NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Guideline

Preterm labour and birth

Draft for consultation, February 2022

This guideline covers the care of women at increased risk of, or with symptoms and signs of, preterm labour (before 37 weeks), and women having a planned preterm birth. It aims to reduce the risks of preterm birth for the baby and describes treatments to prevent or delay early labour and birth.

The guideline uses the terms 'woman' or 'mother' throughout. These should be taken to include people who do not identify as women but are pregnant or have given birth.

This guideline will update NICE guideline NG25 (published November 2015).

Who is it for?

- Healthcare professionals who care for women at increased risk of or with symptoms and signs of preterm labour and women having a planned preterm birth
- Commissioners and providers of maternity services
- Women at increased risk of or with symptoms and signs of preterm labour and women having a planned preterm birth, and their families and carers

What does it include?

- the recommendations
- recommendations for research
- rationale and impact sections that explain why the committee made the 2019 and 2022 recommendations and how they might affect services
- the guideline context.

Information about how the guideline was developed is on the guideline's webpage. This includes the evidence reviews, the scope, details of the committee and any declarations of interest.

New and updated recommendations

We have reviewed the evidence on the use of repeat doses of corticosteroids. You are invited to comment on the new and updated recommendations. These are marked as **[2022].**

You are also invited to comment on recommendations that we propose to delete from the 2015 guideline.

We have not reviewed the evidence for the recommendations shaded in grey, and cannot accept comments on them. In some cases, we have made minor wording changes for clarification.

See update information for a full explanation of what is being updated.

Full details of the evidence and the committee's discussion on the 2019 and 2022 recommendations are in the evidence reviews. Evidence for the 2015 recommendations is in the full version of the 2015 guideline.

Contents

Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

Recommendations

1.1 Information and support

1.1.1 When giving information and support to women at increased risk of preterm labour, with suspected, diagnosed or established preterm labour, or having a planned preterm birth (and their family members or carers as appropriate):

- give this information and support as early as possible, taking into account the likelihood of preterm birth and the status of labour
- follow the principles in NICE's guideline on patient experience in adult NHS services
- bear in mind that the woman (and her family members or carers) may be particularly anxious
- give both oral and written information
- describe the symptoms and signs of preterm labour
- explain to the woman about the care she may be offered. **[2015]**

1.1.2 For women who are having a planned preterm birth or are offered treatment for preterm labour in line with sections 1.8 to 1.10 (and their family members or carers as appropriate), provide information and support that includes:

- information about the likelihood of the baby surviving and other outcomes (including long-term outcomes) and risks for the baby, giving values as natural frequencies (for example, 1 in 100)
- explaining about the neonatal care of preterm babies, including location of care
- explaining about the immediate problems that can arise when a baby is born preterm
- explaining about the possible long-term consequences of prematurity for the baby (how premature babies grow and develop)
- ongoing opportunities to talk about and state their wishes about resuscitation of the baby
- an opportunity to tour the neonatal unit
- an opportunity to speak to a neonatologist or paediatrician. **[2015]**

1.2 Prophylactic vaginal progesterone and prophylactic cervical cerclage.

1.2.1 Offer a choice of prophylactic vaginal progesterone or prophylactic cervical cerclage to women who have both:

- a history of spontaneous preterm birth (up to 34+0 weeks of pregnancy) or loss (from 16+0 weeks of pregnancy onwards) and
- results from a transvaginal ultrasound scan carried out between 16+0 and 24+0 weeks of pregnancy that show a cervical length of 25 mm or less.

Discuss the risks and benefits of both options with the woman, and make a shared decision on which treatment is most suitable.

In August 2019, this was an off-label use of vaginal progesterone. See NICE's information on prescribing medicines. **[2019, amended 2022]**

1.2.2 Consider prophylactic vaginal progesterone for women who have either:

- a history of spontaneous preterm birth (up to 34+0 weeks of pregnancy) or loss (from 16+0 weeks of pregnancy onwards) or
- results from a transvaginal ultrasound scan carried out between 16+0 and 24+0 weeks of pregnancy that show a cervical length of 25 mm or less.

In August 2019, this was an off-label use of vaginal progesterone. See NICE's information on prescribing medicines. **[2019, amended 2022]**

1.2.3 When using vaginal progesterone, start treatment between 16+0 and 24+0 weeks of pregnancy and continue until at least 34 weeks. **[2019]**

1.2.4 Consider prophylactic cervical cerclage for women when results of a transvaginal ultrasound scan carried out between 16+0 and 24+0 weeks of pregnancy show a cervical length of 25 mm or less, and who have had either:

- preterm prelabour rupture of membranes (P-PROM) in a previous pregnancy or
- a history of cervical trauma. **[2015, amended 2019]**

1.2.5 If prophylactic cervical cerclage is used, ensure that a plan is in place for removal of the suture. **[2019]**

For a short explanation of why the committee made these recommendations see the rationale and impact section on prophylactic vaginal progesterone.

