospital.

International water immersion guidelines were also reviewed/included as the Guideline Development Group believed appropriate, i.e. guidelines from the Maternity Unit at the Ulster Women's Hospital in Belfast, Oxford University Hospital and Birmingham Women and Children's Hospital in the UK, Hywel Dda University Health Board Hospital in Wales, Salisbury NHS Foundation Trust, Milton Keynes University Hospital and the Sunshine Coast Hospital and Health Service, Queensland, Australia. Practice Template for water immersion for labour/birth developed by the American College of Nurses/Midwives was also incorporated into this Guideline.

The National Institute for Health and Care Excellence (NICE), Royal College of Midwives (RCM), Royal College of Obstetricians and Gynaecologists (RCOG), and Irish National Maternity Strategy were all cross-referenced.

3.2 Appraisal of evidence

Following a comprehensive literature review, the quality, validity and relevance of the evidence gathered were critically appraised by the Guideline developers under the following headings:

- Study design
- Relevance of primary and secondary outcomes
- Consistency of results across studies
- Magnitude of benefit versus magnitude of harm
- Applicability to practice context

Many evidence-based recommendations for water immersion and water birth management were agreed upon. They have been adapted to reflect care in the Irish healthcare setting.

3.3 AGREE II process

The Guideline was assessed while being developed using the AGREE II checklist (appendix 14) recommended by the Department of Health in the 'How to Develop a National Clinical Guideline: a manual for guideline developers', 2019 [16].

The purpose of AGREE II is to provide a framework to:

1. Assess the quality of guidelines;
2. Provide a methodological strategy for the development of guidelines; and
3. Inform what information and how information ought to be reported in the guidelines

3.4 Literature review

Details of supportive evidence-based literature for this Guideline are reported in chapter two.

- The literature review was conducted by Paula Barry, Dr Caroline Keegan, Dr Julie Higgins, Carmel Cronolly and Aoife Hamill between July 2023 and August 2024.
- The guideline development group reviewed the final documents selected.
- There is substantial international evidence available to answer the clinical questions proposed within hospital and community settings. However, from an Irish perspective, there is a dearth of evidence for water immersion or water birth services.
- The quality of the evidence available is, for the most part, strong. However, most of the evidence is in relation to women with uncomplicated/'normal risk' pregnancies, and many elements in relation to the care and management of women using a birthing pool were based on best practices. However, this 'best practice' spans over three decades (since the 1990s). Much of this best practice has helped inform this Guideline.
- The evidence reviewed comes from national and international studies and has been adapted to fit the Irish context.

16 Department of Health (2019). How to develop a National Clinical Guideline: a manual for guideline developers. Available at: https://www.gov.ie/en/collection/cd41ac-clinical-effectiveness-resources-and-learning/

3.5 Grades of recommendation

GRADE offers a transparent and structured process for developing and presenting evidence summaries and for carrying out the steps involved in developing recommendations.[17]

While we acknowledge that an extensive GRADE approach is not possible for this work, we have used the suggested language set out in the GRADE table when making recommendations.[18] (Appendix 15)

3.6 Future research

An important outcome of the Guideline development process is highlighting gaps in the evidence base. The questions of relevance to this Guideline include;

- Water immersion for women with potential risk factors (i.e. women on the Assisted/Specialised Care Pathway(s))
- Management of the third stage of labour following water birth
- Midwives' experiences of implementing the service/water birth in Ireland
- Women's experiences of water immersion for labour/birth in the Irish maternity setting.

17 Guyatt, Gordon, *et al.* "GRADE Guidelines: 1. Introduction – GRADE Evidence Profiles and Summary of Findings Tables." *Journal of Clinical Epidemiology*, vol. 64, no. 4, 2011, pp. 383-94, https://doi.org/10.1016/j.jclinepi.2010.04.026.

18 SMFM adopts GRADE (Grading of Recommendations Assessment, Development, and Evaluation) for clinical guidelines. Society for Maternal-Fetal Medicine (SMFM), Chauhan SP, Blackwell SC. Am J Obstet Gynecol. 2013 Sep;209(3):163-5. doi: 10.1016/j.ajog.2013.07.012. PMID: 23978245 https://pubmed.ncbi.nlm.nih.gov/23978245/

Chapter 4: **Governance And Approval**

4.1 Formal governance arrangements

The Guideline developers wrote this Guideline under the direction of the Guideline Programme Team (GPT). An Expert Advisory Group was formed to review the Guideline prior to submission for final approval with the National Women and Infants Health Programme. The roles and responsibilities of the members of each group and their process were clearly outlined and agreed upon.

4.2 Guideline development standards

This Guideline was developed by the Guideline Developer Group (GDG) within the overall template of the HSE National Framework[19] for developing Policies, Procedures, Protocols and Guidelines (2023) and under the supervision of the Guideline Programme Team.

A review was conducted by a group of experts, specialists and advocates (the EAG) prior to approval by the Clinical Advisory Group (CAG) of the National Women and Infants Health Programme (NWIHP) with final sign-off for publication by CAG Co-Chairs the Clinical Director of NWIHP and the Chair of the IOG. See Appendix 16 for a list of CAG members.

19 Health Service Executive (2023). How to develop HSE National Policies, Procedures, Protocols and Guidelines (PPPGs).

Chapter 5: **Communication And Dissemination**

A communication and dissemination plan for this Guideline has been developed by the GPT and endorsed by NWIHP.

Effective ongoing clear communication is essential in explaining why the Guideline is necessary and securing continued buy-in. It provides an opportunity to instil motivation within staff, helps overcome resistance to change and gives an opportunity for feedback[20].

The Clinical Guideline will be circulated and disseminated through the Guideline Programme Team and the professional networks that developed and reviewed it.

Senior management within the maternity units is responsible for the appropriate dissemination of new and updated guidelines. Local hospital groups, including Guideline committees, are also instrumental in circulating new and updated guidelines and promoting their use in the relevant clinical settings.

The HSE will make this Guideline and its supporting documents available to all employees through standard networks. Electronic versions available on the NWIHP https://www2.healthservice.hse.ie/organisation/national-pppgs/ and RCPI websites (https://www.rcpi.ie/faculties/obstetricians-and-gynaecologists/national-clinical-guidelines-in-obstetrics-and-gynaecology/) and other communication means can be used to maximise distribution.

In this case, a national eLearning programme on water immersion for labour/birth has been developed to support the implementation of this guideline/water immersion service nationally. This will be available to all Health Care Professionals involved in the care of women in the maternity setting.

20 Department of Health (2018). NCEC Implementation Guide and Toolkit. Available at: https://www.gov.ie/en/collection/cd41ac-clinical-effectiveness-resources-and-learning/?

Chapter 6: **Implementation**

6.1 Implementation plan

Implementation was considered at the beginning and throughout the Guideline development process. The local multidisciplinary clinical team, senior executive and clinical management in each maternity and gynaecology unit are ultimately responsible for the appropriate structured adoption and implementation of the Guideline within their area of responsibility. They must ensure that all relevant personnel under their supervision have read and understood the Guideline and monitor their effectiveness and adoption.

Within each site, local multidisciplinary teams are responsible for clinically implementing the Guidelines' recommendations and ensuring that their local clinical practices and processes reflect and align with them.

The guideline development group acknowledges that not all units in Ireland have birthing pools; some provide a water immersion service for labour only, and others offer the option of water birth. Therefore, implementation of this guideline may need to be incremental and will be individualised to each unit, while gradually expanding to accommodate women's choices and safe clinical practice. This will require collaboration between service users, Directors of Midwifery, Registered Advanced Midwife Practitioners, Midwifery Managers, Midwives, Obstetricians, and the multidisciplinary teams at local level in order to develop a guideline implementation plan and future-proof the service.

The following have been implemented to help facilitate the implementation of this Guideline.

- Quick Summary Document (QSD) for clinical staff (includes key recommendations, auditable standards, and recommended reading)
- Clinical Guideline mobile application
- Plain language summary
- Information Leaflet for Service Users
- The development of an eLearning programme on the use of water immersion for labour/birth.
- Ongoing support to Centres of Midwifery Education (CMEs) and individual hospitals/units in developing educational programmes for midwives in relation to water immersion, including facilitation of practical sessions and skills/drills at the local level. Emergency pool evacuation procedures should be included in PROMPT/equivalent programmes and involves the MDT.

6.2 Education plans required to implement the Guideline

It is acknowledged that this Guideline should be complemented by ongoing education, training and assessment where required.

This Guideline's education plan includes;

- The development of an eLearning programme on water immersion for labour/birth. This will be available nationally to all midwives, midwifery students and other healthcare professionals involved in maternity care.
- Standards will be set for education programmes to guide educators/facilitators who provide teaching on water birth at the local level.
- Individual maternity units will need to do a Training Needs Analysis to identify staff training requirements so that bespoke training can be carried out locally by Practice Development staff and/or Centres of Midwifery Education to aid implementation of this guideline.
- Midwifery students will be encouraged to attend training sessions and be exposed to water birth (under supervision) when the opportunity arises during clinical placements.

