



Guidelines for midwifery led care in labour

**THE *Central Sheffield
University Hospitals***

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Introduction

Movements to implement change in maternity services to meet the individual needs of women, have grown considerably in the 1990s. In the UK, the initiatives have called for a lead role and greater responsibility for midwives in normal pregnancy and labour (Dept of Health 1993). Such midwifery led care has been seen to have as good outcomes as shared care, met with greater satisfaction from the women (McVicar et al 1993, Shields et al 1998, Turnbull et al 1996) and reduce obstetrical intervention rates (Campbell et al 1999, Hundley et al 1994).

Midwifery care perceives labour as a normal physiological process characterised by a spontaneous onset between 37 and 42 weeks, in a woman whose pregnancy has been uncomplicated. It also recognises that for the woman labour is not 'just normal' but actually extraordinary : as a 'good' or 'bad' experience it has great implications for her psychological well-being (Simkin 1991) and her relationships with her family.

The history of childbirth, that has moved it towards being a medically assessed event only perceived as normal in retrospect (RCM 1997), has brought with it considerable interventions that have become traditional and routine in many midwifery units. There has also developed the current status quo of policies and protocols which, combined with the powerful fear of litigation, has come to undermine midwives and women's confidence in accepting or even understanding the normal. As Cochrane commented in 1972, obstetricians and gynaecologists were at the forefront of unevaluated practice: such direction impacted dramatically on midwifery. The indictment however led to the impressive work of systematic reviews contained in Effective Care in Pregnancy and Childbirth (Chalmers et al 1989) and the Cochrane Library. Such quality research is now readily available to midwives and offers them a useful resource to challenge routine practice which interferes with the normal birth process. There is also a growing body of research exploring midwives' and women's views of the childbirth experience. These guidelines are an attempt to make some of the current research useful to midwives for midwifery led care in this unit.

Midwifery led care is committed to the right of women to have good information and be involved in decisions about the care of themselves and their babies. Failure to pay attention to the quality of that information and an over optimistic view of interventions can have serious consequences in terms of iatrogenic harm, unnecessary costs and increased dissatisfaction (Coulter 1998). The contents of this document are clearly not exhaustive and will need to be reviewed regularly in response to new research. There is also no intention to be entirely prescriptive as care has to be individual. However, it is recommended that a clear cut departure from the evidence should be justified and documented in the notes.

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Methodology

The guidelines presented here are from a literature search using the following method:

- search of the electronic databases: Cochrane, MEDLINE, CINAHL, MIDIRS.
- hand searching key journals and looking for frequently cited literature.
- consultation with local midwife researchers
- peer review by another midwife researcher

Literature covering the following perspectives was reviewed

- that of prospective randomised controlled trials
- that from midwives' research and reviews
- that exploring women's views
- reports from professional bodies (RCM & RCOG) and government policy directives
- expert opinion

In line with the philosophy of midwifery led care, particular weight was given to finding women's views, despite this being such an under-researched area.

The subjects investigated were determined in group discussion with midwives in the unit. An on-going educational strategy, offering workshops and lectures on key areas, was incorporated from the beginning¹

A comprehensive evaluation of the development and implementation of the first edition of the guidelines was undertaken (Munro & Spiby 1999). This used an *Appraisal Instrument for Clinical Guidelines* (Cluzeau et al 1997), it sought both midwives and users of the service views, and measured change of practice shown in routinely collected data. The findings of the evaluation informed this updated edition.

¹ If used by other units, the authors draw to your attention that the guidelines form only one part of introducing evidence based practice. It is not anticipated that the document would be introduced without the educational support for safe transition.

Introduction and Methodology

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Referral to obstetric care

Women who should be in consultant obstetric care at the onset of labour are those with

- pre-existing medical problems
 - gestation of < 37 completed weeks or >42 completed weeks
 - multiple pregnancy
 - group B haemolytic streptococcus positive
 - previous stillbirth or neonatal death
 - previous LSCS/shoulder dystocia/uterine surgery
 - placenta praevia
 - antepartum haemorrhage
 - presence of rhesus or other antibodies
 - malpresentation
 - suspected small for dates fetus and/or oligohydramnios
 - pregnancy induced hypertension, pre-eclampsia
 - any meconium staining of the liquor
-
- ***all women having induction or augmentation of labour***

Reasons for intra-partum referral to consultant obstetric care

- Any concern about the woman's or fetal condition
- Any concern about the progress of labour
- Use of epidural pain relief (labour then moves out of the normal physiological and active management needs to be considered)

Women receiving consultant led care in labour should have a plan of management documented on the partogram, at the time of admission and regularly through labour, by an obstetrician of appropriate seniority.

Birth Environment

- “Women should receive clear, unbiased advice and be able to choose where they would like their baby to be born” (DoH 1993 p25). There is no evidence to suggest that it is inadvisable for women without complications to book for birth at home or in a GP or midwifery unit (MIDIRS 1997).
- Hospital is an alienating environment for most women where institutionalised routines and lack of privacy can contribute to feelings of loss of control (Steele 1995). The studies by Green et al (1998) and Simkin (1991;1992) found that control, or lack of it, was important to the women’s experience of labour and their subsequent emotional well-being.
- Trials have demonstrated the benefits to women of having a low-risk, midwife-led area as an alternative to the traditional labour ward (Hundley et al 1994; McVicar et al 1993)
- Women in early labour are best assessed away from the delivery unit as this results in fewer interventions during the active phase of labour (McNiven et al 1998)
- Respect of a woman’s wishes and her involvement in decision making is essential to her care in pregnancy and labour (DoH 1993). **The birth plan should be discussed in full with the midwife looking after the woman in labour**

Birth Environment

The environment in which a woman labours can have a great effect on the amount of fear and anxiety she experiences. Hospital, is an alienating environment for most women (Steele 1995) where institutionalised routines like placing name bands on wrists, asking women to undress on admission and lack of privacy can contribute to feelings of loss of control. Brown & Lumley (1994) found that the technology and intervention that has now become commonplace on many labour wards was implicated in women's dissatisfaction with labour. Increased anxiety brought on through loss of control, can interfere with the normal effective physiology of labour (Steele 1995). Simkin's (1991; 1992) studies of women's birth experiences found that the control or lack of it was very important in the long term memory of birth as positive or negative.

Respect of a woman's wishes and her involvement in decision making is essential to her care in pregnancy and labour (DoH 1993). From Hodnett's systematic review (1996) it would appear that women have better physical and emotional labour outcomes if they are involved in the decision making. Green et al's study (1990) found that good information was important to her birth experience and also to her subsequent emotional well-being. The decision making must extend to the woman's choice of companion(s) who should be made to feel welcome in the labour ward.

Birth planning is a continuous part of antenatal care. This requires a good discussion about place of birth when 'women should receive clear, unbiased advice and be able to choose where they would like their baby to be born' (DoH 1993). There is no evidence to suggest that it is inadvisable for women without complications to book for delivery at home or in a GP or midwifery unit (MIDIRS 1997). The birth plan should be discussed in full with the midwife looking after the woman in labour. Women often find it difficult to ask questions (Read and Garcia 1989) so midwives need to encourage them to do so and act as advocate for the wishes expressed (Kirkham 1986).

Trials have demonstrated the benefits to women of less intervention and more mobility, in having a low-risk, midwife-led area as an alternative to the traditional labour ward (Hundley et al 1994; McVicar et al 1993). The philosophy behind the provision of such units is to provide a 'homely' environment where women can take more control. Labour in these units is managed more with minimal intervention (Hundley et al 1994). It has also been found that women who give birth in low-tech, midwife-led facilities e.g. home or birth centres, require less pharmacological analgesia (Skibsted and Lange 1992, Chamberlain et al 1997). These findings give further support to the need for making the birth environment more homelike and less dominated by the presence of technical equipment.

Women in early labour are best assessed away from the delivery unit, ideally at home, as this results in fewer interventions during the active phase of labour and improves women's evaluations of their labour and birth experiences.(McNiven et al 1998).

Birth Environment
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Pre-Labour Rupture of Membranes at term

- **The woman who gives a history of a sudden gush of fluid from the vagina followed by uncontrollable leaking is correctly self-diagnosing 90% of the time (Garite 1995).** If doubt exists, the history can be confirmed with an amnicator and speculum if necessary.
- **Digital examination must be avoided to prevent the introduction of infection** (Hannah et al 1996).
- In line with the philosophy that PROM is within the spectrum of normal pre-labour activity, the fetal heart can be auscultated over one minute using a portable Sonicaid. The midwife should also document descent of the presenting part, quality of the liquor and maternal observations.
- **All women should be screened for group B haemolytic streptococcus.** An introital swab appears to be the appropriate method: cervical cultures are not acceptable (US Dept of Health & Human Services 1996).
- **When women are known to be Group B haemolytic streptococcus positive, they should be offered immediate oxytocin induction and antibiotics** (Hannah et al 1997).
- When expectant management of up to 96 hours was compared with early induction, there appeared no difference in the risks of infection for the baby but an increase in the likelihood of chorioamnionitis for the women (Hannah et al 1996).
- Women have preferences about the methods of care available to them (Hannah et al 1996). Information should be provided to enable women to choose which method of care they prefer.
- Women choosing to await the onset of labour must be given information about when to contact the hospital or midwife. They should check their temperature twice a day and report any changes in colour or odour of the liquor or any signs or symptoms of infection (Hannah et al 1996). The community midwife should make contact once a day. **An appointment should be made for the woman to attend the Labour Suite no later than 3 days after PROM has occurred.**

Pre-Labour Rupture of Membranes

Pre-labour rupture of membranes (PROM) occurs in 6-19% of pregnancies at term. 60% of women in this situation will give birth within 24 hours and 86% within 48 hours. Only 2-5 % women will still be pregnant after 72 hours (Keirse et al 1996). However, it is impossible to identify which women will not be in labour at that stage.

Various theories have been suggested for causation. Pre-labour rupture of membranes is considered to be within the spectrum of normal pre-labour activity by some (Keirse et al 1996). However, subclinical ascending infection has also been suggested as a factor and has been detected in up to one third of women experiencing term PROM (Romero 1992). Against such a background, the development of appears particularly challenging.

The risk factors for chorioamnionitis are an increasing number of vaginal examinations, a longer duration of active labour and meconium. Risk factors for postpartum fever are chorioamnionitis, an increasing duration of active labour and Caesarean Section (Seaward et al 1997).

The most important predictors of neonatal infection are clinical chorioamnionitis and maternal group B streptococcal colonisation (Seaward et al 1997). Due to the route of infection, an introital swab appears to be the most appropriate method for detecting the presence of Group B haemolytic streptococcus. Women known to be Group B haemolytic streptococcus positive should be offered immediate oxytocin induction and antibiotics (Hannah et al 1997).

The most recent investigation of mortality from early onset Group B haemolytic streptococcal infection in one health region in the United Kingdom, tested assumptions about similarities in mortality between the United Kingdom and United States (Embleton et al 1999). It found the incidence of death from early onset infection was slightly higher than that of the USA prior to introduction there of widespread prophylaxis. The researchers suggest an urgent need for further research in the United Kingdom to include incidence of infection and to determine the best strategy for reducing perinatal disease.

The management of women with term PROM has, until relatively recently, been subject to a number of regimes (Mozurkewich and Wolf 1997). The trial by Hannah and colleagues was designed to try to address some of the methodological problems of earlier trials. Particular weight should therefore be given to the findings of that trial which included approximately 5000 women. From that trial, there appears no increase in the likelihood of neonatal infection (as diagnosed by blood culture and white blood count), when an expectant approach to care is adopted, although there is an increase in the likelihood of maternal infection (Hannah et al 1996).

When the findings of several trials are reviewed, there appears little difference in terms of methods of delivery between expectant approaches to management and early induction (Rydstrom 1992; Grant et al 1992; Natale 1994; Shalev 1995; Ottervanger 1996; Hannah et al 1996).

It is important that options for care are discussed with women, including both information about the likelihood of going into labour over a given time, the process of induction and care received under expectant management. Only one trial has reported women's views of the different methods of management in detail (Hodnett et al 1997). From the large international study, there were fewer women in the induction groups who reported "There was nothing I liked about my treatment" compared to the expectant group (Hannah et al 1996). However, several of the trials report that up to 25% of women declined participation due to preferences

in methods of management. Details of women's use of pain relief with various management options is not reported. Women should be provided with information about the risks of both expectant and induction approaches to care.

At the time of confirmation of pre-labour rupture of membranes, midwifery observations should be aimed at determining maternal and fetal well-being and detecting signs of infection. The women who gives a history of a sudden gush of fluid from the vagina followed by uncontrollable leaking is correctly self-diagnosing 90% of the time (Garite 1995). If doubt exists, then the history can be confirmed with an amnicator and a speculum if necessary. Digital examination must be avoided to prevent the introduction of infection (Hannah et al 1996). In line with the philosophy that PROM is within the spectrum of normal pre-labour activity, the fetal heart can be auscultated over one minute using a portable Sonicaid. The midwife will also document descent of the presenting part, quality of the liquor and maternal observations.

Various regimes exist for women receiving an expectant approach to care (Raymond 1996). Care during the Hannah trial included the option of women returning home to await the onset of labour. It would seem appropriate to provide women with information about when to contact the hospital or a midwife in the event of concern. Women should check their temperature twice per day and report any feverishness, changes in the colour or odour of the liquor or signs and symptoms suggestive of infection (Hannah et al 1996).

An appointment should be made for women to attend the Labour and Delivery Suite no later than three days after PROM has occurred, by which time at least 72 hours will have elapsed. This will ensure that delivery is accomplished within the 96 hours expectant management evaluated in the Hannah trial (1996). The method of induction to be decided by the obstetrician based on clinical findings.

Recently questions have been raised about the value of routine antibiotics for all women with PROM in reducing infection for the woman or her baby and a review of the effects of antibiotics and induction of labour for women with term PROM is planned (Flenardy and King 1999). Strategies to prevent neonatal infection are important and these may comprise screening of women during pregnancy. Further work is required to address these issues for UK midwifery and obstetric practice.

Pre-labour rupture of membranes

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Supporting women in labour

- Descriptive studies have suggested 4 dimensions to the support that women want in labour: **emotional support; informational support; physical support and advocacy** (MIDIRS and the NHS Centre for Reviews and Dissemination 1999).
- **Continuous support is associated with shorter labour, lower use of pharmacological analgesia, and less operative vaginal delivery (Hodnett 1996).**
- Support from the midwife may include helping the woman in her wish to avoid pharmacological pain relief or helping her choose among pharmacological and non-pharmacological methods of pain relief (Enkin et al 1995) A pain free labour does not ensure satisfaction with childbirth (Enkin et al).
- Midwives should keep up to date with non-pharmacological methods of pain relief. These include water, positions and movement, massage, TENS. coping strategies and alternative therapies (Mander 1998)
- Preparation for childbirth during pregnancy has been shown to reduce the need for pain relief in labour (Wagner 1994). Midwives should ask women about their preparation in the use of coping skills in birth planning (Spiby et al 1999)
- Women who give birth in low-tech, midwife-led facilities e.g. home or birth centres, require less pharmacological analgesia (Skibsted & Lange 1992, Chamberlain et al 1997)

Supporting Women in Labour

Women experience a wide range of pain in labour and have an equally wide range of responses to it (Mander 1998). A woman's reactions to labour pain may be influenced by the circumstances of her labour including the environment and the support she receives (Enkin et al 1995).

Women in labour have need for companionship, empathy and help (Simkin 1992; Dept of Health 1993). Descriptive studies of women's childbirth experience have suggested four dimensions to the support that women want in labour. These are emotional support, informational support, physical support and advocacy (MIDIRS and The NHS Centre for Reviews and Dissemination 1999). A systematic review of 10 randomised controlled trials (Hodnett (1996) showed that continuous support is associated with shorter labour, lower use of pharmacological analgesia, and less operative vaginal delivery (Hodnett (1996). The support of partners or other support people of the labouring woman's own choosing, while important, is no substitute for the support provided by a specially trained support person (Hodnett).

Support from the midwife may include helping the woman in her wish to avoid pharmacological pain relief or helping her choose among pharmacological and non-pharmacological methods of pain relief (Enkin et al 1995)

Midwives should keep up to date with non-pharmacological methods of pain relief. These include immersion in water, massage, positions and movement, coping strategies, TENS and alternative therapies (Mander 1998)

Preparation for childbirth during pregnancy has been shown to reduce the need for pain relief in labour (Wagner 1994). The use of coping skills in labour is associated with definite benefits in terms of women's experience of pain and emotional distress (Slade et al 1995). Midwives should find out from women about their preparation in the use of coping skills from birth plans and care planning (Spiby et al 1999). Coping skills are easily disrupted by changing environment and after procedures such as monitoring or examinations (Slade et al). Niven (1994) suggests that midwives may not always give value to psychological coping strategies: they often give the impression of being somewhat hostile to the use of 'NCT type' techniques.

Supporting Women in Labour
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The use of water for labour and birth

- From two national surveys of neonatal morbidity and mortality, there is nothing to suggest that this method of care cannot be made available to women (Gilbert and Tookey 1999; Alderdice et al 1995).
- Quality assurance measures are important and include the need for checking the quality of water reaching the pool (Robb et al 1991) and on thorough cleaning of the pool after use (Forde et al 1999).
- The woman's temperature should be monitored closely and a rise of 1 degree Centigrade above baseline should result in advice to discontinue use (Charles 1998)
- Water temperature should be monitored closely and kept comfortable for the woman and not above 37 degrees Centigrade (Charles 1998)
- There is no evidence to support restricting the duration of use and little to support the imposition of arbitrary points at which the use of water should commence. Early immersion (before 5cm dilatation) has been associated with prolongation of labour and increased need for epidural and syntocinon (Eriksson et al 1997)
- The use of water for labour and birth should be provided within controlled trials or with on-going audit for untoward side effects until further research is available (Nikodem 1997).

The use of water for labour and birth

The use of water for labour and birth has been available in the United Kingdom since the late 1980's. This approach to care can be provided using a variety of pools and in both the home and hospital settings. There is little high quality evidence, appropriate to United Kingdom midwifery practice, from which definitive conclusions about the effects of using water for labour and birth can be drawn. Research findings should be interpreted with caution as the use of water reported in some papers may be different to that in local practice. These differences include the use of pools with air jets (Schorn et al 1993), re-circulating water systems (Loomes 1990) or restricted duration of bathing (Lenstrup et al 1987).