Full details of the evidence and the committee's discussion are in evidence review A: clinical effectiveness of prophylactic progesterone in preventing preterm labour

1.3 Diagnosing preterm prelabour rupture of membranes (P-PROM).

1.3.1 In a woman reporting symptoms suggestive of P-PROM, offer a speculum examination to look for pooling of amniotic fluid and:

- if pooling of amniotic fluid is observed, do not perform any diagnostic test but offer care consistent with the woman having P-PROM (see sections 1.4, 1.5 and 1.9)
- if pooling of amniotic fluid is not observed, perform an insulin-like growth factor binding protein-1 test or placental alpha-microglobulin-1 test of vaginal fluid. **[2015, amended 2019]**

1.3.2 If the results of the insulin-like growth factor binding protein-1 or placental alpha-microglobulin-1 test are positive, do not use the test results alone to decide what care to offer the woman, but also take into account her clinical condition, her medical and pregnancy history and gestational age, and either:

- offer care consistent with the woman having P-PROM (see sections 1.4, 1.5 and 1.9) **or**
- re-evaluate the woman's diagnostic status at a later time point. **[2015]**

1.3.3 If the results of the insulin-like growth factor binding protein-1 or placental alpha-microglobulin-1 test are negative and no amniotic fluid is observed:

- do not offer antenatal prophylactic antibiotics
- explain to the woman that it is unlikely that she has P-PROM, but that she should return if she has any further symptoms suggestive of P-PROM or preterm labour. **[2015]**

1.3.4 Do not use nitrazine to diagnose P-PROM. **[2015]**

1.3.5 Do not perform diagnostic tests for P-PROM if labour becomes established in a woman reporting symptoms suggestive of P-PROM. **[2015]**

1.4 Antenatal prophylactic antibiotics for women with P-PROM

1.4.1 Offer women with P-PROM oral erythromycin 250 mg 4 times a day for a maximum of 10 days or until the woman is in established labour (whichever is sooner). **[2015]**

1.4.2 For women with P-PROM who cannot tolerate erythromycin or in whom erythromycin is contraindicated, consider an oral penicillin for a maximum of 10 days or until the woman is in established labour (whichever is sooner). **[2015, amended 2019]**

1.4.3 Do not offer women with P-PROM co-amoxiclav as prophylaxis for intrauterine infection. **[2015]**

1.4.4 For guidance on the use of intrapartum antibiotics, see the section on intrapartum antibiotics in NICE's guideline on neonatal infection, and when applicable also see the section on treatment for women with prolonged prelabour rupture of membranes who have group B streptococcal colonisation, bacteriuria or infection. **[2015]**

1.5 Identifying infection in women with P-PROM

1.5.1 Use a combination of clinical assessment and tests (C-reactive protein, white blood cell count and measurement of fetal heart rate using cardiotocography) to diagnose intrauterine infection in women with P-PROM. **[2015]**

1.5.2 Do not use any one of the following in isolation to confirm or exclude intrauterine infection in women with P-PROM:

- a single test of C-reactive protein
- white blood cell count
- measurement of fetal heart rate using cardiotocography. **[2015]**

1.5.3 If the results of the clinical assessment or any of the tests are not consistent with each other, continue to observe the woman and consider repeating the tests. **[2015]**

1.6 Rescue cervical cerclage

1.6.1 Do not offer 'rescue' cervical cerclage to women with:

- signs of infection or
- active vaginal bleeding or

- uterine contractions. **[2015]**

1.6.2 Consider 'rescue' cervical cerclage for women between 16+0 and 27+6 weeks of pregnancy with a dilated cervix and exposed, unruptured fetal membranes:

- take into account gestational age (being aware that the benefits are likely to be greater for earlier gestations) and the extent of cervical dilatation
- discuss with a consultant obstetrician and consultant paediatrician. **[2015]**

1.6.3 Explain to women for whom 'rescue' cervical cerclage is being considered (and their family members or carers as appropriate):

- about the risks of the procedure
- that it aims to delay the birth, and so increase the likelihood of the baby surviving and of reducing serious neonatal morbidity. **[2015]**

1.6.4 If ‘rescue’ cervical cerclage is used, ensure that a plan is in place for removal of the suture. **[2019]**

For a short explanation of why the committee made this recommendation see the rationale and impact section on rescue cervical cerclage.

1.7 Diagnosing preterm labour for women with intact membranes

1.7.1 Explain to women reporting symptoms of preterm labour who have intact membranes (and their family members or carers as appropriate):

- about the clinical assessment and diagnostic tests that are available
- how the clinical assessment and diagnostic tests are carried out
- what the benefits, risks and possible consequences of the clinical assessment and diagnostic tests are, including the consequences of

false positive and false negative test results taking into account gestational age. **[2015]**

1.7.2 Offer a clinical assessment to women reporting symptoms of preterm labour who have intact membranes. This should include:

- clinical history taking
- the observations described for the initial assessment of a woman in labour in NICE's guideline on intrapartum care
- a speculum examination (followed by a digital vaginal examination if the extent of cervical dilatation cannot be assessed; be aware that if a swab for fetal fibronectin testing is anticipated - see recommendation 1.7.5 - the swab should be taken before any digital vaginal examination.). **[2015]**

1.7.3 If the clinical assessment suggests that the woman is in suspected preterm labour and she is 29+6 weeks pregnant or less, advise treatment for preterm labour as described in sections 1.8 and 1.9. **[2015]**

1.7.4 If the clinical assessment suggests that the woman is in suspected preterm labour and she is 30+0 weeks pregnant or more, consider transvaginal ultrasound measurement of cervical length as a diagnostic test to determine likelihood of birth within 48 hours. Act on the results as follows:

- if cervical length is more than 15 mm, explain to the woman that it is unlikely that she is in preterm labour and:
  - think about alternative diagnoses
  - discuss with her the benefits and risks of going home compared with continued monitoring and treatment in hospital
  - advise her that if she does decide to go home, she should return if symptoms suggestive of preterm labour persist or recur
- if cervical length is 15 mm or less, view the woman as being in diagnosed preterm labour and offer treatment as described in sections 1.8 and 1.9. **[2015]**

1.7.5 Consider fetal fibronectin testing as a diagnostic test to determine likelihood of birth within 48 hours for women who are 30+0 weeks pregnant or more if transvaginal ultrasound measurement of cervical length is indicated but is not available or not acceptable. Act on the results as follows:

- if fetal fibronectin testing is negative (concentration 50 ng/ml or less), explain to the woman that it is unlikely that she is in preterm labour and:
  - think about alternative diagnoses
  - discuss with her the benefits and risks of going home compared with continued monitoring and treatment in hospital
  - advise her that if she does decide to go home, she should return if symptoms suggestive of preterm labour persist or recur
- if fetal fibronectin testing is positive (concentration more than 50 ng/ml), view the woman as being in diagnosed preterm labour and offer treatment as described in section 1.8 and 1.9. **[2015]**

1.7.6 If a woman in suspected preterm labour who is 30+0 weeks pregnant or more does not have transvaginal ultrasound measurement of cervical length or fetal fibronectin testing to exclude preterm labour, offer treatment consistent with her being in diagnosed preterm labour (see sections 1.8 and 1.9). **[2015]**

1.7.7 Do not use transvaginal ultrasound measurement of cervical length and fetal fibronectin testing in combination to diagnose preterm labour. **[2015]**

1.7.8 Ultrasound scans should be performed by healthcare professionals with training in, and experience of, transvaginal ultrasound measurement of cervical length. **[2015]**

1.7.9 For guidance on the use of other biomarker tests used for the diagnosis of preterm labour, see NICE's diagnostics guidance on biomarker tests to help diagnose preterm labour in women with intact membranes. **[2019]**

1.8 Tocolysis

1.8.1 Take the following factors into account when making a decision about whether to start tocolysis:

- whether the woman is in suspected or diagnosed preterm labour
- other clinical features (for example, bleeding or infection) that may suggest that stopping labour is contraindicated
- gestational age at presentation
- likely benefit of maternal corticosteroids (see section 1.9)
- availability of an appropriate level of neonatal care (if there is need for transfer to another unit). See also NHSE saving babies' lives care bundle version 2 (recommendation 5.9).
- the preference of the woman. **[2015, amended 2022]**

1.8.2 Consider nifedipine for tocolysis for women between 24+0 and 25+6 weeks of pregnancy who have intact membranes and are in suspected preterm labour.

In November 2015, this was an off-label use of nifedipine. See NICE's information on prescribing medicines. **[2015]**

1.8.3 Offer nifedipine for tocolysis to women between 26+0 and 33+6 weeks of pregnancy who have intact membranes and are in suspected or diagnosed preterm labour.

In November 2015, this was an off-label use of nifedipine. See NICE's information on prescribing medicines. **[2015]**

1.8.4 If nifedipine is contraindicated, offer oxytocin receptor antagonists for tocolysis. **[2015]**

1.8.5 Do not offer betamimetics for tocolysis. **[2015]**

1.9 Maternal corticosteroids

In February 2022 this was an off-label use of betamethasone and dexamethasone. See NICE's information on prescribing medicines.

1.9.1 For women between 23+0 and 23+6 weeks of pregnancy who are in suspected or established preterm labour, are having a planned preterm birth or have P-PROM (see section 1.3), discuss with the woman (and her family members or carers as appropriate) the use of maternal corticosteroids in the context of her individual circumstances. **[2015]**

1.9.2 Offer maternal corticosteroids to women between 24+0 and 33+6 weeks of pregnancy who are in suspected, diagnosed or established preterm labour, are having a planned preterm birth or have P-PROM. **[2015, amended 2019]**

1.9.3 Consider maternal corticosteroids for women between 34+0 and 35+6 weeks of pregnancy who are in suspected, diagnosed or established preterm labour, are having a planned preterm birth or have P-PROM. **[2015]**

1.9.4 Consider a single repeat course of maternal corticosteroids for women less than 34+0 weeks of pregnancy who:

- have already had a course of corticosteroids when this was more than 7 days ago, **and**
- are at very high risk of giving birth in the next 48 hours. **[2022]**

1.9.5 When deciding whether to give a repeat course of maternal corticosteroids, take into account:

- the current gestational age, and gestational age when first course was given, **and**
- fetal growth. **[2022]**

1.9.6 Do not give more than 2 courses of maternal corticosteroids for preterm labour. **[2022]**

1.9.7 When offering or considering maternal corticosteroids, discuss with the woman (and her family members or carers as appropriate):

- how corticosteroids may help
- the potential risks associated with them. **[2015]**

1.9.8 For guidance on the use of corticosteroids in women with diabetes, see NICE's guideline on diabetes in pregnancy. **[2019]**

For a short explanation of why the committee made these recommendations see the rationale and impact section on repeat courses of maternal corticosteroids.

Full details of the evidence and the committee's discussion are in evidence review B: effectiveness of repeat courses of maternal corticosteroids

1.10 Magnesium sulfate for neuroprotection

In August 2019, the use of intravenous magnesium sulfate in recommendations 1.10.1 to 1.10.3 was off label. See NICE's information on prescribing medicines.

This guideline does not recommend using magnesium sulfate beyond 24 hours. But if uncertainty around exact timing of delivery results in repeat administration, follow the MHRA safety advice on the prolonged or repeated use of magnesium sulfate in pregnancy.

1.10.1 For women between 23+0 and 23+6 weeks of pregnancy who are in established preterm labour or having a planned preterm birth within 24 hours, discuss with the woman (and her family members or carers as appropriate) the use of intravenous magnesium sulfate for neuroprotection of the baby, in the context of her individual circumstances. **[2019]**

1.10.2 Offer intravenous magnesium sulfate for neuroprotection of the baby to women between 24+0 and 29+6 weeks of pregnancy who are:

- in established preterm labour or

- having a planned preterm birth within 24 hours. **[2015]**

1.10.3 Consider intravenous magnesium sulfate for neuroprotection of the baby for women between 30+0 and 33+6 weeks of pregnancy who are:

- in established preterm labour or
- having a planned preterm birth within 24 hours. **[2015]**

1.10.4 Give a 4 g intravenous bolus of magnesium sulfate over 15 minutes, followed by an intravenous infusion of 1 g per hour until the birth or for 24 hours (whichever is sooner). **[2015]**

1.10.5 For women on magnesium sulfate, monitor for clinical signs of magnesium toxicity at least every 4 hours by recording pulse, blood pressure, respiratory rate and deep tendon (for example, patellar) reflexes. **[2015]**

1.10.6 If a woman has or develops oliguria or other signs of renal failure:

- monitor more frequently for magnesium toxicity
- think about reducing the dose of magnesium sulfate. **[2015]**

1.11 Intrapartum antibiotics

1.11.1 For guidance on the use of intrapartum antibiotics in established preterm labour, see NICE's guideline on neonatal infection. **[2019]**

1.12 Fetal monitoring

Monitoring options: cardiotocography and intermittent auscultation

1.12.1 Discuss with women in suspected, diagnosed or established preterm labour (and their family members or carers as appropriate):

- the purpose of fetal monitoring and what it involves
- the clinical decisions it informs at different gestational ages
- if appropriate, the option not to monitor the fetal heart rate (for example, at the threshold of viability). **[2015]**

1.12.2 Involve a senior obstetrician in discussions about whether and how to monitor the fetal heart rate for women who are between 23+0 and 25+6 weeks pregnant. **[2015]**

1.12.3 Explain the different fetal monitoring options to the woman (and her family members or carers as appropriate), being aware that:

- there is limited evidence about the usefulness of specific features to suggest hypoxia or acidosis in preterm babies
- the available evidence is broadly consistent with that for babies born at term (see monitoring during labour in NICE's guideline on intrapartum care)
- a normal cardiotocography trace is reassuring and indicates that the baby is coping well with labour, but an abnormal trace does not necessarily indicate that fetal hypoxia or acidosis is present. **[2015]**

1.12.4 Explain to the woman (and her family members or carers as appropriate) that there is an absence of evidence that using cardiotocography improves the outcomes of preterm labour for the woman or the baby compared with intermittent auscultation. **[2015]**

1.12.5 Offer women in established preterm labour but with no other risk factors (see monitoring during labour in NICE's guideline on intrapartum care) a choice of fetal heart rate monitoring using either:

- cardiotocography using external ultrasound or
- intermittent auscultation. **[2015]**

1.12.6 For guidance on using intermittent auscultation for fetal heart rate monitoring, see monitoring during labour in NICE's guideline on intrapartum care. **[2015]**

Fetal scalp electrode

1.12.7 Do not use a fetal scalp electrode for fetal heart rate monitoring if the woman is less than 34+0 weeks pregnant unless all of the following apply:

- it is not possible to monitor the fetal heart rate using either external cardiotocography or intermittent auscultation
- it has been discussed with a senior obstetrician
- the benefits are likely to outweigh the potential risks
- the alternatives (immediate birth, intermittent ultrasound and no monitoring) have been discussed with the woman and are unacceptable to her. **[2015]**

1.12.8 Discuss with the woman (and her family members or carers as appropriate) the possible use of a fetal scalp electrode between 34+0 and 36+6 weeks of pregnancy if it is not possible to monitor the fetal heart rate using either external cardiotocography or intermittent auscultation. **[2015]**

Fetal blood sampling

1.12.9 Do not carry out fetal blood sampling if the woman is less than 34+0 weeks pregnant. **[2015]**

1.12.10 Discuss with the woman the possible use of fetal blood sampling between 34+0 and 36+6 weeks of pregnancy if the benefits are likely to outweigh the potential risks. **[2015]**

1.12.11 When offering fetal blood sampling, discuss this with the woman and advise her that if a blood sample cannot be obtained a caesarean section is likely. Also see the advice on fetal blood sampling in the NICE guidelines on intrapartum care for women with existing medical conditions or obstetric complications and their babies and intrapartum care for healthy women and babies. **[2015, amended 2020]**

1.13 Mode of birth

1.13.1 Discuss the general benefits and risks of caesarean section and vaginal birth with women in suspected, diagnosed or established preterm labour and women with P-PROM (and their family members or carers as appropriate) – see planning mode of birth in NICE's guideline caesarean birth. **[2015]**

1.13.2 Explain to women in suspected, diagnosed or established preterm labour and women with P-PROM about the benefits and risks of caesarean section that are specific to gestational age. In particular, highlight the difficulties associated with performing a caesarean section for a preterm birth, especially the increased likelihood of a vertical uterine incision and the implications of this for future pregnancies. **[2015]**

1.13.3 Explain to women in suspected, diagnosed or established preterm labour that there are no known benefits or harms for the baby from caesarean section, but the evidence is very limited. **[2015]**

1.13.4 Consider caesarean section for women presenting in suspected, diagnosed or established preterm labour between 26+0 and 36+6 weeks of pregnancy with breech presentation. **[2015]**

1.14 Timing of cord clamping for preterm babies (born vaginally or by caesarean section)

1.14.1 If a preterm baby needs to be moved away from the mother for resuscitation, or there is significant maternal bleeding:

- consider milking the cord and
- clamp the cord as soon as possible. **[2015]**

1.14.2 Wait at least 30 seconds, but no longer than 3 minutes, before clamping the cord of preterm babies if the mother and baby are stable. **[2015]**

1.14.3 Position the baby at or below the level of the placenta before clamping the cord. **[2015]**

Terms used in this guideline

This section defines terms that have been used in a particular way for this guideline. For other definitions see the NICE glossary and the Think Local, Act Personal Care and Support Jargon Buster.