6.3 Barriers and facilitators

To ensure the successful implementation of guidelines, it is first necessary to look at potential barriers and facilitators. When developing the implementation plan, consider these should improve relevant users' support levels. (DOH 2018, 2019)

Barriers may be categorised as internal (specific to the Guideline itself) or external (specific to the clinical environment).

The Guideline Development Group has aimed to address any internal barriers during the development of this Guideline.

Potential external barriers include:

- Structural factors (e.g. budget or service redesign)
- Organisational factors (e.g. lack of facilities, resources or equipment)
- Individual factors (e.g. knowledge, skills, training)
- Medical and midwifery perceptions of birthing pool use and openness to embracing change in practice, i.e. provision of a water birth service to women.
- Women's perceptions and lack of awareness in relation to using a birthing pool.

In the case of this Guideline, it will be necessary to examine possible barriers and consider implementation strategies to address them. For example, this may include discussion with relevant management groups regarding budgetary impact, service redesign and/or providing training to the appropriate staff.

Although water immersion is primarily a midwifery intervention, all healthcare professionals must have an understanding of the use of a birthing pool for labour and birth. This will support implementing this Guideline and providing a safe, quality service to women choosing this care option.

6.4 Resources necessary to implement recommendations

Each maternity hospital/unit should have a robust governance structure in place to ensure implementation of water immersion/birth for women who choose this care option.

Implementing this Guideline should be part of each hospital's quality improvement plan. Hospitals should review existing service provision against this Guideline and identify the necessary resources to implement its recommendations.

In the case of this Guideline, each maternity unit will need to identify gaps, either material, human, or resource-wise. Educational and training requirements will need to be attended to so that midwives are competent and confident in their ability to successfully implement this guideline.

The National Women and Infants Health Programme have funded several 'Home from Home/Pool Rooms' nationally and is committed to supporting the implementation of this guideline through supporting training, meeting with midwifery management/Practice Development Departments and supporting local audit and potential research projects on water immersion for labour/birth.

Chapter 7: Audit and Evaluation

7.1 Introduction to audit

It is important to audit both the implementation of the Guideline and its influence on outcomes to ensure that this Guideline positively impacts the care of the woman. Institutions and health professionals are encouraged to develop and undertake regular audits of Guideline implementation. Personnel tasked with the role of conducting the audit should be identified upon receipt of the most recent version of the Guideline.

The care and outcomes of women using birthing pools should be included in the hospital/unit's annual clinical report or equivalent. The ongoing local audit and the auditable standards below should be reported on.

7.2 Auditable standards

Audits using the key recommendations as indicators should be undertaken to identify where improvements are required and enable changes as necessary. They should also provide evidence of continuous quality improvement initiatives.

Auditable standards for this Guideline include (not exhaustive):

1. Evidence that women meet the pool eligibility criteria.
2. Evidence (including a review of cleaning records) that the pool and surrounding environment were clean before a woman entered the pool.
3. Evidence that the tap(s) have been run per agreed local protocol before filling the pool.
4. A full maternal and fetal wellbeing assessment is recorded before a woman enters a birthing pool (as per NWIHP/IOG, 2025)[1].
5. Pool water temperature is checked before a woman enters a pool. The water temperature should be between 35 and 37 degrees Celsius and not exceed 37.5 degrees Celsius throughout labour/birth.
6. Evidence of maternal and fetal observations being carried out during labour/birth (as per NWIHP/IOG, 2025)[1]
7. Record of times women entered and exited from the pool (may be multiple).
8. Evidence of regular oral fluids (drink to thirst) and two-hourly passing of urine.
9. For birth, record the woman's lower half of her body remaining underwater until the baby is fully born.
10. Evidence of close observation of mother and baby following birth while awaiting delivery of the placenta.
11. Evidence that the woman exited and care/management was 'on land' if the third stage of labour is actively managed.

12. Concerns during any stage of labour/birth are recorded and managed appropriately *(as per Appendices 7 and 8).*
13. A full review of any unexpected outcomes (maternal or neonatal) was conducted, and may have included external peer review, as appropriate.

It is also recommended that each maternity hospital/unit should maintain its records of:

1. Number of women using a birthing pool
2. Parity of women
3. Other non-pharmacological and pharmacological analgesia utilised
4. Number who go on to give birth in water
5. If exiting the pool, reasons for same
6. Length of the first and second stages of labour
7. Management of the third stage (include information on whether conducted in/out of the pool)
8. Outcomes – maternal – perineal trauma, blood loss, admission to HDU
9. Outcomes – neonatal – Apgar scores, resuscitation, admission to NICU
10. Mode of infant feeding
11. Women's experiences of birthing pool utilisation

7.3 Evaluation

Evaluation is a formal process for determining the extent to which an intervention achieves its planned or desired outcomes[21].

Implementation of this Guideline will be audited periodically at the national level, with standards set by the NWIHP. Evaluation of the auditable standards should also be undertaken locally by senior hospital clinical management to support implementation.

21 Health Information Quality Authority (2012). National Standards for Safer Better Healthcare [Internet]. Available from: https://www.hiqa.ie/reports-and-publications/standard/national-standards-safer-better-healthcare

Chapter 8: **Revision Plan**

8.1 Procedure for the update of the Guideline

It may be a requirement to amend, update or revise this Guideline as new evidence emerges. This Guideline will be reviewed at national level every three years, or earlier if circumstances require it, and updated accordingly.[22]

The Guideline Development Group will be asked to review the literature and recent evidence to determine if changes are to be made to the existing Guideline. If the Guideline Development Group are unavailable, the GPT along with the NWIHP senior management team will select a suitable expert to replace them.

If there are no amendments required to the Guideline following the revision date, the detail on the revision tracking box must still be updated which will be a new version number and date.

The recommendations set out in this Guideline remain valid until a review has been completed.

8.2 Method for amending the Guideline

As new evidence becomes available, Guideline recommendations will fall behind current evidence-based clinical practice. Therefore, it is essential that clinical guidelines are reviewed and updated as new evidence becomes available.

In order to request a review of this Guideline, one of the following criteria must be met:

a. 3 years since the Guideline was published.

b. 3 years since the last review was conducted.

c. Update required as a result of new evidence.

Correspondence requesting a review of the Guideline should be submitted to the National Women and Infants Health Programme. Any such requests should be dealt with in a timely manner.

22 Health Service Executive (2023). How to develop HSE National Policies, Procedures, Protocols and Guidelines (PPPGs).

Chapter 9: **References**

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The Rotunda Hospital, Guideline for the Use of a Birthing Pool during Labour (2022)

Our Lady of Lourdes Hospital, Intrapartum Use of the Birthing Pool in the Maternity Unit (2023)

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Supporting Evidence

GRADE: http://www.gradeworkinggroup.org/

AGREE: http://www.agreetrust.org/agree-ii/

Glossary

ABU Along Side Birthing Unit

ACOG American College of Obstetricians and Gynaecologists

AGREE Appraisal of Guidelines for Research and Evaluation

BMI Body Mass Index

CAG Clinical Advisory Group

CCT Controlled Cord Traction

CEFM Continuous Electronic Fetal Monitoring

CI Confidence Interval

CS Caesarean Section

CTG Cardiotocograph Machine

EAG Expert Advisory Group

EBL Estimated Blood Loss

FIGO International Federation of Gynaecology and Obstetrics

GBS Group B Strep

GPT Guideline Programme Team

GRADE Grading of Recommendations, Assessments, Developments and Evaluations

HCP Healthcare Practitioner

HIQA Health Information and Quality Authority

HSE Health Service Executive

IM Intra-muscular

IMEWS Irish Maternity Early Warning Score System

IOG Institute of Obstetricians and Gynaecologists

IOL Induction of Labour

IV Intravenous

MDROs Multidrug Resistant Organisms

MDT Multidisciplinary Team (incl. Midwives, Doctors & Allied Healthcare Professionals)

