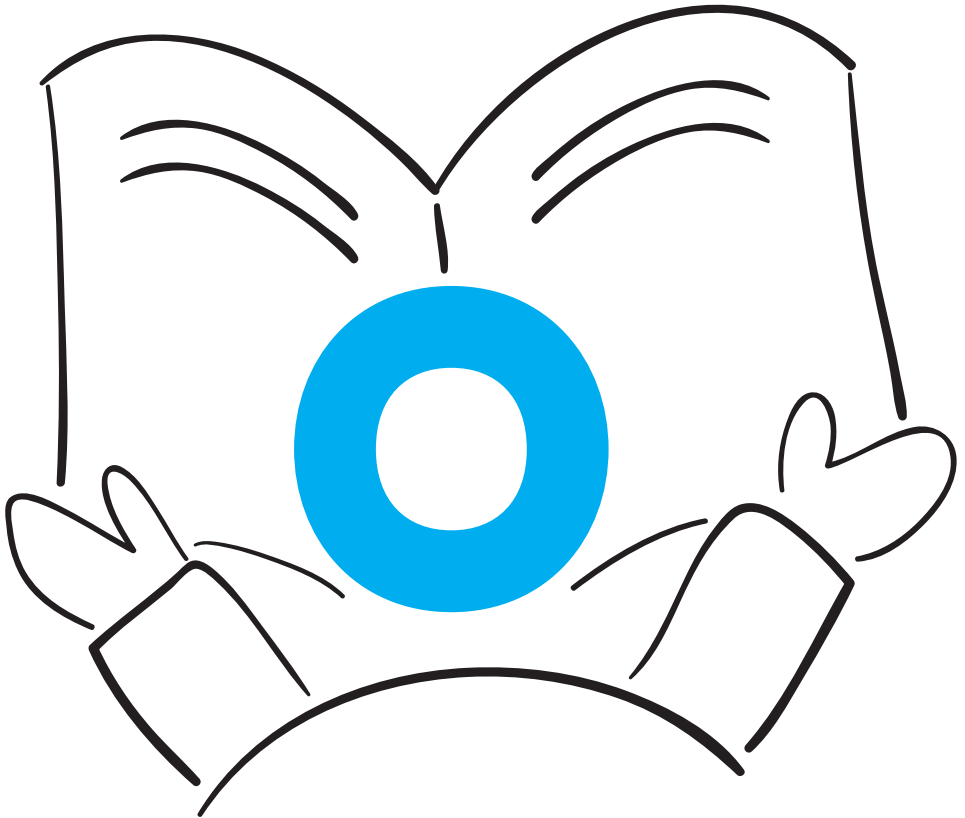


Premature Labour

Information for midwives



About Tommy's, the baby charity

Tommy's, the baby charity, aims to inform and educate all parents-to-be about health in pregnancy. By providing this information we hope to ensure that every pregnancy has the best possible chance of a healthy outcome and a healthy baby.

Tommy's was set up in 1992 with the goal of making pregnancy and childbirth safer for both the expectant mother and her child, by funding a national programme of medical research into miscarriage, stillbirth and premature birth.

Every parent-to-be hopes their baby will be born healthy but every year in the UK one in five pregnancies will end in miscarriage and around 4,000 babies will be stillborn. More than 100 babies are born too small or too soon every day and two percent are severely premature, arriving six weeks or more before their expected birthday. Premature birth is the most common cause of baby death and one in 10 premature babies will develop a permanent disability.

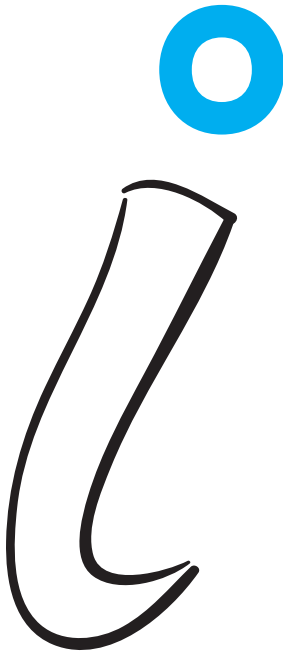
As the UK's leading baby charity we want to find the answers for parents who deserve to know why their baby died or had to fight for life after being born prematurely.

