# Management of the Neonate following Prolonged Rupture of Membranes & Early Neonatal Infection - Paediatric Full Clinical Guideline

Reference no: NEONATE/09:16/N1

**Integrated Care**
**Joint Neonatal & Maternity Guideline**

## