Management of Early Onset Neonatal Sepsis
### Policy Title:
Management of Early Onset Neonatal Sepsis

### Executive Summary:
Early-onset neonatal bacterial infection (infection with onset within 72 hours of birth) is a significant cause of mortality and morbidity in newborn babies.

### Supersedes:
Previous guideline Version 5.0 Early Onset Neonatal Sepsis Including Management of a Newborn where there is Known Group B Haemolytic Streptococcus present in Either Mother or baby

### Description of Amendment(s):
Changes to the content of the guideline to include oxygen saturation monitoring, blood cultures available at 36hrs, consider stopping antibiotics at 5 days if CRP reassuring, NEWTT Observation chart and amended Gentamicin monitoring proforma

### This policy will impact on:
Maternity and Children’s Service

### Financial Implications: Non Known

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<td>Maternity and Women’s Services</td>
<td>Early Onset Neonatal Sepsis</td>
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<th>Effective Date:</th>
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<th>Issued By:</th>
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<td>Planned Care Business Unit</td>
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<tr>
<th>Author:</th>
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<td>J Crowther ANNP</td>
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### APPROVAL RECORD

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<tr>
<th>Committees / Group</th>
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<tr>
<td>Labour Ward Forum, Educational Link Tutor and MSLC. Paediatricians, Midwives, Pharmacy,</td>
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<tr>
<td>Maternity and Women’s Clinical Governance Committee</td>
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<th>Head of Midwifery Mrs L Moorcroft………………….. Date</th>
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<td>Medline Management Group</td>
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Content

1.0 Policy Statement
1.1 Background
1.2 Organisational Responsibilities
2.0 Planning and Implementation
2.1 Measuring Performance and Audit
2.2 Review
2.3 Rational
3.0 Care pathways
3.1 Support to parents
4.0 Information at discharge for parents and carers of babies with suspected or confirmed early-onset neonatal infection
4.1 If a baby has been treated for suspected or confirmed early-onset neonatal infection:
5.0 When a baby who has had a group B streptococcal infection is discharged from hospital:
6.0 Table 1 Risk factors for early-onset neonatal infection, including ‘red flags’
7.0 Determine the need for antibiotic treatment in the baby
8.0 Table 2 Clinical indicators of possible-early-onset neonatal infection (observations and events in the baby), including ‘red flags’
9.0 Investigations before starting antibiotic treatment
10.0 Management of antibiotic treatment for suspected for early-onset neonatal infection
11.0 Duration of antibiotic treatment
12.0 Antimicrobial management for suspected or confirmed meningitis in babies in a neonatal unit
13.0 Localised infections of the eye and umbilical cord
14.0 Therapeutic drug monitoring for Gentamicin
15.0 Factors potentially leading to toxicity
16.0 References
17.0 Audit / Monitoring Compliance of this Guideline
18.0 Appendix 1 Information at Discharge
   Appendix 2 Neonatal Early Warning Trigger and Track (NEWTT)
   Appendix 3 Double prompt Gentamicin check sheet
Early Onset Neonatal Sepsis

1.0 Policy Statement

Early-onset neonatal bacterial infection (infection with onset within 72 hours of birth) is a significant cause of mortality and morbidity in newborn babies. This guideline will advise on the detection and management of those babies with early onset neonatal sepsis.

1.1 Background

This guideline will reflect the current National Institute for Clinical Excellence (NICE) August 2012. Antibiotics for early-onset neonatal infection: Antibiotics for the prevention and treatment of early-onset neonatal infection CG 149.

1.2 Organisational Responsibilities

Chief Executive
Has ultimate responsibility for the implementation and monitoring of the policies in use in the Trust. This responsibility may be delegated to an appropriate colleague.

Clinical Leads/Head of Midwifery
Where Clinical Leads/Head of Midwifery are asked to ratify this guideline they are responsible for the review of the guideline and the final ratification prior to the guideline actually being implemented. This ratification process will take place following the consultation and approval process.

Trust Committees
As a group are responsible for the consultation and approval process required during the development of guidelines for the Trust. The committees are responsible for the review of guidelines submitted to them to ensure that guidelines are appropriate, workable and follow the principles of best practice.

All Staff
It is incumbent on relevant staff, when asked, to provide comments and feedback on the content and practicality of guidelines that are being developed and reviewed. It is the duty of all staff when asked, to provide assistance during the development and review stages of guideline formulation.

Stakeholders
Are those people with an interest in a guideline who contribute, comment and agree to the content of the guideline. They include specific committees, groups or forums, individual colleagues, whole departments, service users and their families.

2.0 Planning and Implementation

The objectives of this guideline are aimed to ensure best practice in relation to the care of the newborn in relation to early onset neonatal sepsis.

Newly ratified guidelines are included on the maternity newsletter. Relevant staff have the responsibility to ensure awareness of the contents of the guideline and to inform their Line Manager of any training needs which may affect their ability to follow this guideline.
2.1 Measuring Performance and Audit

The Trust will measure performance of this guideline against the NHSLA criteria stated under the heading Audit/Monitoring Compliance below.

2.2 Review

This guideline will be reviewed every three years or sooner following findings from audit, changes to national guidance, or in response to clinical practice. The responsibility for the review of guidelines lies with the Practice Development Midwives who will report to the overarching Maternity and Women’s Service Clinical Governance Committee.

2.3 Rational

Early-onset neonatal bacterial infection (infection with onset within 72 hours of birth) is a significant cause of mortality and morbidity in newborn babies.

The approach needs to:

- prioritise the treatment of sick babies
- minimise the impact of management pathways on healthy babies
- use antibiotics wisely to avoid the development of resistance to antibiotics.

The key principles underpin the recommendations in this guideline are:-

- Unless it is dangerous, families should be offered choice.
- Babies with suspected early-onset neonatal infection should be treated as quickly as possible.
- Antibiotic exposure should be minimised in babies who do not have an early-onset neonatal infection.

Unless otherwise indicated, all references to infection in the guideline recommendations refer to early-onset neonatal infection (that is, onset of infection within 72 hours of birth).
3.0 Care Pathways

Information for and communication with parents and carers of babies with suspected or confirmed early-onset neonatal infection

If clinical concerns about possible early-onset neonatal infection arise during pregnancy or in the first 72 hours after birth (for example, in relation to risk factors [see table 1] or clinical indicators [see table 2]):

- tell the baby's parents or carers
- explain the reason for concern (including the nature of early-onset neonatal infection)
- discuss the preferred options for management (for example, observation, investigations or antibiotic treatment)
- give the baby's parents or carers time to consider the information provided, and offer further opportunities for discussion if necessary.

If considering antibiotic treatment because of clinical concerns about possible early-onset neonatal infection, discuss:

- the rationale for the treatment
- the risks and benefits in the individual circumstances
- the observations and investigations that may be needed to guide clinical management (for example, when to stop treatment)
- the preferred antibiotic regimen and likely duration of treatment
- the impact, if any, on where the woman or her baby will be cared for.

3.1 Support to parents

- Reassure parents or carers that they will be able to continue caring for, and holding, their baby according to their wishes unless the baby is too ill to allow this.
- If the severity of the baby's illness means they need to change the way they care for the baby, discuss this with them.
- Reassure parents or carers that babies at increased risk of, or with, early-onset neonatal infection can usually continue to breastfeed, and that every effort will be made to facilitate this.
- If a baby is temporarily unable to breastfeed, support the mother to express breast milk if she wishes to do so.
- If the woman had group B streptococcal colonisation in a previous pregnancy but without infection in the baby, reassure her that this will not affect the management of the birth in the current pregnancy.
- Record discussion with parents in the Medical records.
4.0 Information at discharge for parents and carers of babies with suspected or confirmed early-onset neonatal infection

Offer parents or carers the leaflet “Information at discharge for parents and carer of babies with suspected or confirmed early-onset neonatal infection” appendix 1.

If there have been any concerns about early-onset neonatal infection before a baby is discharged, advise the parents or carers that they should seek medical advice (for example, from NHS 111, their general practice, or an accident and emergency department) if they are concerned that the baby:

- is showing abnormal behaviour (for example, inconsolable crying or listlessness) or
- is unusually floppy or
- has developed difficulties with feeding or with tolerating feeds or
- has an abnormal temperature unexplained by environmental factors (lower than 36°C or higher than 38°C) or
- has rapid breathing or
- has a change in skin colour

When the baby is discharged from the hospital (or in the immediate postnatal period in the case of babies born at home), inform the parents or carers and the baby’s GP, if the baby is considered to be at increased risk of infection.

4.1 If a baby has been treated for suspected or confirmed early-onset neonatal infection:

- inform the parents or carers about potential long-term effects of the baby’s illness and likely patterns of recovery, and reassure them if no problems are anticipated
- take account of parents' or carers' concerns when providing information and planning follow-up.
5.0 When a baby who has had a group B streptococcal infection is discharged from hospital:

Advise the woman that if she becomes pregnant again:

- there will be an increased risk of early-onset neonatal infection
- she should inform her maternity care team that a previous baby has had a group B streptococcal infection
- antibiotics in labour will be recommended

Inform the woman's GP in writing that there is a risk of:

- recurrence of group B streptococcal infection in the baby, and
- group B streptococcal infection in babies in future pregnancies.

