Neonatal infection: antibiotics for prevention and treatment

This guideline update amends 1 of the risk factors for early-onset neonatal infection in relation to the timing of rupture of membranes for term births (see box 1). It also includes new recommendations on switching from intravenous to oral antibiotics when treating early-onset neonatal infection (see recommendations 1.6.7 to 1.6.10).

The consultation draft includes the new recommendations and some existing recommendations for context. It does not include all recommendations, for example, those on late-onset neonatal infection and treating meningitis. Hyperlinks to recommendations that are not included in the consultation draft have been removed but the relevant recommendation numbers have been retained.

This guideline will update NICE guideline NG195 (published April 2021, updated March 2024).

Who is it for?

- Healthcare professionals in primary and secondary care
- Commissioners and providers of neonatal and maternity services
- Parents and carers of babies who are at risk of or who have a neonatal infection

What does it include?

- the recommendations
- rationale and impact sections that explain why the committee made the 2026 recommendations and how they might affect practice.

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 time between prelabour rupture of membranes and birth to see if this affects risk of early-onset neonatal infection. We have also reviewed the evidence on switching from intravenous to oral antibiotics when treating suspected early-onset neonatal infection. You are invited to comment on the new and updated recommendations. These are marked as **[2026]**

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 2026 recommendations are in the evidence reviews. Evidence for the 2021 recommendations are in previous evidence reviews.

1 Recommendations

Parents and carers have the right to be involved in planning and making decisions about their baby's health and care, and to be given information and support to enable them to do this, as set out in the NHS Constitution and summarised 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.

Healthcare professionals should follow our general guidelines for people delivering care:

- Patient experience in adult NHS services
- Babies, children and young people's experience of healthcare

- Shared decision making
- Medicines adherence
- Medicines optimisation

Throughout this guideline, unless otherwise specified, the term neonatal infection covers both early-onset and late-onset infections.

1.1 Information and support

Parents and carers of all babies

1.1.15 Before any baby is transferred home from the hospital or midwifery-led unit (or in the immediate postnatal period in the case of babies born at home), advise parents and carers to seek urgent medical help (for example, from NHS 111, their GP, or an accident and emergency department) if they are concerned that their baby:

- is showing abnormal behaviour (for example, inconsolable crying or listlessness) **or**
- is unusually floppy **or**
- has an abnormal temperature unexplained by environmental factors (lower than 36°C or higher than 38°C) **or**
- has abnormal breathing (rapid breathing, difficulty in breathing or grunting) **or**
- has a change in skin colour (for example, where the baby becomes very pale, blue/grey or dark yellow) **or**
- has developed new difficulties with feeding.

Give the advice both in person, and as written information and advice for them to take away. **[2021]**

1.3 Risk factors for and clinical indicators of possible early-onset neonatal infection

Before birth

1.3.1 For women in labour, identify and assess any risk factors for early-onset neonatal infection (see box 1). Throughout labour, monitor for any new risk factors. **[2021]**

1.3.2 For guidance on managing prelabour rupture of membranes at term, see the NICE guideline on intrapartum care. **[2021]**

Assessing and managing the risk of early-onset neonatal infection after birth

1.3.3 If there are any risk factors for early-onset neonatal infection (see box 1), or if there are clinical indicators of possible early-onset neonatal infection (see box 2):

- perform an immediate clinical assessment
- review the maternal and neonatal history
- carry out a physical examination of the baby, including an assessment of vital signs. **[2021]**

1.3.4 If group B streptococcus is first identified in the mother within 72 hours after the baby's birth:

- ask those directly involved in the baby's care (for example, a parent, carer, or healthcare professional) whether they have any concerns in relation to the clinical indicators listed in box 2 **and**
- identify any other risk factors present **and**
- look for clinical indicators of infection.

Use this assessment to decide on clinical management (see recommendation 1.3.5). **[2021]**

Box 1 Risk factors for early-onset neonatal infection, including ‘red flags’

Red flag risk factor:

- Suspected or confirmed infection in another baby in the case of a multiple pregnancy.

Other risk factors:

- Invasive group B streptococcal infection in a previous baby or maternal group B streptococcal colonisation, bacteriuria or infection in the current pregnancy.
- Pre-term birth following spontaneous labour before 37 weeks' gestation.
- Confirmed rupture of membranes for more than 18 hours before a pre-term birth.
- Confirmed rupture of membranes for more than 24 hours before a term birth. **[2026]**
- Intrapartum fever higher than 38°C if there is suspected or confirmed bacterial infection.
- Clinical diagnosis of chorioamnionitis.

