The Midwife's
LABOUR AND BIRTH HANDBOOK

EDITED BY
VICKY CHAPMAN | CATHY CHARLES

WILEY Blackwell
‘Highly recommended for midwives and student midwives in their final year. Includes all aspects of labour and birth including obstetric emergencies, how to suture (step by step and for left-handers too), malpositions and presentations and lots more. Explains things in great detail but easy to understand.’
(Amazon review)

‘This intelligently laid out, well sourced and expertly written handbook would be a boon to any student or practising midwife. Comprehensive and accessible with a good index, this work of reference is an essential addition to the midwife’s library. I would certainly recommend it to my students.’
(Amazon review)

‘Looking back I wished I had this book during my SHO rotation through obstetrics in general and labour ward in particular. Although aimed at midwives, I think all doctors (foundation, GP and core trainees) rotating through labour ward will benefit from this book. It is very well written.’
(Amazon review)
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We have been delighted at the success of *The Midwife’s Labour and Birth Handbook*, now in its fourth edition.

We have continued our collaboration in writing and editing a handbook for midwives and students. Our aim is to make the book easy to read and grounded in research (both anecdotal and quantitative), with a strong women-centred perspective.

We have expanded our subject matter to include female genital mutilation, freebirthing, sepsis, the OASI Care Bundle and a new section on caring for women with diabetes.

This edition also includes new visual material. We now include photos of a footling breech and a breech waterbirth, in addition to the existing extended breech birth photos. Also a new range of stunning images capturing one woman’s journey through labour at home, to active birth in hospital and another series of photos of a beautiful waterbirth. Many thanks to all the parents who gave permission for use of their photos, including Brittany, Sue, Anna, Jacqui, Tor, Steve, Lisa, Mel and Aaron. Some of the twin and placenta photos are Vicky’s own, and even our commissioning editor Magenta donated a photo in Chapter 11. Special thanks to Lucy Pryor (www.angelfirephotography.co.uk) for our cover image, capturing her sister Mel and partner Aaron at the birth of baby Amelie and their fabulous midwife Samantha.

As this edition goes to publication we are mourning a major blow to independent midwifery. Without independent midwives, many of the photos in this edition – and many of the anecdotal and non-hospital experiences from which as a profession we all learn, may in future no longer be available. Additionally, the Nursing and Midwifery Council (NMC) is curtailing midwifery representation at the NMC and abolishing midwifery supervision. This is a historical low for midwifery in the UK and demand for an all-midwifery body is more pressing than ever.
Many midwives today continue to give flexible individualised care to women in the face of increasingly prescriptive policies and protocols, with the spectre of investigation, risk and litigation always looming in the background. For all that, it is still deeply rewarding to care for women in labour and to try to offer them a safe and fulfilling birth. Our hope is that midwives everywhere maintain their joy in helping a woman to birth her baby, and are committed to ensuring that she has the best experience possible.

Once again we thank our great team of writers for their patience and hard work.

Cathy Charles and Vicky Chapman
Contributors

The editors

Vicky Chapman RGN, RM(Dip), MA
As a midwife Vicky has worked in a variety of hospital settings, and as a caseload midwife. She has a particular interest in normal birth, as well as an interest in the politics of childbirth and their impact on women’s birth experiences. She has also been a visiting lecturer. Vicky has juggled her career with her four children, the last three of whom were born at home, including twins.

Cathy Charles RGN, RM, BSc(Hons), BA(Hons)
Cathy is a midwife and ventouse practitioner, practising in acute and community settings in Wiltshire and Somerset. She has lectured and written on the subject of practising as a midwife ventouse practitioner in a stand-alone birthing centre. Like Vicky, Cathy has an interest in waterbirth and home births. She also gained experience in investigating adverse events as a clinical audit/risk management co-ordinator and has been a supervisor of midwives and a visiting lecturer. She teaches aquanatal classes.

The contributors

Charlise Adams BSc
Charlise qualified as a midwife in 2003 and has practised in a consultant-led unit, a stand-alone birthing centre and the private sector. She currently works in a major Wiltshire hospital. She has been published in various midwifery journals and facilitated teaching obstetric emergencies. She has also been involved with a local university, interviewing and clinically assessing students. Charlise is married with one gorgeous son!

Hannah Bailey RM, DipHE (Midwifery)
Hannah qualified as a midwife in 2001. She has worked in both community and acute settings; as a labour ward sister at the Great Western Hospital in Swindon; and as a practice development midwife at the Royal United Hospital in Bath. She worked closely with her consultant obstetric and anaesthetic colleagues to build a robust programme of regular staff simulation training to complement annual PROMPT training. Hannah’s interest in quality improvement includes a 3 year project to raise awareness of stillbirth in pregnant women, and she has just become head of quality and improvement at a local mental health trust. She plans to keep her midwifery registration by working at local birthing centres.
Annette Briley  
**SRN, RM, MSc, PhD**
Annette is a consultant midwife/clinical trials manager within the Division of Women’s Health at St Thomas’ Hospital, London. She was a clinical midwife for many years, working in all areas of maternity services, including obstetric ultrasound. Annette joined the St Thomas’ research team in 1997 and was involved in a major study on vitamins in pre-eclampsia. She has since worked on numerous national and international pregnancy-related clinical trials, including the UK Pregnancies Better Eating and Activity Trial (UPBEAT). She is a National Institute for Health Research (NIHR) Midwife Champion for London South, NIHR Advocate for Allied Health Professionals (Midwifery), Research and Development Lead for Women’s Services at Guy’s and St Thomas’ NHS Foundation Trust (GSTFT) and NIHR Co-Speciality Lead for Reproductive Health and Childbirth (London South). She completed her PhD in 2014 focusing on pre-pregnancy, pregnancy-acquired and intrapartum risk factors for blood loss in childbirth. Annette works with Tommy’s, the baby charity, and is a trustee of Maternity Worldwide.