If the woman has had group B streptococcal colonisation in the pregnancy but without infection in the baby, inform her that if she becomes pregnant again, this will not affect the management of the birth in the next pregnancy.

For every baby about whom there has been a clinical concern regarding early-onset neonatal infection, formulate a post discharge management plan in the medical records, taking into account factors such as:

- the level of the initial clinical concern
- the presence of risk factors
- parents' or carers' concerns.
### 6.0 Table 1 Risk factors for early-onset neonatal infection, including ‘red flags’

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Red flag</th>
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<tbody>
<tr>
<td>Invasive group B streptococcal infection in a previous baby</td>
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<tr>
<td>Maternal group B streptococcal colonisation on HVS, bacteriuria or infection in the current pregnancy</td>
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<tr>
<td>Prelabour rupture of membranes</td>
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<tr>
<td>Preterm birth following spontaneous labour (before 37 weeks’ gestation)</td>
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<tr>
<td>Suspected or confirmed rupture of membranes for more than 18 hours in a preterm birth or more than 24hrs in a term birth.</td>
<td></td>
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<tr>
<td>Intrapartum fever higher than 38°C, or confirmed or suspected chorioamnionitis</td>
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<tr>
<td>Parenteral antibiotic treatment given to the woman for confirmed or suspected invasive bacterial infection (such as septicaemia) at any time during labour, or in the 24-hour periods before and after the birth [This does not refer to intrapartum antibiotic prophylaxis]</td>
<td>Yes</td>
</tr>
<tr>
<td>Suspected or confirmed infection in another baby in the case of a multiple pregnancy</td>
<td>Yes</td>
</tr>
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</table>
7.0 Determine the need for antibiotic treatment in the baby

Use table 1 to identify risk factors for early-onset neonatal infection and table 2 to identify clinical indicators of early-onset neonatal infection. Use tables 1 and 2 to identify red flags (risk factors and clinical indicators that should prompt a high level of concern regarding early-onset neonatal infection).

If there are any risk factors for early-onset neonatal infection (see table 1) or if there are clinical indicators of possible early onset neonatal infection (see table 2) perform a careful clinical assessment without delay. Review the maternal and neonatal history and carry out a physical examination of the baby including an assessment of the vital signs.

Use the following framework to direct antibiotic management decisions:

- Any red flag, or
- Two or more risk factors or clinical indicators that are not red flags (see tables 1 and 2)
- No red flags, and
- No clinical indicators (see table 2), but
  - One risk factor that is not a red flag (see table 1)
- No red flags, and
- No risk factors (see table 1), but
  - One clinical indicator that’s not a red flag (see table 2)
- No risk factors, and
- No clinical indicators, and
- No laboratory evidence of possible infection

Perform investigations & start antibiotic treatment observations within approx 1 hr of birth and within approx 2hrs of birth and then approx 2 hrly for 10 hours. If remains on antibiotics continue approx 4hrly observations. Record observations on the Neonatal early warning score observation chart (NEWS) appendix 2.

Using clinical judgement, consider:
- whether it is safe to withhold antibiotics, and
- whether it is necessary to monitor the baby’s vital signs and clinical condition – if monitoring is required continue it for at least 12 hours within approx 1hr of birth & within approx 2hrs of birth and then approx 2 hourly for 10 hours. Record observations on the Neonatal early warning score observation chart (NEWS) appendix 2.

NOTE: If any GBS in current pregnancy and mother has had intrapartum antibiotics for >2hrs before delivery perform observations as above.

If any GBS in current pregnancy and mother has not had intrapartum antibiotics for >2hrs before delivery perform investigations as section 9.0, start antibiotic treatment as section 10.0 and perform observations as above.

If previous baby unwell with GBS, perform observations as above and decide involving parents, if to perform investigations and start antibiotics.

