

# ABC of labour care

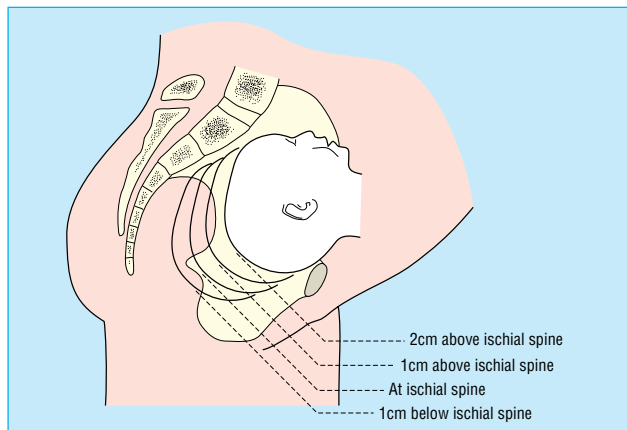
## Labour in special circumstances

Geoffrey Chamberlain, Philip Steer

About two thirds of labours are normal. In the rest, increased surveillance—and sometimes action—is required to prevent maternal or fetal problems. All primary care givers need to be able to recognise such variations and either take appropriate action or refer to an obstetrician for advice and assistance. This may require transfer to hospital if the woman is in labour at home or in a freestanding general practitioner unit. A paediatrician should be called to attend if any problems are anticipated.

### Slow progress (delay) in labour

The fundamental process of labour is progressive dilatation of the cervix. The woman herself usually diagnoses labour when she has recurrent painful uterine contractions. However, such contractions may be ripening the cervix (the latent phase) before rapid cervical dilatation (the active phase) occurs. Midwives and doctors judge progress by assessing the descent of the fetal presenting part on abdominal palpation and advancement of the fetus on vaginal examination (position of the presenting part relative to the ischial spines). These may be imprecise measurements, but a series of careful assessments by the same observer is usually informative.

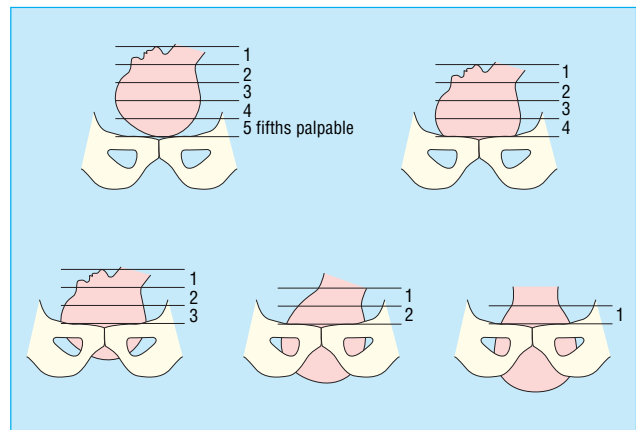


The concept of the fetal head descending through the pelvis in labour is checked by vaginal examination when the level of the presenting part is assessed against the level of the ischial spines (in centimetres) vertically

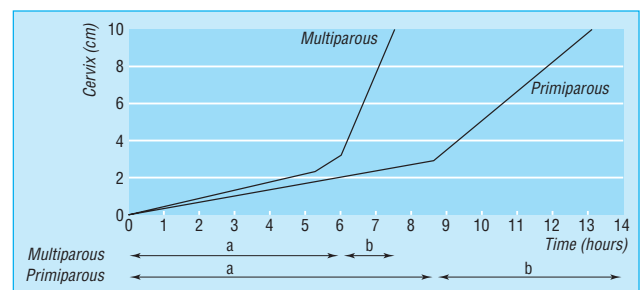
Labour is usually diagnosed by the professional when there are regular contractions or when the cervix has reached 3 cm dilatation in the presence of contractions. At this point, the recording of details on a partogram is often started. Intervention to accelerate labour in the latent phase is not associated with an improvement in outcome, but pain relief with an epidural and augmentation of labour are sometimes necessary to prevent the woman becoming exhausted and demoralised.