Several outcomes have been reported in publications and these include the duration and experience of the labour, condition of the baby in utero and at birth, the state of the perineum and the risk of infection to the woman or her baby.

A range of effects on pain have been reported in the literature. Entry to a tub bath was associated with a stabilising effect on pain sensation but no overall difference in epidural requirements (Cammu et al 1994). However, other reports suggest less need for pharmacological pain relief (Aird et al 1997). Using water has proved a very positive experience for women (Gillot de Vries 1987).

The majority of studies comparing immersion with non-immersion provide no evidence of a shortening or lengthening of labour (Andersen et al 1996; Lenstrup et al 1987) or in the interval between spontaneous rupture of membranes and birth (Waldenstrom and Nilsson 1992). More recently, Eriksson's study of early versus late bathing (before and after 5cm cervical dilatation) found early bathing to be associated with an increase in the mean duration of first stage and an increased need for oxytocin and epidural anaesthesia (1997), although the direction of these findings is not surprising. There appears little to recommend the use of arbitrary points during labour to dictate when birth pools should or should not be used and no evidence to suggest that the use of water should be limited to a specific duration.

The suggestion that fetal hyperthermia may lead to hypoxia (Rosevear et al 1993) has resulted in recommendations to monitor maternal temperatures closely. Increases of one degree Centigrade above the baseline to should result in advice to discontinue use (Charles 1998). Water temperatures should be comfortable for the woman but not exceed 37 degrees Centigrade.

Johnson's review of respiratory physiology suggests that, in a non-stressed fetus, it is unlikely that breathing will commence in the short time that the baby's head is underwater (1996). Johnson sees no reason to prevent this option being offered to women and this is supported by the national UK survey (Alderdice et al 1995), where the twelve cases of neonatal mortality were not considered to be due to the use of water although, as the authors point out, the retrospective nature of the data collection must be noted. More recently a surveillance study (British Isles) and postal survey (England and Wales) reported that perinatal mortality is not substantially increased when birth occurs in water compared to that for babies born by normal vaginal delivery to women at low obstetric risk (Gilbert and Tookey 1999). Data collected for this survey was compared with that for traditional deliveries from other series of low risk births in the United Kingdom.

Similarly, perinatal mortality and risk of admission to Special Care was similar for babies delivered in water to that of low risk births out of water. Water aspiration was reported in two

babies and snapped umbilical cord in five, although there is no data available about the incidence of this for non-water births.

The majority of studies show no effect on Apgar Scores with pool use (Schorn et al 1993; Andersen et al 1996; Eriksson et al 1997), although Garland and Jones report fewer low scores with pool use (1997). One study included women who had over 24 hours with ruptured membranes : infants born to women in the bathing group had more Apgar Scores of less than 8 at 5 minutes (Waldenstrom and Nilsson (1992).

Several maternity units in the United Kingdom have reported quality assurance measures. These have included testing water before and after use for contamination with organisms such as *Pseudomonas aeruginosa* (Robb et al 1991; Hawkins 1995) and swabs from babies immediately after birth (Coombs et al 1994). These studies support the need for continued attention to pool cleaning and monitoring.

Andersen et al reported more minor infectious morbidity for the woman (1996) but not for the baby and other studies report no significant differences for either the woman or her baby (Forde et al 1999; Eriksson 1996; Schorn 1993)

Information on perineal outcome is conflicting. Garland and Jones commented that early reports failed to differentiate between births out of water following immersion in labour and the use of water throughout (1997). It is difficult to offer any interpretation of the data when delivery techniques vary considerably in the extent to which a "hands-on" approach is used.

It is important that information is provided prior to labour to allow time for consideration of this option (Richmond 1994). A study comparing midwives' visual estimation of blood loss in "water" and on "land" found no significant difference in the accuracy of estimation in these two contexts (Lim 1994).

Pending further research, the use of water should be provided within controlled trials or with on-going audit to detect side effects (Nikodem 1997).

The use of water for labour and birth

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Pharmacological Pain Relief

- Sometimes midwives can underestimate the intensity of pain experienced by women in labour and over estimate the relief offered by analgesic drugs (Niven 1994, Rajan 1993). Labour pain can only be partially relieved by the use of analgesic drugs such as pethidine and entonox (Mander 1997).
- Pharmacological methods of pain relief all have side-effects (Enkin et al 1995). If women have not had access to good information antenatally, the midwife on the labour ward must take responsibility for offering it.
- **There are considerable doubts about the effectiveness and concerns about maternal, fetal and neonatal side-effects of pethidine** (Elbourne & Wiseman 1998). These include depression of neonatal respiration, depression of reflexes including impaired suckling, lassitude and drowsiness (Priest & Rosser 1991). Side effects to the mother include nausea, vomiting, dizziness, dysphoria and drowsiness (Mander 1998)
- Fairlie et al's (1999) small study found that there appear to be benefits to using diamorphine as the opiate in labour: they found a higher level of pain relief, less maternal vomiting and a lower incidence of low 1 minute Apgar scores.
- Epidural analgesia is a commonly used method of pain relief in labour in the UK (RCOG 1995). **It is the most effective method of pain relief in labour.** There are, however, a number of possible unwanted consequences and side-effects (Lieberman et al 1999, Thorp & Breedlove 1996, Bogod 1995). Women should be counselled about these risks before labour begins (Howell 1999). Epidural analgesia is associated with longer first and second stages of labour, an increased incidence of fetal malposition, an increased use of oxytocin and instrumental delivery (Howell 1999). Other associated risks are intrapartum fever (Howell 1999, Liberman et al 1999) and significant perineal trauma (Robinson et al 1999, Donnelly et al 1998). Potentially life threatening complications occur in about 1:4000 cases. Dural tap occurs in about 1% of women (MIDIRS & the NHS Centre for Reviews 1999).

Pharmacological Pain Relief

It has been demonstrated that midwives sometimes underestimate the intensity of the pain experienced by women in labour (Niven 1994) and overestimate the efficacy of pharmacological pain relief (Rajan 1993). Labour pain can only be partially relieved by the use of analgesic drugs such as pethidine and entonox (Niven 1994, Mander 1997). It is clearly important midwives acknowledge this with labouring woman.

Pharmacological methods of pain relief all have side effects: careful account must be taken of those that may be undesirable for both the woman and her baby (Wagner 1994). Women need access to good information in order to be able to make informed choice and this should ideally take place in the antenatal period. However, if this has not happened and been recorded, the midwife on the labour ward must take responsibility for offering it.

Pethidine is the most commonly used opiate in labour. Its popularity is ascribed to its being generally the only drug for pain relief written up in labour ward standing orders for midwives, and the fact that it is low cost. However, there are considerable doubts about its effectiveness and concerns about its potential maternal, fetal and neonatal side-effects (Elbourne & Wiseman 1998). The side-effects to the baby include the depression of neonatal respiration, often leading to one of more injections of the antagonist, naloxone. Other neonatal effects are reported as different behavioural patterns including a lack of responsiveness to sights and sounds, lassitude and drowsiness (Priest & Rosser 1991) depression of reflexes, including impaired suckling reflex for up to 48 hours (Wiener et al 1977, Brackbill et al 1974). Rajan's (1994) secondary analysis of the National Birthday Trust data on pain relief (Chamberlain et al 1993) found that pethidine had a serious inhibiting effect on breast feeding. Side effects to the mother include nausea and vomiting, dizziness, dysphoria and drowsiness (Mander 1998). These side effects can be seen to have unwelcome outcomes for women in feeling confused and losing control (Kitzinger 1987). Few studies offer statistics as to how common these adverse effects are but almost all comment on their high frequency when compared to the low efficacy of the drug (Priest & Rosser 1991). Fairlie et al's (1999) recently published small study, comparing pethidine with diamorphine, found that there appear to be benefits to the use of diamorphine as the opiate in labour: they found a higher level of pain relief, less maternal vomiting and a lower incidence of low 1 minute Apgar scores.

Epidural analgesia offers the most effective but most invasive and potentially hazardous method of pain relief in labour (Lieberman et al 1999, Thorp & Breedlove 1996, Bogod 1995,). Health care providers to date have failed to educate themselves and the public regarding the well-established risks (Thorp & Breedlove 1996). The literature on this subject is wide and confusing because analysis has been consistently influenced by two powerful biases: that of strong opinions based on personal experiences and that of some conflicts of interests among health care providers. However, the data is clear on two side effects: epidural analgesia increases the duration of labour and the frequency of operative delivery. (Thorp & Breedlove 1996, Enkin et al 1995). Epidural analgesia is associated with longer first and second stages of labour, an increased incidence of fetal malposition, an increased use of oxytocin and instrumental delivery (Howell 1999) Other associated risks are intrapartum fever (Lieberman et al 1999) (which in some cases appears to lead to fetal tachycardia, which can lead to the baby being investigated for infection) and significant perineal trauma (Robinson et al 1999, Donnelly et al 1998). Potentially life threatening complications occur in about 1:4000 cases although death associated with epidural analgesia is rare (MIDIRS & the NHS Centre for Reviews 1999). Major neurological disability may occur as a result of hypoxic ischemic brain damage, hypotension or respiratory arrest,

or from spinal nerve damage, epidural haematoma or abscess (Thorp & Breedlove 1996). Dural tap occurs in approximately 1% of women during insertion of the epidural catheter (MIDIRS & the NHS Centre for Reviews 1999). Women will continue to elect epidural analgesia in labour because of its analgesic efficacy, but others may prefer an alternative if offered the appropriate information.

Pharmacological Pain Relief

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Fetal heart rate monitoring

- The decision about fetal monitoring should be made antenatally in joint discussion between the woman and her midwife (Thacker et al 1997).
- If this discussion has not taken place by the time that woman goes into labour, it should form part of the initial birth planning.
- Electronic fetal monitoring was found to increase the caesarian section rate by about 250%, in the early randomised controlled trials. In later trials , the caesarian section rate increased by 30%: this could be due to the use of fetal blood sampling or improved skills in interpreting EFM traces. It also increases the operative vaginal delivery by 30% (MIDIRS & The NHS Centre for Reviews and Dissemination 1999).
- Electronic fetal monitoring was found to reduce the rate of neonatal seizures, but only where labours were induced or augmented with oxytocin (Macdonald et al 1985) The neonatal seizures prevented by intensive monitoring are not those associated with long term impairment (Enkin et al 1995)
- **Because of the high level of intervention associated with electronic fetal monitoring, intermittent auscultation with a hand held instrument is the recommended method for normal labours (RCOG 1993). This consists of measuring the fetal heart**

FIRST STAGE - for one complete minute beginning immediately after the end of a contraction every 15 minutes

SECOND STAGE - for one minute after every maternal push

All values should be recorded .

If the auscultated fetal heart rate gives reason for concern, then a continuous record should be obtained using EFM (RCOG 1993).

- **The admission trace has not been properly evaluated. It should not be used routinely until such time as reliable research has shown it to be of benefit (MIDIRS & The NHS Centre for Reviews and Dissemination 1999)**

Fetal Heart Rate Monitoring

Since its introduction in the 1970s, electronic fetal monitoring has become a routine part of clinical practice. In the late 1970s such use began to be questioned (Johnstone, Campbell & Hughes 1978) and since then, the practice has been continually reviewed and discussed (Thacker, Stroup & Peterson 1997; Shy, Larson & Luthy 1987). The enthusiastic use of electronic fetal monitoring mirrors that of other medical technologies: assessments with randomised controlled clinical trials follow, rather than precede, widespread introduction. When the results of clinical trials did not indicate clearly defined benefits, EFM was already a routine practice and clinicians found it difficult to consider abandoning it (Thacker 1997). As is clear with the experience of EFM, widespread diffusion of a technology before efficacy and safety has been established “can lead to misuse, misunderstanding and unnecessary concerns with malpractice and litigation” (Thacker 1997). And as Simkin suggests “It can even be argued that the premature universal application of EFM has done more harm than good, increasing the rates of surgical intervention, causing the loss of valuable clinical assessment skills and contributing to the skyrocketing costs of obstetrical care without conferring demonstrable benefits” (1987 p 124).

The most recent systematic review (Thacker et al 1997) states that the only benefit from the use of routine continuous EFM was in the reduction of neonatal seizures. The implications of this outcome is unclear as the only two follow-up studies to date have indicated that the long-term neurological effects of these seizures have been minimal. Enkin et al (1995 p211) state that neonatal seizures prevented by intensive monitoring are not those associated with long term impairment. They also point out that, in fact, there were more babies who developed cerebral palsy in the electronically monitored groups, although the increase was not statistically significant. There has been some comment (Lumley et al 1986) on the Dublin trial (Macdonald et al 1985) (the only trial that reported a significant decrease in neonatal seizures with EFM) stating that the difference in number of seizures was seen only among those who received oxytocin. In approximately 10,000 labours where no oxytocin was used, there were 8 seizures in EFM and 8 in auscultated infants.

The problem of EFM as a poor predictor of fetal compromise is compounded by its low specificity (the ability to identify those fetuses that are not distressed) and the consequent increase in operative and assisted delivery rates, without showing a reduction in perinatal mortality, or the incidence of cerebral palsy. MIDIRS (1999) presents the evidence of EFM alone increasing the caesarian section rate by about 250% in the early randomised controlled trials and, in the later trials, by 30%. They suggest that this change may be due to the use of fetal blood sampling or an improvement in the interpretation skills. This review also found that EFM increases the operative vaginal delivery rate by 30%.

Advocates of the technology of EFM continue to argue that its benefits have been obscured through lack of quality machinery and lack of skill of interpretation. Although there is ongoing assessment of the wide variation of interpretation of fetal heart rate patterns, even among experts (Enkin et al 1995, Ayers-de-Campos et al 1999), it is clear that all practitioners involved in the labour process need to take personal responsibility for being trained and regularly updated in all methods of fetal monitoring (MIDIRS 1999 and the NHS Centre for Reviews and Dissemination). However, midwives should be wary of fetal heart monitoring educational forums that make unequivocal claims about the benefit of electronic fetal monitoring without addressing its evidence base (Walsh 1998, Rosser 1998).

There has been only one randomised controlled trial which has included women's preferences of monitoring (Garcia et al 1985). This reported that women were more likely to feel that their movements were restricted but otherwise showed little preferences. It must be noted that this trial took place in a hospital where personal and continuous care from a midwife for all women is a key feature of hospital policy. The report states, however, that even in that hospital "there is a suggestion that women monitored with EFM were more likely to be left alone for short periods".

As Thacker et al (1997) state, the decision about fetal monitoring should be made in a joint discussion between the woman and her midwife in the antenatal period. If this has not taken place by the time the woman goes into labour it should form part of the discussion of the birth plan. **Because of the increased level of intervention attached to electronic fetal monitoring, both RCOG (1993) and MIDIRS and the NHS Centre for Reviews and Dissemination (1999) say that for normal labour intermittent auscultation should be the method of choice.** The admission trace has not been evaluated as a form of care. It should not be used routinely until such time as reliable research has shown it to be of benefit (ibid 1999)

One of the difficulties for practising clinicians in this debate, is the way in which EFM has been encouraged by fear of litigation. As Walsh (1998) points out, there appears to be a belief that EFM has some protective effect on litigation despite the paradox that 'expert witnesses' advise that EFM is not evidence-based.

As Thacker (1997) suggests, there are several lessons that can be learnt from the experience of electronic fetal monitoring.

- Increased information does not necessarily lead to better clinical outcomes
- Interventions intended for benefit will have some unintended consequences
- New technologies should be evaluated thoroughly before widespread diffusion
- All technologies have costs and benefits

In anticipation of other developing birth technologies e.g. ECG waveform analysis, systolic time intervals, pulse oximetry and infrared spectroscopy, (Walsh 1998) clinicians will hopefully have gained from the EFM experience and be careful to apply such technologies more effectively.

Fetal Heart Rate Monitoring

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Assessing Progress in Labour

- **Simkin & Ancheta (2000) suggest there are six ways to progress in labour: the cervix moves from a posterior to an anterior position; the cervix ripens or softens; the cervix effaces; the cervix dilates; the fetal head rotates, flexes and moulds; the fetus descends.**
- Monitoring the progress of labour, however, requires more than the assessment of cervical dilatation and uterine contractions (Crowther et al 1995). Midwives should give weight to their other skills such as abdominal palpation and a knowledge of women's changing behaviour (Baker & Kenner 1993, McKay & Roberts 1990, Leap 1999).
- Vaginal examinations remain the most accepted method of measuring progress in labour (Crowther et al 1995). These examinations, however, should not be routine or prescriptive but carried out only where there is clinical necessity and after discussion with the woman. "Repeated vaginal examinations are an invasive intervention of as yet unproven value" (Enkin 1992).
- Vaginal examinations are an imprecise measure of the progress of labour when performed by different examiners (Clement 1994, Robson 1991). **Where possible therefore, they should be carried out by the same midwife.**
- The process of care in labour usually demands a focus on the woman's genitalia, with exposure to people that are strangers. **Midwives must give consideration to the emotional and psychosexual aspects of any procedure (Devane 1996).** Many women find vaginal examinations painful and sometimes traumatic (Menage 1996)

Assessing progress in labour

Statistical norms for the length of labour were established by Friedman in the 1950s, influenced by O'Driscoll in the 1970s and continue to be widely used today despite several methodological problems with the data from which they were constructed (Albers et al 1996). The vaginal examination is seen to judge two objective criteria in order to assess the progress of labour: cervical dilatation and descent of the fetal presenting part. However, the examination is inherently imprecise because of the potential for inter-observer variability. The assessment of the cervix is considered to be "the cornerstone of the management of labour" (Tufnell et al 1989) and remains the most accepted method of measuring progress (Crowther et al 1995). There is, however, a great lack of research into the accuracy of the examination (Crowther et al 1995). (Tufnell et al 1989) used cervical simulators with a sample of experienced labour ward midwives (n 36) and obstetricians (n 24), and found no examiner correct in all six cases. Robson's (1991) study of 52 practitioners (doctors, midwives and students) using simulation models also found significant variation in estimations of effacement and dilatation. Because of the possibility of inter-observer variation and inaccuracy (Clement 1994), where possible vaginal examinations should be carried out by the same midwife. Simkin and Ancheta (2000) suggest there are six ways to progress in labour: the cervix moves from a posterior to an anterior position; the cervix ripens or softens: the cervix effaces; the cervix dilates; the fetal head rotates, flexes and moulds; the fetus descends.