Do not routinely give antibiotic treatment. Continue routine postnatal care.
If observations are taken late the reason must be documented on the NEWS chart appendix 2.
### Table 2 Clinical indicators of possible-early-onset neonatal infection (observations and events in the baby), including ‘red flags’

<table>
<thead>
<tr>
<th>Clinical indicator</th>
<th>Red flag</th>
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<tr>
<td>Altered behaviour or responsiveness</td>
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<tr>
<td>Altered muscle tone (for example, floppiness)</td>
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<tr>
<td>Feeding difficulties (for example, feed refusal)</td>
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<td>Feed intolerance, including vomiting, excessive gastric aspirates and abdominal distension</td>
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<tr>
<td>Abnormal heart rate (bradycardia or tachycardia)</td>
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<tr>
<td>Signs of respiratory distress</td>
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<tr>
<td>Respiratory distress starting more than 4 hours after birth</td>
<td>Yes</td>
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<tr>
<td>Hypoxia (for example, central cyanosis or reduced oxygen saturation level)</td>
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<td>Jaundice within 24 hours of birth</td>
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<tr>
<td>Apnoea</td>
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<tr>
<td>Signs of neonatal encephalopathy</td>
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<tr>
<td>Seizures</td>
<td>Yes</td>
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<tr>
<td>Need for cardio–pulmonary resuscitation</td>
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<tr>
<td>Need for mechanical ventilation in a preterm baby</td>
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<tr>
<td>Need for mechanical ventilation in a term baby</td>
<td>Yes</td>
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<tr>
<td>Persistent fetal circulation (persistent pulmonary hypertension)</td>
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<tr>
<td>Temperature abnormality (lower than 36°C or higher than 38°C) unexplained by environmental factors</td>
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<tr>
<td>Signs of shock</td>
<td>Yes</td>
</tr>
<tr>
<td>Unexplained excessive bleeding, thrombocytopenia, or abnormal coagulation (International Normalised Ratio greater than 2.0)</td>
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<tr>
<td>Oliguria persisting beyond 24 hours after birth</td>
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<tr>
<td>Altered glucose homeostasis (hypoglycaemia or hyperglycaemia)</td>
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<tr>
<td>Metabolic acidosis (base deficit of 10 mmol/litre or greater)</td>
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9.0 Investigations before starting antibiotic treatment

- When starting antibiotic treatment in babies with risk factors for infection or clinical indicators of possible early-onset neonatal infection obtain:
  - Blood culture before administering the first dose
  - C-reactive protein concentration
  - Full blood count
  - Perform a lumbar puncture to obtain a cerebrospinal fluid sample before starting antibiotics if it is thought safe to do so and:
    - there is a strong clinical suspicion of infection, or
    - there are clinical symptoms or signs suggesting meningitis

If performing the lumbar puncture would unduly delay starting antibiotics, perform it as soon as possible after starting antibiotics.

Do not routinely obtain:

- urine microscopy or culture
- skin swab microscopy or culture in the absence of clinical signs of a localised infection.

If localised infection is suspected see ‘Localised infections of the eye and umbilical cord’ pathway.
10.0 Management of antibiotic treatment for suspected for early-onset neonatal infection

If a baby needs antibiotic treatment it should be given promptly.

Use intravenous benzylpenicillin with gentamicin as the first-choice antibiotic regimen for empirical treatment of suspected infection.

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

Give gentamicin in a starting dosage of 5 mg/kg 36hourly.

If a second dose of gentamicin is to be given it should usually be given 36 hours after the first dose. The interval may be shortened, based on clinical judgement, for example if:
• the baby appears very ill
• the blood culture shows a Gram-negative infection.

Decide on subsequent gentamicin doses and intervals taking account of blood gentamicin concentrations. (See ‘Therapeutic drug monitoring for gentamicin’ pathway).

Record the times of:
• gentamicin administration
• sampling for therapeutic monitoring.

In babies given antibiotics because of risk factors for infection or clinical indicators of possible infection, measure the C-reactive protein concentration 18–24 hours after presentation.

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 C-reactive protein concentration of 10 mg/litre or greater, or
• has a positive blood culture, or
• does not respond satisfactorily to antibiotic treatment.

If meningitis is suspected see ‘Antibiotic management for suspected or confirmed meningitis’ pathway.

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

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.
11.0 Duration of antibiotic treatment

The usual duration of antibiotic treatment for babies with a positive blood culture, and for those with a negative blood culture but in whom there has been strong suspicion of sepsis, should be 7 days.

In babies given antibiotics because of risk factors for infection or clinical indicators of possible infection, consider stopping the 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, and
- the levels and trends of C-reactive protein concentration are reassuring

Consider continuing antibiotic treatment for more than 7 days if:

- the baby has not yet fully recovered, or
- this is advisable, based on the pathogen identified on blood culture (seek expert microbiological advice if necessary)

If continuing antibiotics for longer than 36 hours despite negative blood cultures, review the baby at least once every 24 hours. On each occasion, using clinical judgement, consider whether it is appropriate to stop antibiotic treatment, taking account of:

- the level of initial clinical suspicion of infection
- the baby’s clinical progress and current condition, and
- the levels and trends of C-reactive protein concentration

Recheck C-reactive protein concentration on day 4 of antibiotics. If the C-reactive protein concentration is less than 10mg/litre, the baby’s clinical condition is reassuring with no clinical indicators of possible infection, consider stopping the antibiotics after 5 completed days.

Care setting for antibiotic treatment

When deciding on the appropriate care setting for a baby, take into account the baby’s clinical needs and the competencies necessary to ensure safe and effective care (for example, the insertion and care of intravenous cannulas).

Using clinical judgement, consider completing a course of intravenous antibiotics in hospital or at home by the Children’s Community Team, in babies who are well without ongoing concerns.

On completing antibiotic treatment, consider prompt discharge of the baby from hospital, with support for the parents or carers and a point of contact for advice.
12.0 Antibiotic management for suspected or confirmed meningitis in babies in the neonatal unit

If meningitis is suspected but the causative pathogen is unknown (for example, because the cerebrospinal fluid Gram stain is uninformative), treat with intravenous amoxicillin and cefotaxime.

If meningitis is shown to be due to Gram-negative infection either by cerebrospinal fluid Gram stain or culture, stop amoxicillin and treat with cefotaxime alone.

If meningitis is shown by cerebrospinal fluid Gram stain to be due to a Gram-positive infection continue treatment with intravenous amoxicillin and cefotaxime while awaiting the cerebrospinal fluid culture result and seek expert microbiological advice.

If meningitis is shown by cerebrospinal fluid Gram stain to be due to listeria enteritis continue treatment with intravenous amoxicillin and cefotaxime while awaiting the cerebrospinal fluid culture result and seek expert microbiological advice.

If the cerebrospinal fluid culture is positive for group B streptococcus consider changing the antibiotic treatment to:

- benzylpenicillin 50 mg/kg every 12 hours, normally for at least 14 days, and
- gentamicin in a starting dosage of 5 mg/kg every 36 hours, with subsequent doses and intervals adjusted if necessary based on clinical judgement and blood gentamicin concentrations; gentamicin treatment should continue for 5 days.

If the cerebrospinal fluid culture identifies a Gram-positive bacterium other than group B streptococcus or listeria seek expert microbiological advice on management.

If the blood culture or cerebrospinal fluid culture is positive for listeria consider stopping cefotaxime and treating with amoxicillin and gentamicin.
13.0 Localised infections of the eye and umbilical cord

Eye

Be aware that, although minor conjunctivitis with encrusting of the eyelids is common and often benign, a purulent discharge may indicate the presence of a serious infection (for example, with chlamydia or gonococcus).

In babies with a purulent eye discharge take swab samples urgently for microbiological investigation, to include chlamydia swab and gonococcus swab. Start systemic antibiotic treatment for possible gonococcal infection while awaiting the swab microbiology results with intravenous Benzylpenicillin.

Umbilical Cord

In babies with clinical signs of umbilical infection, such as a purulent discharge or signs of periumbilical cellulitis (for example, redness, increased skin warmth or swelling), perform a blood culture, take a swab sample for microscopy and culture, and start intravenous antibiotic treatment with intravenous flucloxacillin and Gentamicin.

If the microbiology results indicate that the infection is not due to a Gram-negative infection, stop the Gentamicin.
14.0 Therapeutic drug monitoring for Gentamicin

This policy should be used with the double checking prompt and neonatal care bundle to ensure compliance with NPSA patient safety alert NPSA/2010/PSA001 – Safer use of intravenous Gentamicin for neonates appendix 3

Prescribing Gentamicin

- **Prescribe 5mg/kg every 36 hours for all neonates**
- Gentamicin should be given by slow intravenous injection as below: [Extended interval dose regimen]
- Levels should be taken immediately prior to the second dose and these should be documented on the double checking Gentamicin prompt sheet (appendix 4)
- **A third dose should not be given until these levels have been reviewed by a doctor / NMP.**
- Guidelines in the Trust Antibiotic Policy should be followed whenever an antibiotic is being prescribed.

Monitoring and Dose Adjustments

Trough concentrations

- Check pre-dose [“trough”] level immediately prior to the second dose. The level should be <2mg/L.
- If babies are to continue for more than 3 doses then consider aiming for a trough level of <1mg/L.