The woman should not be left alone in labour; usually her partner is there, and the midwife should be constantly available if not actually in the room. Adequate pain relief should be given

**The commonest problem in childbirth is a labour that is progressing slowly**



Descent of the fetal head into the pelvis is checked by abdominal examination when the head is imagined in segments of one fifth. Engagement—when the maximum diameter of the fetal head has entered the pelvis—corresponds with only two fifths of the head being palpable through the abdomen



Latent (a) and active (b) phase of labour in a multiparous and a primiparous woman, as shown on partogram

### Information conveyed on a partogram

- Fetal heart rate—by intermittent auscultation or continuous fetal heart rate monitoring
- Cervicogram—a record of cervical dilatation and fetal head descent
- Uterine contractions—quantification of frequency, strength, and duration
- Amniotic fluid (if the membranes are ruptured)—state of fluid, any meconium
- Maternal urine production—checked for ketones and protein
- Drugs given—analgesics, oxytocics
- Maternal blood pressure, pulse, and temperature

(see earlier article). It used to be recommended that women should be starved during labour, but such restrictions are now considered unnecessary if progress is normal and there is no significant risk of a caesarean section. Fluids and a light diet are allowed.

The rate of cervical dilatation in the active phase at which augmentation of labour is indicated is controversial. In the 1960s through to the early 1980s O'Driscoll and colleagues suggested that any nulliparous woman with a rate of cervical dilatation below the average (1 cm/h) should be augmented. Thus active management would be used in half of women in their first pregnancies; few multiparous women progress this slowly. Most obstetricians in Britain are now more conservative, and 0.5 cm/h is commonly taken as the cut off. Usually the first step in augmentation is to rupture the amniotic membranes; if this is not followed by a speedy labour intravenous oxytocin is given to stimulate contractions. Careful clinical monitoring is needed to ensure that contractions do not exceed one every two minutes, or fetal hypoxia may result from restriction of the maternal afferent placental blood flow.

When the progress of labour is so slow (despite oxytocic stimulation) that the woman is becoming exhausted and the fetus at risk of hypoxia, a caesarean section is the likely solution. An individual decision is taken by each woman on the recommendation of her obstetrician. A caesarean section cannot be performed without the mother's specific consent, except when she is mentally incompetent and then the decision must be made by a court.

## Cephalopelvic disproportion

Disparity between the size of the fetus and the mother's pelvis is uncommon in Britain, but it is still a major problem in the developing world.

The disparity may be absolute or relative. Absolute disparity occurs when there is no possibility of vaginal delivery; in relative disparity, the baby may be large, but if the head is well flexed and uterine contractions are good, delivery can be achieved after a long, hard labour.

### Some causes of absolute disproportion

- A very big baby (> 5 kg birth weight)
- Fetal hydrocephalus
- Congenitally abnormal pelvis where the sacral alae are missing
- Pelvis that has been damaged by trauma
- Pelvis contracted after oostemalacia in youth

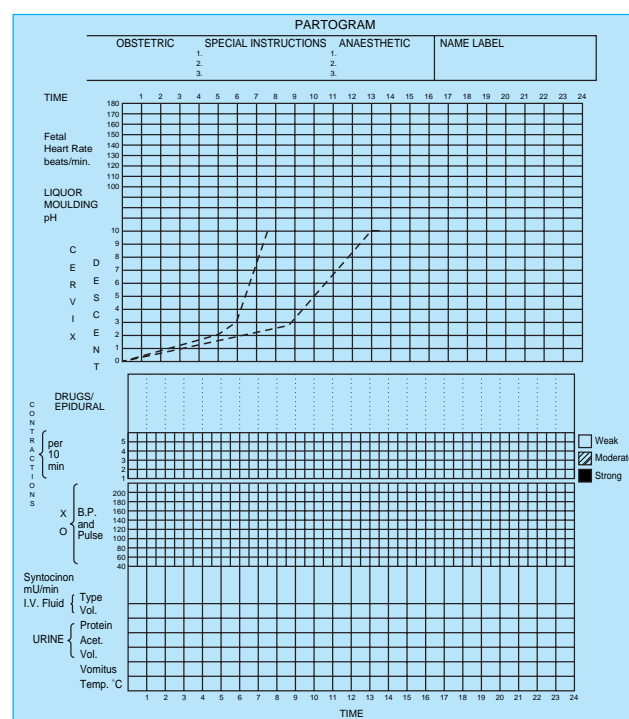
If in late pregnancy in a nulliparous woman the fetal head is not engaged, and will not do so, suspicion should be aroused. The success of labour depends not only on pelvic size but also on the compliance of the soft tissues, the efficiency of the uterine contractions, the ability of the fetal head to mould, and the position it takes up in labour. Most women are now recommended to have a trial of labour unless they have major pelvic problems. If imaging before labour is necessary, computed tomography exposes the fetus to fewer x rays than do plain films (and magnetic resonance imaging to none) and is more accurate.