Cervical trauma

Physical injury to the cervix including surgery; for example, previous cone biopsy (cold knife or laser), large loop excision of the transformation zone (LLETZ – any number) or radical diathermy.

Diagnosed preterm labour

A woman is in diagnosed preterm labour if she is in suspected preterm labour and has had a positive diagnostic test for preterm labour.

Established preterm labour

A woman is in established preterm labour if she has progressive cervical dilatation from 4 cm with regular contractions (see the definition of the established first stage of labour in NICE's guideline on intrapartum care).

Preterm prelabour rupture of membranes (P-PROM)

A woman is described as having P-PROM if she has ruptured membranes before 37+0 weeks of pregnancy but is not in established labour.

'Rescue' cervical cerclage

Cervical cerclage performed as an emergency procedure in a woman with premature cervical dilatation and often with exposed fetal membranes.

Suspected preterm labour

A woman is in suspected preterm labour if she has reported symptoms of preterm labour and has had a clinical assessment (including a speculum or digital vaginal examination) that confirms the possibility of preterm labour but rules out established labour.

Symptoms of preterm labour

A woman has presented before 37+0 weeks of pregnancy reporting symptoms that might be indicative of preterm labour (such as abdominal pain), but no clinical assessment (including speculum or digital vaginal examination) has taken place.

Recommendations for research

The guideline committee has made the following recommendations for research.

As part of the 2019 update, the guideline committee made an additional 3 research recommendations on prophylactic progesterone. As part of the 2022 update, the guideline committee made an additional research recommendation on repeating maternal corticosteroids.

Key recommendations for research

1 Repeating maternal corticosteroids

Is a single repeat dose or a single repeat course (2 doses) of maternal corticosteroids more effective than a single course for preterm neonatal outcomes and longer term outcomes for babies and children, and what is the optimal time interval between completing the initial course (2 doses) and the repeat dose or course? **[2022]**

For a short explanation of why the committee made this research recommendation see the rationale and impact section on repeat courses of maternal corticosteroids.

Full details of the evidence and the committee's discussion are in evidence review B: effectiveness of repeat courses of maternal corticosteroids

2 Prophylactic vaginal progesterone

Does progesterone reduce the risk of preterm birth in women who have risk factors for preterm birth, but do not have a short cervix (cervical length of more than 25 mm)? **[2019]**

Why this is important

Preterm birth is a cause of significant morbidity for women and babies, and impacts negatively on women and their families, as well as being costly to the NHS. There is good evidence for the use of progesterone to reduce preterm birth, however studies

include women with a combination of risk factors for preterm birth, such as a history of preterm birth and a shortened cervix.

There is no evidence for the effectiveness of progesterone in women who do not have a short cervix, but who do have other risk factors for preterm birth. It is therefore difficult to decide if progesterone should be recommended for these women, and also whether measuring the cervical length to guide treatment is necessary.

3 Prophylactic vaginal progesterone

Does progesterone reduce the risk of preterm birth in women who have a short cervix (cervical length of 25 mm or less), but do not have other risk factors for preterm birth? **[2019]**

Why this is important

Preterm birth is a cause of significant morbidity for women and babies, and impacts negatively on women and their families, as well as being costly to the NHS. There is good evidence for the use of progesterone to reduce preterm birth, however studies include women with a combination of risk factors for preterm birth, such as a history of preterm birth and a shortened cervix.

There is a lack of evidence for the effectiveness of progesterone in women with a cervical length of 25 mm or less, but without other risk factors for preterm birth. It is therefore difficult to decide if progesterone should be recommended for these women, and consequently whether measuring the cervix to guide treatment is necessary for women without other risk factors.

4 Prophylactic vaginal progesterone

At what gestation should treatment with prophylactic vaginal progesterone for the prevention of preterm birth be started and stopped? **[2019]**

Why this is important

Preterm birth is a cause of significant morbidity for women and babies, and impacts negatively on women and their families, as well as being costly to the NHS. There is good evidence for the use of progesterone to reduce preterm birth, however studies

do not define the optimal gestational age that this treatment should be started and stopped, and it is therefore difficult to recommend when it should started and the optimal duration of treatment.

5 Prophylactic vaginal progesterone and prophylactic cervical cerclage

What is the clinical effectiveness of prophylactic cervical cerclage alone compared with prophylactic vaginal progesterone alone and with both strategies together for preventing preterm birth in women with a short cervix and a history of spontaneous preterm birth? **[2015]**

Why this is important

Preterm birth causes significant neonatal morbidity and mortality, as well as long-term disability. Therefore strategies for preventing preterm birth are important. There are recognised risk factors for preterm birth, and so interventions can be offered to women with these risk factors. Both prophylactic cervical cerclage and prophylactic vaginal progesterone are effective in preventing preterm birth in women with a short cervix and a history of preterm birth, but there is limited evidence on which is more effective, and the relative risks and benefits (including costs) of each. More randomised research is needed to compare the relative effectiveness of prophylactic cervical cerclage and prophylactic vaginal progesterone in improving both neonatal and maternal outcomes. This will help women and healthcare professionals to make an informed decision about which is the most effective prophylactic option.

