NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

SCOPE

1 Guideline title

Preterm labour and birth

1.1 Short title

Preterm labour and birth

2 The remit

The Department of Health has asked NICE: ‘to develop a clinical guideline on Preterm labour and birth’.

3 Clinical need for the guideline

3.1 Epidemiology

a) Preterm birth is birth that occurs before 37 weeks of pregnancy. It usually follows spontaneous preterm labour, which may be preceded by preterm pre-labour rupture of membranes. However, around 25% of women have a planned preterm birth following iatrogenic intervention (induction of labour or planned caesarean section) to avoid continuing risk to the mother or baby from complications of pregnancy.

b) In England there are around 54,000 preterm births each year, which represents approximately 8% of all live births. Most of these preterm births occur between 32 and 36 weeks, with around 13,500 (2%) births occurring before 32 weeks.

c) Preterm birth is associated with a range of adverse outcomes for the baby. These include increased rates of perinatal death, neonatal morbidity (including respiratory distress syndrome, intra-

ventricular haemorrhage and necrotising enterocolitis [an infection that can cause parts of the bowel to die]) and long-term compromise. The main areas affected in the long term are the neurological system (for example, cerebral palsy, lower educational attainment) and respiratory system (for example, bronchopulmonary dysplasia). The risk of adverse outcomes occurring is inversely proportional to length of gestation. Therefore, infants born extremely premature (before 28 weeks) have significantly worse outcomes than those born moderately premature (34–37 weeks).

d) Spontaneous preterm birth has several possible causes. Preterm labour is associated with intrauterine infection, and organisms such as *Ureaplasma urealyticum, Mycoplasma hominis, Gardnerella vaginalis,* peptostreptococci, and bacteroides are commonly implicated. These organisms, which often live in the vagina, are not normally considered to be harmful. However, it is thought that if these organisms gain access to the uterus then this might initiate preterm labour and birth. In some women, preterm labour is associated with a known pregnancy-related risk factor such as antepartum haemorrhage, or multiple pregnancy. However, the mechanisms by which preterm labour and birth occur are not clearly understood. In the majority of women, there is no obvious cause and a diagnosis of idiopathic preterm labour is made.

e) Maternal disease (for example, pre-eclampsia and diabetes) or fetal conditions (such as intrauterine growth restriction) can also prompt planned preterm birth (by induction of labour or planned caesarean section).

3.2 Current practice

a) Current practice involves identifying women who may be at increased risk of preterm birth and reducing or preventing this risk, and optimising outcomes for babies who are likely to deliver

preterm, for example by asking women about their clinical history at the booking appointment and testing for infection during pregnancy.

b) Surveillance of women who have been identified to be at risk of preterm labour and birth may include the use of specific tests, such as measuring fetal fibronectin, and ultrasound scanning to assess for cervical shortening and/or funnelling.

c) Tocolysis (using drugs to stop the uterus contracting) is used in many centres in England and Wales in an attempt to treat preterm labour and reduce the rates of preterm birth in women with preterm uterine contractions. However, there is variation in their use – that is, when a tocolytic is used, which tocolytic is used, and the population in which it is used (all pregnant women in preterm labour or a selected proportion).

d) Other interventions that have been applied to selected women at high risk of preterm labour include progesterone preparations (oral or vaginal) and cervical cerclage (using a stitch or stitches to try to keep the cervix closed during pregnancy).

e) Optimising outcomes for babies likely to deliver preterm includes transfer to a centre with appropriate neonatal intensive care facilities. There is variation in both the use of this approach in the UK and the diagnostic criteria applied to determine transfer.

f) Other antenatal interventions to optimise outcomes for the baby likely to be born preterm include prenatal maternal corticosteroids (to reduce the incidence of neonatal respiratory adverse outcomes), which are widely used, and/or magnesium sulphate (to reduce the incidence of neonatal neurological adverse outcomes). Magnesium sulphate also has tocolytic activity although it is not commonly used for this purpose in the UK.

g) The frequency of preterm birth, the major contribution it makes to adverse neonatal and infant outcomes, the considerable variation

in practice, and the uncertainty about which interventions are effective, means that a NICE guideline in this area is likely to have an important impact on practice.

4 The guideline

The guideline development process is described in detail on the NICE website (see section 6, 'Further information').

This scope defines what the guideline will (and will not) examine, and what the guideline developers will consider. The scope is based on the referral from the Department of Health.

This guideline will only address the additional antenatal care and intrapartum care required for women at risk of, or in suspected or diagnosed preterm labour. For guidance on routine antenatal and intrapartum care, please see Antenatal care NICE clinical guideline 62 (http://guidance.nice.org.uk/CG62) and
Intrapartum care NICE clinical guideline 55 (http://guidance.nice.org.uk/CG55)

The areas that will be addressed by the guideline are described in the following sections.