Nick Castle  
**PhD, MSc (Dist), DIMC, RGN**
Nick is Head of Professions for the Hamad Medical Corporation Ambulance Service, Qatar, and an Honorary Research Fellow at the Durban University of Technology, South Africa. He is a dual registered nurse and critical care paramedic who is the professional lead for over 1500 ambulance and nursing staff employed by the ambulance service in Qatar. Despite being an Assistant Executive Director Nick still maintains a minimum of 48 clinical patient-facing hours per month. Nick is widely published in the field of emergency care, being the author of 68 peer-reviewed papers as well as two books and numerous book chapters.

Jo Coggins  
**DipHE (Midwifery) (Dist), BSc (Hons), MSc**
Jo is a community midwife in Wiltshire, where she lives with her husband and two children. She previously practised in acute and community settings in Bath. Her role incorporates antenatal, intrapartum and postnatal care for women giving birth at the local birthing centre and at home. Jo enjoys writing and has published articles in several midwifery journals.

Bryony Read  
**RM, BA (Hons)**
Bryony gained her midwifery degree from Oxford Brookes in 2001, and first worked at the John Radcliffe Hospital, Oxford. She then moved to the Princess Royal University Hospital in the London borough of Bromley, where she worked for 10 years as a case-loading midwife in the Young Parents team. This was an inspiring and challenging job, leading to increased breastfeeding rates, which Bryony presented at the Royal College of Midwives (RCM) conference. In 2013 Bryony moved with her husband and young family to Wiltshire and she now works in a Young Parents team, shortly to expand into caring for other vulnerable women, at a stand-alone birthing centre. Bryony has gained great experience in safeguarding and is keen to specialise in this going forward into the future.
Caroline Rutter  
RM, Cert Ed, Dip(HEM), BSc (Hons), PG (Cert), MSc TLHP  
Caroline was a National Childbirth Trust (NCT) teacher prior to becoming a midwife in 1993 and worked as a midwife in stand-alone midwifery units in Wiltshire until 2009. While continuing to work as a bank midwife Caroline then worked as a full-time lecturer at the University of the West of England, sharing her passion for empowerment through education, effective communication and promotion of women-centred values. Since 2016 Caroline has been a community midwife in Swindon.

Lesley Shuttler  
NCT Antenatal Teacher and Assessor, RN, Dip RM, BSc (Hons)  
Pregnancy and birth have always held a fascination for Lesley. She has been involved with the National Childbirth Trust (NCT) for over 30 years, as a mum, teacher, tutor and study day facilitator. She has been a midwife for over 20 years. She has two daughters and is enjoying the honour of becoming Nanna to Ruby and Jude, both born at home in water.

I feel blessed that I can work in a manner that supports so many of my beliefs and values as a woman and as a mother. The women I have met both as a midwife and as an NCT specialist worker have been inspiring and have provided numerous challenges along the way. The day that I cease to feel challenged or inspired, the day I feel I have nothing to learn, is the day I will hang up my pelvis: I hope that is a long way in the future.
1 Labour and normal birth

Cathy Charles

Introduction

Undisturbed birth … is the balance and involvement of an exquisitely complex and finely tuned orchestra of hormones. (Buckley, 2004a)

The most exciting activity of a midwife is assisting a woman in labour. The care and support of a midwife may well have a direct result on a woman’s ability to labour and birth her baby. Every woman and each birthing experience is unique.

Many midwives manage excessive workloads and, particularly in hospitals, may be pressured by colleagues and policies into offering medicalised care. Yet the midwifery philosophy of helping women to work with their amazing bodies enables many women to have a safe pleasurable birth. Most good midwives find ways to provide good care, whatever the environment, and their example will be passed on to the colleagues and students with whom they work.

Some labours are inherently harder than others, despite all the best efforts of woman and midwife. A midwife should be flexible and adaptable, accepting that it may be neither the midwife’s nor the mother’s fault if things do not go to plan. The aim is a healthy happy outcome, whatever the means.

This chapter aims to give an overview of the process of labour, but it is recognised that labour does not simplistically divide into distinct stages. It is a complex phenomenon of interdependent physical, hormonal and emotional changes, which can vary enormously between individual women. The limitation of the medical model undermines the importance of the midwife’s observation and interpretation of a woman’s behaviour.

Facts and recommendations for care

- Women should have as normal a labour and birth as possible, and medical intervention should be used only when beneficial to mother and/or baby (DoH, 2007; NICE, 2016).
- Midwife-led care gives the best outcomes worldwide: more spontaneous births, fewer episiotomies and epidurals, better breastfeeding rates. Women report that they feel more in control of their labour (Sandall et al., 2016).
- Although 88% of women give birth in an obstetric unit many would not choose to: low-risk women (i.e. around 60%) should also be offered the choice of birth either at home or in a midwife-led unit; a woman has a right to choose her place of birth (DoH, 2007; NICE, 2014; NHS England, 2016).
- Women should be offered one-to-one care in labour (NICE, 2014). The presence of a caring and supportive caregiver has been proved to shorten labour, reduce intervention and improve maternal and neonatal outcomes (Green et al., 2000; Hodnett et al., 2013).
- The UK birth rate continues to rise, while England alone is short of 3500 midwives (RCM, 2016).
- 1–2% of mothers develop birth-related post-traumatic stress disorder (Andersen et al. 2012) and midwives can too (Sheen et al., 2015).
- The attitude of the caregiver seems to be the most powerful influence on women’s satisfaction in labour (NICE, 2014).
- 89% of fathers attend the birth (Redshaw and Heikkila, 2010); other relationships, e.g. same-sex couples, have been less closely studied.
- The birth rate for women aged >40 rose above that for women <20 for the first time since 1947 (ONS, 2016).
- 27.5% of births in England and Wales are to women born overseas (ONS, 2016).
- 20% of pregnant women in England are clinically obese (Health and Social Care Information Centre, 2016), increasing the risk of complications.