MLU Midwifery Led Unit

NCEC National Clinical Effectiveness Committee

NICE National Institute for Health and Care Excellence

NICU Neonatal Intensive Care Unit

NWIHP National Women and Infants Health Programme

OASI Obstetric Anal Sphincter Injury

OR Odds Ratio

PCRA Point of Care Risk Assessment

PPE Personal Protective Equipment

PPH Postpartum Haemorrhage

PPPG Policy, Procedures, Protocols and Guidelines

PROMPT Practical Obstetric Multi-Professional Training

QR Quick Response

RAMP Registered Advanced Midwife Practitioner

RCM Royal College of Midwifery

RCOG Royal College of Obstetricians and Gynaecologists

RCPI Royal College of Physicians of Ireland

RCT Randomised Controlled Trial

ROI Republic of Ireland

TENs Transcutaneous Electrical Nerve Stimulation

UK United Kingdom

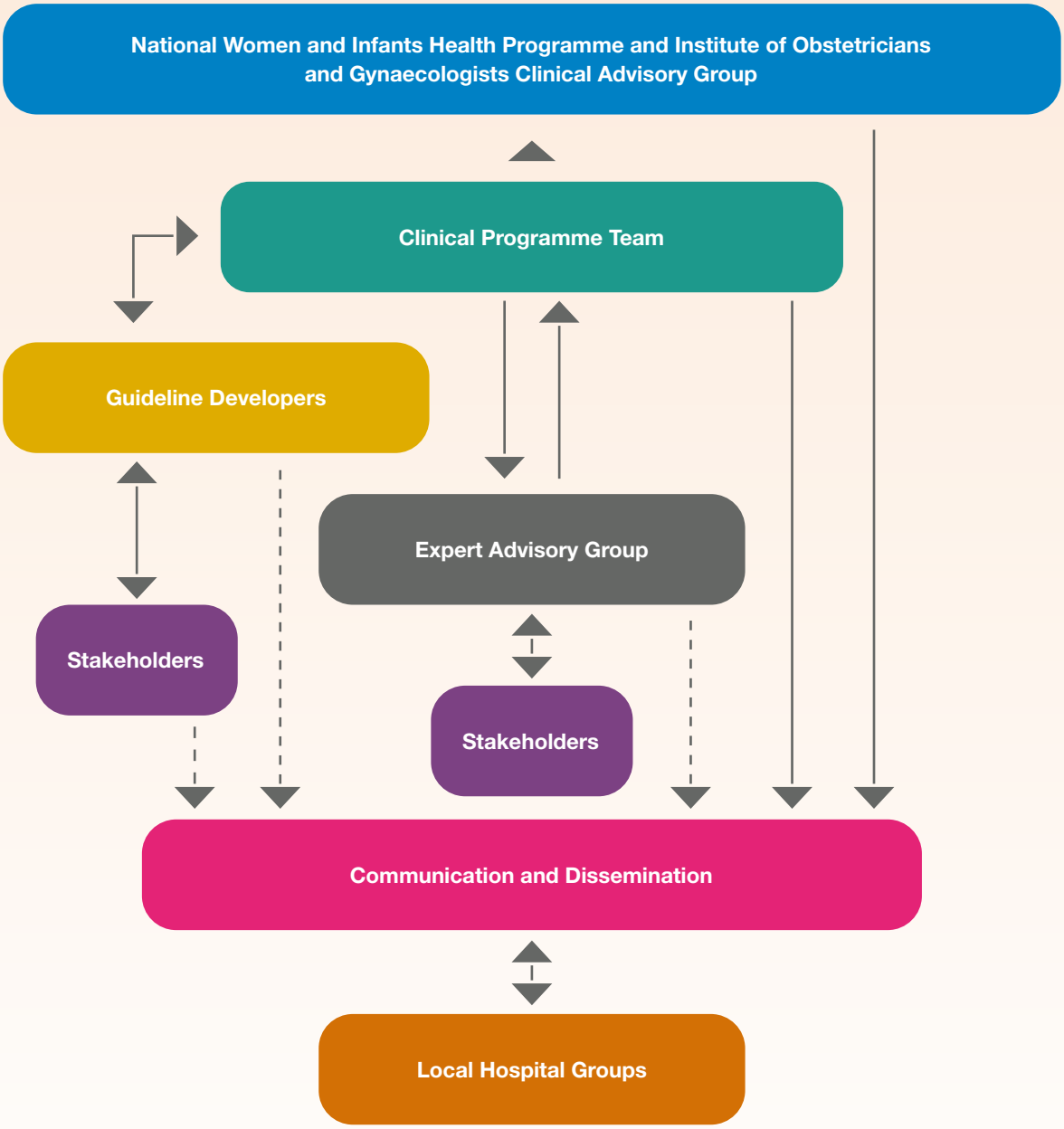
Appendix 1:
Expert Advisory Group Members 2021-

Member	Profession	Location
Dr Mairead Butler	Consultant Obstetrician and Gynaecologist	University Hospital Waterford
Dr Nicholas Barrett	Consultant Anaesthesiologist, Lead for Obstetric Anaesthesiology services	Limerick University Hospital
Dr Venita Broderick	Consultant Obstetrician and Gynaecologist	National Maternity Hospital Dublin
Ms Siobhan Canny	Group Director of Midwifery	Saolta University Health Care Group
Ms Triona Cowman	Director of the Centre for Midwifery Education	Centre for Midwifery Education, Coombe Women & Infants University Hospital
Ms Marie Culliton	Lab Manager/Chief Medical Scientist	National Maternity Hospital Dublin
Ms Niamh Connolly-Coyne And Ms Mandy Daly	Board of Directors Members (Shared nomination)	Irish Neonatal Health Alliance
Ms Sinéad Curran	Dietician Manager	National Maternity Hospital
Dr Niamh Conlon	Consultant Histopathologist	Cork University Hospital
Ms Georgina Cruise	Service Manager	Patient Advocacy Ireland
Dr Orla Donohoe	Specialist Registrar, Obstetrics and Gynaecology and SWEC Fellow	St George Hospital, Sydney, Australia
Ms Alana Dineen	Senior Clinical Pharmacist	Cork University Maternity Hospital
Prof. Maeve Eogan	Consultant Obstetrician and Gynaecologist National Clinical Lead SATU (HSE)	Rotunda Hospital Dublin
Dr Brendan Fitzgerald	Consultant Perinatal Pathologist	Cork University Hospital
Dr Daniel Galvin	Specialist Registrar, Obstetrics and Gynaecology	Cork University Maternity Hospital

Member	Profession	Location
Ms Stacey Grealis	Patient Research Partner	Independent Living Movement Ireland
Ms Fiona Hanrahan	Director of Midwifery and Nursing	Rotunda Hospital Dublin
Ms Laura Harrington	Principal Medical Social Worker	National Maternity Hospital Dublin
Ms Marita Hennessy	Post-Doctoral Researcher	Pregnancy Loss Research Group, INFANT Centre, University College Cork
Ms Caroline Joyce	Principal Clinical Biochemist PhD Candidate	Cork University Hospital University College Cork
Dr Chaitra Jairaj	Consultant Perinatal Psychiatrist	Coombe Women & Infants University Hospital, Dublin Midland Regional Hospital Portlaoise
Dr Cathy Monteith	Consultant Obstetrician and Gynaecologist	Our Lady of Lourdes Hospital Drogheda
Prof. John Murphy	Consultant Neonatologist Clinical Lead for the National Clinical Programme for Paediatrics and Neonatology	National Women and Infants Health Programme
Ms Janet Murphy	Advanced Midwifery Practitioner	University Hospital Waterford
Dr Jill Mitchell	Specialist Registrar, Obstetrics and Gynaecology	Cork University Maternity Hospital
Dr Aisling McDonnell	Specialist Registrar, Obstetrics and Gynaecology	Mater Misericordiae University Hospital Dublin
Dr Ciara McCarthy	General Practitioner ICGP and NWIHP Women's Health Lead	Irish College of General Practitioners
Ms Orla McCarthy	Clinical Specialist Physiotherapist in Pelvic Health	Cork University Maternity Hospital
Dr Donough J. O'Donovan	Director Neonatal Intensive Care Unit Consultant Neonatologist/Paediatrician	University College Hospital Galway

Member	Profession	Location
Mr Fergal O' Shaughnessy And Dr Brian Cleary (Shared nomination)	Senior Pharmacist, Honorary Lecturer And Chief Pharmacist, Honorary Clinical Associate Professor and Medications Lead, Maternal & Newborn Clinical Management System	Rotunda Hospital Dublin Royal College of Surgeons in Ireland
Ms Margaret Quigley	National Lead for Midwifery	Office of Nursing and Midwifery Services Director
Dr Gillian Ryan	Consultant Obstetrician and Gynaecologist	University Hospital Galway
Prof. Valerie Smith	Chair of Midwifery	University College Dublin
Ms Nora Vallejo	Advanced Midwife Practitioner	Coombe Women & Infants University Hospital, Dublin
Member 2021-2023	**Profession**	**Location**
Dr Katherine Astbury	Consultant Obstetrician and Gynaecologist	University Hospital Galway
Dr Richard Duffy	Consultant Perinatal Psychiatrist	Rotunda Hospital Dublin
Ms Clare Farrell	Physiotherapy Manager	Coombe Women & Infants University Hospital, Dublin
Ms Marie Finn	Medical Social Work Counsellor	Saolta University Health Care Group
Prof. Declan Keane	Consultant Obstetrician, Gynaecologist, Professor of Obstetrics and Gynaecology	National Maternity Hospital Dublin, Royal College of Surgeons in Ireland
Ms Áine Kelly	Physiotherapy Manager	Coombe Women & Infants University Hospital, Dublin
Dr Fergus McCarthy	Consultant Obstetrician, Gynaecologist	Cork University Maternity Hospital, University College Cork
Dr Sarah Petch	Specialist Registrar, Obstetrics and Gynaecology	National Maternity Hospital Dublin