4.1 Population

4.1.1 Groups that will be covered

a) Pregnant women who are considered to be at risk of preterm labour and birth because they have a history of:

- spontaneous preterm birth
- preterm pre-labour rupture of membranes
- mid-trimester loss
- cervical trauma (including surgery).

b) Pregnant women who are considered to be at risk of preterm labour and birth because they have a short cervix or funnelling that has been identified on ultrasound scan in the current pregnancy.

c) Pregnant women with preterm pre-labour rupture of membranes.

d) Pregnant women clinically suspected to be in preterm labour.

e) Women diagnosed to be in spontaneous preterm labour.

f) Women having a planned preterm birth.

Subgroup analysis will be performed by gestational age where possible.

4.1.2 Groups that will not be covered

a) Women in labour at term.

b) Women with a multiple pregnancy.

4.2 Healthcare setting

a) Community settings including home and free-standing midwifery units, and hospital settings including alongside midwifery units and obstetric units.

4.3 Clinical management

4.3.1 Key clinical issues that will be covered

a) Prophylactic use of progesterone for women considered to be at risk of preterm labour and birth because they have any of the factors listed in 4.1.1a,b.

b) Prophylactic use of cervical cerclage for women considered to be at risk of preterm labour and birth because they have any of the factors listed in 4.1.1a,b.

c) Diagnosis of preterm labour (by clinical assessment, biochemical testing, cervical ultrasound [alone or in combination]).

d) Use of tocolytic agents (progesterone, beta-sympathomimetics, oxytocin receptor antagonists, calcium channel blockers, cyclo-oxygenase enzyme inhibitors, non-steroidal anti-inflammatory

drugs, nitroglycerin, magnesium sulphate) to improve the adverse outcomes of preterm labour.

e) Pharmacological interventions to improve neonatal outcomes including:

- maternal corticosteroids for fetal lung maturation
- magnesium sulphate for preterm neonatal neuroprotection.

f) Information giving and support for women at risk of preterm labour, or who are suspected or diagnosed to be in preterm labour, and women having a planned preterm birth.

g) Fetal monitoring for women diagnosed to be in preterm labour.

h) Mode of birth for women diagnosed to be in spontaneous preterm labour.

i) Timing of cord clamping.

Note that guideline recommendations will normally fall within licensed indications; exceptionally, and only if clearly supported by evidence, use outside a licensed indication may be recommended. The guideline will assume that prescribers will use a drug's summary of product characteristics to inform decisions made with individual patients.

4.3.2 Clinical issues that will not be covered

a) Screening for preterm labour in all pregnant women including routine fibronectin testing.

b) Risk factors for preterm labour.

c) Routine surveillance of women at risk of preterm labour and birth.

d) Prophylactic measures other than those listed in section 4.3.1 including:

- bed rest

- stopping work
- one-to-one care
- specialist clinics
- cervical pessaries.

e) Non-prophylactic ('rescue') cervical cerclarge for women in suspected preterm labour.

f) Diagnosis of preterm pre-labour rupture of membranes.

g) Prophylactic use of maternal antibiotics to improve neonatal outcomes.

h) Indications for planned preterm birth.

i) Methods of induction of preterm labour.

j) Mode of birth other than as described in section 4.3.1 including the comparative effectiveness of planned caesarean section and planned vaginal birth.

k) Intrauterine transfer to a tertiary unit.

l) Use of intrapartum analgesia.

m) Care of preterm neonates including resuscitation.

4.4 Main outcomes

a) Maternal outcomes:

- maternal mortality
- pharmacological adverse effects
- mode of birth
- physical birth trauma
- sepsis
- women's experience of labour and birth
- psychological birth trauma.

b) Neonatal outcomes:

- perinatal mortality
- birth trauma
- timing of birth in relation to timing of intervention
- admission to neonatal intensive care for respiratory support
- need for mechanical ventilation
- hypoxic ischaemic encephalopathy
- respiratory disorders
- intraventricular haemorrhage
- sepsis
- length of stay in neonatal intensive care
- chronic lung disease
- long-term infant morbidity
- developmental delay.