Level taken prior to second or third dose (aiming for trough level <2mg/L):

- Levels of <1.5mg/L. Repeat level immediately prior to the 4th dose if the baby is going to continue to receive Gentamicin.
- Levels of 1.5 to 1.9mg/L. Repeat the level immediately prior to the 3rd dose if the baby is going to continue to receive Gentamicin. If the second level is 1.5 to 1.9mg/L continue monitoring levels prior to all Gentamicin doses.
- Levels of 2 to 2.5mg/L. **Do not give the next dose at the usual time.** Discuss result with pharmacist or senior medical colleague before prescribing for information on prescribing the further doses.
- For levels above 2.5mg/L. Omit the next dose. Reconsider the need for Gentamicin and discuss concerns with one of the consultant microbiologists and Paediatricians.

Level taken prior to fourth or subsequent doses (aiming for trough level <1mg/L):

- Levels of <1mg/L. Repeat level twice a week if baby to continue receiving Gentamicin
- Levels of >1mg/L. **Do not give the next dose at the usual time.** Consider extending the interval between doses. Discuss result with pharmacist or senior medical colleague before prescribing for information on prescribing the further doses.
- If the baby is stable levels should be checked twice a week. If there are any concerns regarding the baby, levels should be checked more frequently.
Peak concentrations

Consider measuring peak blood Gentamicin concentrations in selected babies such as in those with:
- oedema
- macrosomia (birth weight more than 4.5 kg)
- an unsatisfactory response to treatment
- proven Gram-negative infection

Measure peak concentrations 1 hour after starting the gentamicin infusion.

If a baby has a Gram-negative or staphylococcal infection, consider increasing the dose of Gentamicin if the peak concentration is less than 8 mg/litre.

Record the times of:
- Gentamicin administration on the prescription sheet.
- Sampling for therapeutic monitoring.

15.0 Factors potentially leading to toxicity

The following factors can lead to an increased risk of toxicity. If any of these factors are present measure trough levels prior to each dose. Serum creatinine levels should also be measured.

Clinical factors:
- Dehydration
- Ill neonate including sepsis and hypoxia
- Diarrhoea/vomiting
- Renal impairment
- Poor cardiac output

Drug interactions
- Cephalosporins
- Ciclosporin / Tacrolimus
- Non-steroidal anti-inflammatory drugs (NSAIDs)
- Furosemide [if concurrent use is unavoidable, administration should be separated by as long a period as possible]
- ACE Inhibitors
- Note most side effects are dose related; therefore whenever possible treatment should not exceed 7 day

This guideline cannot anticipate all possible circumstances and exist only to provide general guidance on clinical management to clinicians.
16.0 References

BAPM April 2015. Newborn Early Warning Trigger and Track (NEWTT) observation chart

East Cheshire NHS Trust policy Prevention Detection and Management of Hypothermia in the Newborn.

National Health Service Litigation Authority CNST Maternity Standards 2013/14 Immediate Care of the Newborn Standard 5 Criterion 4


NPSA patient safety alert NPSA/2010/PSA001 – Safer use of intravenous gentamicin for neonates


17.0 Audit /Monitoring Compliance of this Guideline

This guideline will be audited as per the Maternity Service Audit Plan

<table>
<thead>
<tr>
<th>Minimum Requirements</th>
<th>Method Of Assessment</th>
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<tbody>
<tr>
<td>Management of the newborn where there is known Group B haemolytic streptococcus present in either the mother or the fetus</td>
<td>A minimum of 1% of newborn health records</td>
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Frequency

This Guideline will be audited in relation to the maternity unit audit plan. The report will be produced which will be presented at the Maternity and Women’s Service Clinical Governance Committee

Co-ordination of Audit

The audit co-ordination is the responsibility of the Practice Development Midwives in accordance with Maternity Service Audit Plan.

Reporting Arrangements

Acting on Recommendations

The audit recommendations and subsequent action plan will be discussed and agreed by the overarching Maternity and Women’s Service Clinical Governance Committee.

The Maternity and Women’s Service Clinical Governance Committee will agree which individual will be responsible for action (s) within a specified time frame. This will be documented on the action plan and within the minutes from Maternity and Women’s Services Clinical Governance Committee meetings.

Changes in Practice and Lessons to be shared

Any required system or organisational change to practice will be discussed and agreed by the overarching Maternity and Women’s Services Clinical Governance Committee. Changes to practice will be identified and actioned within a specified time frame. A lead member of the team will be identified to take each change forward.