6 Identifying infection in women with preterm prelabour rupture of membranes (P-PROM)

What is the diagnostic accuracy of serial C-reactive protein testing to identify chorioamnionitis in women with P-PROM? **[2015]**

Why this is important

Identifying infection in women with P-PROM is needed to provide best practice care. Early diagnosis of infection allows consideration of therapeutic strategies (including antibiotics and/or early birth). Effective treatment of infection is particularly important given that sepsis is a common direct cause of maternal death. There is currently

limited evidence that serial C-reactive protein testing might be useful, but the Committee is aware that this strategy is in common practice.

Evidence from diagnostic studies is needed about the accuracy of serial C-reactive protein testing for identifying chorioamnionitis, which is one of the most common and serious infective complications of P-PROM.

7 ‘Rescue' cervical cerclage

What is the clinical effectiveness of 'rescue' cerclage in improving outcomes for women at risk of preterm birth? **[2015]**

Why this is important

There is some evidence from randomised studies that 'rescue' cerclage might be effective in improving neonatal outcomes in women with a dilated cervix and exposed, intact fetal membranes. However, there is uncertainty about the magnitude of this effect. The full consequences of this strategy and the subgroups of women at risk of preterm labour who might particularly benefit are not known. A randomised controlled trial would best address this question, but a national registry of the most critical outcomes (neonatal mortality and morbidity, maternal morbidity) could also be considered for women who did not want to participate in a randomised trial but who opted for 'rescue' cerclage.

8 Magnesium sulfate for neuroprotection

What is the clinical effectiveness of a bolus plus infusion of magnesium sulfate compared with a bolus alone for preventing neurodevelopmental injury in babies born preterm? **[2015]**

Why this is important

There is evidence from randomised studies that magnesium sulfate has neuroprotective properties for the baby when given to women who will deliver preterm up to 34+0 weeks of pregnancy. However, there is uncertainty about the best method of administering magnesium sulfate for this purpose, with different studies using different strategies. There are significant advantages for the woman and for reducing healthcare costs if a bolus is as effective as a bolus plus infusion, because magnesium sulfate has side effects for the woman, and more monitoring is

needed for infusion, with additional associated healthcare costs. A randomised controlled trial would best address this question by assessing the effects of each method on neonatal and maternal outcomes.

Rationale and impact

These sections briefly explain why the committee made the recommendations and how they might affect practice.

Prophylactic vaginal progesterone

Recommendations 1.2.1 to 1.2.5

Why the committee made the recommendations

There was good evidence that vaginal progesterone reduced the risk of preterm birth before 34 weeks in women with a previous history of preterm birth, and in women with a short cervix (25 mm or less). The committee were aware that these groups overlapped, as some women with a previous history of preterm birth will also have a short cervix. Therefore, they adopted the recommendation from the previous guideline to offer vaginal progesterone to women with a previous history of preterm birth and a short cervix. The committee concluded that, as in the previous guideline, progesterone should be offered as an equal option with cervical cerclage (for which no new evidence review had been conducted), as there is no evidence to determine which of these options is more effective.

As the treatment options are very different (regular use of vaginal progesterone pessaries throughout pregnancy, compared with a single operative procedure), the committee highlighted that the choice of treatment should be made after discussion of the risks and benefits of the 2 treatments.

The committee were aware that there is uncertainty regarding which risk factors should be used to identify women at risk of preterm birth (cervical length measurements, previous history of preterm birth, previous cervical surgery). There is also variation in practice across the country regarding which women are offered cervical length scanning. Cervical scanning is currently offered when there is clinical concern regarding the risk of preterm birth, rather than as a routine part of antenatal

care. Also, vaginal progesterone may be effective at reducing preterm birth for women with some risk factors, but not others.

Identifying specific groups of women who would benefit from treatment with progesterone was difficult because of the overlap in risk factors for an individual woman: some women with a previous history of preterm birth also have a cervical length of 25 mm or less, and some women with a cervical length of 25 mm or less also have a previous history of preterm birth. Therefore, it was hard to determine which of these 2 factors could identify women at high risk of preterm birth who would definitely benefit from treatment with vaginal progesterone. Consequently, the committee agreed that treatment with progesterone should be considered for women with either of these risk factors (cervical length of 25 mm or less, or a previous history of preterm birth). Because of the uncertainty over the benefits of progesterone in women who have risk factors for a preterm birth but do not have a cervical length of 25 mm or less, and women who have a cervical length of 25 mm or less but do not have a history of preterm birth, the committee made research recommendations on this topic.

The timing of progesterone administration varied between the studies. However, most trials started treatment between 16+0 and 24+0 weeks. This was in keeping with the experience of the committee members, therefore they made a recommendation to start treatment at any suitable time during that range of gestational age. There was no evidence on when progesterone should be stopped, but the committee's experience was that it should be continued until at least 34 weeks. As there was uncertainty about these timings, the committee also made a research recommendation on the optimal timing of treatment.

The recommendation on ensuring a plan is in place for removal of the suture when prophylactic cervical cerclage is used was made in response to an NHS England safety report, which highlighted some instances when removal did not happen.

How the recommendations might affect practice

Vaginal progesterone is a relatively inexpensive and commonly used treatment for women at risk of preterm birth, so the recommendations are unlikely to significantly alter practice. As vaginal progesterone should now be considered for women with a

history of preterm birth (with an unknown cervical length or a cervical length greater than 25 mm on scan), this might increase the use of progesterone, but the benefits of reduced numbers of preterm births are likely to lead to cost savings overall.

The recommendation on planning for removal of the suture when prophylactic cervical cerclage is used is not expected to affect practice.

Return to recommendations

'Rescue' cervical cerclage

Recommendation 1.6.4

Why the committee made the recommendations

The recommendation on ensuring a plan is in place for removal of the suture when 'rescue' cervical cerclage is used was made in response to an NHS England safety report, which highlighted some instances when removal did not happen.

How the recommendations might affect practice

The recommendation is not expected to affect practice.

Return to recommendations

Repeat courses of maternal corticosteroids

Recommendations 1.9.4 to 1.9.6

Why the committee made the recommendations

There was some evidence that repeat doses of maternal corticosteroids reduce birthweight, but the absolute reductions in birthweight were very small. Subgroup analyses showed these reductions were seen when corticosteroids were administered at lower gestational ages (below 30 weeks), when administered at intervals of less than 7 days, and when higher doses were administered. There was also a significant trend for reducing birthweight as the number of repeat courses increased. There was no evidence of benefit of maternal corticosteroids on chronic lung disease, but the committee were aware of a benefit seen with the need for respiratory support in neonates, although this outcome had not been prioritised for inclusion in the review. There was good evidence that repeat courses of maternal

corticosteroids had no effect or beneficial effects on perinatal mortality, neonatal admission, intraventricular haemorrhage, growth at 2 years and neurodevelopmental delay. The committee agreed that a single repeat course may be beneficial in certain circumstances, when the previous course had been given more than 7 days previously and preterm birth was imminent, but that with multiple repeat courses the effects on birthweight may outweigh the benefits. However, the committee agreed that corticosteroids administered for other reasons during pregnancy would not count towards this total of 2 courses, and so clarified in their recommendation that only courses administered for preterm labour should be counted.

The committee were concerned with the lack of evidence for longer-term neurodevelopmental and growth outcomes beyond 2 years and lack of evidence on the optimal dose and interval for the repeat corticosteroids and so the committee made a research recommendation.

How the recommendations might affect practice

The recommendations provide guidance on when a single repeat course of maternal corticosteroids may be used, and so may reduce variation in practice. This may increase the number of women who receive a single repeat course, and may reduce the number of multiple (more than 2) courses of maternal corticosteroids given. The cost impact is therefore likely to be minimal.

Return to recommendations

Context

Preterm birth is the single biggest cause of neonatal mortality and morbidity in the UK. Over 52,000 babies (around 7.3% of live births) in England and Wales in 2012 were born preterm (that is, before 37+0 weeks of pregnancy). There has been no decline in the preterm birth rate in the UK over the last 10 years.

Babies born preterm have high rates of neonatal and infant mortality, and the risk of mortality increases as gestational age at birth decreases. Babies who survive preterm birth have increased rates of disability. Recent UK studies comparing cohorts born in 1995 and 2006 have shown improved rates of survival (from 40% to

53%) for extreme preterm births (born between 22 and 26 weeks). Rates of disability in survivors were largely unchanged over this time period.

The major long-term consequence of prematurity is neurodevelopmental disability. Although the risk for the individual child is greatest for those born at the earliest gestational ages, the global burden of neurodevelopmental disabilities depends on the number of babies born at each of these gestations, and so is greatest for babies born between 32 and 36 weeks, less for those born between 28 and 31 weeks, and least for those born at less than 28 weeks gestation.

Around 75% of women giving birth preterm do so after preterm labour, which may or may not be preceded by preterm prelabour rupture of membranes. The remaining women giving birth preterm have an elective preterm birth when this is thought to be in the fetal or maternal interest (for example, because of extreme growth retardation in the baby or maternal conditions such as pre-eclampsia).

This guideline reviews the evidence for the best way to provide treatment for women who present with symptoms and signs of preterm labour and women who are scheduled to have an early planned birth. It also reviews how preterm birth can be optimally diagnosed in symptomatic women, given that many women thought to be in preterm labour on a clinical assessment will not give birth preterm.

The guideline does not cover who should and should not have medically indicated preterm birth, or diagnostic or predictive tests in asymptomatic women.

Finding more information and committee details

You can see everything NICE says on preterm labour and birth in the NICE Pathway on preterm labour and birth.

To find out what NICE has said on topics related to this guideline, see the NICE webpage on intrapartum care.

For full details of the evidence and the guideline committee's discussions, see the evidence review. You can also find information about how the guideline was developed, including details of the committee.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting NICE guidelines into practice, see resources to help you put NICE guidance into practice.

Update information

February 2022: We have reviewed the evidence and made new recommendations on the use of repeat courses of maternal corticosteroids. These recommendations are marked **[2022].**

August 2019: We have reviewed the evidence and made new recommendations on the effectiveness of prophylactic vaginal progesterone and prophylactic cervical cerclage for preterm labour and birth. These recommendations are marked **[2019]**.

We have also made some changes without an evidence review:

- updated recommendations to show cervical length of 25 mm or less as indicative of a high risk of preterm birth for consistency
- updated licensing information for erythromycin and magnesium sulfate use during pregnancy
- updated the time period when corticosteroids are offered to women with suspected preterm labour reflect current practice
- updated advice on insulin-like growth factor binding protein 1 test or placental alpha-microglobulin 1 testing in preterm rupture of membranes to remove the word ‘consider’, making it clearer when the tests should be used.

These recommendations are marked **[2015, amended 2019]**.

Minor changes since publication

April 2021: In recommendation 1.4.4 we added a link to the section on women with prolonged prelabour rupture of membranes who have group B streptococcal colonisation, bacteriuria or infection, in NICE’s updated guideline on neonatal infection.

January 2021: A duplicate link was removed from recommendation 1.12.11. Footnotes were incorporated into the main text to improve accessibility.

August 2020: Links to the NICE guidelines on intrapartum care for women with existing medical conditions or obstetric complications and their babies and intrapartum care for healthy women and babies were added to recommendation 1.12.11. This recommendation is marked **[2015, amended 2020]**.