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Box 2 Clinical indicators of possible early-onset neonatal infection (observations and events in the baby), including 'red flags'

Red flag clinical indicators:

- Apnoea (temporary stopping of breathing)
- Seizures
- Need for cardiopulmonary resuscitation
- Need for mechanical ventilation
- Signs of shock

Other clinical indicators:

- Altered behaviour or responsiveness
- Altered muscle tone (for example, floppiness)
- Feeding difficulties (for example, feed refusal)
- Feed intolerance, including vomiting, excessive gastric aspirates and abdominal distension
- Abnormal heart rate (bradycardia or tachycardia)
- Signs of respiratory distress (including grunting, recession, tachypnoea)
- Hypoxia (for example, central cyanosis or reduced oxygen saturation level)
- Persistent pulmonary hypertension of newborns
- Jaundice within 24 hours of birth
- Signs of neonatal encephalopathy
- Temperature abnormality (lower than 36°C or higher than 38°C) unexplained by environmental factors
- Unexplained excessive bleeding, thrombocytopenia, or abnormal coagulation
- Altered glucose homeostasis (hypoglycaemia or hyperglycaemia)
- Metabolic acidosis (base deficit of 10 mmol/litre or greater)

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1.3.5 Use the following framework, based on the risk factors in box 1 and the clinical indicators in box 2, to make antibiotic management decisions as directed:

- In babies with any red flag, or with 2 or more 'non-red-flag' risk factors or clinical indicators:
  - follow section 1.4 on investigations before starting antibiotics **and**
  - start antibiotic treatment according to sections 1.5 and 1.6 **and**
  - do not wait for the test results before starting antibiotics
- in babies without red flags and only 1 risk factor or 1 clinical indicator, use clinical judgement to decide:
  - whether it is safe to withhold antibiotics **and**
  - whether the baby's vital signs and clinical condition need to be monitored. If monitoring is needed, continue for at least 12 hours using a newborn early warning system
- for babies without risk factors or clinical indicators of possible infection, continue routine postnatal care as covered in the NICE guideline on postnatal care. **[2021]**

Kaiser Permanente neonatal sepsis calculator

1.3.6 The Kaiser Permanente neonatal sepsis calculator can be used as an alternative to the framework outlined in recommendation 1.3.5 for babies born after 34+0 weeks of pregnancy who are being cared for in a neonatal unit, transitional care or postnatal ward. It should only be used if it is part of a prospective audit, which should record:

- total number of babies assessed using the calculator
- number of babies correctly identified by the calculator who develop a culture-confirmed neonatal infection
- number of babies incorrectly identified by the calculator who do not develop a culture-confirmed neonatal infection
- number of babies missed by the calculator who develop a culture-confirmed neonatal infection. **[2021]**

1.3.7 If using the Kaiser Permanente neonatal sepsis calculator (see recommendation 1.3.6) to assess the risk of early-onset neonatal infection, use the classification given by the calculator to direct management decisions. **[2021]**

Management for babies at increased risk of infection

1.3.8 In babies being monitored for possible early-onset neonatal infection:

- Consider starting antibiotic treatment (see section 1.4 on investigations before starting antibiotics, and section 1.5 on which intravenous antibiotics to use).
- If no further concerns arise during observation reassure the family and, if the baby is to be discharged, give information and advice to the parents and carers (see recommendations 1.1.15 and 1.1.16). **[2021]**

1.3.9 If a baby needs antibiotic treatment, give this as soon as possible and always within 1 hour of the decision to treat. **[2021]**

For a short explanation of why the committee made the 2021 recommendations and the change to the risk factors for early-onset neonatal infection in 2026 and how they might affect practice, see the rationale and impact section on risk factors for and clinical indicators of possible early-onset neonatal infection.

Full details of the evidence and the committee's discussion are in evidence review D: maternal and neonatal risk factors and evidence review D2: timing of prelabour rupture of membranes to birth and risk of early-onset neonatal infection.