Mode of delivery

- The UK normal birth rate is around 60% (ONS, 2016; NHSD, 2017).
- The instrumental delivery rate is around 10–15% (ONS, 2016; NHSD, 2017).
- The episiotomy rate for England is around 20% (see Chapter 4).
- The caesarean section (CS) rate is around 26% (NHSD, 2017).

The birth environment

In what kind of surroundings do people like to make love? A brightly lit bare room with a high metal bed in the centre? Lots of background noise, with a series of strangers popping in and out to see how things are going? The answers to these questions may seem obvious. If we accept that oxytocin levels for sexual intercourse are directly
affected by mood and environment, why is it that women in labour receive less consideration? The intensely complex relationship between birth and sexuality is an increasing source of study and reflection by birth writers.

Once women gave birth where and when they chose, adopting the position they wanted, using their instinctive knowledge to help themselves and each other. Recently birth has become more medicalised, and the place of birth often restricted. No one would deny that appropriate intervention saves lives. For some women an obstetric unit is the safest choice, and for others it feels like the safest, so that makes them feel happier. But does it have to be the choice for everyone?

The clinical environment and increased medicalisation of many birth settings directly affect a woman’s privacy and sense of control (Walsh, 2010a). Home-like birthing rooms (‘alternative settings’), even within an obstetric unit, increase the likelihood of spontaneous vaginal birth, labour/birth without analgesia/anaesthesia, breastfeeding at 6–8 weeks postpartum and satisfaction with care; these rooms also result in a reduction in oxytocin augmentation, assisted vaginal/CS birth and episiotomy (Hodnett et al., 2012). This may be due partly to the fact that women simply feel more relaxed at home, or in a home-like setting. However, simply changing the curtains and hiding the suction machine does not always mean a change of philosophy of care. A more telling factor may be that the type of midwives who choose to work in the community or birth centre, or who gravitate towards more home-like rooms, are those with a less interventionist approach.

Women should be able to choose where to give birth; it would be still more wonderful if women could simply decide in labour whether they wish to stay at home or go to a birth centre or an obstetric unit, and indeed if they could change their mind during labour. Such choices do exist, but UK service provision is patchy. The Better Births report (NHS England, 2016) and the Best Start report (Scottish Government, 2017) may influence change in this respect. It is also heartening to see midwife-led units opening in Northern Ireland: there are now eight, whereas in 2000 there were none at all (Healy and Gillen, 2016). In many other countries women have little or no choice.

Although it has been estimated that at least two-thirds of women are suitable for labour at home or in a midwife-led birthing centre (DoH, 2007), and 87% of women believe that birth in a stand-alone birth centre is a safe option (Rogers et al., 2011), for many reasons most mothers and midwives in the UK will still meet in labour in an acute unit. It is incumbent on all midwives to make the environment, irrespective of its location, warm, welcoming and safe. Always remember that the quality of the caregiver is the thing that most strongly influences a woman’s satisfaction with her labour.

Midwives who are asked by family or friends, or perhaps a previous client, to deliver them outside normal working conditions may refer to the guidance produced by the Royal College of Midwives (RCM, 2017a). Most things are possible with good communication and flexibility.

The RCM Campaign for Normal Birth http://www.midwives.org.hk/doc/resources/RCMTopTipsenglish.pdf) suggests ‘ten top tips’ to promote normal birth (Box 1.1). The Association for Improvements in the Maternity Services (AIMS, 2012) has also produced ‘ten top tips for what women want from their midwives’, which include compassion, courage, respect and positivity: ‘Women appreciate midwives who are genuinely confident and upbeat when … women are flagging … and who are able to … encourage: “you’re doing so, so well”, “you’re amazing”, “you’re so strong”, “well done, that’s another one gone”.’
Box 1.1  Ten top tips for normal birth (RCM, 2017b).

(1) Wait and see
The single practice most likely to help a woman have a normal birth is patience. In order to be able to let natural physiology take its own time, we have to be very confident of our own knowledge and experience … of normal birth – and know when the time is right to take action.

(2) Build her a nest
Mammals try to find warm, secure, dark places to give birth – and human beings are no exception.

(3) Get her off the bed
Gravity is our greatest aid in giving birth, but for historical and cultural reasons (now obsolete) in this society we (often) make women give birth on their backs. We need to help women … feel free to be mobile and try different positions during labour and birth.

(4) Justify intervention
What we … understand about the remarkable new technologies of labour and birth is that one technological intervention is likely to lead to (another) … creating a ‘cascade’ of intervention, ending in an abnormal birth. We need to ask ourselves ‘is it really necessary?’ And not to do it unless it is indicated.

(5) Listen to her
Women themselves are the best source of information about what they need. What we need to do is to get to know her, listen to her, understand her, talk to her and think about how we are contributing to her sense of achievement.

(6) Keep a diary
One of the best sources for learning are our own observations. Especially when we can look back at them and realise what we have learned and discovered since then. Write down what happened today: how you felt, what you learnt.

(7) Trust your intuition
Intuition is the knowledge that comes from the multitude of perceptions that we make which are too subtle to be noticed. With experience and reflection we can understand what these patterns are telling us – picking up and anticipating a woman’s progress, needs and feelings.

(8) Be a role model
Our behaviour influences others – for better or worse. Midwifery really does need exemplars who can model the practices, behaviour and attitudes that facilitate normal birth. Start being a role model today!

(9) Give her constant reassurance – be positive
Nothing in life prepares a woman for labour. Your reassurance that contractions and emotions are all part of the normal process of giving birth is vital. Do you believe in her strength and ability to give birth normally? You may be the only constant anchor during a woman’s labour to give her constant reassurance – be positive.