The phrase "trial of labour" is awesome but does warn the labour ward staff that cephalopelvic disproportion is suspected. Oxytocin should be used with caution, to avoid overstimulation of the uterus. A partogram is particularly valuable, and if the woman's progress lies to the right of the expected curve, a

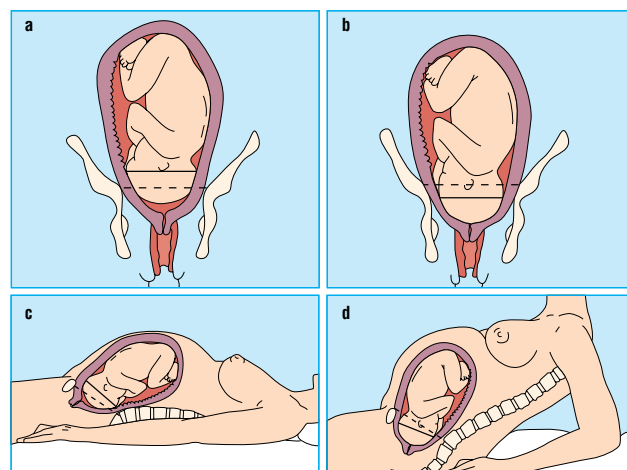
**Labour progress is different in primiparous and multiparous women and is best displayed graphically on a partogram, which shows average dilatation rates by parity**

### Percentages of women receiving "active management" of labour, promoted by O'Driscoll and colleagues in the 1960s, '70s, and '80s

	1968	1972	1980
Augmentation	11	55	41
Caesarean section in labour	1.2	1.8	1.2



Partogram: the broken lines show expected progress of cervical dilatation in multiparous (left) and primiparous (right) women



Engagement of fetal head. In (a) maximum diameter of head is above inlet of pelvis and head is not engaged; in (b) engagement has taken place (maximum diameter of head is below inlet of pelvis); in (c) head is not engaged; in (d) when mother sits up on her elbows, the head sinks in, an indication that the head will engage when labour starts

caesarean section should be considered while the woman is not exhausted and the fetus is not distressed. It is important to involve the woman and her partner as fully as possible in any decisions.

## Fulminating pre-eclampsia and eclampsia

Hypertension induced by pregnancy (a blood pressure of  $\geq 140/90$  mm Hg on two occasions at least 6 hours apart) is quite common, with an incidence of 5-12% depending on the population. Pre-eclampsia (hypertension with proteinuria of at least 300 mg/l) is less common, occurring in only 1-2%. If pre-eclampsia progresses into eclampsia, it becomes an acute emergency.

### Presenting symptoms in 442 women with fulminating pre-eclampsia

	%
Epigastric pain	65
Nausea and vomiting	36
Headache (mainly frontal)	31
Visual field disturbances	10
Bleeding	9
Jaundice	5

Symptoms of pre-eclampsia may include acute headache, visual disturbances, vomiting with upper abdominal pain as the liver peritoneum is stretched by oedema, or subcapsular haemorrhage. On examination, reflexes will be very brisk, even to the state of clonus; blood pressure may have risen even higher, and there will be increased proteinuria. In severe cases the HELLP (Haemolysis, Elevated Liver enzymes, and Low Platelets) syndrome may develop.