1.5 Intravenous antibiotics for suspected early-onset infection

1.5.1 Use intravenous benzylpenicillin with gentamicin as the first-choice antibiotic regimen for empirical treatment of suspected early-onset

infection, unless microbiological surveillance data show local bacterial resistance patterns that indicate the need for a different antibiotic. **[2012]**

1.5.2 Give benzylpenicillin in a dosage of 25 mg/kg every 12 hours. Consider shortening the dose interval to every 8 hours, based on clinical judgement (for example, if the baby appears very ill). **[2012]**

1.5.3 Give gentamicin in a starting dose of 5 mg/kg (see recommendation 1.5.4). **[2012]**

1.5.4 When prescribing gentamicin, be aware that:

- the summary of product characteristics recommends a dosage of 4 to 7 mg/kg/day administered in a single dose
- the evidence reviewed for the guideline supports a starting dosage of 5 mg/kg every 36 hours administered in a single dose.

In 2021, a dosage of 5 mg/kg every 36 hours is an off-label use of gentamicin. See NICE's information on prescribing medicines. **[2012]**

1.5.5 If a second dose of gentamicin is given, this should usually be 36 hours after the first dose (see recommendation 1.6.3 for criteria for stopping antibiotics at 36 hours). Use a shorter interval if clinical judgement suggests this is needed, for example, if:

- the baby appears very ill
- the blood culture shows a Gram-negative infection. **[2012]**

1.5.6 Take account of blood gentamicin concentrations when deciding on subsequent gentamicin dosing regimen (see recommendations 1.15.1 to 1.15.8). **[2012]**

1.5.7 Record the times of:

- gentamicin administration
- sampling for therapeutic monitoring. **[2012]**

1.5.8 Regularly reassess the clinical condition and results of investigations in babies receiving antibiotics. Consider whether to change the antibiotic regimen, taking account of:

- the baby's clinical condition (for example, if there is no improvement)
- the results of microbiological investigations
- expert microbiological advice, including local surveillance data. **[2012]**

1.5.9 If there is microbiological evidence of Gram-negative bacterial sepsis, add another antibiotic to the benzylpenicillin and gentamicin regimen that is active against Gram-negative bacteria (for example, cefotaxime). If Gram-negative infection is confirmed, stop benzylpenicillin. **[2012]**

1.6 Duration and route of administration of antibiotic treatment for early-onset neonatal infection

Investigations during antibiotic treatment

1.6.1 In babies given intravenous antibiotics because of risk factors for infection or clinical indicators of possible early-onset infection, measure the C-reactive protein concentration 18 to 24 hours after presentation. **[2012]**

1.6.2 Consider performing a lumbar puncture to obtain a cerebrospinal fluid sample in a baby who did not have a lumbar puncture at presentation who is receiving antibiotics, if it is thought safe to do so and if:

- the baby has a positive blood culture (other than coagulase negative staphylococcus) **or**
- the baby does not respond satisfactorily to antibiotic treatment **or**
- there is a strong clinical suspicion of infection **or**
- there are clinical symptoms or signs suggesting meningitis. **[2012, amended 2021]**

Decisions about antibiotic treatment

1.6.3 For babies who are being treated with intravenous antibiotics because of risk factors for early-onset infection or clinical indicators of possible infection, stop antibiotics at 36 hours if:

- the blood culture is negative **and**
- the initial clinical suspicion of infection was not strong **and**
- the baby's clinical condition is reassuring, with no clinical indicators of possible infection (see box 2 for the list of clinical indicators) **and**
- the levels and trends of C-reactive protein concentration are reassuring. **[2012, amended 2026]**

1.6.4 Give antibiotic treatment for a total of 7 days for babies with a positive blood culture or negative blood culture if sepsis has been strongly suspected. **[2012]**

1.6.5 Consider continuing antibiotic treatment for more than 7 days for babies with a positive blood culture or negative blood culture if sepsis has been strongly suspected, if:

- the baby has not yet fully recovered **or**
- this is advisable because of the pathogen identified on blood culture (seek expert microbiological advice if necessary). **[2012]**

1.6.6 When continuing intravenous antibiotics for more than 36 hours for babies with suspected sepsis despite negative blood cultures, review the baby at least once every 24 hours. Consider at each review whether it is appropriate to stop antibiotic treatment, taking account of:

- the level of initial clinical suspicion of infection **and**
- the baby's clinical progress and current condition **and**
- the levels and trends of C-reactive protein concentration. **[2012]**

1.6.7 For babies born from 35 weeks' gestation who are being treated with intravenous antibiotics because of risk factors for early-onset infection or clinical indicators of possible infection, consider switching treatment to

oral antibiotics at 36 hours to complete the course and sending the baby home under the care of the neonatal team, if:

- the baby's blood culture is negative **and**
- the initial clinical suspicion of infection was strong and the level of C-reactive protein concentration was elevated **but**
  - the baby's clinical condition is now reassuring, with no current clinical indicators of ongoing infection (see box 2 for the list of clinical indicators) **and**
  - the level of C-reactive protein concentration is now reassuring **and**
- the baby is tolerating oral feeds **and**
- the baby has been reviewed by a senior neonatologist or paediatrician (consultant or similar level). **[2026]**

1.6.8 Use amoxicillin with or without clavulanic acid as the oral antibiotic, unless microbiological surveillance data show local bacterial resistance patterns that indicate the need for a different antibiotic. **[2026]**

1.6.9 Before sending a baby home on oral antibiotics, ensure that:

- parents or carers are trained to give oral antibiotics, including giving the first dose under supervision while in hospital
- parents or carers know when and how to seek medical help from the neonatal team (see recommendation 1.1.15 for signs in babies that require medical help)
- parents' or carers' concerns are addressed. **[2026]**

1.6.10 If switching to oral antibiotics and sending the baby home, provide at least 2 follow-up consultations, including 1 at the end of treatment. **[2026]**

Service and staffing requirements

1.6.11 Consider establishing hospital systems to provide blood culture results 36 hours after starting antibiotics, to allow timely stopping of treatment and discharge from hospital. **[2012]**

1.6.12 Healthcare professionals with specific experience in neonatal infection should be available every day to give clinical microbiology or paediatric infectious disease advice. **[2012]**

For a short explanation of why the committee made the 2026 recommendations and how they might affect practice, see the rationale and impact section on antibiotic treatment for early-onset neonatal infection.

Full details of the evidence and the committee's discussion are in evidence review R: switching from intravenous to oral antibiotics for suspected early-onset neonatal infection.

1.7 Care setting

1.7.1 Using clinical judgement, consider completing a course of intravenous antibiotics outside of hospital (for example, at home or through visits to a midwifery-led unit) in babies who are well and for whom there are no ongoing concerns if there is adequate local support. See also the recommendations on switching from intravenous antibiotics to oral antibiotics for babies with early-onset neonatal infection. **[2012, amended 2026]**

1.7.2 When deciding on the appropriate care setting for a baby, take into account the baby's clinical needs and the competencies needed to ensure

safe and effective care (for example, the insertion and care of intravenous cannulas). **[2012]**

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.

Early-onset neonatal infection

Neonatal infection less than 72 hours after birth.

Late-onset neonatal infection

Neonatal infection 72 hours or more after birth.

Severe penicillin allergy

A history of allergy to penicillin with effects that are clearly likely to be allergic in nature such as anaphylaxis, respiratory distress, angioedema or urticaria.

Therapeutic monitoring

A process of measuring the concentration of a drug in the bloodstream, to avoid excessive levels that might be associated with adverse effects or to ensure adequate levels for therapeutic effect.

Rationale and impact

These sections briefly explain why the committee made the recommendations and how they might affect practice. They link to details of the evidence and a full description of the committee's discussion.

Risk factors for and clinical indicators of possible early-onset neonatal infection

Recommendations 1.3.1 to 1.3.9

Why the committee made the recommendations

Before birth

No evidence was found that related specifically to this topic, and the committee agreed that the recommendations from the previous version of this guideline still reflected current best practice so did not need to be changed. These recommendations apply to all women with risk factors, including those who decline antibiotics, or those who either do not receive antibiotics or receive their first dose of antibiotics shortly before birth because of precipitate birth. As such, any women with risk factors should be monitored throughout labour, and these factors should be taken into account when assessing the risk of infection in the baby.

Assessing and managing the risk of early-onset neonatal infection after birth

The committee based their recommendations on evidence on the accuracy of clinical decision models for early-onset neonatal infection, as well as evidence on individual neonatal and maternal risk factors.