Tommy's is determined to find the causes of miscarriage, stillbirth and premature birth and to save tiny lives by discovering new ways to encourage healthy pregnancy and prevent problems. We support a nationwide programme of vital research and are already improving the chances of survival for hundreds of babies through our clinical trials. We are examining the processes underlying normal and premature labour, and are finding ways to identify women who are most at risk of giving birth prematurely. We are increasing understanding of conditions such as pre-eclampsia which endanger both mother and baby, and we are making progress in discovering ways to prevent health problems in premature and low birth-weight babies.

Tommy's also provides information about pregnancy health issues for health professionals, parents and parents-to-be. We aim to ensure that information on health in pregnancy and reducing the risks of problems is available to all parents-to-be in the UK, thereby reducing the number of babies' lives lost.

Foreword

This leaflet, produced by Tommy's, aims to give a brief overview of currently available research evidence to inform practice. The leaflet has been produced in conjunction with a leaflet for parents to provide women at risk of going into premature labour with information and support to increase their confidence in having a healthy pregnancy and increase their ability to reduce the preventable risks of having a premature baby.



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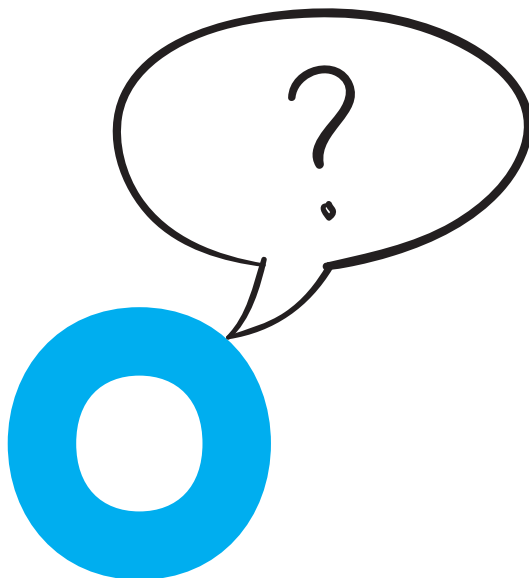
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Useful addresses

What is premature labour?

Premature delivery, as defined by The World Health Organisation, is a delivery that occurs prior to the 37th completed week of pregnancy. Despite modern antenatal care, and the emergence of fetal medicine units, the number of babies born early has not reduced significantly since the 1960s.

Prematurity is the leading cause of infant mortality in industrialised societies and annually affects 5-6% of all UK births (DoH, 2004). Its incidence is greatly increased among the socially disadvantaged but the reasons for this inequality are unclear and to date have been relatively unexplored. It remains very difficult to identify women at risk of premature delivery because the causes are still poorly understood.



Identifying women at risk of preterm delivery

Spontaneous prematurity is a multifactorial phenomenon. The mechanisms of preterm labour remain poorly understood, and correct identification of a pregnancy at risk of preterm labour is difficult and frequently inaccurate. To date, no specific intervention has been shown to significantly reduce preterm birth.

Many women with no identified risk factors will go on to experience premature delivery, however there are some factors that we know increase the risk of having a premature baby.

Risk factors of premature labour

Obstetric history

Previous spontaneous preterm delivery
Previous late miscarriage 16-24 weeks
Previous preterm prelabour SROM
Uterine abnormality

Infections

Clinical
Subclinical/asymptomatic
Local
Systemic

Lifestyle

Smoking
Recreational drug use
Poverty, social deprivation
Domestic violence
High caffeine intake
Poor diet (or being underweight)
Overstrenuous physical activity

Previous gynaecological history

Cervical abnormality
Cervical surgery:

- Large Loop Excision of the Transitional Zone (LLETZ)
- Cone Biopsy
- Late, or repeated terminations