(10) From birth to abdomen – skin to skin contact
Breastfeeding gets off to a better start when mothers and their babies have time together – beginning at birth. Immediate skin to skin contact allows them to remain together [so babies can] feed on demand for an unlimited time, stay warm and cry less. Mothers learn to recognise their baby’s cues and the baby reciprocates. The relationship becomes tender and loving – a connection that lasts a lifetime begins from birth to abdomen.
Signs that precede labour

Women often describe feeling restless and strange prior to going into labour, sometimes experiencing energy spurts or undertaking ‘nesting’ activities. Physical symptoms may include:

- low backache and deep pelvic discomfort as the baby descends into the pelvis
- upset stomach/diarrhoea
- intermittent regular/irregular tightening for days/weeks before birth
- loss of operculum (‘show’), usually clear or lightly bloodstained
- increased vaginal leaking or ‘cervical weep’, and/or
- spontaneous rupture of the membranes (SROM) – usually unmistakable; sometimes less so, particularly if the head is well engaged (see Boxes 1.2 and 1.3 for diagnosis and management of SROM). See Chapter 13 for more information on preterm SROM.

Not all women seek advice at this stage. If they do, the midwife should act as a listener and reassure the woman that these prelabour signs are normal. Avoid negative terms such as ‘false labour/alarm’.

**Box 1.2 Diagnosis of spontaneous rupture of the membranes.**

<table>
<thead>
<tr>
<th><strong>Woman’s history</strong></th>
</tr>
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<tbody>
<tr>
<td>This is usually conclusive in itself.</td>
</tr>
<tr>
<td>Clarify the time of loss and the appearance and approximate amount of fluid.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Observe the liquor</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The pad is usually soaked: if no liquor is evident ask the woman to walk around for an hour and check again.</td>
</tr>
<tr>
<td>Liquor may be:</td>
</tr>
<tr>
<td>- Clear, straw coloured or pink: it should smell fresh.</td>
</tr>
<tr>
<td>- Bloodstained: if mucoid contamination this is probably a show – but perform cardiotocography (CTG) if you doubt this.</td>
</tr>
<tr>
<td>- Offensive smelling: this may indicate infection.</td>
</tr>
<tr>
<td>- Meconium stained: a term baby may simply have passed meconium naturally, but always pay close attention to meconium. NICE (2014) advises continuous electronic fetal monitoring for ‘significant’ meconium: ‘dark green or black amniotic fluid that is thick or tenacious, or any meconium-stained amniotic fluid containing lumps of meconium’.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Speculum examination</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>If the history is unmistakable, or the woman is in labour, routine speculum examination is unnecessary (NICE, 2014). However consider it if the baby’s head is high, as cord prolapse is a slight risk.</td>
</tr>
<tr>
<td>Avoid vaginal examination (VE) unless the woman is having regular strong contractions and there is a good reason for it. VE risks ascending infection; however, there is a degree of paranoia about this. The evidence base is weak (NICE, 2014) but it is not a disaster if VE is done, it is just preferable to avoid it.</td>
</tr>
<tr>
<td>To perform the examination:</td>
</tr>
<tr>
<td>- suggest the woman lies down for a while to allow the liquor to pool</td>
</tr>
<tr>
<td>- lubricate the speculum and gently insert it into her vagina: the woman may find raising her bottom (on her fists or a pillow) allows easier and more comfortable access</td>
</tr>
<tr>
<td>- if no liquor is visible ask the woman to cough: liquor may trickle through the cervix and collect in the speculum bill.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th><strong>Other tests</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>NICE (2016) recommends the Vision Amniotic Leak Detector (ALD) to assess unexplained vaginal wetness in pregnancy. This is a panty liner with an inbuilt indicator strip.</td>
</tr>
</tbody>
</table>
Prelabour rupture of membranes at term

Some women experience prelabour rupture of the membranes (PROM) at term (Box 1.3 and see Chapter 19). Risks include infection, cord prolapse (see Chapter 17) and sometimes iatrogenic consequences of intervention, but most women go into labour spontaneously and have a good outcome.

First stage of labour

There is much debate about whether it is helpful to divide labour into ‘stages’. Walsh (2010b), among others, challenges this: ‘The division of the first stage of labour into latent and active is clinician-based and not necessarily resonant with the lived experience of labour’.

- Midwives should always be aware of the limitations of rigid categories, but it is also true that certain broad generalisations are helpful to enable the midwife to offer the appropriate support to a woman. With some reservation, the following definitions are offered.
Latent stage

**Characteristics of the latent stage**

The National Institute for Health and Care Excellence (NICE, 2014) describes this as: ‘a period of time, not necessarily continuous, when:

- there are painful contractions, and
- there is some cervical change, including cervical effacement and dilatation up to 4 cm’.

**Midwifery care in the latent phase**

Women may be excited and/or anxious. They will need a warm response and explicit information about what is happening to them. In very early labour they may need just verbal reassurance; they may make several phone calls.

Ideally, home assessment is preferable to that in hospital: it reduces analgesia use, labour augmentation and CS and appears cost-effective. Women report greater feelings of control and an improved birth experience (Walsh, 2000a; Spiby et al., 2008). If women do come to hospital, evidence supports an assessment unit separate from the labour ward, reducing labour ward stay, increasing a perceived sense of control and reducing analgesia use (Hodnett et al., 2008).

Some women experience a prolonged latent phase, which may be tiring and demoralising, requiring more support (see Chapter 9, ‘Prolonged latent phase’). Women may undergo repeated visits/assessments and feel something is going wrong. Most women, however, cope well.

