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Collaborative waterbirth audit — *'Supporting practice with audit'*

A collaborative audit between ten units with data collected during 2001

Introduction

This is the second paper exploring the issues of 'waterbirth' evidence-based practice. Previously, Garland and Jones¹ explored the rationale for this audit focusing on the methods and rationale and initial results from their 1998 collaboration.

Despite the fact that waterbirths are available worldwide, the amount of evidence regarding the safety of this particular type of birth is limited. That which is available is often based on single unit, individual midwife or lone client experiences.

Background to the study

For this study we continue to use the clinical audit approach, where we compare waterbirth with traditional dry land birth, a tool that has been well documented and used at Maidstone since 1989.¹⁻³

One issue, which continually arose, was the point that our study was of a single unit, a South East of England hospital audit, and may not reflect practices, outcomes and experiences of our colleagues around the United Kingdom (UK).

The collaborative audit

In order to extend the study beyond one unit, we sought funding during 1996-7 from the National Health Service (NHS) Executive (research and development). We then negotiated with nine other units around the UK from 1997 to 2001 when the most recent units joined the study.

The ten units involved

Birth unit profiles

Maidstone hospital lies on the outskirts of the county town, some 45 miles from the Kent coast and 40 miles

south of London. We are committed to choice for women in their pattern of care and place of birth. Our first 'Lagoon' room was opened in 1998 followed a year later by the 'Marine' room. We also have two portable home birthing pools which we rent to mothers in the surrounding area. Our sister hospital (with 2,500 births per year) also has a pool. Between the two sites, 5,000 deliveries and five pools we have a 10-15% water labour rate and 3-5% waterbirth rate.

Hillingdon hospital is a district general hospital in Uxbridge, west London, a busy unit with 3,500 births and a diverse population including Caucasian, Asian and Somali families. The unit has one plumbed-in pool and has had over 500 waterbirths since its installation.

The Hospital of St John and Elizabeth is a private hospital in St John's Wood, north London. It has pioneered the use of birthing pools and the application of complementary therapies for pain relief and relaxation in labour. There are two plumbed-in pools. The clients are mainly British but the unit also cares for a small Japanese population. They have approximately 270 births a year.

Torbay maternity unit is part of the district general hospital in Torquay, Devon. Their delivery rate is approximately 2,000 babies per year. The unit serves both rural and urban communities. Team midwifery, group practices and midwifery-led schemes are all provided within the Trust. The home birth rate is currently 10% in urban areas and 25% in rural areas. A birthing pool has been available since 1992, and home waterbirths are also supported.

The Barratt maternity home in Northampton is part of a general hospital. It is a busy unit with 3,600 births per year, serving both town and rural communities. The pool room opened in 1998 and offers women the choice of water for labour and/or birth. The unit offers its clients consultant-, midwifery- or general practitioner-led care.

Portsmouth Hospitals NHS Trust is situated on the south coast of England. There are four peripheral units, three of which offer waterbirth facilities. The Mary Rose unit has approximately 700 births a year and has a plumbed-in pool. Portsmouth's first waterbirth was in 1990; since then, its popularity has grown with about 100 waterbirths a year and another 70% of women who labour in water.

St Richard's Hospital is the district general hospital for Chichester on the south coast of England, midway between Southampton and Brighton. They have around 2,000 births a year. A plumbed-in pool has been available since November 1996. It is mostly team midwives, previously known to the women, who provide care. The clients are predominantly white, representing all social classes.

Craigavon Hospital is in County Armagh, Northern Ireland. The midwifery-led unit (MLU) opened in July 2000 and is the first MLU in Northern Ireland. The hospital and unit are expecting to deliver 2,200 babies this year. Currently, 70% of women are choosing water for labour and 30% are birthing in water. The unit has en-suite facilities, offering a 'home-from-home' environment and is managed by skilled midwives committed to normal childbirth.

Aintree Centre for Women is located at the north end of Liverpool. It delivers 2,400 babies a year and was the first unit in the north west to install a pool facility, over ten years ago. The population has varied socio-economic groupings, with well-documented social problems. Group practice midwifery was introduced seven years ago and provides one-to-one care in labour; the unit has recently been awarded Baby Friendly Initiative status.

The Queen Elizabeth Hospital in Kings Lynn, Norfolk, is a small district general hospital caring for approximately 2,000 women yearly. The catchment area is rural, serving a mainly Caucasian population. The permanent pool was installed in December 1999 and all low-risk women can access the service. The unit has about 24 waterbirths a year with a small number of home waterbirths also occurring.

Nine of the units are NHS and one is a private provider. Initially, many of the units were in the south-east but, following an advertisement in the professional journals, we were able to widen the study to units further afield. The units agreed a single set of variables to be studied and the collection of comparable data.

Research analysis

Initially, this was through the Centre for Health Studies, University of Kent at Canterbury, and more recently has transferred to the clinical audit department in the Maidstone and Tunbridge Wells NHS Trust.

Methodology

The participating units have a similar philosophy and ethos of care. Most importantly, all units have established waterbirth services, educational support, and practise within agreed clinical evidence-based guidelines.⁴ Part of the clinical support is the fundamental belief the midwives have in the 'normality' of waterbirths and their knowledge of maternal and newborn intrapartum physiology; these are essential to enable us to be able to work within safe practice parameters. Both the Royal College of Midwives⁴ and the United Kingdom Central Council for Nursing, Midwifery and Health Visiting⁵ (now the Nursing and Midwifery Council) have published guidelines supporting this 'normality' attitude with regard to waterbirths.

In each unit, an identified lead midwife was nominated to collect data (with or without clinical audit staff assistance). The general approach was that participant birth units agreed data definitions, data collection methods and reporting formats to build their data sets. These data sets were integrated into a combined database and a single approach to analysis was then followed.

Data collection

Our audit is anonymous and clients' identities are not recorded in data lists. Clients who spent part of the first stage of labour in the birthing pool for the purpose of relaxation and/or pain relief but did not birth their babies into water were excluded from this audit.

Procedure

For each waterbirth, the participant units recorded data relating to a defined set of 'outcome' and 'explanatory' variables which were obtained directly from the delivery records. The data were then entered into a computer file at each unit in accordance with a previously agreed coding frame. Each unit then recorded the data for the same variables from records of a dry birth occurring at roughly the same time. Each dry birth client was approximately matched to the waterbirth group using the following criteria:

1. parity
2. trial of scar
3. mothers' age group
4. ethnicity.

Sometimes, a non-match mother was identified, ie home trial of scar waterbirth; in these situations we informed the audit department at the end of the data set that no match was found.

This match provided a set of waterbirth data and 1:1 dry birth comparison group for each of the ten units.

Outcomes measured were:

- perineal trauma
- blood loss
- Apgar scores at one and five minutes
- analgesia requirements
- length of labour.

These factors were perceived and agreed by the steering group to be essential outcomes to support the safety aspects of care.

Results

Demography of women

The ages of the women ranged from 15-44 years old. Despite having a wide variety of ethnic groups within the ten units, the highest percentage of ethnic background was Caucasian:

- nullips — 98% women were Caucasian
- six units stated that 100% of waterbirths were among Caucasian women
- multiples — 97% women were Caucasian.

Five units reported that all women having waterbirths were Caucasian.

Implications for practice

Worldwide, other countries are using water for labour and birth including Russia, Japan and South America. It is important to discover whether this disparity results from maternal choice, or whether women from minority ethnic groups are not being offered the option of water birth worldwide.

Total number of waterbirths

The units varied greatly in their total number of waterbirths. The total for 2001 was 680, ranging from 22 in Hillingdon to 167 in Craigavon.

Implications for practice

The above figures show the importance of combining data and providing local numbers. Lone unit figures would not be significant and some units could take many years to attain levels suitable for analysis.

Why are numbers so varied between units? It is possible for each to calculate their own percentage of waterbirths compared to normal dry births; this may prove more significant as a yearly total. It is often difficult to compare units, but there may be issues surrounding 'advertising' the service, staff education and actual availability rather than perceived availability of pools or staff.

Dilation on entering water

Primips entered the water at different stages; however, there were some obvious groupings:

- five units reported most women entering the water at 3cm
- three units encourage access at 5cms
- access is not dependent on cervical dilation in one unit
- multiples' access is concentrated at 3cms in six units.