4.5 Review questions

Review questions guide a systematic review of the literature. They address only the key clinical issues covered in the scope, and usually relate to interventions, diagnosis, prognosis, service delivery or patient experience. Please note that these review questions are draft versions and will be finalised with the Guideline Development Group.

a) What is the effectiveness of progesterone in preventing preterm labour in pregnant women considered to be at risk of preterm labour and birth because they have any of the following:

- a history of spontaneous preterm birth
- a history of preterm pre-labour rupture of membranes
- a history of mid-trimester loss
- a history of cervical trauma (including surgery)
- a short cervix or funnelling that has been identified on scan in the current pregnancy?

b) What is the effectiveness of cervical cerclage in preventing preterm labour in women considered to be at risk of preterm labour and birth because they have any of the following:

- a history of spontaneous preterm birth
- a history of preterm pre-labour rupture of membranes
- a history of mid-trimester loss
- a history of cervical trauma (including surgery)
- a short cervix or funnelling that has been identified on scan in the current pregnancy?

c) What is the diagnostic accuracy of the following (alone or in combination) to identify preterm labour:

- clinical assessment such as strength and frequency of contractions, findings on vaginal examination (softening, effacement and dilatation of the cervix), vaginal loss
- biochemical testing for markers for preterm labour such as cervicovaginal fetal fibronectin
- ultrasound features such as cervical length and the presence of funnelling?

d) What is the effectiveness of the following tocolytic agents to improve outcomes of preterm labour:

- progesterone
- beta-sympathomimetics
- oxytocin receptor antagonists
- calcium channel blockers
- cyclo-oxygenase enzyme inhibitors
- non-steroidal anti-inflammatory drugs
- nitroglycerin
- magnesium sulphate?

e) What is the effectiveness of maternal corticosteroids for fetal lung maturation given at different gestations in improving preterm neonatal outcomes?

f) What is the effectiveness of repeat courses of maternal corticosteroids for fetal lung maturation in improving preterm neonatal outcomes?

g) What is the effectiveness of magnesium sulphate for preterm neonatal neuroprotection?

h) What additional information and support should be given to women and their partners where the woman is at risk of preterm labour, or has a suspected or diagnosed preterm labour, or has a planned preterm birth?

i) What is the effectiveness of intrapartum electronic fetal monitoring compared with intermittent auscultation at different gestational ages?

j) What are the criteria for interpreting the preterm intrapartum fetal heart rate trace?

k) At what gestational age can a fetal scalp electrode be used?

l) What is the utility of fetal blood sampling as an adjunct to intrapartum fetal heart rate monitoring at different gestational ages?

m) What is the optimal mode of birth for women diagnosed to be in spontaneous preterm labour?

n) What is the effectiveness of cord clamping:

- within 1 minute of birth
- more than 1 minute after birth?

4.6 Economic aspects

Developers will take into account both clinical and cost effectiveness when making recommendations involving a choice between alternative interventions. A review of the economic evidence will be conducted and analyses will be carried out as appropriate. The preferred unit of effectiveness is the quality-adjusted life year (QALY), and the costs considered will usually be only from an NHS and personal social services (PSS) perspective. Further detail on the methods can be found in 'The guidelines manual' (see ‘Further information’).

4.7 Status

4.7.1 Scope

This is the consultation draft of the scope. The consultation dates are 20th February to 20th March 2013.

4.7.2 Timing

The development of the guideline recommendations will begin in May 2013.

5 Related NICE guidance

5.1 Published guidance

- Antenatal care. NICE clinical guideline 62 (2008).
- Antibiotics for early-onset neonatal infection. NICE clinical guideline 149 (2012).
- Patient experience in adult NHS services. NICE clinical guideline 138 (2012).
- Drainage, irrigation and fibrinolytic therapy (DRIFT) for post-haemorrhagic hydrocephalus in preterm infants. NICE interventional procedure guidance 412 (2011).
- Caesarean section. NICE clinical guideline 132 (2011).
- Multiple pregnancy. NICE clinical guideline 129 (2011).
- Quitting smoking in pregnancy and following childbirth. NICE public health guidance 26 (2010).

- Pregnancy and complex social factors. NICE clinical guideline 110 (2010).
- Hypertension in pregnancy. NICE clinical guideline 107 (2010).
- Neonatal jaundice. NICE clinical guideline 98 (2010).
- Induction of labour. NICE clinical guideline 70 (2008).
- Diabetes in pregnancy. NICE clinical guideline 63 (2008).
- Antenatal care. NICE clinical guideline 62 (2008).
- Intrapartum care. NICE clinical guideline 55 (2007).
- Antenatal and postnatal mental health. NICE clinical guideline 45 (2007).
- Postnatal care. NICE clinical guideline 37 (2006).
- Endovascular closure of patent ductus arteriosus. NICE interventional procedure guidance 97 (2004).

5.2 Guidance under development

NICE is currently developing the following related guidance (details available from the NICE website):

- Intrapartum care (update). NICE clinical guideline. Publication expected October 2014
- Diabetes in pregnancy (update). NICE clinical guideline. Publication expected June 2014.

6 Further information

Information on the guideline development process is provided in the following documents, available from the NICE website:

- 'How NICE clinical guidelines are developed: an overview for stakeholders the public and the NHS'
- 'The guidelines manual'.

Information on the progress of the guideline will also be available from the NICE website.