The first midwife contact is important and it will establish trust:

- Greet the woman warmly and make her feel special.
- Observe, listen and acknowledge her excitement.
- Be positive but realistic: many women, especially primigravidae, can be overoptimistic about progress.
- Women whose first language is not English may need extra reassurance, careful explanations and sensitivity to personal and cultural preferences. A trusted translator should have been arranged prior to labour, but sometimes this has not been done. Some hospitals subscribe to ‘LanguageLine’ or another similar service. The dangers of relying on a partner or family member to translate are well known, but in practice many birth partners are sensitive and supportive, and many couples would be horrified to have a translator thrust upon them at such an intimate time. This is a judgement call for the midwife.

- Physical checks include:
  - Baseline observations (Table 1.1).
  - Urinalysis. NICE (2014) recommends testing for protein at labour onset, although this is debatable for normotensive women since vaginal secretions, e.g. liquor, commonly contaminate the sample so protein is often ignored.
  - Abdominal palpation. Measure fundal height and ascertain lie, presentation, position and engagement (Figure 1.1). Ask about fetal movements.
  - Fetal heart (FH) auscultation (see Chapter 3). Offer intermittent auscultation not a ‘routine admission trace’ for low-risk women (NICE, 2014).
Table 1.1  Maternal observations in labour (low-risk women).

<table>
<thead>
<tr>
<th>Observation</th>
<th>Frequency</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood pressure</strong></td>
<td>Test at labour onset then</td>
<td><strong>Hypertension</strong> can be caused by:</td>
</tr>
<tr>
<td>Normal range:</td>
<td>o 4-hourly in first stage</td>
<td>o anxiety and pain</td>
</tr>
<tr>
<td>systolic 100–140 mmHg</td>
<td>o hourly in second stage</td>
<td>o general anaesthesia</td>
</tr>
<tr>
<td>diastolic 60–90 mmHg</td>
<td>(NICE, 2014)</td>
<td>o essential hypertension or pre-eclampsia (see Chapter 20 for pre-eclampsia definitions)</td>
</tr>
<tr>
<td>(NICE, 2010)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pulse rate</strong></td>
<td>Test at labour onset then when checking fetal heart rate:</td>
<td><strong>Tachycardia ≥100 bpm</strong> can be caused by:</td>
</tr>
<tr>
<td>Normal range:</td>
<td>o record 4-hourly in first stage</td>
<td>o anxiety, pain, hyperventilation</td>
</tr>
<tr>
<td>55–90 bpm</td>
<td>o record every 15 minutes in second stage</td>
<td>o dehydration</td>
</tr>
<tr>
<td>(NICE, 2014)</td>
<td></td>
<td>o pyrexia, infection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o obstructed labour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o haemorrhage, anaemia and shock</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>Test at labour onset then 4-hourly (NICE, 2014) or hourly if in a birthing pool</td>
<td><strong>Pyrexia &gt;37.5 °C</strong> can be caused by:</td>
</tr>
<tr>
<td>Normal range: 36–37 °C</td>
<td></td>
<td>o infection/sepsis</td>
</tr>
<tr>
<td>(97–98.4 °F)</td>
<td></td>
<td>o epidural: usually low-grade pyrexia but rises with time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o dehydration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o overheated birthing pool</td>
</tr>
<tr>
<td><strong>Respirations</strong></td>
<td>NICE (2014) does not mention respirations but there is increased sepsis awareness (see Chapter 17), so MEOWS charts and many partograms now have respiratory rate included. Always remain vigilant to breathlessness</td>
<td><strong>Tachypnoea &gt;30/minute</strong> can be caused by:</td>
</tr>
<tr>
<td>Normal range: 10–20/minute</td>
<td></td>
<td>o same reasons as tachycardia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o asthma attack</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o sepsis <em>(may be the first symptom)</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>o pulmonary/cardiac embolism/thrombosis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o amniotic fluid embolism</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MBRRACE (2016) highlights breathlessness when lying supine as a marker for an undiagnosed cardiac condition</td>
</tr>
</tbody>
</table>

MEOWS, modified early obstetric warning score.

Figure 1.1  Engagement of the fetal head: fifths palpable by abdominal palpation.
Vaginal examination (VE) is not usually warranted if contractions are <5 minutes apart and lasting <60 seconds unless the woman really wants one.

Ruptured membranes (see Box 1.2 for diagnosis) are usually obvious. If the woman is contracting, there is no need for a speculum examination.

Established first stage of labour

Characteristics of the established first stage

In early labour:

- the woman may eat, laugh and talk between/during contractions
- contractions become stronger, increasingly painful, 2–5 minutes apart lasting ≤60 seconds
- the cervix is mid to anterior, soft, effaced (not always fully effaced in multiparous women) and ≥4 cm dilated.

As labour advances:

- the woman usually becomes quieter and behaves more instinctively, withdrawing as the primitive parts of the brain take over
- during contractions the woman may become less mobile, holding someone/something during a contraction, or she may stand legs astride and rock her hips; she may also close her eyes and breathe heavily and rhythmically, moaning or calling out during the most painful contractions
- talking may be brief, e.g. ‘water’ or ‘back’. This is not the time for others to chat.

Lemay (2000) echoes Dr Michel Odent’s consistent advice: ‘the most important thing is do not disturb the birthing woman’. Midwives are usually adept at reading cues. Others unfamiliar with labour behaviour, including her partner and students, may need guidance to avoid disturbing her, particularly during a contraction. Before FH auscultation, first speak in a quiet voice or touch the woman’s arm; do not always expect an answer.

Midwifery care in the established first stage

Make sure your manner is warm. Smile! Involve her partner. Clarify how they prefer to be addressed. Ideally, the woman will have already met her midwife antenatally. A good midwife, familiar or not, will quickly establish a good rapport. Kind words, a constant presence and appropriate touch are proven powerful analgesics.