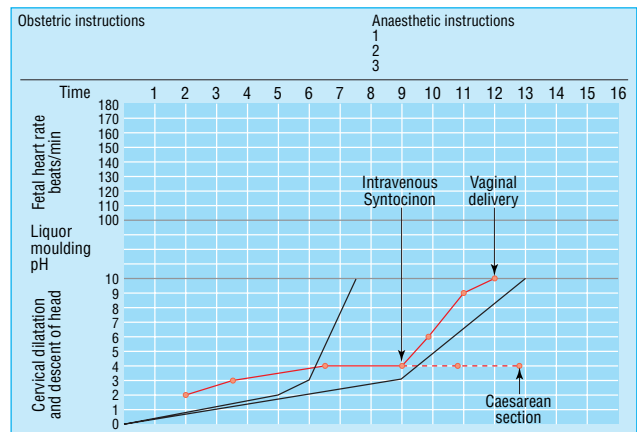
Currently, the drug of choice is magnesium sulphate, given by intravenous infusion. It substantially reduces the risk of fitting, reduces blood pressure, and relaxes the uterus. Hydralazine is sometimes needed to reduce the arterial blood pressure further if the magnesium sulphate alone is not sufficient, but it is not necessary to reduce the blood pressure below 140/90 mm Hg; indeed, doing so may compromise placental perfusion.

## Women with cardiac disease

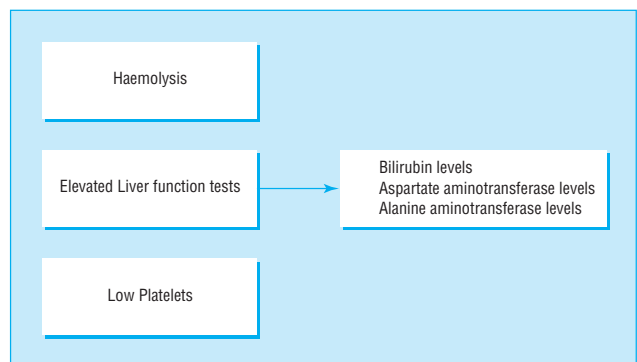
Rheumatic fever as a cause of heart valve damage has greatly decreased in Britain over the past 50 years because of better housing and the use of antibiotics. As a result of the developments in cardiac surgery in the 1960s and '70s, many women with congenital heart disease now survive to childbearing age (about 0.5% of all women booking).

Despite a common belief that caesarean section is an easy option in such cases, a straightforward spontaneous labour with epidural analgesia to mitigate stress, and a well assisted second stage, is associated with the lowest morbidity and mortality. The priority in management is to prevent complications such as prolonged labour and infection, while being careful not to introduce destabilising iatrogenic factors such as epidural hypotension and fluid overload.

Detailed surveillance with intra-arterial blood pressure measurement, maternal electrocardiographic monitoring, and pulse oximetry is important.



Delay in first stage of labour in a multiparous woman. The line of cervical dilatation is flattened and crosses the expected line, leading to a change of management to increase uterine contractions. If this works, progress speeds up and runs in parallel to the expected line, leading to a vaginal delivery. If it does not, a caesarean section should follow after a reasonable trial—in this case, 4 hours



Biological and haematological symptoms of HELLP (Haemolysis, Elevated Liver enzymes, Low Platelets) syndrome

### Emergency intravenous drug regimens for eclampsia

- Magnesium sulphate
- Diazepam
- Hydralazine
- Labetalol
- Phenytoin

**Senior, experienced medical and obstetric staff should be involved at all times in the labour of women with cardiac disease**

## Women with HIV infection

Women known to be HIV positive should be taking zidovudine and protease inhibitors during the second half of pregnancy. This reduces the viral load in the blood and therefore reduces the risk of infecting the baby at birth (by about 50%).