Monitoring the progress of labour, however, requires more than the assessment of cervical dilatation and uterine contractions. Progress must be considered in the context of the woman's total well-being. As Crowther et al (1995 p 225) point out 'A dilatation rate of 1cm/hour in a woman who is having strong contractions and is in severe distress is far more worrying than a rate of 0.3cm/hour in a woman who is comfortable, walking around, drinking cups of tea and chatting with her companions'. Midwives should give weight to their other skills in determining the progress of labour such as abdominal palpation and their knowledge of women's behaviour at different stages of labour (Baker & Kenner 1993; McKay & Roberts 1990). Frequent vaginal examinations in the second stage may also 'reinforce cultural messages about women's powerlessness' and imply that 'the woman's body cannot be trusted to work right' (Bergstrom et al 1992)

The process of care in labour usually demands a focus on the woman's genitalia, with exposure to people that are strangers (Devane 1996). Midwives have traditionally responded to the embarrassment of this situation by adopting ritualistic semi-sterile procedures and often using language which infantilises the woman. Such behaviour can now easily be recognised as inappropriate. Midwives should give consideration to the emotional and psychosexual aspects of any procedure and talk about these issues in a respectful way.

Most women do not like vaginal examinations: they can be experienced as painful (Bergstrom et al 1992) distressing and embarrassing (Devane 1996). They bring up issues of sexual intimacy, invasion of privacy and vulnerability (Warren 1999). They also carry a risk of infection (Seaward et al 1997).

Menage (1996) suggests that the physical pain, feelings of powerlessness, lack of information and an unsympathetic attitude by the midwife or the doctor may contribute to psychological trauma; she also points out that this may have medico-legal implications. The GMC receives complaints every year about improper or rough behaviour during intimate examinations (RCOG 1997)

Vaginal examinations must be considered within the context of the woman's individual experience of labour. Examinations carried out with sensitivity, in privacy by one midwife with whom the woman has a good relationship will be experienced as very different from brusque examinations from different care givers whom the woman hardly knows (Clement 1994)

There is no research-based information on which to make recommendations for the timing and frequency of vaginal examinations. It seems appropriate, therefore, to abandon arbitrary predetermined timing (Devane 1996) and to make sure that women are involved in decision making about timing and frequency. Warren (1999) recommends asking the question 'How can I justify this invasive interference?' before carrying out a vaginal examination. Potential change in care, resulting from examination findings, should also be discussed at this point (RCOG 1997, Bergstrom et al 1992).

As Enkin (1992) states, in considering these issues, "repeated vaginal examinations are an invasive intervention of as yet unproven value" and that "those who advocate its use thus have the responsibility to test their belief in an appropriately controlled trial".

Assessing Progress in Labour

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Rupturing Membranes

- **Amniotomy is not part of normal physiological labour** (RCM 1997). It should be reserved for women with abnormal labour progress (Fraser et al 1997).
- The intervention can cause an increase in pain which makes labour unmanageable (Fraser 1993; NCT 1989; Inch 1985). Any intervention that interferes with a woman's ability to cope in labour can have long term implications for her own well-being and her relationship with her baby (Robson & Kumar 1980; Oakley 1979)
- Amniotomy is associated with a reduction in labour duration of between 60 and 120 minutes, more commonly in nulliparous women (Johnson et al 1997). More analgesia and more fetal heart abnormalities are reported with early amniotomy (Goffnet et al 1997).
- The decision to rupture membranes should only be taken in direct consultation with the woman, when the evidence is discussed and the intervention is not minimalised. This discussion should form part of the birth plan and not take place just before or during a vaginal examination.

Rupturing Membranes

The rupturing of membranes in labour is a common practice. Although an invasive procedure, many midwives and obstetricians regard it as straightforward and even insignificant (Henderson 1990). It is a component of the model of actively managed labour, which has been so influential on labour ward practice since O'Driscoll's original work of the late 1960's. The theory on amniotomy here was that it was a means of 'improving the forces of labour' (Olah & Gee 1996) and that labour would be shortened. Other justifications of the intervention are the desire to see the colour of the liquor and to facilitate the application of a fetal scalp electrode.

Fraser et al's meta-analysis (1997) of the effect of amniotomy has the following conclusions. It is associated with a reduction in labour of between 60 and 120 minutes (more commonly in nulliparous women (Johnson et al 1997)). Early amniotomy does not reduce the risk of caesarian delivery. There was an association between early amniotomy and caesarian delivery for fetal distress noted in one large trial. The recommendation from this, therefore, is that rupturing of membranes should only be considered for women with 'abnormal labour progress'. Goffnet et al's (1997) secondary analysis of a multicentred randomised trial (Fraser et al 1993), reported an increase in the hourly rate of severe variable fetal heart rate decelerations in the amniotomy group.

The randomised controlled trials of this intervention seem to focus on **early** amniotomy. What stage of labour 'early' is implying is not always clear. It is interesting, however, that in The UK Amniotomy Group's large multicentred trial (1994), the mean dilatation that was described as early was 5.1cm and the late was 6.7cm. A distinction of 1.6 cm cervical dilatation might be considered unclear to many practitioners. This lack of good definition of 'early' is a problem to the collected body of research; Rosen and Peisner's trial (1987) concluded that cervical dilatation at the time of membrane rupture appeared to be the most important factor associated with the length of labour. There is little research comparing elective amniotomy with an intention to leave membranes intact until the second stage: only one study reports this intention (Barrett 1992). In this trial 46% of the women allocated to non-intervention had their membranes ruptured at some stage. This reflects methodological problems as commented on by Fraser (1993): "Once the treatment group is revealed, the preference of the obstetrician, midwife or mother for one of the other treatments may influence the probability of occurrence of the outcome of interest".

The **increase in pain** following rupture of membranes is widely discussed (Barrett et al 1992; Lupton 1992; Inch 1985). A large study of 3000 women's opinions of the intervention was conducted by the National Childbirth Trust (1989). Two thirds of the women in this study reported an increase in rate, strength and pain of contractions following membrane rupture: they found these contractions more difficult to cope with, needed more analgesia and felt that the physiology of labour was disturbed. This survey questions whether women want shorter and more painful labour.

As Flint (1990) suggests, any intervention that interferes with women's ability to cope in labour has huge implications :it can destroy feelings of achievement and self esteem. Women who feel they have coped have more confidence in their mothering abilities than women who feel traumatised by the birth process (Oakley 1979). Specifically disturbing to this aspect of common labour ward practice is the data of Kumar & Robson (1980) reporting an association between the delayed onset of maternal affection and procedures in labour, such as artificial rupture of the membranes.

One of the most challenging issues to midwives' practice in this area comes from a small descriptive study by Henderson (1984), which found there was no discussion with the woman about the intervention before rupturing of membranes. This is a finding which echoes Kirkham's (1983) study of labour ward interaction where, in most instances, women were not consulted, but just told what was going to be done. Although it would appear that the quality of information given to women has improved within a working culture that considers informed consent and choice (Coulter 1998, Harrison 1997), the history of this frequently unconsented intervention must be remembered. The decision to rupture the membranes should only be taken in direct consultation with the woman, when the evidence is discussed and the intervention is not minimalised. This discussion should not take place just before or during a vaginal examination. The first intervention in labour, often leads to another (Donald 1979) and in this case the obvious one is the need for more analgesia.

This review suggests that amniotomy should not be considered as a routine part of 'normal' labour (RCM 1997). For the woman who would like a shorter labour, the disadvantages of both narcotic and epidural analgesia should be considered in the discussion.

Rupturing Membranes
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Positions for Labour and Birth

- There are significant advantages to assuming an upright position in labour (MIDIRS and the NHS Centre for Reviews and Dissemination 1999) and birth (Nikodem 1995). However, lying down continues to remain the most common position.
- **Women often 'choose' to do what is expected of them and the most common image of the labouring woman is 'on the bed'. Midwives therefore need to be proactive in demonstrating and encouraging different positions in labour.**
- The environment is key to freedom of movement. There should be a variety of furniture and props available in the room that encourage women to try different positions.
- The use of electronic fetal monitoring, intravenous infusions and different methods of analgesia will all affect a woman's mobility. Women need to be aware of this in order for them to make an informed choice of their use (MIDIRS and The NHS Centre for Reviews and Dissemination 1999).

Positions For Labour and Birth

There are several theoretical physiological advantages for being upright during labour (MIDIRS and The NHS Centre for Reviews and Dissemination 1999). These include gravity; lessened risk of aorto-caval compression; improved alignment of the fetus; stronger more efficient uterine contractions; and increased pelvic outlet in squatting and kneeling positions (Gardosi, Sylvester & Lynch 1989)

Upright position in the first stage is any position that avoids lying flat and may include ambulation. An upright position in the second stage includes sitting more than 45 degrees from the horizontal, squatting, kneeling and being on hands and knees. Recumbent positions include supine, lateral, lithotomy and semi-recumbent with wedges. (MIDIRS and The NHS Centre for Reviews and Dissemination 1999)

An upright position in the first stage can mean less severe pain (Hemminki & Saarikoski 1983) and reduced length of first stage. (Roberts, Mendez-Bauer & Wodell 1983).