Appendix 2:
Guideline Programme Process



Appendix 3:
Training and Education Programme: Water Immersion labour/birth

Water Immersion for Labour and Birth
Training/Education Programme

Date: _____ **Location:** _____

	Programme Schedule		Facilitator (s)
08.15-08.30	Registration		
08.30-08.40	Introduction and Outline of the Day		
08.40-09.20	An overview of water immersion for labour and birth (The 'evidence')		
09.20-10.00	The theory of using water and hormonal effects (woman and baby)		
10.00-10.30	**Break**		
10.30-11.00	Assessing suitability for use of water immersion for labour and birth (Individualising care)		
11.00-12.00	Care in the first, second and third stage of labour		
12.00-12.30	Dealing with concerns and emergencies (unexpected outcomes)		
12.30-13.15	**Lunch**		
13.15-15.15 (45 mins at each session and 10 mins turnaround)	**Group 1**	**Group 2**	
	Practical session in pool room	Case study review and group work	
	Case study review and group work	Practical session in pool room	
15.15-15.45	Summary, Discussion, Q & A		
15.45-16.00	**Evaluation & Close**		

Appendix 4: **Education and Training: Practical session**

Water Immersion for Labour and Birth Practical Session (Including skills and drills)

Overall

By providing training to both community and maternity-unit based teams, we ensure safe and efficient care of women choosing to use water immersion for labour and birth. There are specific considerations and practicalities required for water immersion, be it for labour or birth. The template below includes practical guidance on the care/management of women choosing to use a birthing pool either in hospital or at home. The session will also include guidance on what to do should an emergency occur and the woman requires evacuation from the pool.

Clinical Consideration	Objective	Practicalities
Equipment	Equipment required to facilitate care.	**1. What equipment is required?** Doppler Thermometer Gloves/gauntlets Mirror Towels Inco sheets Heat source Entonox Sieve Birthing aids **2. Health and safety considerations** Personal: Manual handling & PPE Kneelers Emergency evacuation net/hoist/sling Neonatal Emergency response/call bell/alarm
The Birthing Environment	Ability to facilitate an environment conducive to physiological birth 'oxytocin friendly' Home & hospital (tips) Fairy lights/tea lights, music	1. Awareness of obstacles and facilitators 2. Physical and psychological safety: continuity, partners involved 3. Incorporating elements of mobility, optimal birth positions, alternative therapies

Clinical Consideration	Objective	Practicalities
Filling the Pool	Awareness of maintaining the water level and pool temperature	Familiarity with equipment Filling and emptying Removing debris
When to Enter	Clinical guidance	Awareness of the evidence & individualising – women's needs/requests Physiological response & benefits of water
Midwifery care in labour & birth • Water temperature • Hygiene • IA and waterproof telemetry CTG • Level of water • Mobility/positions • Transition/maternal behaviour • Birth • Third stage	Observing and maintaining maternal and fetal wellbeing	1. Ability to support and care for a woman in the pool 2. Observations (maternal & fetal) 3. Documentation 4. Hands off approach 5. Physical care: hydration, elimination, bladder care 6. Woman to be submerged 7. Uninterrupted skin to skin 8. Third stage (active & physiological) 9. Prevention of and management of cord avulsion/cord snap
When to exit the pool	Safety concerns Clinical guidance	The safety conversation Clinical concerns: maternal and/or fetal
Emergency preparedness • **Estimating blood loss**	*Recognition of excessive blood loss	Develop skills, competence and confidence. Include midwifery students. Facilitate regular skills and drills sessions. Reverting to active management of the third stage, PPH – care & management
Emergency preparedness • **Shoulder Dystocia**	Recognition and initiation of emergency steps. Exiting the pool safely	Develop skills, competence and confidence. Include midwifery students and the MDT. Facilitate regular skills and drills sessions.
Emergency preparedness • **Maternal collapse**	Recognition and initiation of emergency steps. Exiting the pool safely	Develop skills, competence and confidence. Include midwifery students and the MDT. Facilitate regular skills and drills sessions.
Emergency preparedness • **Neonatal resuscitation**	Recognition and initiation of emergency steps.	Develop skills, competence and confidence. Include midwifery students and MDT. Facilitate regular skills and drills sessions. In line with AHA Neonatal Resuscitation Programme

***NB: Recommend**
Burns E, McDonald M, Rodd Z, Shepherd E, Smith L, Blamey C (2023) *estiMATE – An e-learning tool for estimating blood loss during waterbirth.* https://www.all4birth.com/courses/estimate-an-e-learning-tool-for-estimating-blood-loss-during-waterbirth/[67]

Appendix 5:
Water Birth Competency Tool (Midwife from another workplace)

Water Birth Competency Tool –
FOR MIDWIVES COMPETENT IN WATER BIRTH (From another Workplace)

Midwives Name: _____ NMBI PIN: _____

To be deemed competent in Water Birth a midwife must

1. Be registered with the Nursing & Midwifery Board of Ireland (NMBI)

AND

2. Conducted HSE National eLearning Programme on Use of Water for Labour/Birth
3. Have attended a water birth education session (which includes a review of relevant evidence, care/management during water immersion/birth, practical skills & drills and emergency procedures) *NB. Undertake skills & drills training/updates in this new unit/environment and be familiar with local practices*

AND

4. Ensure that s/he is complying with the requirements of the Nursing & Midwifery Board of Ireland (NMBI) with respect to practice (e.g. Practice within his/her Scope of Practice (NMBI 2025) and work within Hospital/Unit Guidelines (s).

Additional Comments:_____

_____

_____

Signed by Midwife _____ Date: _____

Signed by midwifery assessor/CMM: _____ Date: _____

Appendix 6:
Water Birth Competency Tool (Midwife with no water birth experience)

Water Birth Competency Assessment Tool
FOR MIDWIVES WITH NO WATER BIRTH EXPERIENCE

Midwives Name: _____ NMBI PIN: _____

To be deemed competent in Water Birth, a midwife must;

1. Be registered with the Nursing & Midwifery Board of Ireland (NMBI)

AND

2A. Conducted HSE National eLearning Programme on Use of Water for Labour/Birth.

2B. Have attended a water birth education session locally/via the CME (which includes a review of care/management during water immersion/birth, practical skills & drills and emergency procedures (locally))

AND

3. Have witnessed/assisted a midwife competent in water birth with a water birth on at least 1 occasion

AND

4. Have conducted at least 1* water birth under the supervision of a midwife competent in water birth

AND

5. Ensure that s/he is complying with the requirements of the Nursing & Midwifery Board of Ireland (NMBI) with respect to practice (e.g. Practice within his/her Scope of Practice (NMBI 2025) and work within Hospital/Unit Guidelines (s).

Additional Comments: _____

_____

_____

Signed by Midwife _____ Date: _____

Signed by midwifery assessor/CMM: _____ Date: _____

* Can be more – as per an individual midwife's competency level and Scope of Practice (NMBI, 2025)

Appendix 7:
In the Event of an Intrapartum Complication During/Following a Water Birth in the Hospital/MLU/ABU Setting

1. Tight Nuchal Cord Preventing Birth of the Baby's Body

- Seek further assistance by using the emergency call bell.
- Carefully assist the woman to stand in order to exit the pool. Once standing, to mitigate against further cord traction and/or trauma to the baby, a midwife should cradle the baby's head, until the woman has safely left the pool and assisted onto awaiting bed, for birth to be completed 'on land'.
- Clamping and cutting a tight nuchal cord underwater is not recommended as it can stimulate breathing.

2. Shoulder Dystocia (SD)

- . If the event of shoulder dystocia, the woman is requested to move into a standing position in preparation to exit the pool. *Often by the virtue of this movement, the anterior shoulder may dislodge, resulting in the birth of the baby.*

If the baby remains undelivered;

- . Seek further assistance by using the emergency call bell.
- . Once the woman is in the standing position, she is requested to place one foot onto the pool's internal step/side of the pool. As above, by virtue of adopting this position, the anterior shoulder may dislodge, resulting in the birth of the baby.

If the birth has still not occurred, proceed with management below;

- A bed/trolley is brought level to the pool side, with the end/foot as close to the pool edge as possible with brakes applied, and the back of the bed/trolley is flat and pillows removed.
- The woman is assisted to **either;**
  - crawl onto the bed and once safe, assisted to turn over and instructed how to adopt the 'Mc Roberts manoeuvre', ready to proceed with SD protocol as necessary OR
  - to rest her buttocks on the edge of the pool where it meets the bed/trolley and then assisted to lie back. Using a slide/glide sheet, she is assisted back up the bed/trolley and simultaneously assisted to adopt the 'Mc Roberts' manoeuvre, ready to proceed with SD protocol as necessary.