There was uncertainty about how well the Kaiser Permanente neonatal sepsis calculator identified true cases of early-onset infection, because the studies included very few cases of infection that were confirmed by blood culture. This was a problem for the framework outlined in the 2012 version of the guideline as well, but the committee believed that the framework is more conservative and would lead to more antibiotics being prescribed than the Kaiser Permanente calculator (both appropriately and inappropriately). Evidence on the Kaiser Permanente neonatal sepsis calculator suggests that it is good at correctly identifying babies without neonatal infection, so reducing the amount of antibiotics that are prescribed unnecessarily. However, given the very serious consequences of missing an infection, the committee preferred the conservative approach from the framework in the 2012 guideline, with some amendments as outlined. However, as the evidence does not clearly show one option to be better and some UK centres currently use the Kaiser Permanente calculator, they also recommended this as an alternative, but only in the context of a research or audit project. By using the Kaiser Permanente calculator as part of an audit, centres will be able to collect detailed data on the use of the tool within NHS practice, including the number of babies who correctly

received treatment, those who received antibiotics unnecessarily, and any who were not recommended antibiotics but did have infection. This information will provide a more detailed understanding of the effectiveness and safety of the Kaiser Permanente calculator which can be used to inform decisions on its use in future updates of this guideline.

The committee decided to specify that the Kaiser Permanente calculator should only be used for babies who are being cared for in a neonatal unit (neonatal intensive care units, local neonatal units and special care units), transitional care or a postnatal ward. The committee highlighted how it would be more difficult to collect the information needed for the audit in other settings. They did not think the calculator should be recommended for use in the emergency department, as babies who are brought in from home are likely to already be showing signs of being unwell and therefore need more immediate treatment than babies who are being assessed for risk of infection in a neonatal unit. In these cases, waiting to consult the calculator could instead delay treatment. The committee also thought that the calculator was not appropriate for use in a midwife-led unit or freestanding midwifery unit as there is currently no evidence that has used the calculator in these settings.

As there was only limited new evidence, the framework for assessing and managing risk, involving red flag indicators and other indicators of infection, has been retained from the 2012 guideline. The committee selected the red flag indicators as those that, based on their clinical experience, are the most high-risk factors that need immediate treatment. Non-red flag indicators are those that can have causes other than neonatal infection and therefore do not always signal the need for immediate treatment. Many of the clinical indicators matched those in the 2012 guideline, with the following changes.

Parenteral antibiotics are no longer a risk factor. Since the 2012 guideline, awareness of the risks of maternal sepsis has increased and there has been a focus on early treatment with antibiotics. This has led to more babies being prescribed antibiotics even when a maternal infection is not strongly suspected. This rise in antibiotic use can result in babies being unnecessarily exposed to the side effects associated with antibiotics, such as nephrotoxicity, as well as increasing a baby's

length of stay in hospital. Increased antibiotic use is also associated with an increase in the development of antibiotic resistance.

Chorioamnionitis and intrapartum fever are now separate risk factors because intrapartum fever has other potential causes. This change means that women with chorioamnionitis and intrapartum fever will have 2 risk factors, so their babies will receive antibiotics.

Invasive group B streptococcal infection in a previous baby and maternal group B streptococcal colonisation, bacteriuria or infection in the current pregnancy have been combined into a single risk factor, because having a previous baby with invasive group B streptococcal infection increases the risk of future colonisation and infection, but does not confer additional risk if infection, bacteriuria or infection in the current pregnancy is already known about.

Mechanical ventilation, which was previously a red flag risk factor pre-term babies, and a non-red flag risk factor for term babies has been merged into one recommendation. The committee agreed that mechanical ventilation is a risk factor for infection regardless of prematurity, and so they decided to merge these into one red flag risk factor which did not refer to whether a baby was born pre-term or at term.

In 2021, confirmed prelabour rupture of membranes without any associated timeframe was removed from the list of risk factors for early-onset neonatal infection because the committee decided that it was covered by other risk factors (pre-term birth and confirmed rupture of membranes in a pre-term or term birth).

In 2026, evidence from 3 studies showed that the risk of early-onset neonatal infection increased as the time between prelabour rupture of membranes (PROM) at term and birth increased. The committee agreed to amend the risk factor about rupture of membranes at term to refer to the time between rupture and birth rather than prelabour rupture and onset of labour. This reflected their view that whether membranes rupture before or after onset of labour is irrelevant and that is it the overall time between rupture and birth that is important for the risk of early-onset neonatal infection. The evidence was inconclusive in identifying a specific time

interval at which the risk of early-onset neonatal infection significantly increased. So, using their clinical experience, the committee decided to keep this at more than 24 hours.

To address the limited evidence, the committee made a recommendation for research on the accuracy of the Kaiser Permanente neonatal sepsis calculator and other clinical prediction models.