One unit reported most women entering the water at 5cms and one unit at 7cms. One of the units rarely examines women prior to entering the water.

Implications for practice

We are interested to know whether difference is based on local guidelines, or custom and practice. Evidence from many units round the world does not support the need to be prescriptive about when to enter the water. In contrast, research suggests that women should be encouraged to enter the water when they require analgesia, and the nature of the labour should then be observed.⁶

Length of labour

This comparison arises purely from the number of shorter, longer or the same lengths of labour. A more detailed analysis will be undertaken to see exactly the number of minutes difference there is between the two groups.

- Primips — five units reported that dry land and waterbirth labour numbers were equal; however, in the other five units the number of shorter labours was increased in the waterbirth group.
- Multips — four units reported an increase number of shorter labours in the waterbirth groups. Two units reported an increase number of shorter dry births and four reported no difference between water and dry land.

Notably in this analysis, are two units — Maidstone and Liverpool — who report that their waterbirth groups have shorter labours than their dry birth groups in primips and multips.

Implications for practice

It is important to review the comparison between when the waterbirth groups enter the pool (as this is the starting point for waterbirth groups) and the starting point for dry land labour (the point at which the mother requests analgesia). We are also interested to know if there are other practice issues involved, ie number of pools available, data recording and staff education.

Perineal trauma

Primip rates

There is a wide variation between intact perineum rates within the units



The amount of evidence available on waterbirth is still surprisingly limited

— Chichester's is 13.3% and Maidstone's 48%, with an average rate of 32%. Six units reported intact perineum rates equal in water and dry birth and four units reported increased intact rates in waterbirth women. Only two cases of third degree tears were reported in both water and dry birth — a rate of 0.8%.

Multip rates

There is, again, a wide variation between intact perineum rates within the units — Chichester 19% and Liverpool 63%, with an average rate of 46%. Five units reported intact perineum rates equal in water and dry birth and five units reported increased intact rates in waterbirth women. Only one case of third degree tear was reported in water but three cases on dry birth — a rate of 0.2% and 0.6% respectively.

Implications for practice

It would be very interesting to investigate the wide variation in perineal trauma. Are we all practising a 'hands off' approach, and what about delivery position or length of time in the water? We believe, as midwives, these are interesting ideas to explore.

Apgar scores

The marker used for a low Apgar score is less than seven at one minute.

The primip group is reported as equal to dry land in three units. There were eight Apgars of less than seven at one minute in water (3.3%) and 12 on dry land (5%). The multip group had equal Apgars in one unit and there were equal numbers of apgars less than 7 in 14 cases in both water and dry birth groups (3.1%).

Implications for practice

One issue surrounding water births has always been the safety for newborns, these Apgar scores appear to reflect that waterbirth babies have

as good as or better Apgar scores than their dry land counterparts.

There are issues surrounding analgesia used in the lower Apgar dry land births and when the Apgar score is done on dry land. Are we really convinced that all midwives wait until one minute before they record Apgar? There is also the issue of the initiation of respiration differences between water

and dry land birth.⁷

Blood loss

The management of the two groups tend to be different and so we are aware that the third stage is not necessarily matched like with like. Most waterbirth women will opt for or be offered physiological third stage. However, the primip waterbirth group reported 12 cases of postpartum haemorrhage (PPH), a rate of (5%) and dry land nine cases (3.7%), whilst multips had equal numbers of 18 cases or 4% (allowing for the loss of greater than 500mls or an amount which compromises maternal condition).

It is interesting to note that Hillingdon, Liverpool and Kings Lynn did not report any case in primips, and Torbay and Hillingdon had none in multips.

Implications for practice

There are possibly practices and skills to learn from each other; however, none of the numbers are large enough to cause concern.

Trial of scars or home waterbirth

Most of the units do not offer the use of water labour or birth with previous lower segment caesarean section (LSCS). However, some of the units do allow this choice (following a risk assessment). During 2001, three women had waterbirth following LSCS, with no adverse outcomes.

Discussion

Those units who support a risk assessment attitude to trial, of scar labours, have found no adverse outcomes. This process at Maidstone includes the clinical risk manager, the obstetrician and the practice development midwife. The two main criteria being 'safety' and 'realism' of using water following a previous LSCS.