The midwife must remain vigilant and prepared for a precipitous delivery at any point during the evacuation procedure(s) above. I.e. one midwife cradles the baby's head throughout the whole evacuation process.

3. Women Feeling Faint/Weak

- Seek further assistance by using the emergency call bell.
- **If the baby is born, remove from the mother's arms immediately.**
- Stay close to the woman throughout. **Do not leave the woman.**
- A colleague in assistance should bring a bed/chair close to the pool.
- Assist the woman to move to the internal seat within the pool/the side of the pool, before standing up to leave the pool.
- Alternatively, if the woman feels unwell and is unable to stand/exit safely – see No 4. Maternal Collapse.

4. Maternal Collapse

- If baby is born, remove immediately from mothers' arms. Stay close to the woman throughout. **Do not leave the woman.**
- **NB: One person MUST maintain the woman's airway by gently supporting her head and neck above the level of the water.**
- The second attendant uses the emergency call bell to seek assistance.
- DO NOT empty the pool. The pool water is topped up in order to increase buoyancy i.e. Help the woman float to the surface and assist in the emergency evacuation process.
- A bed/trolley is brought to the side/top end of the pool (depending on its shape/type) and as close to the pool edge as possible. Using the emergency evacuation net/pool hoist, and buoyancy aids (if available), the woman is carefully transferred from the pool onto the awaiting bed. The bed/trolley should be lowered to the level of the pool, with brakes applied, back lowered, pillows removed and a slide/glide sheet used to assist transfer.
- Once woman is safely on the bed/trolley, remove the emergency evacuation net/sling, wet clothes/linen, dry the woman quickly, cover with warm towels/blankets and simultaneously begin maternal collapse protocol as appropriate.
- In the event of a cardiac arrest and where an AED is used, it is necessary to ensure that the woman's chest is dry, and vigilance is taken by staff as water is a conductor of electricity.

5. Baby Needing Resuscitation

- Seek further assistance by using the emergency call bell
- Clamp and cut the umbilical cord immediately
- Transfer baby to the resuscitaire
- Commence resuscitation as per local neonatal resuscitation protocol.
- *Be mindful that the woman is still in water. A staff member must remain with the woman to facilitate safe exit from the pool and ongoing care/management.*

Appendix 8:
In the Event of an Intrapartum Complication During/Following a Water Birth in the Community/Home Birth Setting

1.Tight Nuchal Cord Preventing Birth of the Baby's Body

- Carefully assist the woman to stand in order to exit the pool. Once standing, to mitigate against further cord traction and/or trauma to the baby, a midwife should cradle the baby's head, until the woman has safely left the pool and assisted onto floor/sofa/bed, for birth to be completed 'on land'.
- Simultaneously the emergency/ambulance service is contacted as necessary, to seek assistance and arrange emergency transfer to nearest maternity unit, as per protocol
- ***Clamping and cutting a tight nuchal cord underwater is not recommended as it can stimulate breathing.***

2. Shoulder Dystocia (SD)

- In the event of shoulder dystocia, the woman is requested to move into a standing position in preparation to exit the pool. Often by the virtue of this movement, the anterior shoulder may dislodge, resulting in the birth of the baby.

If the baby remains undelivered;

- From the standing position, the woman is assisted to exit the pool. Again, often by moving, the anterior shoulder may dislodge, resulting in the baby's birth.
- If the birth has still not occurred, once exited the pool, the woman is requested to lie flat on her back on the floor and assisted with the 'McRoberts manoeuvre', ready to proceed with the SD protocol as necessary.
- Simultaneously, the emergency/ambulance service is contacted to seek assistance and arrange emergency transfer to the nearest maternity unit, as per protocol.

The midwife must be vigilant and prepared for a precipitous delivery during any part of the evacuation procedure(s). I.e. one midwife cradles the baby's head throughout the evacuation process.

3. Women Feeling Faint/Weak

- **If the baby is born, remove from the mothers' arms to safety immediately.**
- One midwife must stay close to the woman throughout.
- Assist the woman to move to the internal seat within the pool/the side of the pool, before standing up to leave the pool.
- Birth partner(s) may be requested to assist also.
- NB: if the woman feels unwell and is unable to stand/exit safely – see No 4. Maternal Collapse.

4. Maternal Collapse

- **If the baby is born, remove from the mothers' arms to safety immediately.**
- **NB: One person MUST maintain the woman's airway by gently supporting her head and neck above the level of the water.**
- The birth partner(s) is/are requested to assist with evacuating the woman from the pool together with the midwives; by lifting her legs and under her arms – the woman is lifted from the pool onto the floor.
- Simultaneously the emergency/ambulance service is contacted to seek assistance and arrange emergency transfer to nearest maternity unit, as per protocol.
- Once the woman is safely out of the pool, maternal collapse protocol is implemented. Once stable, the woman is dried, any wet clothes/towels removed, and warm towels/blankets provided.
- Once ambulance personnel arrive and in the event of a cardiac arrest where an AED is used, it is necessary to ensure that the woman's chest is dry and vigilance is taken, as water is a conductor of electricity.

5. Baby Needing Resuscitation

- Clamp and cut the umbilical cord immediately.
- Transfer the baby to the resuscitaire area (should be set up in anticipation of the birth).
- Commence resuscitation as per local neonatal resuscitation protocol.
- Simultaneously the emergency/ambulance service is contacted to seek assistance and arrange emergency transfer to nearest maternity unit, as per protocol.
- *Be mindful that the woman is still in water. A midwife must remain with the woman to facilitate safe exit from the pool and ongoing care/management.*

Appendix 9: **Example of blood loss in a birthing pool**

Experiment using expired whole blood – observe the light and the colour of the water

100mls

300mls (If 300mls and ongoing, assist woman to exit pool)

500mls (Evacuation process and initiate PPH Protocol)

800mls

1000mls

In Summary:

1. Assess the **clinical situation;** (woman's history, last haemoglobin, length of labour, birth weight of baby, method of management of the third stage of labour).
2. **Water;**
   - 2..1. Colour of pool water 'rosé – blackcurrant – claret' and its opacity
   - 2..2. Presence of clots and expansion of the clot layer (becoming 'denser' in appearance)
   - 2..3. Visibility of body 'landmarks' – woman's legs/feet
   - 2..4. Visibility of base of the pool
   - 2..5. Flow of blood from the mother – fast or slow
3. **Woman;**
   - 3..1. Pallor
   - 3..2. Behaviour (feeling weak, warm, nauseated)
   - 3..3. Abnormal vital signs (increase in respirations, hypotension, tachycardia)
   - 3..4. Loss of interest in the baby
4. If concerned, remove the baby immediately, request assistance, and assist the woman in safely exiting the pool (see appendix 7 and/or 8), and implement the local PPH protocol as necessary.
5. Recommend completion of; Burns E, McDonald M, Rodd Z, Shepherd E, Smith L, Blamey C (2023) *estiMATE – An e-learning tool for estimating blood loss during waterbirth.* Available at: https://www.all4birth.com/courses/estimate-an-e-learning-tool-for-estimating-blood-loss-during-waterbirth/[67]

Appendix 10: **Information on using an inflatable birthing pool**

Water Birth at Home

Information on using an inflatable birthing pool

In the community/home birth setting, inflatable pools can be used by people who wish to use water immersion. In relation to the use of the same, it is always recommended to refer to the manufacturer's instruction manual. When planning a home water birth, home birth midwives may provide guidance in relation to birthing pools; however, the overall responsibility for arranging private hire/purchase of a birthing pool and its subsequent assembly and maintenance lies with the woman and her birth partner. Hire or purchase must be from a reputable firm; paddling pools are unsuitable.

It is recommended that the home birth midwife assess the environment when the woman initially books for home birth in relation to the suitability for a home birth, including the use of the birthing pool/potential water birth. The woman is advised to trial the pool before 37 weeks to ensure it is in working order and all the necessary parts are available.

They are informed that the inflatable pool should be situated ideally on a ground floor and/or a floor capable of taking the weight of the pool, filled with water, e.g. 657kgs for 'Pool in a Box'.[75] They are also advised regarding safety issues and the location of the pool, i.e. with at least two sides (if possible three sides) accessible to the midwife in the event the woman needs assistance/evacuation from the pool during labour. To prevent puncture, pools should not be located close to a heat source such as a radiator/fire or anything sharp, and women should be cautioned of the risks of electrical appliances/cables in the vicinity of the pool. Inflatable pools may be shared among women. However, if so, a new/once only 'liner' (always check integrity), clear fit cover, hose pipe, adaptor nozzle and submersible pump must be used. It is recommended that any pumps used solely for pool emptying, not recirculating water, which could be a breathing ground for bacteria. Documented evidence of assessment and discussion is recorded in the woman's handheld notes/computerised notes by the home birth midwife and/or the DMO *as per locally agreed guidelines*. Cleaning of an inflatable pool is outlined in Appendix 13.