In some studies it was observed that women changed positions frequently in the first half of the first stage (Gardosi et al 1989) but preferred to recline in the bed as labour progressed (Hemminki & Saarikoski 1983, Roberts et al 1983)

A systematic review of trials (Nikodem 1995) shows that women being upright during the second stage results in less discomfort; less intolerable pain; shorter second stage; bearing down being less difficult; fewer assisted and caesarian births; fewer perineal and vaginal tears; more labial tears; more women with a blood loss over 500mls (in women using birth chairs and stools); fewer postpartum wound infections.

On the whole women will 'choose' to do what they think is expected of them and they are usually informed by the most common image of the labouring women as lying down. Midwives will need to be proactive in demonstrating and encouraging different positions. The labour environment is key to women's ability to try different positions (MIDIRS and The NHS Centre for Reviews and Dissemination 1999). There should be appropriate furniture and props readily available: bean bags, mattresses, chairs and stools.

The use of electronic fetal monitoring, intravenous infusions and different methods of analgesia will all affect women's mobility. Women need to be aware of this in order for them to make an informed choice (MIDIRS and The NHS Centre for Reviews and Dissemination 1999).

Positions for Labour and Birth
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Nutrition in Labour

- There is insufficient evidence to support the practice of starving women in labour in order to lessen the risk of gastric acid aspiration (Baker 1996; Johnson et al 1989).
- Fasting may result in dehydration and acidosis which, combined with starvation and fatigue, can increase the need for active management and instrumental delivery (Broach & Newton 1988).
- Eating and drinking can allow a woman to feel normal and healthy (Frye 1994). Denial of food can be seen as authoritarian and intimidating and increase feelings of apprehension (Simkin 1986).
- The majority of sources agree that mild maternal ketosis is a physiological part of normal labour and might even be beneficial (Anderson 1998)
- Narcotics appear to be the major factor in delaying stomach emptying (Holdsworth 1978; Nimmo et al 1975). If these are used, then women should stop eating and drinking be reduced to sips of water.
- While there are no risk factors suggesting the need for general anaesthesia, women who wish to eat and drink in labour should be encouraged to do so. The diet offered should be light, nutritious and easily absorbable (Grant 1990).

Nutrition in Labour

The practice of restricted intake, and in some cases, fasting during labour has become commonplace in many hospitals. The explanation for this is the concern that eating and drinking in labour increases the risk of regurgitation and aspiration of the stomach contents if there is need for general anaesthesia. The most specific worry is of acidic gastric aspiration (Mendelson's syndrome). The absolute level of the risk of aspiration has always been low and it is clear that aspiration of gastric contents now plays a very small role in both absolute and relative terms as a cause of maternal death (Johnson et al 1989). It has been frequently noted however that anaesthetic technique is the major reason that deaths from aspiration still occur (Morgan 1986, Crawford 1986, Ludka 1987, DoH 1991). Johnson et al (p 828) state that most cases of aspiration "could be prevented by a combination of decreasing the frequency of procedures that require anaesthesia, the use of regional anaesthesia wherever feasible, and meticulous attention to safe anaesthetic technique".

No presently known practices can ensure that a labouring woman's stomach is empty, or that her gastric juices will have a pH greater than 2.5 (Johnson et al 1989). Fasting during labour does not guarantee an empty stomach should general anaesthesia become necessary: no time interval since the last meal can ensure a stomach volume of less than 100 ml. Nor can fasting during labour be relied on to lower the acidity of the gastric contents (Roberts & Shirley 1976).

Broach and Newton (1988), commenting on the fact that the delay in gastric emptying during spontaneous labour at term in low-risk women has not been demonstrated, state that it is the administration of narcotics that appears to be the major factor in delaying stomach emptying (Nimmo et al 1975, Holdsworth 1978). This would suggest that either other forms of analgesia should be considered or that oral intake of food should cease when narcotics are given (Grant 1990).

Fasting may result in dehydration and acidosis. Recently it has been argued that ketosis is a normal physiological response in labour (Anderson 1998). However, ketosis combined with starvation and fatigue, can lead to inefficient uterine action (Broach & Newton 1988) increase the need for active management (Foulkes & Dumoulin 1985) and lead to instrumental delivery (Grant 1990). There has been little published research into allowing nutrition in labour. A frequently cited study however, is that reported by Ludka (1987) from the North Central Bronx Hospital in New York. This was a hospital where women were allowed to eat and drink throughout normal labour as desired. In 10 years and throughout 20,000 births not one case of aspiration was noted. For a 6 month period the liberal practice was discontinued. During this time they had one case of maternal aspiration in a woman who had fasted for 36 hours: instrumental delivery increased by 35%; caesarian section increased by 38%; the need for intensive care of newborns increased by 69% and the chemical stimulation of labour increased fivefold. It is also important to consider that the withholding food and drink in labour is very much a hospital practice: when women opt for home confinement there is not such restriction (Baker 1996). As Odent (1994) points out, in the Netherlands where there is a high level of home delivery, caesarian section rate is below 10% and maternal mortality less than 1:10,000.

As Baker (1996) suggests, there is insufficient evidence to support the practice of starving women in labour. While there are no risk factors suggesting the need for general anaesthesia, women who wish to eat and drink in labour should be encouraged to do so. Frye (1994) says that eating in labour allows the woman to feel normal and healthy, it keeps her energy up and can minimise complications caused by maternal exhaustion. The psycho-social aspect of fasting should also be considered. The provision of food and drink can be reassuring and comforting : denial can be seen as authoritarian and intimidating and may increase feelings of apprehension. Simkin's survey into new mother's assessments of emotional stress associated with obstetric interventions found that 57% of those whose oral fluids were restricted and 27% of those whose oral intake of food was restricted reported these practices to be 'moderately' or 'most' stressful (in Broach & Newton 1988)

The desire to eat, however, would appear to be most common in early labour. As Odent (1994) points out, women do not usually wish to eat in active labour and it is inappropriate to be encouraging them to do so, against their natural instincts. This is another area in which we should be responding to what the woman feels and needs and allowing her to make the decision and take control (Department of Health 1993).

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Second Stage of Labour

- There are many signals from the mother about the transition into the active phase of the second stage of labour: change in expression on the face, words, action (McKay, Barrows and Roberts 1990, Enkin et al 1995, Bergstrom et al 1997). However, if the progress of labour gives reason to believe that the cervix is not fully dilated, a vaginal examination should be carried out (Enkin et al 1995)
- There is no good evidence to justify arbitrary time limits on the length of the second stage. While maternal and fetal conditions are satisfactory and there is clear progress with the descent of the presenting part, there are no grounds for intervention (Paterson, Saunders & Wadsworth 1992, Watson 1994). Saunders et al (1992), however, highlight an association between maternal morbidity and a second stage of 3 hours. This increase in risk needs to be weighed against the risk of instrumental delivery.
- There is no evidence to suggest that women need to be taught when and how to push (Sleep 1990) and the practice of sustained breath holding in directed pushing may be harmful (Thomson 1993). **Women should therefore be given confidence in following their own urge to push.**
- The 'no noise' rule sometimes invoked in hospital is neither helpful to labouring women, or their caregivers: 'a woman's sounds in labour should be expected, supported and explained' (McKay, Barrows and Roberts 1990)
- The recumbent position tends to lengthen labour (MIDIRS and the NHS Centre for Reviews and Dissemination 1999), to reduce the incidence of spontaneous birth and increase the incidence of abnormal fetal heart rate patterns (Enkin et al 1995). **Women should be encouraged to combine spontaneous pushing with upright postures.**
- The experience of women with epidural analgesia is clearly different: midwives should follow multidisciplinary unit guidelines here.

Second stage

Kitzinger and Simkin (1991) describe some common features of the latent phase of the second stage as being a decrease in contractions and/or backache and the mother becoming quiet, uncommunicative or making different sounds. There are many signals from the mother about the transition into the active phase: change in expression on the face, words, action (Enkin et al 1995 p 229). Clear signs of having moved into the active phase are breathing hard, powerful sounds, and an overwhelming urge to push. However, if the progress of labour gives reason to believe that the cervix is not fully dilated, a vaginal examination should be carried out (Enkin et al 1995)

There is no good evidence to justify the imposition of arbitrary time limits on the length of the 2nd stage (Enkin et al 1995). The adverse outcomes attributed to “prolonged” second stage are consequent upon underlying causative factors and not on the absolute duration (Sleep 1990). While maternal and fetal conditions are satisfactory and there is evidence that progress is occurring with the descent of the presenting part there are no grounds for intervention (Kuo Y-C, Chen C-P, Wang K 1996, Paterson et al 1992, Watson 1994). Saunders et al (1992), in their retrospective analysis of 25,069 births, conclude that although second stage labours of up to 3 hours do not seem to carry undue risk to the fetus, women who remain in the second stage for this length of time suffer a higher rate of early morbidity (postpartum haemorrhage and infection) though this effect is less marked in women who deliver spontaneously. They suggest that “the modest increase in risk might be considered acceptable if a larger proportion of women are able to give birth spontaneously as a result” (Saunders et al 1992).