October 2019: The review date for recommendation 1.3.1 was updated to show it had been amended in 2019 without an evidence review.

Recommendations that have been deleted, or changed without an evidence review

We propose to delete some recommendations from the 2015 guideline. Table 1 sets out these recommendations and includes details of replacement recommendations. If there is no replacement recommendation, an explanation for the proposed deletion is given.

For recommendations shaded in grey and ending **[2015, amended 2022]**, we have made changes that could affect the intent without reviewing the evidence. Yellow shading is used to highlight these changes, and reasons for the changes are given in table 2.

For recommendations shaded in grey and ending **[2015]** or **[2019]** we have not reviewed the evidence. In some cases minor changes have been made – for example, to update links, or bring the language and style up to date – without changing the intent of the recommendation. Minor changes are listed in table 3.

See also the previous NICE guideline and supporting documents. [update hyperlink with guideline number]

Table 1 Recommendations that have been deleted

Recommendation in [2015] guideline	Comment
1.9.5 Do not routinely offer repeat courses of maternal corticosteroids, but take into account: • the interval since the end of last course • gestational age • the likelihood of birth within 48 hours. [2015]	Replaced by: 1.9.4 Consider a single repeat course of maternal corticosteroids for women less than 34+0 weeks of pregnancy who: • have already had a course of corticosteroids when this was more than 7 days ago, and

	• are at very high risk of giving birth in the next 48 hours. [2022] . 1.9.5 When deciding whether to give a repeat course of maternal corticosteroids, take into account: • the current gestational age and gestational age when first dose was given, and • fetal growth. [2022] 1.9.6 Do not give more than 2 courses of maternal corticosteroids for preterm labour. [2022]

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2 **Table 2 Amended recommendation wording (change to intent) without an**

3 **evidence review**

Recommendation in [2015] guideline	Recommendation in current guideline	Reason for change
1.2.1 Offer a choice of prophylactic vaginal progesterone or prophylactic cervical cerclage to women who have both: • a history of spontaneous preterm birth (up to 34+0 weeks of pregnancy) or mid-trimester loss (from 16+0 weeks of pregnancy onwards) and • results from a transvaginal ultrasound scan carried out between 16+0 and 24+0 weeks of pregnancy that show a cervical length of 25 mm or less. Discuss the risks and benefits of both options with the woman, and make a shared decision on which treatment is most suitable. In August 2019, this was an off-label use of vaginal progesterone. See NICE's information on prescribing medicines. [2019]	1.2.1 Offer a choice of prophylactic vaginal progesterone or prophylactic cervical cerclage to women who have both: • a history of spontaneous preterm birth (up to 34+0 weeks of pregnancy) or loss (from 16+0 weeks of pregnancy onwards) and • results from a transvaginal ultrasound scan carried out between 16+0 and 24+0 weeks of pregnancy that show a cervical length of 25 mm or less. Discuss the risks and benefits of both options with the woman, and make a shared decision on which treatment is most suitable. In August 2019, this was an off-label use of vaginal progesterone. See NICE's information on prescribing medicines. [2019, amended 2022]	The word 'mid-trimester' has been removed from both these recommendations as the time frame suggested (from 16 weeks onwards) does not match with the accepted definition of mid-trimester which starts at 13 weeks.

1.2.2 Consider prophylactic vaginal progesterone for women who have either: • a history of spontaneous preterm birth (up to 34+0 weeks of pregnancy) or mid-trimester loss (from 16+0 weeks of pregnancy onwards) or • results from a transvaginal ultrasound scan carried out between 16+0 and 24+0 weeks of pregnancy that show a cervical length of 25 mm or less. In August 2019, this was an off-label use of vaginal progesterone. See NICE's information on prescribing medicines. [2019]	1.2.2 Consider prophylactic vaginal progesterone for women who have either: • a history of spontaneous preterm birth (up to 34+0 weeks of pregnancy) or loss (from 16+0 weeks of pregnancy onwards) or • results from a transvaginal ultrasound scan carried out between 16+0 and 24+0 weeks of pregnancy that show a cervical length of 25 mm or less. In August 2019, this was an off-label use of vaginal progesterone. See NICE's information on prescribing medicines. [2019, amended 2022]	
1.8.1 Take the following factors into account when making a decision about whether to start tocolysis: • whether the woman is in suspected or diagnosed preterm labour • other clinical features (for example, bleeding or infection) that may suggest that stopping labour is contraindicated • gestational age at presentation • likely benefit of maternal corticosteroids (see section 1.9) • availability of neonatal care (need for transfer to another unit) • the preference of the woman. [2015]	1.8.1 Take the following factors into account when making a decision about whether to start tocolysis: • whether the woman is in suspected or diagnosed preterm labour • other clinical features (for example, bleeding or infection) that may suggest that stopping labour is contraindicated • gestational age at presentation • likely benefit of maternal corticosteroids (see section 1.9) • availability of an appropriate level of neonatal care (if there is need for transfer to another unit). See also NHSE saving babies' lives care bundle version 2 (recommendation 5.9). • the preference of the woman. [2015, amended 2022]	The 5th bullet point has been amended to clarify that it is the availability of the appropriate level of neonatal care that should be considered, if there is a need to transfer to another unit, and a link to the NHS England care bundle which references this has been included.

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Table 3 Minor changes to recommendation wording (no change to intent)

Recommendation numbers in current guideline	Comment
All recommendations except those labelled [2022]	Recommendations have been edited into the direct style (in line with current NICE style for recommendations in guidelines) where possible. Yellow highlighting has not been applied to these changes.