Appendix 11: **Example of a checklist for inflatable pool use at a home water birth**

Use of an Inflatable Birthing Pool at Home – Checklist		
Woman's name: _____	EDD: _____	
Adequate heating	YES/NO	Comments:
Adequate Lighting	YES/NO	Comments:
Optimal pool placement site discussed	YES/NO	Comments:
Evacuation procedure discussed	YES/NO	Comments:
Clearing electrical equipment near the pool was discussed	YES/NO	Comments:
A trial run of filling the pool before 37 weeks is advised (to ensure adequate hot water supply and no leaks in the pool).	YES/NO	Comments:
Advised re: new disposable liner if required *(check integrity)*	YES/NO	Comments:
Advised re: new disposable hose, connector nozzle, pool cover and submersible pump, if required	YES/NO	Comments:
Advice to the woman		
The birth partner is responsible for maintaining, filling and emptying the pool.	YES/NO	Comments:
Due to the risk of Legionnaire's disease, the pool should not be pre-filled or maintained with a heater before labour. It should be filled at the time of labour.	YES/NO	Comments:
Discuss any water quality issues/'boil water notices'	YES/NO	Comments:
Discussion with the woman about waiting for her midwife to arrive before entering the pool and reasons when it may be necessary to leave the pool.	YES/NO	Comments:
Equipment required		
Birthing pool/Liner/Hose and valve connection for tap	YES/NO	Comments:
A new thermometer, sieve and mirror	YES/NO	Comments:
Stool/step for pool access if needed	YES/NO	Comments:
Towels/protective floor covering	YES/NO	Comments:

Signature Home Birth Midwife/DMO: _____ **Date:** _____

Appendix 12: **Cleaning and Maintaining Plumbed Birthing Pools**

Daily Procedure:

- Pool tap(s) should be run in accordance with the local flushing protocol (if a mixed tap is used, run on the coldest setting followed by the hottest setting for the required time). Flushing taps reduce the risk of legionella contamination and avoid water stagnation.
- Perform hand hygiene according to the WHO's five moments of hand hygiene[76] and assess the requirement for PPE (if needed) according to the Point of Care Risk Assessment (PCRA). [77]
- Use a clean, disposable cloth, non-abrasive detergent solution (*made up as per manufacturer instructions*), and warm water to clean the pool thoroughly;
    - start with the taps, pool surround and the rim,
    - then the pool and,
    - lastly, the plughole
- Always work downwards and towards the waste outlet/plughole – do not take the dirty cloth back over areas already cleaned.
- Rinse well with warm water *(using a jug specifically for this purpose).*
- Ensure the pool is dried **thoroughly** with a clean disposable cloth/paper towel.
- Close the plughole. Discard disposable cloths/paper towels.
- Discard PPE and perform hand hygiene as per the WHO's five moments of hand hygiene. [76]
- Rinse jug/bucket, dry well and store in designated storage area.
- Document **both** tap flushing and pool cleaning on the daily cleaning record sheet, as per agreed-upon local guidelines.

Following Use:

- Ensure disinfectant cleaning warning signs are in place and the room is well-ventilated.
- Perform hand hygiene according to the WHO's five moments of hand hygiene[76] and assess the requirement for PPE (if needed) according to the Point of Care Risk Assessment (PCRA). [77]
- Remove any large particles with a disposable sieve and dispose of them as Healthcare Risk Waste.
- Dispose of single-use only items, e.g. mirror, sieve.
- Empty the pool and rinse it with warm water (using a jug specifically *for this purpose).*
- As above, use a disposable cloth, non-abrasive detergent solution (made according to the manufacturer's instructions), and warm water to thoroughly clean the taps, pool surround, pool, and plughole.

- Perform disinfection using a chlorine-based product such as sodium dichloro isocyanurate (NaDCC), sodium hypochlorite 10,000ppm, or another appropriate disinfectant. To kill microorganisms, any disinfectant must have sufficient contact time with the surface (as per the manufacturer's instructions). The product must also have the correct concentration, be applied to a clean surface, and be effective against the particular microorganisms of concern.
- If a non-chlorine-based disinfectant is used, it should be a product suitable for use in a healthcare environment with bactericidal (EN16615), sporicidal (17126) and virucidal (EN14476) activity as required and be CE marked. Choosing a disinfectant compatible with the surface material is integral to avoiding damage to the surface.
- Use a clean disposable cloth to wipe the entire pool with disinfectant, starting with the taps, pool surround, pool, and finally, the plughole. Leave for the time specified as per the disinfectant manufacturer's instructions.
- Rinse the pool **thoroughly** with **cold water**. To prevent any residue from remaining on the surface, it is essential to remove all traces of disinfectant from the pool.
- Ensure the pool is dried **thoroughly** with a clean disposable cloth/paper towel and close the plughole.
- Clean and disinfect, as appropriate, any other equipment used (e.g. waterproof Doppler, digital in-flight thermometer, torch) as per agreed-upon local policy.
- Discard all disposable cloths/disinfectant wipes/paper towels used.
- Discard PPE and perform hand hygiene as per the WHO's five moments of hand hygiene. [76]
- Rinse jug/bucket, dry well and store in designated storage area.
- Document on cleaning record sheet as per agreed local policy.

Appendix 13: **Cleaning and Maintaining Inflatable Birthing Pools**

When cleaning and maintaining inflatable birthing pool always follow the manufacturer's instructions).

As discussed in the 'Clinical Practice' section of Clinical Question 2.11, when a woman is planning a home water birth, home birth midwives may provide guidance in relation to birthing pools; however, the overall responsibility for arranging private hire/purchase of a birthing pool and its subsequent assembly, maintenance and cleaning following use lies with the woman and her birth partner. Women should be advised to assess the pool for cleanliness and integrity and clean it with a household detergent and warm water before leaving it to dry well and storing it for use during labour.

Inflatable pools are primarily used in the community for home water births. They may be shared among women. However, a new/once-only liner (checked for integrity), clear-fit cover, hose pipe, adaptor nozzle, and submersible pump are essential.

Following a home water birth, the primary responsibility lies with the birth partner, but the Midwife may guide and support.

- Perform hand hygiene according to the WHO's five moments of hand hygiene[76] and assess the requirement for PPE (if needed) according to the Point of Care Risk Assessment (PCRA). [77]
- Before emptying the pool, remove any debris using a disposable sieve.
- Use the 'single use only' submersible water pump and piping provided to empty the pool of water.
- Once empty, remove the pool liner carefully to avoid spillages, wrap it, and dispose of it as domestic waste.
- The pool interior and exterior are cleaned using a clean cloth, non-abrasive general, household detergent, and warm water. They are then left to dry in a well-ventilated area.
- Ensure the underside of the pool is cleaned and dried.
- Once dry (check for water pooling or moisture and wipe dry if necessary), deflate and fold neatly and return to the box or storage bag.
- The midwife discards all single-use items and cleans and disinfects any other equipment (e.g. waterproof Doppler, digital in-fared thermometer, and torch) per the agreed-upon local policy.
- Disposable cloths, disinfectant wipes, and PPE are discarded in general waste and used to decontaminate hands, per the WHO's five moments of hand hygiene. [76]

Following a hospital water birth: using an inflatable birthing pool.

- Perform hand hygiene according to the WHO's five moments of hand hygiene[76] and assess the requirement for PPE(if needed) according to the Point of Care Risk Assessment (PCRA). [77]
- Before emptying the pool, remove any debris using a disposable sieve and dispose of it as Healthcare Risk Waste.
- Use the 'single use only' submersible water pump and piping provided to empty the pool of water.

- Once empty, remove the pool liner carefully to avoid spillages, wrap it and dispose of it as Healthcare Risk Waste.
- The pool interior and exterior are cleaned using a clean disposable cloth, a non-abrasive detergent solution (made up per the manufacturer's instructions), and warm water. The cloth is left to dry in a well-ventilated area.
- Ensure the underside of the pool is cleaned and dried.
- Once dry (check for water pooling or moisture and wipe dry if necessary), deflate and fold neatly and return to the box or storage bag.
- As per the manufacturer's instructions, store above 5 degrees Celsius in a clean, dry, dedicated storage area.
- Discard all single-use items.
- Clean and disinfect (as appropriate) any other equipment used (e.g. waterproof Doppler, digital infared thermometer, torch) as agreed local policy.
- Discard disposable cloths/disinfectant wipes and PPE and perform hand hygiene according to the WHO's five moments of hand hygiene. [76]
- Document on cleaning record sheet as per agreed local policy.

Appendix 14: **AGREE II checklist**[23]

AGREE Reporting Checklist 2016

This checklist is intended to guide the reporting of Clinical Practice Guidelines.