Risk factors of premature labour

Pre-existing maternal medical conditions

Systemic lupus erythmatosus (SLE)
Antiphospholipid syndrome (APS)
Renal disease

Pregnancy related conditions

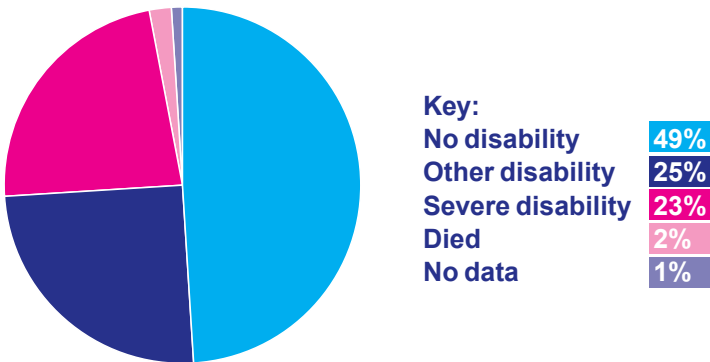
Pre-eclampsia
Gestational diabetes
Obstetric cholestasis, (OC)

However, many women with no risk factors will labour prematurely. There are now tests to predict prematurity, which include cervical scanning and fetal fibronectin sampling, and other tests are under investigation. Ultimately a combination of these may more accurately identify those at risk (Goldenberg *et al.*, 2001).

What are the implications of premature birth?

Survival rates over the past ten years have improved (Wood et al., 2000), due to advances in neonatal care, although there is evidence of significant morbidity in babies born extremely early. The EPICure Study looked at the outcome of babies born between 20 and 25 weeks gestation in 261 centres in UK and Eire, over a 10-month period in 1995, reviewing overall disability, 30 months following delivery.

Summary of outcome with respect to overall disability at 30 months for 314 children born at 22 through 25 weeks' gestation



The EPICure study concluded that, following extreme preterm birth:

- Survival appears to have improved considerably over recent years.
- The incidence of morbidity in survivors is increasing.
- Survival varies around the world, within the UK, and possibly between units serving similar populations.

Although survival has improved, the total number of preterm births remains unchanged.

Antenatal care

Management and advice

Regular midwifery contact is **extremely** important. Regular contact can help to identify women at risk of premature delivery and allows the progress of the pregnancy to be closely monitored. Whilst this may not influence length of pregnancy, it is recognised that emotional support is beneficial to high-risk women (Sikorski *et al.*, 1996). Midwives are also an important point of contact providing advice about changing behaviours to reduce risk of premature labour. The following specific risk factors are known to be linked to premature delivery.

Work

Large observational studies suggest that prolonged standing increases the risk of early birth. There is no direct relationship between the number of hours worked, however shift patterns may contribute to increased risk (Mozurkewich *et al.*, 2000).

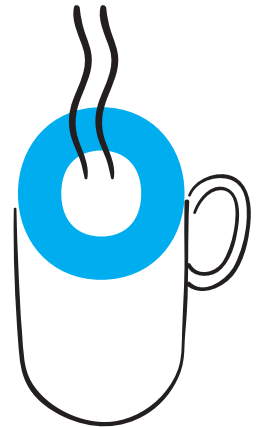
Smoking

A meta-analysis showed that smoking was a significant cause of preterm deliveries (Shah & Braken, 2000).

Recreational drug use

Drug addiction predisposes women to a less stable lifestyle, with a reluctance to access health services, including antenatal care. This is thought to contribute to adverse pregnancy outcome more than the drug addiction itself (Mitter & Boudreaux, 1999).

Other lifestyle factors including drinking caffeine, over strenuous activity and stress have all been linked with premature birth and miscarriage.



Monitoring indicators of premature birth

Detecting and treating infection

Research has shown that some urinary and vaginal infections are commonly related to preterm labour. These can sometimes present with no symptoms.

Genital tract infection

There is increasing evidence that ascending genital tract infection leading to chorioamnionitis plays a role particularly in those who deliver before 32 weeks (Goldenberg *et al.*, 1996a). It is believed that genital tract infection is a precursor to bacterial invasion of the membranes and the decidua. This causes an immune response with the production of cytokines and the stimulation of prostaglandin synthesis. This in turn may lead to uterine contractions and cervical change, which may culminate in labour and delivery (Sommerset & Kilby, 1996).



Urinary tract infection (UTI)

Recent studies have suggested that untreated urinary tract infections play a significant role in premature labour. It is therefore recommended that routine urinalysis is carried out and any suggestion of infection followed up, and all confirmed urinary infections treated with appropriate antibiotics. Common symptoms of a urine infection are burning or stinging when passing urine, increased frequency of passing urine, unpleasant smell, backache, and sometimes generally feeling unwell.

Biochemical markers

New markers are currently being studied, most pertaining to infection and inflammation. They also include markers of common pathways leading to preterm delivery such as fetal membrane damage and cervical changes. However at present they are not widely available in routine clinical practice.

Fetal Fibronectin. This is a protein produced by the fetal membranes. Its function is not completely understood, but its presence indicates disruption of fetal membrane and uterine wall interface. Fetal fibronectin (detected on high vaginal swab) has been implicated as a useful marker in identifying women at risk of early delivery (Goldenberg *et al.*, 1996b).

Salivary Oestriols. Studies have identified the use of salivary oestriols as a marker of prematurity. Levels are found to rise significantly prior to the onset of labour (McGregor *et al.*, 1995).

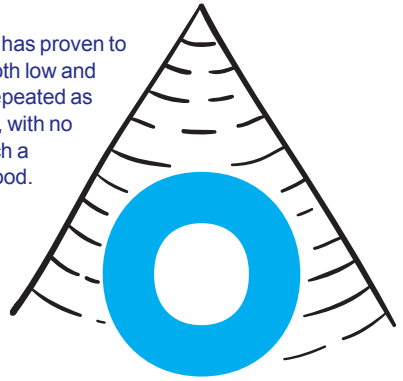
Interleukins. These markers of inflammation have been recognised as indicating the presence of ascending genital tract infection (Rizzo *et al.*, 1996).

Cervical assessment

Cervical incompetence has long been viewed as a major cause of premature delivery, the cause of this could be congenital or surgery, for example LLETZ or cone biopsy. The traditional method of assessment, digital examination, is subjective with poor reproducibility.

Transvaginal ultrasound

Assessment of cervical length using transvaginal ultrasound has proven to be a valuable non-invasive predictor of preterm delivery in both low and high-risk groups (Iams *et al.*, 1996). This procedure can be repeated as necessary, most commonly until around 24 weeks' gestation, with no significant reported adverse effects. The mechanism by which a short cervix predisposes to preterm birth is yet to be understood. One theory is that cervical shortening precedes preterm prelabour rupture of the membranes (PPROM) (Kurtzman *et al.*, 1999). Current opinion suggests if the membranes are exposed to the vagina, through the shortened cervix, there is increased risk of ascending infection causing PPRM, and ultimately preterm labour.



PPROM is the first sign of labour in a significant number of premature births, accounting for up to 40% of spontaneous preterm deliveries.

Cervical scan reports provide information on several factors, including:

- Length of cervix: preterm delivery is more likely when cervical length is less than 25 mm. The shorter the cervix, the greater likelihood of preterm delivery (Iams *et al.*, 1996).
- Funnelling: this is never normal. It is caused by the protrusion of the membranes into the cervix, and is described as a proportion of the entire cervical length. Funnelling greater than 50% of the total length, may indicate high risk and is related to earlier deliveries.
- Pressure effects: the sonographer will apply gentle pressure to the lower abdomen and watch the cervical response on scan, and report the findings.

Cervical cerclage

Cervical cerclage has been undertaken in women with a history of early preterm delivery, or late miscarriage. However, evidence of its effectiveness is controversial (Lancet 2004; 363: 1849-53). The advent of cervical scanning has proved useful in more accurately identifying women who may benefit from this procedure. (Tommy's is currently funding a clinical trial: CIRCLE, to test this theory).

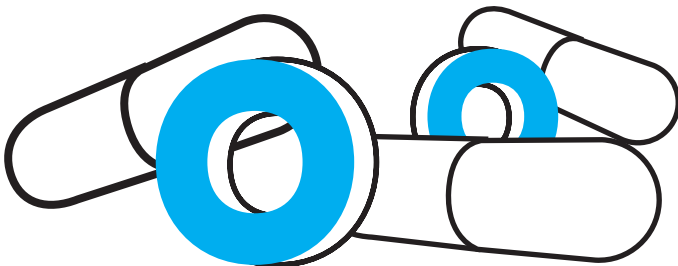
Treating symptoms of premature birth

Antibiotics

For years there has been controversy over whether to treat women with PPROM, threatened or actual premature labour with broad-spectrum antibiotics. However, recent Cochrane reviews concluded there was insufficient evidence to recommend prescribing antibiotics (King & Flenady, 2001; Kenyon & Boulvain, 2001).

International clinical trials (ORACLE I & II) investigated the use of antibiotics in threatened preterm labour and PPROM, concluding:

- In threatened preterm labour there is **no evidence** to advise routine prescription of antibiotics with no identified clinical infection.
- In PPROM Augmentin (Co-Amoxiclav) should NEVER be used as it may be associated with necrotising enterocolitis in the neonate. Erythromycin showed some potential health benefits for the neonate, however long-term follow-up is needed and planned (Kenyon *et al.*, 2001a and 2001b).
- Tommy's PREMET trial results indicate that metronidazole may increase risk of preterm labour in women who are fetal fibronectin positive.



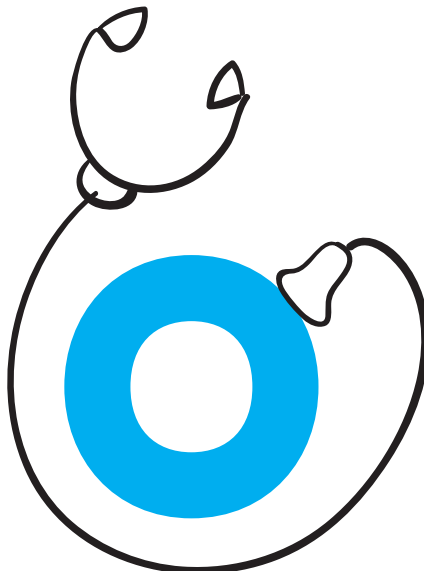
Antenatal corticosteroids

Intramuscular steroids have been routinely used in obstetric practice since the 1970s in women at the suspected onset of preterm labour to improve fetal surfactant production. Following research that found possible endocrine system defects in babies whose mother's had received multiple courses of steroids, controversy regarding treatment has arisen (Ng *et al.*, 1999).

The effects of antenatal multiple courses of steroids versus a single course are currently being investigated in the context of the TEAMS trial (UK). However a recent American trial concluded no proven benefit from multiple courses (Guinn *et al.*, 2001).

Bed rest

There is no evidence that bed rest is beneficial (Sosa C; Althabe F; Belizan J; *et al*; 2004). Studies have actually highlighted additional potential risks, including thrombosis and pulmonary oedema associated with prolonged bedrest (Kovacevitch *et al.*, 2000).



Management of preterm labour

Tocolytics

There is no evidence that tocolytic agents prevent pre-term birth (Hannah, 2000). They delay labour enabling administration of maternal steroids, or facilitating *in utero* transfer to a specialist unit (The Worldwide Atosiban versus Beta-agonists Study Group, 2001). In very preterm labours a delay of 24 to 48 hours can improve the baby's survival chances (Hannah *et al.*, 1995).

The British National Formulary does **not** recommend using tocolytics in pregnancies complicated by:

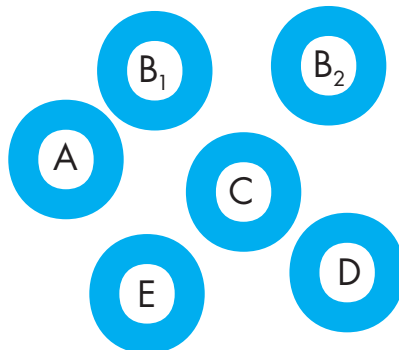
- Cardiac disease (maternal or fetal)
- Eclampsia
- Intra-uterine infection
- Intra-uterine death
- Antepartum haemorrhage
- Placenta praevia
- Cord compression

There are currently four tocolytic agents licensed in the UK (BNF, 2004):

- Ritodrine (Yutopar)
- Salbutamol
- Terbutaline Sulphate
- Atosiban

Atosiban (an oxytocin inhibitor) although more expensive, has been shown to have fewer side effects than other tocolytics in randomised controlled trials (The Worldwide Atosiban versus Beta-agonists Study Group, 2001).

Close monitoring of the mother and fetus is essential during tocolytic therapy. Maintaining adequate maternal hydration is also important. Further research regarding the use of tocolytics is needed and the controversy around their use persists (Gyetvai *et al.*, 2001).



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Useful addresses

Tommy's, the baby charity

Funds research into the causes of miscarriage, stillbirth and premature birth. Also provides information about healthy pregnancy.

www.tommys.org
Nicholas House
3 Laurence Pountney Hill
London EC4R 0BB
Pregnancy information line: 0870 777 30 60
Tel: 08707 70 70 70
Fax: 08707 70 70 75
Email: info@tommys.org

SANDS (Stillbirth and Neonatal Death Society)

Provides support and information for parents, families and carers following stillbirth and neonatal death.

www.uk-sands.org
28 Portland Place
London W1N 4DE
Tel: 020 7436 5881 (helpline)
Fax: 020 7436 3715
Email: support@uk-sands.org

The Miscarriage Association

Provides advice and support following miscarriage

www.miscarriageassociation.org.uk
c/o Clayton Hospital
Northgate
Wakefield
West Yorkshire WF1 3JS
Tel: 01924 200 799
Fax: 01924 298 834
Email: info@miscarriageassociation.org.uk

BLISS

Provides equipment to neonatal units nationwide. Advice, support and information for families and health professionals, plus training for nurses and midwives caring for sick neonates. Also conducts research into neonatology.

www.bliss.org.uk
68 South Lambeth Road
London SW8 1RL
Tel: 0870 7700 337
Fax: 0870 7700 338
Email: information@bliss.org.uk

Premature Babies UK

A website designed by a parent of a preterm baby. Provides support and links to other sites.

www.premature-babies.co.uk

Baby Lifeline

Provides equipment and training for neonatal units. Also support for parents and carers. Founded by a parent.

www.babylifeline.org.uk
Tel: 0845 6581059
Email: info@babylifeline.org.uk

The Child Bereavement Trust

Provides advice and support for families and health care professionals coping with the loss of a child.

www.childbereavement.org.uk
Information & support service line:
0845 357 1000
Email: enquiries@childbereavement.org.uk

How we can help you

Tommy's, the baby charity, publishes information for parents-to-be and for those who have experienced problems in pregnancy, such as miscarriage, stillbirth or premature birth, as well as providing information on toxoplasmosis. Please indicate below if you would like to be sent further information.

- Toxoplasmosis and pregnancy
- Toxoplasmosis a handbook for health professionals
- Toxoplasmosis and pregnancy everything you need to know
- Toxoplasmosis and animals
- Toxoplasmosis information about congenital toxoplasmosis
- Healthy pregnancy a guide for parents-to-be
- When a baby dies information for parents, for family and for friends
- Premature labour information for parents
- Premature labour information for midwives
- Information sheet on miscarriage
- Information sheet on stillbirth
- Information sheet on premature birth
- Information sheet on pre-eclampsia
- Annual Review
- Research update

Please complete your details below and return the form to Tommy's, the baby charity, Nicholas House, 3 Laurence Pountney Hill, London EC4R 0BB, or contact Tommy's on our information line (0870 777 30 60) or e-mail: info@tommys.org

Your details	Name
Address	
Postcode	
Telephone	
Email	

Please tick this box if you do not wish to receive further mailings from Tommy's.

Tommy's, the baby charity

Nicholas House
3 Laurence Pountney Hill
London EC4R 0BB
Tel: 08707 70 70 70
Fax: 08707 70 70 75

Pregnancy information line: 0870 777 30 60

Email: mailbox@tommys.org

Website: www.tommys.org