Home waterbirths

During 2001 six home waterbirths occurred in two of the Trusts.

Geno Naccocchi/Bubbles

Discussion

As midwives we support the choice of home waterbirths. However, we are conscious that the cost of hiring home pools may be prohibitive to some parents. There may also be the issues of providing a well staffed and supported home waterbirthing service.

Discussion

This study demonstrates that audit data can make a useful contribution to evidence-based practice. It provides a relatively simple method of collecting anonymous data from units, allowing it to be aggregated and then analysed in a central locality. This aggregation allows for a simple analysis whilst preserving the integrity of local data. The study has, we believe, one great advantage over previous studies¹ in that it overcomes the problem of comparing evidence from diverse units who have designed their studies independently of one another, resulting in differences in data collection, analysis and interpretation of results. This study we believe represents a higher level of audit than can be achieved by an individual unit or lone practitioner.

In terms of the findings, there were few surprises. There are, of course, variations between the units that will always leave us with some unanswered questions. Whether waterbirth is

Table 1. Total waterbirths data by unit in 2001

	Total	Primips	Multips
Hillingdon	22	10	12
Liverpool	28	9	19
Kings Lynn	33	15	18
Torbay	52	21	31
St John & Elizabeth	53	17	36
Chichester	56	15	41
Maidstone	67	25	42
Northampton	96	43	53
Portsmouth	106	47	59
Craigavon	167	35	132

preferable to dry land birth depends ultimately on the viewpoint and values of mothers and midwives. Studies which have attempted to answer some of these questions, bear out the importance that professionals place upon audit. In 1999, the British Paediatric Surveillance Unit⁸ described an audit of over 4,000 waterbirths, and concluded 'Perinatal mortality is not substantially higher among babies delivered in water than among those born to low risk women who delivered conventionally'.

Conclusion

Despite the audit data that we have presented in this and other papers, waterbirths may always be on the 'fringes' of accepted clinical practice. Fundamental to the challenges placed upon our practice is the belief in normal physiology, the nature of labour and women's ability to birth their babies.

Our study to collect 2000 waterbirths and 2000 dry births will, we hope, finish by mid to end of 2003. It will assist us in extending our knowledge in clinical practice and increase the evidence on which that practice is based.

The challenge ahead is to collect not just national data but international collaboration to share outcomes and provide an extensive library of evidence.

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Demystifying the research on amniotomy

Introduction

Amniotomy has been used in the management of childbirth since the 1920s.¹ During this period, Kreis, an obstetrician, argued that amniotomy shortened labour, basing this on his very small study, but controversy remains as to its effectiveness.¹ Indeed, a recent qualitative study which sought to examine midwives' attitudes to research-based practice found the issue of amniotomy to be a highly contentious area of contemporary clinical midwifery practice.² Junior midwives reported experiences of coercion to undertake practices not based on research findings, such as amniotomy, thereby highlighting tensions between research, 'ritual and routine', where, despite hard evidence, some midwives appeared

to draw on intuition and previous experience.

However, it has been recognised that amniotomy has become almost routine since the medicalisation of childbirth in the 1970s and early 1980s, bringing with it a greater dependency on intervention and technology.³ The aim of this article is to review the role of amniotomy as a practice which may potentially affect the duration of labour. It is hoped that this will assist midwives to demystify the research surrounding this subject and help inform future practice.

Amniotomy and active management

The ethos of 'active management of labour' stemmed largely from the work of the Irish obstetrician Kieran O'Driscoll.⁴ O'Driscoll advocated a

system of management which included early diagnosis of labour, routine amniotomy within one hour of admission, high doses of oxytocin when progress of labour was slow and active obstetric participation in the management of labour. This aimed to reduce the duration of labour to a maximum of twelve hours and to minimise the rate of caesarean section in primigravidae. Despite the fact that O'Driscoll's framework was not based on a randomised control trial (RCT) and was therefore not clinically proven by unbiased comparisons, his procedures (including amniotomy) were adopted nationwide in obstetric units, and many continue today.

Chalmers⁵ suggested that maternity care must be based on the best available evidence when he found a wide variation in clinical interventions