CHECKLIST ITEM AND DESCRIPTION	REPORTING CRITERIA	Page #
DOMAIN 1: SCOPE AND PURPOSE		
1. OBJECTIVES *Report the overall objective(s) of the guideline. The expected health benefits from the guideline are to be specific to the clinical problem or health topic.*	☐ Health intent(s) (i.e., prevention, screening, diagnosis, treatment, etc.) ☐ Expected benefit(s) or outcome(s) ☐ Target(s) (e.g., patient population, society)	
2. QUESTIONS *Report the health question(s) covered by the guideline, particularly for the key recommendations.*	☐ Target population ☐ Intervention(s) or exposure(s) ☐ Comparisons (if appropriate) ☐ Outcome(s) ☐ Healthcare setting or context	
3. POPULATION *Describe the population (i.e., patients, public, etc.) to whom the guideline is meant to apply.*	☐ Target population, sex and age ☐ Clinical condition (if relevant) ☐ Severity/stage of disease (if relevant) ☐ Comorbidities (if relevant) ☐ Excluded populations (if relevant)	
DOMAIN 2: STAKEHOLDER INVOLVEMENT		
4. GROUP MEMBERSHIP *Report all individuals who were involved in the development process. This may include members of the steering group, the research team involved in selecting and reviewing/ rating the evidence and individuals involved in formulating the final recommendations.*	☐ Name of participant ☐ Discipline/content expertise (e.g., neurosurgeon, methodologist) ☐ Institution (e.g., St. Peter's hospital) ☐ Geographical location (e.g., Seattle, WA) ☐ A description of the member's role in the guideline development group	

23 AGREE Reporting Checklist is available on the AGREE Enterprise website, a free and open access resource to support the practice guideline field (www.agreetrust.org)

CHECKLIST ITEM AND DESCRIPTION	REPORTING CRITERIA	Page #
5. TARGET POPULATION PREFERENCES AND VIEWS *Report how the views and preferences of the target population were sought/considered and what the resulting outcomes were.*	☐ Statement of type of strategy used to capture patients'/publics' views and preferences (e.g., participation in the guideline development group, literature review of values and preferences) ☐ Methods by which preferences and views were sought (e.g., evidence from literature, surveys, focus groups) ☐ Outcomes/information gathered on patient/public information ☐ How the information gathered was used to inform the guideline development process and/or formation of the recommendations	
6. TARGET USERS *Report the target (or intended) users of the guideline.*	☐ The intended guideline audience (e.g. specialists, family physicians, patients, clinical or institutional leaders/administrators) ☐ How the guideline may be used by its target audience (e.g., to inform clinical decisions, to inform policy, to inform standards of care)	
DOMAIN 3: RIGOUR OF DEVELOPMENT		
7. SEARCH METHODS *Report details of the strategy used to search for evidence.*	☐ Named electronic database(s) or evidence source(s) where the search was performed (e.g., MEDLINE, EMBASE, PsychINFO, CINAHL) ☐ Time periods searched (e.g., January 1, 2004 to March 31, 2008) ☐ Search terms used (e.g., text words, indexing terms, subheadings) ☐ Full search strategy included (e.g., possibly located in appendix)	
8. EVIDENCE SELECTION CRITERIA *Report the criteria used to select (i.e., include and exclude) the evidence. Provide rationale, where appropriate.*	☐ Target population (patient, public, etc.) characteristics ☐ Study design ☐ Comparisons (if relevant) ☐ Outcomes ☐ Language (if relevant) ☐ Context (if relevant)	

CHECKLIST ITEM AND DESCRIPTION	REPORTING CRITERIA	Page #
9. STRENGTHS & LIMITATIONS OF THE EVIDENCE *Describe the strengths and limitations of the evidence. Consider from the perspective of the individual studies and the body of evidence aggregated across all the studies. Tools exist that can facilitate the reporting of this concept.*	☐ Study design(s) included in body of evidence ☐ Study methodology limitations (sampling, blinding, allocation concealment, analytical methods) ☐ Appropriateness/relevance of primary and secondary outcomes considered ☐ Consistency of results across studies ☐ Direction of results across studies ☐ Magnitude of benefit versus magnitude of harm ☐ Applicability to practice context	
10. FORMULATION OF RECOMMENDATIONS *Describe the methods used to formulate the recommendations and how final decisions were reached. Specify any areas of disagreement and the methods used to resolve them.*	☐ Recommendation development process (e.g., steps used in modified Delphi technique, voting procedures that were considered) ☐ Outcomes of the recommendation development process (e.g., extent to which consensus was reached using modified Delphi technique, outcome of voting procedures) ☐ How the process influenced the recommendations (e.g., results of Delphi technique influence final recommendation, alignment with recommendations and the final vote)	
11. CONSIDERATION OF BENEFITS AND HARMS *Report the health benefits, side effects, and risks that were considered when formulating the recommendations.*	☐ Supporting data and report of benefits ☐ Supporting data and report of harms/side effects/risks ☐ Reporting of the balance/trade-off between benefits and harms/side effects/risks ☐ Recommendations reflect considerations of both benefits and harms/side effects/ risks	
12. LINK BETWEEN RECOMMENDATIONS AND EVIDENCE *Describe the explicit link between the recommendations and the evidence on which they are based.*	☐ How the guideline development group linked and used the evidence to inform recommendations ☐ Link between each recommendation and key evidence (text description and/or reference list) ☐ Link between recommendations and evidence summaries and/or evidence tables in the results section of the guideline	

CHECKLIST ITEM AND DESCRIPTION	REPORTING CRITERIA	Page #
13. EXTERNAL REVIEW *Report the methodology used to conduct the external review.*	☐ Purpose and intent of the external review (e.g., to improve quality, gather feedback on draft recommendations, assess applicability and feasibility, disseminate evidence) ☐ Methods taken to undertake the external review (e.g., rating scale, open-ended questions) ☐ Description of the external reviewers (e.g., number, type of reviewers, affiliations) ☐ Outcomes/information gathered from the external review (e.g., summary of key findings) ☐ How the information gathered was used to inform the guideline development process and/or formation of the recommendations (e.g., guideline panel considered results of review in forming final recommendations)	
14. UPDATING PROCEDURE *Describe the procedure for updating the guideline.*	☐ A statement that the guideline will be updated ☐ Explicit time interval or explicit criteria to guide decisions about when an update will occur ☐ Methodology for the updating procedure	
DOMAIN 4: CLARITY OF PRESENTATION		
15. SPECIFIC AND UNAMBIGUOUS RECOMMENDATIONS *Describe which options are appropriate in which situations and in which population groups, as informed by the body of evidence.*	☐ A statement of the recommended action ☐ Intent or purpose of the recommended action (e.g., to improve quality of life, to decrease side effects) ☐ Relevant population (e.g., patients, public) ☐ Caveats or qualifying statements, if relevant (e.g., patients or conditions for whom the recommendations would not apply) ☐ If there is uncertainty about the best care option(s), the uncertainty should be stated in the guideline	
16. MANAGEMENT OPTIONS *Describe the different options for managing the condition or health issue.*	☐ Description of management options ☐ Population or clinical situation most appropriate to each option	

CHECKLIST ITEM AND DESCRIPTION	REPORTING CRITERIA	Page #
17. IDENTIFIABLE KEY RECOMMENDATIONS *Present the key recommendations so that they are easy to identify.*	☐ Recommendations in a summarized box, typed in bold, underlined, or presented as flow charts or algorithms ☐ Specific recommendations grouped together in one section	
DOMAIN 5: APPLICABILITY		
18. FACILITATORS AND BARRIERS TO APPLICATION *Describe the facilitators and barriers to the guideline's application.*	☐ Types of facilitators and barriers that were considered ☐ Methods by which information regarding the facilitators and barriers to implementing recommendations were sought (e.g., feedback from key stakeholders, pilot testing of guidelines before widespread implementation) ☐ Information/description of the types of facilitators and barriers that emerged from the inquiry (e.g., practitioners have the skills to deliver the recommended care, sufficient equipment is not available to ensure all eligible members of the population receive mammography) ☐ How the information influenced the guideline development process and/or formation of the recommendations	
19. IMPLEMENTATION ADVICE/TOOLS *Provide advice and/or tools on how the recommendations can be applied in practice.*	☐ Additional materials to support the implementation of the guideline in practice. For example: ☐ Guideline summary documents ☐ Links to check lists, algorithms ☐ Links to how-to manuals ☐ Solutions linked to barrier analysis (see Item 18) ☐ Tools to capitalize on guideline facilitators (see Item 18) ☐ Outcome of pilot test and lessons learned	