Management of babies at increased risk of infection

No evidence was found that related specifically to this topic, and the committee agreed that the recommendations from the previous version of this guideline still reflected current best practice so did not need to be changed.

How the recommendations might affect practice

The 2026 revised wording for the risk factor for early-onset neonatal infection of rupture of membranes more than 24 hours before a term birth could increase the number of neonates requiring monitoring for early-onset infection, although current practice is already largely aligned with this so no significant change in practice or resource impact is expected. There could be an increase in the number of pregnant women, trans men and non-binary people opting for induction of labour as soon as possible after rupture of membranes rather than expectant management.

Some centres use the Kaiser Permanente neonatal sepsis calculator as an alternative, and the recommendations may increase the number of centres who use this calculator in the context of a research or audit project. Current evidence suggests that this may reduce the number of babies who are unnecessarily given antibiotics, but there was substantial uncertainty about how well the calculator identified true cases of infection. If an increase in use of the Kaiser calculator resulted in more cases of infection being missed, this could increase costs associated with treating neonatal infections, as well as the very serious impact on the baby and their families.

Reducing the number of babies being given antibiotics may reduce costs for the NHS, both by reducing prescriptions and by reducing the amount of time babies and their mothers spend in hospital.

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Antibiotic treatment for early-onset neonatal infection

Recommendations 1.6.7 to 1.6.10

Why the committee made the recommendations

For babies born from 35 weeks' gestation with suspected early-onset bacterial infection who are clinically stable, evidence showed that switching their treatment from intravenous antibiotics to oral antibiotics was associated with reduced hospital stays compared with remaining on intravenous antibiotics, without increasing serious adverse outcomes. The impact on mortality, adverse events, reinfection, readmission to hospital, completion of antibiotic course, exclusive breastfeeding rates, sleep quality, and number of healthcare professional visits was uncertain but appeared similar between babies whose treatment was switched to oral antibiotics and those who remained on intravenous antibiotics.

Expert witness testimony about healthcare services taking a similar approach to that outlined in the evidence showed that switching treatment to oral antibiotics reduced hospital stays and that the number of babies readmitted to hospital with infection was low, with none developing late-onset sepsis. Other benefits included reduced exposure to gentamicin, which can have serious side-effects, fewer re-cannulations, and positive experiences reported by parents, carers and healthcare staff.

Based on their clinical knowledge and experience and informed by the evidence, the committee agreed on the eligibility criteria for switching to oral antibiotics to ensure the safety and effectiveness of the approach. They also agreed that babies sent home with oral antibiotics should remain under the care of the neonatal team until treatment is completed, again for safety reasons, but also for continuity of care.

Amoxicillin alone or in combination with clavulanic acid was recommended as the first-choice oral antibiotic based on the evidence, expert witness testimony and the committee's experience, although the committee emphasised the importance of taking local bacterial resistance patterns into account. The type of oral antibiotic used varied across the published evidence, which were all non-UK studies.

However, according to the expert witness testimony, the 3 projects across 9 UK sites trialing the approach of switching from intravenous to oral antibiotics and sending the baby home (oral-switch approach) were already using oral amoxicillin or were about to start using it.

The committee agreed on further safety netting measures before sending babies home, based on the evidence and their experience. They acknowledged that some parents and carers may face challenges in managing oral antibiotic treatment safely at home, and social and family circumstances may influence the shared decision of sending a baby home with oral antibiotics.

A minimum of 2 follow-up consultations were recommended, based on the number of follow-ups reported in the published studies and the committee's opinion. Each of the 9 UK sites trialing the oral-switch approach were providing 1 clinical follow-up, according to the expert witness testimony. The committee decided to adopt a more cautious approach but agreed that the type of consultation (for example, telephone, video conference or face-to-face) should be decided locally.

How the recommendation might affect practice

The approach of switching treatment for babies with early-onset neonatal infection from intravenous to oral antibiotics and sending them home is already being adopted in some UK hospitals. The recommendations are likely to increase this further. In turn, this is likely to shorten hospital stays, thereby reducing costs, easing pressure on hospital beds, and improving capacity to care for the sickest babies. This approach could also improve parents' and carers' experiences of the healthcare system and reduce the need to manage the harmful side effects of gentamicin.

Neonatal teams will need protocols for following up babies sent home with oral antibiotics.