There is no good evidence to justify the use of directed pushing using the Valsalva manoeuvre (‘take a deep breath in, hold it and push’) and there are many papers which consider fetal compromise associated with this practice because of the reduction in maternal arterial pressure and the oxygenation of maternal blood (Thomson 1993). In her small study Thomson (1995) observed that women do not instinctively take a deep breath, they do not start expulsive effort with the commencement of the contraction and both open and closed glottis pushing are used. There are no data to suggest that women need to be taught how and when to push (Sleep 1990). The midwife should encourage the woman to follow the directives of her own body rather than to seek direction from a caregiver (Grant 1987). McKay, Barrows and Roberts (1990) study of women’s views of the second stage found that caregivers’ instructions commonly did not seem to be in synchrony with physiological responses. This study primarily investigated maternal sounds made during labour and concluded that the ‘no noise’ rule often invoked in hospital is neither helpful to labouring women, or their caregivers and that a ‘woman’s sounds in labour should be expected, supported and explained, and when they indicate that help is needed, it should be offered.’

The experience of women with epidurals in labour is clearly different :midwives should follow the specific guidelines here.

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Care of the perineum

- Antenatal perineal massage is an effective approach to increasing the chance of an intact perineum (Labrecque et al 1999 , Shipman et al 1997) and in reducing instrumental deliveries (Shipman et al 1997).
- There is no evidence to support the practices of “ironing out” or massaging the perineum during birth (Enkin et al 1995). Traditional practices such as flexion and extension of the head have recently been challenged (Myrfield, Brook & Creedy 1997).
- Mcandlish et al (1998) compared two methods of management of the perineum: ‘hands on’ and ‘hands poised’. The only significant difference in outcome was more mild pain at 10 days in the ‘hands poised’ group. The use of either should therefore reflect both the midwife’s skill and the informed choice of the woman.
- There is no evidence of short term or long term maternal benefit to support the use of liberal episiotomy (Carroli et al 1997). Like any surgical procedure, episiotomy carries a number of risks (Enkin et al 1995). Women report increased pain and discomfort after episiotomy that interferes with the experience of early motherhood (Kitzinger & Walters 1981). The practice should therefore be restricted mainly to fetal indications (Sleep 1990).
- Episiotomy is strongly associated with a higher frequency of serious trauma (third and fourth degree lacerations) (Renfrew et al 1998, Albers et al 1999)

Care of the perineum

There have been two useful randomised controlled trials investigating the effect of antenatal perineal massage. Shipman et al (1997) found a significant benefit of such massage in reducing second and third degree tears, episiotomies and instrumental deliveries. Analysis by mothers' age showed a much larger benefit in those aged 30 and over. Labreque et al (1999) reported a significant increase in intact perineums for women with first vaginal delivery, but not for women with a previous vaginal birth.

The literature provides little detail of what constitutes good management at birth. Mcandlish et al (1998) compared two methods of management. These were 'hands on', in which the midwife's hands put pressure on the baby's head and support ('guard') the perineum, lateral flexion then being used to facilitate delivery of the shoulders; and 'hands poised', in which the midwife keeps her hands poised, not touching the perineum or head and allowing spontaneous delivery of the shoulders. The results indicate more mild perineal pain at 10 days in the 'hands poised' group and no other statistically significant outcomes. As Elbourne (1998) says, the results of this trial suggest that units that substantially practice 'hands-on' should continue in this practice unless midwives are skilled with the hands poised technique and women choose to have it. After considerable discussion about practice in our unit, it appears that midwives are not accustomed to using either of these techniques, and use some mixture of both. The value of this trial to our clinical practice is therefore questionable.

There is no evidence to support the practices of 'ironing out' or massaging the perineum during birth (Enkin 1995). The traditions of flexion and extension of the head have recently been challenged in a critical analysis of the scientific principles underpinning such practice (Myrfield, Brook & Creedy 1997). These authors suggest that such techniques may increase the risk of perineal trauma.

The latest systematic review of episiotomy (Carroli G, Belizan J and Stamp G 1997) recommends a policy of restrictive use. The suggested maternal benefits of liberal use have never been proven (Enkin et al 1995): the procedure, therefore, should be used mainly for fetal indications (Sleep 1990). Episiotomy is an example of an intervention which was introduced without accurate assessment and evaluation (Graham 1997) and without considering women's views (Kitzinger 1990). The NCT study (1981) of 1795 women, found that it caused pain at and following delivery, which could interfere with the initial relationship with her baby and her sexual activity. Two recent systematic reviews (Renfrew et al 1998, Albers et al 1999) have found that episiotomy is strongly associated with a higher frequency of serious trauma (third and fourth degree lacerations)

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Third Stage

- Midwives should feel competent in both active and physiological management

Active management - includes a prophylactic oxytocic drug, early clamping and cutting of the cord and controlled cord traction (Gyte 1994).

Physiological management is where there is no prophylactic oxytocic drug, no cord clamping until after placental delivery and no cord traction but the use of maternal effort, guided by gravity or assisted by the baby being put to the breast (Gyte 1994)

- Active management is superior to physiological in terms of blood loss (Prendiville et al 1997, Rogers et al 1998). Adverse effects of active management are increase in nausea, vomiting, headache and hypertension (Prendiville et al). Syntometrine is associated with a significantly higher incidence of nausea and vomiting than syntocinon and a small reduction in the incidence of postpartum haemorrhage. However there is no difference in the incidence of major haemorrhage (greater than 1000ml) when comparing the two drugs (McDonald et al 1999)
- **Physiological management is only appropriate for women with low risk of postpartum haemorrhage and who have had a normal physiological labour.** Any circumstances which may inhibit the uterus to function normally such as syntocinon, large doses of narcotics, epidurals and early clamping and cutting of the cord should be seen as contraindications to a physiological third stage (Inch 1988)
- If physiological management is attempted but intervention needed, then management must proceed actively. If the placenta is retained after one hour, active management should be considered (Prendiville et al 1988).
- When physiological management is offered to women as a reasonable option, many will choose it (Rogers & Wood 1999). Physiological management can be seen as the logical ending to a normal physiological labour (RCM 1997)

Third Stage of Labour

Gyte (1994), in her useful evaluation of the meta-analyses on the effects of active management of the third stage, identifies third stage management into three broad categories.

1. **Active management** which is usually taken to include a prophylactic oxytocic drug, early clamping and cutting of the cord and controlled cord traction.
2. **Physiological (expectant or conservative) management** where there is no prophylactic oxytocic drug, no cord clamping until after placental delivery, no cord traction but the use of maternal effort guided by gravity.
3. **Piecemeal approaches.** These cover many variations of practice where there is a mixture of active and physiological e.g. an oxytocic drug, no early clamping and cutting of the cord and controlled cord traction.

The latest systematic review (Prendiville, Elbourne and McDonald 1997) states that active management is superior to physiological in terms of blood loss, post partum anaemia and the need for blood transfusion during the puerperium. Adverse effects of active management are an increase in nausea, vomiting, headache and hypertension. Prendiville et al conclude that active management should be the management of choice "in a maternity hospital where active management is standard practice" but they say that "implications are less clear in maternity units where physiological management is the usual practice". Syntometrine is associated with a significantly higher incidence of nausea and vomiting than syntocinon and a small reduction in the incidence of postpartum haemorrhage. However there is no difference in the incidence of major haemorrhage (greater than 1000ml) when comparing the two drugs (McDonald et al 1999)

There has been considerable critique of trials in the Prendiville (1997) review. Gyte (1994) points to the fact that the trials used 'piecemeal' approaches to the management of the third stage. In one of the trials ((Prendiville et al 1988), 53% of the women allocated to physiological management actually received some component of active management. An interim analysis of this trial showed that a disproportionate number of haemorrhages seemed to have occurred in cases in which physiological management, though randomly allocated, had not been possible (for example the cord had been cut early) (Prendiville et al 1988). The trials in the review (Prendiville et al 1997) took place in units where active management was the routine: as Begley (1990) comments, it can take some time for midwives to gain or regain skills of physiological management.

The most recent randomised controlled trial into management of the third stage (Rogers et al 1998) took place at Hinchingsbrooke Hospital where physiological third stages has been a common practice. The results of this trial confirm the conclusions from Prendiville et al's (1997) systematic review. The primary outcome measured was the incidence of PPH, defined as a blood loss of 500ml or greater, estimated by the midwife. However, despite the midwives' experience in physiological management only 64% of the women allocated to the physiological group actually received allocated management, as compared to 93% in the active group. This is of significant interest, as for those women who ended up with a mixture of managements, the PPH rate was 21%, compared with 8% for those in the full active management group, and 11% for those in the full physiological management group.