To reduce this risk even further, an intravenous infusion of zidovudine for 4 hours is recommended just before anticipated delivery. Elective caesarean section has been shown to reduce the risk even further (by another 40%). The lower uterine segment incision should be made using a staple gun to seal the wound edges, thus ensuring an almost bloodless field through which the baby can be delivered.

If the mother chooses a vaginal birth, application of scalp electrodes and fetal blood sampling breach the baby's skin and probably increase the risk of infection; these procedures should therefore be avoided. Avoidance of breast feeding also halves the overall risk of infection (it carries a 15% risk).

Use of all known techniques for prophylaxis reduces the overall risk of fetal and neonatal infection from about 30% to under 5% (and possibly below 1%).

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The ABC of Labour Care is edited by Geoffrey Chamberlain, emeritus professor of obstetrics and gynaecology at the Singleton Hospital, Swansea. It will be published as a book in the summer.

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**It is important that pregnant women are screened for HIV infection; an infected woman can then be offered care to protect her baby, and staff too can be properly protected**

### Key references

- Confidential enquiry into stillbirths and deaths in infancy. London: Maternal and Child Health Research Consortium, 1998. (5th annual report.)
- Erikim M, Kieve M, Refrew M, Neilson J. *Guide to effective care in pregnancy and childbirth*. 2nd ed. Oxford: Oxford University Press, 1993:145.
- James D, Steer P, Weiner C, Gonik B. *High risk pregnancy—management options*. London: Saunders, 1999.
- Mercey D. Antenatal HIV testing. *BMJ* 1998;316:241-2.

The table showing active management of labour is based on data from O'Driscoll et al (*BMJ* 1969;ii:447-8; *BMJ* 1973;iii:135-7; and *Obstet Gynecol* 1984;63:485-90). The drawing of fetal head engagement is adapted from Chamberlain (*ABC of antenatal care*. London: BMJ Publishing, 1996).

## Lesson of the week

### When "NAI" means not actually injured

Clifford Mayes, Calum Macleod

Non-accidental injury is a diagnosis that must be kept in mind by all health professionals who deal with children. The characteristic features of non-accidental injury are well known.<sup>1</sup> We describe a previously unreported case of congenital melanocytic naevi presenting as scalp bruising in an infant with features in the history suggestive of abuse. This case emphasises the need for a cautious, open minded approach to this difficult subject even when the initial history and examination are highly suspicious.

### Case report

JD presented to his general practitioner at the age of 3 months with a one week history of bruising to both parietal areas of the scalp. The doctor initially reassured the mother and sent her home. An anonymous telephone call to social services resulted in a second visit that same day with a social worker in attendance, and an urgent referral to a consultant paediatrician was arranged with a suspected diagnosis of non-accidental injury. The mother was insistent that she had not harmed the child in any way and was clearly distraught that such an allegation had been made. In hospital the mother stated that the bruises had been caused by the infant rolling his head from side to side in an unpadding car seat. She could not, however, describe a specific event and

explained her delay in seeking medical advice by saying that she had asked her own mother for advice and had been reassured by her. JD was the product of a normal pregnancy and delivery and had an otherwise unremarkable medical history. He was the only child of an unmarried mother who cohabited with the child's father.

On examination he was well cared for. His growth parameters were all just above 50th centiles. Three flat, non-tender, brown lesions resembling bruises were readily apparent on both parietal areas of the scalp: on the right a single, well circumscribed lesion measuring 5.0 × 4.5 cm; on the left two discrete, linear lesions measuring 4.5 × 1.0 cm and 3.5 × 0.75 cm respectively. It was noted that the hair overlying the lesions was darker than elsewhere. The remainder of the examination was normal. In particular there was no bruising elsewhere, the frenulum was intact, and fundi were normal. Interaction between mother and child seemed appropriate.

Admission to hospital was arranged in view of the physical findings of bruising to the head of a premobile infant, the inadequacy of the explanation (inspection of the car seat showed that it could not possibly be the mechanism for his injuries), the delay in seeking medical advice, and the concerns of social services, which were otherwise considering an emergency protection order. The mother understood the need for admission

**Classic features of non-accidental injury are not always diagnostic**

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