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Context

Neonatal bacterial infection is a significant cause of mortality and morbidity in newborn babies. Parent organisations and the scientific literature report that there can be unnecessary delays in recognising and treating sick babies. In addition, concern about the possibility of neonatal infection is common. This concern is an important influence on the care given to pregnant women and newborn babies. There is wide variation in how the risk of neonatal infection is managed in healthy babies. The approach taken by the NHS needs to:

- prevent neonatal infection when possible
- prioritise the treatment of sick babies
- minimise the impact of management pathways on healthy women and babies
- use antibiotics wisely to avoid the development of resistance to antibiotics.

These drivers have not always been addressed consistently in the NHS, and this guideline was commissioned to ensure they would be addressed in future.

Five key principles underpin the recommendations in this guideline:

- Unless it is dangerous, families should be offered choice. The guideline includes recommendations to support families in making choices through provision of information and, when appropriate, reassurance.
- Intrapartum antibiotic prophylaxis should be administered in a timely manner to all eligible women who choose it.
- Babies with suspected neonatal infection should receive treatment as quickly as possible.
- Antibiotic exposure should be minimised in babies who do not have a neonatal infection.
- An integrated system of clinical care is needed to allow full implementation of the guideline recommendations.

Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic page on infections.

For full details of the evidence and the guideline committee's discussions, see the evidence reviews. 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 our guidelines into practice, see resources to help you put NICE guidance into practice.

Update information

May 2026: We have reviewed the evidence on the time interval between prelabour rupture of membranes and birth to see if this affects risk of early-onset neonatal infection. We have also reviewed the evidence on switching from intravenous to oral antibiotics when treating suspected early-onset neonatal infection.

Recommendations are marked **[2026]** if the evidence has been reviewed.

For recommendations shaded in grey and ending **[2012, amended 2026]**, we have made changes that could affect the intent without reviewing the evidence. Yellow shading is used to highlight these changes, and the reasons for the changes are given in table 1.

Table 1 Amended recommendation wording (change to intent) without an evidence review

Recommendation in 2021 guideline	Recommendation in current guideline	Reason for change
In babies given antibiotics because of risk factors for early-onset infection or clinical indicators of possible infection, consider stopping the antibiotics at 36 hours if: - the blood culture is negative and	For babies who are being treated with intravenous antibiotics because of risk factors for early-onset infection or clinical indicators of possible infection, stop antibiotics at 36 hours if:	The committee agreed to strengthen the 2012 recommendation about when to stop antibiotics because babies who meet the criteria in recommendation 1.6.3

- the initial clinical suspicion of infection was not strong and - the baby's clinical condition is reassuring, with no clinical indicators of possible infection and - the levels and trends of C-reactive protein concentration are reassuring. (1.6.3)	- the blood culture is negative and - the initial clinical suspicion of infection was not strong and - the baby's clinical condition is reassuring, with no clinical indicators of possible infection (see box 2 for the list of clinical indicators) and - the levels and trends of C-reactive protein concentration are reassuring. (1.6.3)	are very unlikely to require further antibiotics. This was driven by the need to reduce unnecessary use of antibiotics for this population.
Using clinical judgement, consider completing a course of intravenous antibiotics outside of hospital (for example, at home or through visits to a midwifery-led unit) in babies who are well and for whom there are no ongoing concerns if there is adequate local support. (1.16.1)	Using clinical judgement, consider completing a course of intravenous antibiotics outside of hospital (for example, at home or through visits to a midwifery-led unit) in babies who are well and for whom there are no ongoing concerns if there is adequate local support. See also the recommendations on switching from intravenous antibiotics to oral antibiotics for babies with early-onset neonatal infection. (1.16.1)	Link to new recommendations about switching from intravenous antibiotics to oral antibiotics for babies with early-onset neonatal infection added because these include sending the baby home.

April 2021: We have reviewed the evidence and made new recommendations on the risk factors for infection and clinical indicators of possible infection and on intrapartum antibiotics of neonatal infection. These recommendations are marked **[2021]**.

We have also made some changes without an evidence review:

- what to do if a woman has been identified as having a group B streptococcal infection in relation to future pregnancies
- when to perform a lumbar puncture for babies who are receiving antibiotics who did not have a lumbar puncture on presentation
- early- and late-onset meningitis.

These recommendations are marked **[2012, amended 2021]**.

Recommendations marked **[2012]** last had an evidence review in 2012. In some cases, minor changes have been made to the wording to bring the language and style up to date, without changing the meaning.

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