There were 16 other outcomes measure, many of which are useful to women in making informed choice. Women in the expectant management group were 5 times more likely to receive a blood transfusion; there was a raised incidence of nausea vomiting and headaches in the active group; babies in the physiological group were on average 67 gm heavier, probably due to the extra blood received before clamping (this process could be significant in the prevention of iron deficiency anaemia (Pisacane 1996)) ; there was no difference between the two groups in feelings of tiredness, or the number of days breastfeeding; women were on the whole satisfied with whichever management they had. It is important, as always, to consider the women who declined to take part. 1512 women took part in the study, but there were also 976 eligible women who were not happy to be randomised to different methods of management. Of this group, 52% chose physiological management. As Rogers and Wood (1999) point out there is a clear implication for practice here, that when physiological management is offered to women as a reasonable option, many will choose it.

All of the studies found a longer third stage in the physiological groups. Prendiville et al (1988) found a median length of 5 minutes in the active group compared to 15 minutes in the physiological. Rogers et al (1998) found these means as 8 minutes in the active group and 15 minutes in the physiological. The importance of this factor to both women and midwives is demonstrated in the study of their views following the Bristol Trial (Harding, Elbourne & Prendiville 1989) where both groups commented adversely on it. These comments, of course, have to be viewed within the context of the Bristol trial.

Inch (1988) states that **physiological management is only appropriate for women with low risk of post-partum haemorrhage and who have had a 'natural' labour'. Any circumstances which may inhibit the uterus to function normally such as syntocinon , large doses of narcotics, epidurals and anything necessitating the early clamping and cutting of the cord should be seen as contraindications to a physiological third stage.** As Inch suggests (in Gyte 1991) it is only this group of women that should be studied in trials. Although the Bristol trial did not attempt to use such exclusion criteria, both the Brighton (Thilaganathan et al 1993) and the Dublin trial (Begley 1989) (used in the review of Prendiville et al 1997) used samples of women "deemed to be at low risk of post partum haemorrhage". Both these studies came out with very different conclusions to Bristol. Thilaganathan et al (1993) found no difference in terms of blood loss between the two different managements and Begley (1989) found an increase in blood loss but no serious complications following PPH in 'low risk women'. Other adverse factors associated with the active management in the Dublin trial, were a higher incidence of manual removal of the placenta and higher incidence of after pains requiring IM analgesia.

As Rogers and Wood (1999) suggest, the evidence should be presented in an unbiased way so that women can weigh it up and make the decision according to their own beliefs and values. Physiological management can be seen as the logical ending to a normal physiological labour (RCM 1997).

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Suturing the perineum

- Green et al's (1998) large prospective study of women's experience of childbirth, found that suturing is a major and sometimes traumatic event for women. 12% of the women described it as 'the worst thing about their birth'
- It is important that suturing be carried out quickly and skilfully with adequate pain relief (Green et al 1998)
- There is evidence that women prefer to be sutured by midwives: it can mean a reduction in waiting time (Ho 1985) and a more sympathetic approach (Hulme & Greenshields 1993)
- The recent Ipswich Childbirth Study (1998) found that women in the two-stage repair group (leaving the skin unsutured), had less pain and dyspareunia at three months postpartum and that there were no apparent disadvantages. It will, however, be necessary for midwives to have re-training in this technique.
- There is little research to date on the non-suturing of second degree tears. Midwives should clearly discuss the lack of evidence, and the theory of the healing process, when considering this with women (Lewis 1997)
- Clement & Reed's (1999) small follow-up study of unsutured tears, offers a psychological and social point of view, as well as a physical one, which could be useful to helping women make an informed decision

Suturing the Perineum

Green et al's (1998) large prospective study (*n* 710) of women's experiences of childbirth found that suturing is a major, and sometimes traumatic event for women. The process, and the later consequences, were discussed by women as a matter of great concern. The pain of suturing was a particular issue for two thirds of the sample and 12% of women found suturing the worst thing about their birth. The high incidence (19%) of women describing 'a lot of pain' during stitching seems surprising, given the use of anaesthesia, and rather implies that the anaesthesia was inadequate, or that staff were not waiting for it to take effect. Some women complained about the baby being taken away during the process and about the lack of information given about the degree of the tear or the number of stitches they had. The most common complaint, however, was the delay in being stitched: such delays were not just a cause of significant physical discomfort but also anxiety producing and meant that the woman could not relax.

There is to date no good evidence to clearly justify the non-suturing of second degree tears. Lewis (1997) argues that the contemporary change in practice is not justified and is in contradiction to current understanding of the healing process. He accentuates the need for midwives to discuss the lack of evidence, and the reasons why suturing is done. Clement and Reed's (1999) recent long-term follow-up study of women of 107 women with unsutured perineal tears found that the vast majority (*n*= 98) felt positive about not having had stitches. 2 women had negative views and 7 had mixed views. They make a useful comparison of the morbidity of women in their study and morbidity in general postnatal/adult populations. The comparison suggests that the women in their sample reported broadly similar morbidity. As Clement and Reed argue, in the absence of evidence from randomised trials, the findings of this study, which offers a psychological and social point of view as well as a physical one, could be useful to helping women make an informed decision.

The repair of the perineum is an important part of the continuing care of a woman during labour and delivery. The trust and support that is developed between the woman and the midwife can make the experience less traumatic. The permanent presence of midwives, trained and continually developing expertise in perineal repair, minimises the problems associated with the rotation of inexperienced junior medical staff (Draper & Newell 1996). There is also evidence to suggest that women prefer to be sutured by midwives. It can mean a reduction in waiting time (Ho 1985) and a more sympathetic approach (Hulme & Greenshields 1993).

The current evidence indicates that absorbable sutures result in less short-term and long-term pain (Draper & Newell 1996) and are less likely to require resuturing (Enkin et al 1995). The use of polyglycolic acid sutures (Dexon, Vicryl) appears to cause less pain in the early postpartum period than chromic catgut sutures (Enkin 1995). There appear to be no long term differences between the two types but trials to date have not followed women for long enough post repair (Draper & Newell).

Enkin et al recommend the continuous 'locking' stitch to prevent 'concertina' of the vagina. The deeper perineal tissues are usually closed with interrupted sutures although sometimes continuous running stitches are used. Reviews of controlled trials suggest that continuous subcuticular suturing of the skin is associated with less pain (Brownlee 1994, Enkin et al 1995). The recent Ipswich Childbirth Study (1998) compared two stage perineal repair, leaving the skin unsutured, with three stage repair including skin closure with interrupted or subcuticular sutures. The findings were that the women in the two-stage repair group had less pain and dyspareunia at three months postpartum and that there were no apparent disadvantages. It will, however, be necessary for midwives to have re-training in this technique.

Suturing the perineum

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Immediate Care of the Newborn

- Kindness and respect of the newborn baby should involve gentle handling and lack of excessive noise (Tyson 1992). There is no evidence of adverse effects of Leboyer (1975) style deliveries: dimmed lights, soft voices, gentle handling, lack of activity.
- Babies can lose heat quite dramatically after birth (Enkin et al 1995). They should be dried with pre-warmed towels and placed in contact with the mother's skin (Fardig 1980, Christensson et al 1992).
- Early mother-baby contact should be encouraged in an unhurried environment (Enkin et al 1995).
- **Skin to skin contact and the opportunity to suckle within the first half hour of birth are important to the initiation of breastfeeding (WHO 1998).** Such early contact also has a positive effect on the duration of breastfeeding at 2 to 3 months (Perez-Escamilla et al 1994).
- Routine delivery ward practice should not be allowed to interfere with the needs of the family to be together and the initiation of breast feeding.

Immediate care of the Newborn

There appears to have been little interest and therefore little research into the effects of the birth environment on the neonate. Leboyer (1975) however was influential in advocating efforts to minimise 'the shock of the newborn's first separation experiences': dimmed lights, soft voices, gentle handling, lack of activity. In an unpublished randomised trial (Sorrel-Jones 1983) found such positive 'transient' differences as increased infant alertness and increased maternal smiling and talking to the infant in the Leboyer group on the second day postpartum. As Tyson (1992) suggests, despite the lack of evidence to support Leboyer deliveries, the newborn should be treated with kindness and respect.

Routine suctioning of the newborn's oral and nasal passages has not been assessed in any clinical trial. Potential hazards include cardiac arrhythmias, laryngospasm, and pulmonary artery vasospasm. (Tyson 1992). If nasal and pharyngeal suction is used, care should be taken to minimize pharyngeal stimulation: suction bulbs rather than catheters should be used.

There is a large body of evidence supporting the need to keep all babies warm immediately after birth. Even vigorous newborns, exposed to cold delivery rooms, may have a marked drop in temperature and develop metabolic acidosis (Enkin et al 1995). Skin to skin contact with the mother can reduce this loss of temperature (Fardig 1980, Christensson et al 1992). Babies should be dried with pre-warmed towels and then placed in contact with the mother's skin. If the mother is unable to hold her baby, s/he should be wrapped in warmed towels and placed under a radiant warmer (Tyson 1992).

Overall, the evidence demonstrates that early mother-baby contact and early suckling have positive effects on breast-feeding success (Atkinson 1992, Perez-Escamilla R et al 1994, Renfrew and Lang 1997). There have also been studies that have found greater affectionate behaviour in mothers where there had been longer interaction in the early hours after delivery (Enkin et al 1995). Routine delivery ward practices should not be allowed to interfere with the needs of the family to be together and the initiation of breast feeding.

Immediate Care of the Newborn
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