- Take a clear history.
  - Discuss previous pregnancies, labours and births.
  - Look for relevant risk factors. Some conditions require specific labour management, e.g. diabetes and pre-eclampsia (see Chapter 20), GBS (see Appendix 1.1), and epilepsy (Box 1.4). Advise a woman on antenatal heparin not to inject further heparin during labour (RCOG, 2015a).
  - Ask about vaginal loss, a ‘show’ and the time of onset of tightenings.

- Review the notes.
  - Ultrasound scan for dates and placental location.
  - Blood results: group, rhesus factor, antibodies, recent haemoglobin.
  - Any allergies.
• **Offer continuous support.** A Cochrane review (Hodnett *et al.*, 2013) found that continuous female support in labour:
  - reduces the use of pharmacological analgesia including epidural
  - makes spontaneous birth more likely (fewer instrumental/CS births)
  - shortens labour
  - increases women’s satisfaction with labour.

• **Supporting the birth partner.** Some men (or women) do not cope well in hospitals, or when their partner is in pain. Encourage them to take frequent breaks, eat and drink. Some are clumsy when offering support, annoying the woman. They may also worry about the birth noises women make. Communicate quietly and give gentle guidance on the woman’s needs.

  Supporting a woman and her partner in labour is an intense relationship, hour after hour, and can be physically and mentally demanding. Providing emotional support, monitoring labour and documenting care may mean that the midwife can hardly leave the woman’s side. Involving the birth partner(s) or a doula can both support the midwife and enhance the quality of support the woman receives. There should be no restriction on the number of birth partners present, although be very sure that the woman really wants them all: sometimes women accede to other people’s desire to witness the birth. Birth is not a spectator sport; if birth partners are chatting among themselves and not supporting the woman then the midwife may need to offer them some direction or tactfully suggest they leave the room.

• **Communicate and build trust.** Talk through any birth plans early, while the woman is still able to concentrate. As labour progresses, observe her verbal and body language and tell her how well she is coping, offering simple clear information. Stay with her unless she wishes otherwise; 25% of women report that they and/or their birth partner were left alone and worried at some time during labour (CQC, 2015).

• **'Build her a nest' (RCM, 2017b).** Make the birth environment welcoming: prepare the room before she arrives.
  - Mammals like warm dark places to nest, so keep it relaxed with low lighting.
  - Remove unnecessary monitors/equipment.
  - Noise, particularly other women giving birth, can be distressing; low music may mask this. Avoid placing a woman arriving in labour near someone who is noisy.
  - Keep interruptions to a minimum; always knock and wait before entering a room and do not accept anyone else failing to do this.
  - If there is a bed, consider pushing it to the side so that it is not the centrepiece.

• **Eating and drinking.** Labour is hard physical work. Who would suggest someone runs a marathon without proper nutrition? Women often want to eat in early (rarely later) labour. A light diet is appropriate unless the woman has recently had opioids or is at higher risk of a general anaesthetic (Singata *et al.*, 2013; NICE, 2014). This too can be problematic, as withholding food from higher risk women could increase the likelihood of intervention for slow progress. Ensure birth supporters eat too. Drinking well will prevent dehydration. NICE (2014) suggests that isotonic drinks are even better than water, but this is the woman’s decision. Dawood *et al.* (2013) point out the ludicrousness of restricting oral fluids, then putting up an intravenous (IV) drip to correct dehydration. H₂ receptors or antacids are not
Labour and normal birth

Recommended routinely for low-risk women but may be appropriate for those at higher risk (NICE, 2014).

- Basic observations (Table 1.1). Record contraction frequency hourly in the first stage.
- Frequent micturition should be encouraged, but measuring the volume of urine and repeated urinalysis in labour are unnecessary for normotensive women.
- Observe vaginal loss, e.g. liquor, meconium, blood and offensive smell.
- Do not offer a shave or enema! Fortunately in the UK the days of routine enemas and pubic shaves have long gone; they are at best ineffective and at worst embarrassing, uncomfortable and harmful, paradoxically increasing infection risk (Basevi and Lavender, 2014). Very occasionally a loaded rectum is felt on VE, or the woman reports constipation. A couple of glycerine suppositories may bring relief.
- FH auscultation. NICE (2014) recommends intermittent auscultation every 15 minutes following a contraction, for at least 1 minute, recorded as a single rate. Midwives may disagree with this guidance, which is based on (largely obstetric) opinion rather than clear evidence or individualised care. Midwives typically choose to monitor less than every 15 minutes early in labour or more frequently at other times, e.g. following SROM or a VE (see Chapter 3).

Assessing progress in labour

Justify intervention. (RCM, 2017b)

Unless birth is imminent, most midwives undertake abdominal palpation when taking on a woman’s care, and periodically thereafter, to ascertain the lie, position and presentation of the baby. Engagement is particularly helpful to monitor descent of the presenting part and thus labour progress (Figure 1.1). However, some women may find this examination painful, particularly in advanced labour.

Labour progress can also be judged observationally by the woman’s contractions and her verbal and non-verbal responses to them (Table 1.2). Some midwives also observe the ‘purple line’, present in 76% of women, which may gradually extend from the anal margin up to the nape of the buttocks by full dilatation (Hobbs, 1998; Shepherd et al., 2010).
VEs in labour are an invasive, subjective intervention but no one has devised an acceptable, precise alternative method of assessing labour progress. It can be difficult for woman to decline a VE or for midwives to perform one when they feel it is best indicated. Even in low-risk births, midwives often feel pressured to adhere to medicalised guidelines which lack good evidence.

NICE (2014) recommends:

- 4-hourly VEs in the first stage of labour, or if there is concern about progress, or at the woman’s request (after abdominal palpation and assessment of vaginal loss)
- cervical dilatation of 2 cm in 4 hours is reasonable progress
- using a 4 hour action line on the cervicogram/partogram
- that a routine amniotomy should not be performed; if an amniotomy is performed for slow progress the VE should be repeated after 2 hours

Table 1.2  Contractions and women’s typical behaviour up to full dilatation.

<table>
<thead>
<tr>
<th>Cervical dilatation</th>
<th>Frequency of contractions</th>
<th>Pain of contractions</th>
<th>Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–3 cm</td>
<td>May be irregular and sometimes stop Gradually increasing in frequency</td>
<td>Varying from painless/mild/stranger</td>
<td>Chatty, nervous, excited, able to make jokes and laugh. Often able to talk through contractions May use learned breathing techniques too early, and need reminding to pace herself</td>
</tr>
<tr>
<td>3–4 cm</td>
<td>Regular, lasting 20–40 seconds Becoming more painful but usually bearable</td>
<td></td>
<td>Withdrawing more. Deeper ‘sighing’ breathing Sense of humour fading</td>
</tr>
<tr>
<td>4–7 cm</td>
<td>Regular, lasting ≤60 seconds</td>
<td>Increasingly painful</td>
<td>Becoming vocal: crying out with some contractions May express irritation when touched</td>
</tr>
<tr>
<td>7–9 cm</td>
<td>Regular, lasting ≤60 seconds</td>
<td>Often almost (sometimes completely) unbearable pain, although if in the transitional stage the woman may have some respite</td>
<td>Appears withdrawn, in another world May not reply, or may answer sharply</td>
</tr>
<tr>
<td>9–10 cm</td>
<td>Sometimes almost continuous, although they can ‘fade away’ for a while in transition</td>
<td></td>
<td>Concentrating on breathing, which slows and deepens with a contraction Throaty grunting noises, crying out with expiration: may panic and express desperate ideas: ‘I can’t do this!’ Less mobile, holding on to something during a contraction; often eyes closed, but may open wide in surprise with pushing urge</td>
</tr>
</tbody>
</table>

NB This is only a broad guide, intended to stimulate awareness of birthing behaviour; women’s behaviour will of course vary.

Vaginal examination, amniotomy and partograms

VEs in labour are an invasive, subjective intervention but no one has devised an acceptable, precise alternative method of assessing labour progress. It can be difficult for woman to decline a VE or for midwives to perform one when they feel it is best indicated. Even in low-risk births, midwives often feel pressured to adhere to medicalised guidelines which lack good evidence.

NICE (2014) recommends:

- 4-hourly VEs in the first stage of labour, or if there is concern about progress, or at the woman’s request (after abdominal palpation and assessment of vaginal loss)
- cervical dilatation of 2 cm in 4 hours is reasonable progress
- using a 4 hour action line on the cervicogram/partogram
- that a routine amniotomy should not be performed; if an amniotomy is performed for slow progress the VE should be repeated after 2 hours
• documenting care on the partogram/notes, including problems, interventions or referrals.

See Chapters 2 (VE) and 9 (slow progress) for a detailed, critical discussion.

**Analgesia**

Pain is a complex phenomenon and a pain-free labour will not necessarily be more satisfying. Working with women’s pain rather than alleviating it underpins many midwives’ practice. Indeed many would argue that some degree of pain is an essential part of labour: ‘as it stimulates the brain to release a cocktail of hormones, which in turn stimulate the uterus to contract’ (Walsh and Gutteridge, 2011). Leap *et al.* (2010) distinguish between midwives who ‘work with pain’ and those who provide ‘pain relief’.

Most midwives encourage natural and non-interventionist methods first, with pharmacological methods only if these methods are deemed insufficient.

**Non-pharmacological analgesia**

- **Massage and touch.** These can be powerful analgesics (Figure 1.2), encouraging pain-relieving endorphin release. Women receiving massage in labour report reduced pain (Smith *et al.*, 2012; Nutt, 2016). Never underestimate the effect of being ‘with woman’. Be sensitive however. Touch can be irritating or distracting, particularly in later labour. Labour can induce flashbacks for sexual abuse victims (see Chapter 2) and some women come from cultures where any non-essential touching by strangers feels invasive.

- **Distraction**, e.g. breathing patterns, music, television: ‘In labour I spend a lot of time in a low calm voice quietly talking women through a contraction. *Breath in through your nose, (pause) blow out from your mouth … let your shoulders drop, arms relax, unclench your hands. … Next out breath I add: let your legs relax and sink into the chair/bed etc … unclench your toes!! I don’t think this is hypnobirthing but it’s working with each contraction and it seems to work!*’ (Midwife, personal communication).

- **Position changes with aids.** Upright postures reduce the intensity of pain (Lawrence *et al.*, 2013), e.g. beanbags, wedges, stools and birthing balls (Figures 1.3 and 1.4).

- **Transcutaneous electrical nerve stimulation (TENS).** Despite conflicting opinions on its effectiveness, including a possible placebo effect, many women report that it provides good analgesia, especially in the first stage of labour (Johnson, 1997). A decade ago 20% of women used it (Healthcare Commission, 2008) and most said they would use it again (Dowswell *et al.*, 2009). There is no adverse effect on the mother or baby (Mainstone, 2004). However, a lack of substantial non-anecdotal evidence has led NICE (2014) to conclude, controversially, that TENS should not be recommended in established labour. However, a Cochrane review (Dowswell *et al.*, 2009) suggests that research is insufficient and that women should have the choice of using TENS: many continue to hire TENS units, or borrow them from enlightened hospitals/birth centres.

- **Aromatherapy.** Aromatherapy aids labour relaxation, and seems to reduce the use of analgesia and oxytocin (Burns *et al.*, 2000; McNabb *et al.*, 2006; Dhany *et al.*, 2012). A Cochrane review is more guarded, citing small underpowered studies (Smith *et al.*, 2011a), but this is one of many complementary therapies that is difficult to
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research by randomised controlled trial. Women usually love aromatherapy, and the massage which accompanies it. Midwives must be adequately trained prior to administering it, and maintain continuing professional development; some oils are contraindicated in pregnancy (Tiran, 2000, 2016; NMC, 2013).

Continuous vaporisation of oils, however, may impede midwives’ concentration and have adverse effects on anyone exposed, including headache, nausea or lethargy. Tiran (2016) therefore states: ‘… it is completely unethical and unsafe for aromatherapy oils to be vapourised in a maternity unit or birth centre’.

- **Hypnosis/hypnotherapy.** A decade ago a Cochrane review reported positive results from small studies: ‘Current available evidence shows that hypnosis reduces the need for pharmacological pain relief, including epidural analgesia in labour. Maternal satisfaction with pain management in labour may be greater among women using hypnosis. Other promising benefits from hypnosis appear to be an increased incidence of vaginal birth, and a reduced use of oxytocin augmentation’ (Smith et al., 2006). More recently a large trial concluded that epidural use was unaffected but women reported increased postnatal confidence and reduced fear of future birth (Downe et al., 2015). Research continues. Anecdotal accounts of hypnobirthing yield extraordinary stories (www.hypnobirthing.co.uk).

- **Other methods, e.g. acupuncture/pressure, reflexology, shiatsu, yoga, sterile water blocks, homeopathic and herbal remedies.** Normally only midwives trained in these specialist areas or qualified practitioners offer these therapies. Non-pharmacological methods are notoriously difficult to evaluate by standard research methods. Acupuncture, acupressure, relaxation and yoga have undergone Cochrane review and shown positive results, including reduced analgesia use and increased spontaneous births, although studies remain of variable quality (Smith et al., 2011b,c). NICE (2014) mentions alternative therapies in the weakest way, stating: ‘Do not offer acupuncture, acupressure or hypnosis, but do not prevent women who wish to use these techniques from doing so.’ Midwives wishing to involve themselves in these methods need to look for more helpful and positive resources than NICE.

- **Water.** Deep-water immersion has unique benefits. The opportunity to labour in water should be part of routine labour care (see Chapter 7).

**Pharmacological analgesia**

- **Entonox (nitrous oxide).** This is the most commonly used labour analgesic in the UK; it appears to offer effective pain relief to significant numbers of women (Klomp et al., 2012). There is little evidence on fetal/maternal effects; like all drugs it will cross the placenta to the baby, but there is no evidence of harm. Maternal side-effects are minor, e.g. dry mouth or nausea, but it is quickly excreted so effects wear off rapidly. Long-term exposure risks are well documented, including risk to pregnant staff with high labour ward workloads (Robertson, 2006).

- **Opioids, e.g. pethidine, diamorphine.** These are usually given intramuscularly (IM) but occasionally by patient-controlled analgesia (PCA). Anti-emetics should be given prophylactically with opioids (NICE, 2014). Opioids can ‘take the edge off’ the pain for some women, inducing a feeling of well-being and allowing some rest. Others dislike the feeling of being sedated, out of control and still able to feel considerable pain. There are considerable doubts about the effectiveness of opioids and concern about potential maternal, fetal and neonatal side-effects. Maternal side-effects
include nausea, vomiting and hypertension (Ullman et al., 2010). Some women feel disorientated and out of control. Neonatal side-effects include respiratory depression (NB naloxone is now not advised; see Chapter 18), subdued behaviour patterns, including a lack of responsiveness to sights and sounds, drowsiness and impaired early breastfeeding (NICE, 2014). It may be that babies of mothers
receiving opiates in labour become addicted to opiates/amphetamines in later life (Jacobsen et al., 1988, 1990; Nyberg et al., 2000). While recent studies have not confirmed this (Pereira et al., 2012), all researchers believe that more work is needed, and concerns remain that some addiction and behavioural disorders may have their roots in fetal exposure to labour opiates and disordered fetal cortisol levels (Beech, 2004).

**Regional anaesthesia**

Regional anaesthesia (RA) aims to remove all pain from the lower half of the body. It is used by around a third of women for labour in the UK. Local anaesthetic is injected into the lower region of the spine, close to the nerves that transmit pain. Adding an opiate to the anaesthetic drug means lower concentrations of the latter are needed.

- **Epidural anaesthesia.** A local anaesthetic and/or opiate is injected between the spinal column and the outer membrane of the spinal cord (i.e. into the ‘epidural space’) by bolus injection, continuous infusion or PCA.

- **Spinal anaesthesia.** A single dose of local anaesthetic and/or opiate is injected through the subarachnoid space into the cerebral spinal fluid; this is a faster and shorter acting form of RA than epidural anaesthesia.

- **Combined spinal–epidural anaesthesia (CSA).** This is a single spinal injection, following which an epidural catheter remains in situ. CSA is faster acting than epidural anaesthesia but gives no better pain relief than epidural alone (Simmons et al., 2012).

NICE (2014) recommends low-dose bupivacaine and fentanyl for optimal labour outcomes and shows no preference for epidural (recommending either bolus or PCA) over CSA, unless rapid RA is required.

The concept of a so-called ‘walking epidural’ can be confusing. It is simply a low-dose epidural, which is what most epidurals are these days. All low-dose epidurals are intended to increase mobility to some degree, allowing a woman to adopt upright positions, or possibly a kneeling/all-fours position. Occasionally she may be able to stand or walk, although this is unlikely and many hospitals discourage the attempt fearing the risk of falling. Some women report disappointment when they find that their mobility is not as good as they had hoped, and electronic fetal monitoring still intrudes. There are known and suspected risks from RA (Box 1.5).

The reasons for adverse neonatal outcomes may be more subtle than simply opiate effects. Many researchers have speculated that a slightly raised level of maternal stress hormones in labour has a beneficial effect on the fetus, preparing it for extrauterine life (Dahlen et al., 2013). RA may make the woman in one sense ‘too relaxed’ and dissociated.