This will be documented on the agreed action plan and monitored on a monthly basis until completion. Lessons learned will be shared with the relevant stakeholders.
18.0 Appendix 1. Information at Discharge

Refer to Babies with Suspected or Confirmed early-onset Neonatal Infection Information at discharge Reference Number Ref:11545 Review: 4/2016

Introduction
Group B Strep (GBS) is a bacteria commonly found inhabiting the human digestive system (and often the vagina of adult women). It is normally harmless, however, it can be passed to newborn babies around childbirth, and in babies which then develop GBS infection, it can be very serious.

Your baby has either been suspected or has been confirmed as having an infection and has been treated in hospital.

When your baby is ready for discharge we will discuss a post discharge management plan with you.

Signs to look out for in your baby:
• Showing abnormal behaviour (for example, inconsolable crying or listlessness) or
• your baby is unusually floppy or
• has developed difficulties with feeding or with tolerating feeds or
• has an abnormal temperature unexplained by environmental factors (lower than 36°C or higher than 38°C) or
• has rapid breathing or
• has a change in skin colour.

If your baby has any of these signs or you are concerned about your baby’s health you should seek medical advice. This is available from NHS Direct, your general practice, or an accident and emergency department.

Will any babies I have in the future be affected?
If your baby has had a group B streptococcal infection and you become pregnant again:

there will be an increased risk of early-onset neonatal infection

you should inform your maternity care team that a previous baby has had a group B streptococcal infection

antibiotics in labour will be recommended

If you had group B streptococcal and a well baby, this will not affect the management of the birth in a future pregnancy.

More information is available from the Group B Strep Support at http://www.gbss.org.uk/ Or on Tel: 01444 416176.
### NEONATAL EARLY WARNING SCORE OBSERVATION CHART

See over for observations and frequency

**REMEMBER TO USE CLINICAL JUDGEMENT IN EACH CASE IRRESPECTIVE OF SCORE**

<table>
<thead>
<tr>
<th>Name</th>
<th>Hosp No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone</td>
<td>Normal</td>
<td>Stiff or Floppy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td>Pink</td>
<td>Blue/Grey/White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscious Level</td>
<td>Alert</td>
<td>Unrrousable or Unconscious</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grunting</td>
<td>Absent</td>
<td>Present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recession</td>
<td>Absent</td>
<td>Present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasal Flaring</td>
<td>Absent</td>
<td>Present</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Temperature (degrees C)</th>
<th>39.5</th>
<th>39</th>
<th>38.5</th>
<th>38</th>
<th>37.5</th>
<th>37</th>
<th>36.5</th>
<th>36</th>
<th>35.5</th>
<th>35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp Score</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Heart Rate (beats per minute)</th>
<th>300</th>
<th>280</th>
<th>260</th>
<th>240</th>
<th>220</th>
<th>200</th>
<th>180</th>
<th>160</th>
<th>140</th>
<th>120</th>
<th>100</th>
<th>80</th>
<th>60</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate score</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

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Early Onset Neonatal Sepsis  
J Crowther ANNP  
Aug 2017 Version 6.0
| RESPIRATORY RATE (breaths per minute) | 10 | 0 | 90 | 80 | 70 | 60 | 50 | 40 | 30 | 20 | 10 |
|--------------------------------------|----|---|----|----|----|----|----|----|----|----|----|----|
| 3 | 3 | 2 | 1 | 1 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 |

Resps Rate Score

Total NEWS

Signature

**RESPIRATORY RATE**

**Total NEWS**

**Signature**
# Newborn Early Warning Trigger and Track (NEWTT)

## Observation Frequency

<table>
<thead>
<tr>
<th>Condition</th>
<th>Frequency of observations (approx)</th>
</tr>
</thead>
</table>
| Babies born to mothers with one or more risk factors for bacterial infection:  | Within 1 hr of birth  
- Maternal GBS carriage on HVS/infection during current  
- Previous affected child with GBS sepsis  
- Prolonged rupture of membranes (>18 hours in preterm or > 24hrs in term)  
- Spontaneous preterm labour  
Intrapartum fever (>38°C)  
- Chorioamnionitis or parental antibiotics for suspected/confirmed sepsis in mother 24hrs before or after birth. |  
| Receiving Antibiotics for suspected or proven infection                    | Observations as above for first 12 hours, then 4 hourly whilst on treatment                        |
| At risk of Hypoglycaemia (<37wks, ≤ 2nd centile (as per gap and grow), Infant of Diabetic mother, Maternal labetalol) | Observations required before 3 hourly feeds until glucose measurements are stable.               |
| Meconium stained liquor                                                    | If there is thin Meconium, baby is to have observations at 1 and 2 hours                          |
|                                                                           | If there is thick Meconium, observations should be performed at 1 and 2 hours of age and then 2 hourly for a further 10 hours. |
| Cord arterial pH ≤ 7.1  
Base excess ≥ -12mmol/l  
Apgar ≤ 7 at 5 minutes  
IPPV > 5 minutes  
Maternal opiate < 6 hr before delivery                                       | Within 1 hr of birth  
Within 2 hrs of birth  
Then 2 hourly until 12 hrs of age |
| Babies causing other concerns                                              | Use clinical judgement                                                                           |