CHECKLIST ITEM AND DESCRIPTION	REPORTING CRITERIA	Page #
20. RESOURCE IMPLICATIONS *Describe any potential resource implications of applying the recommendations.*	☐ Types of cost information that were considered (e.g., economic evaluations, drug acquisition costs) ☐ Methods by which the cost information was sought (e.g., a health economist was part of the guideline development panel, use of health technology assessments for specific drugs, etc.) ☐ Information/description of the cost information that emerged from the inquiry (e.g., specific drug acquisition costs per treatment course) ☐ How the information gathered was used to inform the guideline development process and/or formation of the recommendations	
21. MONITORING/AUDITING CRITERIA *Provide monitoring and/or auditing criteria to measure the application of guideline recommendations.*	☐ Criteria to assess guideline implementation or adherence to recommendations ☐ Criteria for assessing impact of implementing the recommendations ☐ Advice on the frequency and interval of measurement ☐ Operational definitions of how the criteria should be measured	
DOMAIN 6: EDITORIAL INDEPENDENCE		
22. FUNDING BODY *Report the funding body's influence on the content of the guideline.*	☐ The name of the funding body or source of funding (or explicit statement of no funding) ☐ A statement that the funding body did not influence the content of the guideline	
23. COMPETING INTERESTS *Provide an explicit statement that all group members have declared whether they have any competing interests.*	☐ Types of competing interests considered ☐ Methods by which potential competing interests were sought ☐ A description of the competing interests ☐ How the competing interests influenced the guideline process and development of recommendations	

From: Brouwers MC, Kerkvliet K, Spithoff K, on behalf of the AGREE Next Steps Consortium. The AGREE Reporting Checklist: a tool to improve reporting of clinical practice guidelines. BMJ 2016;352:i1152. doi: 10.1136/bmj.i1152.

For more information about the AGREE Reporting Checklist, please visit the AGREE Enterprise website at http://www.agreetrust.org

Appendix 15: **Grades of Recommendation**[24]

Grade of recommendation	Clarity of risk/ benefit	Quality of supporting evidence	Implications	Suggested language
1A. Strong recommendation, high-quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	Consistent evidence from well-performed randomized, controlled trials or overwhelming evidence of some other form. Further research is unlikely to change our confidence in the estimate of benefit and risk	Strong recommendations can apply to most patients in most circumstances without reservation. Clinicians should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present	We strongly recommend… We recommend that …should be performed/ administered… We recommend that …. is indicated/ beneficial/ effective…
1B. Strong recommendation, moderate-quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	Evidence from randomized, controlled trials with important limitations (inconsistent results, methodologic flaws, indirect or imprecise), or very strong evidence of some other research design. Further research (if performed) is likely to have an impact on our confidence in the estimate of benefit and risk and may change the estimate	Strong recommendation and applies to most patients. Clinicians should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present	We recommend… We recommend that … should be performed/ administered… We recommend that … is (usually) indicated/ beneficial/ effective…

24 SMFM adopts GRADE (Grading of Recommendations Assessment, Development, and Evaluation) for clinical guidelines. Society for Maternal-Fetal Medicine (SMFM), Chauhan SP, Blackwell SC. Am J Obstet Gynecol. 2013 Sep;209(3):163-5. https://pubmed.ncbi.nlm.nih.gov/23978245/

Grade of recommendation	Clarity of risk/ benefit	Quality of supporting evidence	Implications	Suggested language
1C. Strong recommendation, low-quality evidence	Benefits appear to outweigh risk and burdens, or vice versa	Evidence from observational studies, unsystematic clinical experience, or from randomized, controlled trials with serious flaws. Any estimate of effect is uncertain	Strong recommendation that applies to most patients. Some of the evidence base supporting the recommendation is, however, of low quality	We recommend… We recommend that … should be performed/ administered… We recommend that … Is (maybe) indicated/ beneficial/ effective…
2A. Weak recommendation, high-quality evidence	Benefits closely balanced with risks and burdens	Consistent evidence from well-performed randomized, controlled trials or overwhelming evidence of some other form. Further research is unlikely to change our confidence in the estimate of benefit and risk	Weak recommendation: best action may differ depending on circumstances or patients or societal values	We suggest… We suggest that… may/might be reasonable...
2B. Weak recommendation, moderate-quality evidence	Benefits closely balanced with risks and burdens, some uncertainty in the estimates of benefits, risks and burdens	Evidence from randomized, controlled trials with important limitations (inconsistent results, methodologic flaws, indirect or imprecise), or very strong evidence of some other research design. Further research (if performed) is likely to have an impact on our confidence in the estimate of benefit and risk and may change the estimate	Weak recommendation; alternative approaches likely to be better for some patients under some circumstances	We suggest… We suggest that … may/might be reasonable...

Grade of recommendation	Clarity of risk/ benefit	Quality of supporting evidence	Implications	Suggested language
2C. Weak recommendation, low-quality evidence	Uncertainty in the estimates of benefits, risks, and burdens; benefits may be closely balanced with risks and burdens	Evidence from observational studies, unsystematic clinical experience, or from randomized, controlled trials with serious flaws. Any estimate of effect is uncertain	Very weak recommendation: other alternatives may be equally reasonable	We suggest … is an option We suggest that … may/might be reasonable.
Best practice	A recommendation that is sufficiently obvious that the desirable effects outweigh undesirable effects, despite the absence of direct evidence, such that the grading of evidence is unnecessary			We recommend… We recommend that … should be performed/ administered… We recommend that… Is usually) indicated/ beneficial/effective

Appendix 16: **NWIHP/IOG CAG 2026-**

Dr Cliona Murphy (Chair, 2023-). Consultant Obstetrician and Gynaecologist, Coombe Women and Infants University Hospital. Clinical Director, National Women and Infants Health Programme.

Dr Suzanne O'Sullivan (2023-). Consultant Obstetrician and Gynaecologist, Cork University Maternity Hospital. Director of Education and Training, Obstetrics and Gynaecology, Institute of Obstetricians and Gynaecologists. Chair, Institute of Obstetricians and Gynaecologists.

Dr Venita Broderick (2024-). Clinical Lead Gynaecology, National Women and Infants Health Programme.

Dr Brian Cleary (2023-). Chief Pharmacist, Rotunda Hospital. Medications Lead, Maternal and Newborn Clinical Management System Project.

Ms Angela Dunne (2023-). Director of Midwifery, National Women and Infants Health Programme.

Prof Seán Daly (2023-). Master, Consultant Obstetrician and Gynaecologist, Rotunda Hospital.

Prof Maeve Eogan (2023-). Consultant Obstetrician and Gynaecologist, Rotunda Hospital. Clinical Lead, Sexual Assault Treatment Units, National Women and Infants Health Programme.

Prof Richard Greene (2023-). Consultant Obstetrician and Gynaecologist, Cork University Maternity Hospital. Clinical Director, National Perinatal Epidemiology Centre, University College Cork.

Prof John Higgins (2023-). Cork University Maternity Hospital, Consultant Obstetrician and Gynaecologist, Clinical Director, Ireland South Women and Infants Directorate.

Prof Shane Higgins (2023-). Master, Consultant Obstetrician and Gynaecologist, National Maternity Hospital.

Dr Mendinaro Imcha (2023-). Clinical Director, Consultant Obstetrician and Gynaecologist, University Maternity Hospital Limerick.

Prof John Murphy (2023-). Clinical Lead Neonatology, National Women and Infants Health Programme.

Dr Aoife Mullaly (2023-). Consultant Obstetrician and Gynaecologist, Coombe Women and Infants University Hospital. Clinical Lead, Termination of Pregnancy Services, National Women and Infants Health Programme.

Prof John Morrison (2023-). Consultant Obstetrician and Gynaecologist, University Hospital Galway. Clinical Director, Saolta Maternity Directorate.

Mr Kilian McGrane (2023-). Director, National Women and Infants Health Programme.

Prof Keelin O'Donoghue (2023-). Consultant Obstetrician and Gynaecologist, Cork University Maternity Hospital. Clinical Lead, National Guidelines, National Women and Infants Health Programme.

Prof Mike O'Connell (2023-). Master, Consultant Obstetrician and Gynaecologist, Coombe Women and Infants University Hospital.

Ms Davinia O'Donnell (2024-). General Manager | National Women and Infants Health Programme.

Dr Vicky O'Dwyer (2023-). Consultant Obstetrician and Director of Gynaecology, Rotunda Hospital.

Dr Mairead O'Riordan (2024-). Consultant Obstetrician and Gynaecologist, Cork University Maternity Hospital.

Dr Fergal O'Shaughnessy (2025-) Senior Pharmacist, Rotunda Hospital.

Prof Nóirín Russell (2023-). Consultant Obstetrician and Gynaecologist, Cork University Maternity Hospital. Clinical Director, Cervical Check.

Dr Carmen Regan (April 2024). Clinical Lead Obstetrics, National Women and Infants Health Programme.

Dr Orla Shiel (2024-). Consultant Obstetrician and Gynaecologist, National Maternity Hospital.

Ms Clare Thompson (2023-). Consultant Gynaecological Oncologist, The Mater, Dublin.