**Infants that need immediate review by Doctor/ANNP**

- Jaundice < 24 hours of age
- Bilious vomiting
- Abnormal movements
- Hypoglycaemia
- Apnoea
Prescription chart must be rewritten if appropriate

- Please use this prompt in numerical order every time a dose of gentamicin is prepared and administered.
- Both members of staff are to use the prompt and to initial each box.

**Ultimate responsibility** for the process lies with checker one whose additional responsibilities are highlighted in points 1 to 5

<table>
<thead>
<tr>
<th>Date</th>
<th>Time admin</th>
<th>Date</th>
<th>Time admin</th>
<th>Date</th>
<th>Time admin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checker 1</td>
<td>Checker 2</td>
<td>Checker r1</td>
<td>Checker 2</td>
<td>Checker r1</td>
<td>Checker r2</td>
</tr>
</tbody>
</table>

**Blood level monitoring:** Any actions required in the section below should be prioritised to ensure doses are not delayed:

1. Are any blood levels required prior to, or post this administration?

2. Do any blood level results need action prior to administration of this dose? i.e. results chasing or results interpreted.

3. If yes to question two, has the person responsible for the interpretation of result been informed?

4. Has the blood level result been interpreted correctly and documented in the notes? If not, contact the prescriber or other designated prescriber.

5. Does the blood level result indicate that the dose or dosing interval (extended dose interval regime) needs changing? If yes, ensure this is actioned as per Early Onset Neonatal Sepsis Guideline.

**Prescription chart details:**

6. Has the prescription been signed by the prescriber?

7. Check the time recorded when dose last given and the frequency prescribed. Is a dose due now?

8. Is the patient's weight recorded on the prescription chart correct? Check against weight record chart and medical notes.

9. Has the correct dose been prescribed based on the weight or subsequent blood levels? Each checker to calculate the dose

10. Is the dosing regimen and frequency (extended dose interval regime) correct for subsequent blood levels? Check against Early Onset Neonatal Sepsis Guideline. If not, contact prescriber or duty doctor.

**Preparation and Administration:** Wear a blue apron to indicate that you should not be disturbed.

11. Has the correct medication been selected and is it ‘in date’?

12. Is this the correct strength of gentamicin, i.e. 20mg/2ml?

13. Has the correct volume been drawn up? Each checker to calculate

14. Does the patient’s identity match the patient details on the prescription

15. Has the prescription chart been signed by checker 1 and checker 2 with details of the time of administration?
Double-checking prompt for the preparation and administration of intravenous gentamicin to neonates

Please use this prompt in numerical order every time a dose of gentamicin is prepared and administered.

- Both members of staff are to use the prompt and to initial each box.
- **Ultimate responsibility** for the process lies with **checker one** whose** additional responsibilities are highlighted in points 1 to 5.**

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<th>Date</th>
<th>Time admin</th>
<th>Date</th>
<th>Time admin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checker</td>
<td>Checker</td>
<td>Checker</td>
<td>Checker</td>
<td>Checker</td>
<td>Checker</td>
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4. Has the blood level result been interpreted correctly and documented in the notes?  *If not, contact the prescriber or other designated.*  
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**Prescription chart details:**

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7. Check the time recorded when dose last given and the frequency prescribed. Is a dose due now?  
8. Is the patient’s weight recorded on the prescription chart correct?  *Check against weight record chart and medical notes.*  
9. Has the correct dose been prescribed based on the weight or subsequent blood levels? Each checker to calculate the dose  
10. Is the dosing regimen (*extended dose interval regime*) and frequency correct for subsequent blood levels? Check against Early Onset Neonatal Sepsis Guideline.  *If not, contact prescriber or other designated prescriber.*  

**Preparation and Administration:** Wear a blue apron to indicate that you should not be disturbed.

11. Has the correct medication been selected and is it ‘in date’?  
12. Is this the correct strength of gentamicin, i.e. 20mg/2ml?
<p>| | | | |</p>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>13. <strong>Has the correct volume been drawn up? Each checker to calculate dose separately.</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>14. <strong>Does the patient’s identity match the patient details on the</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
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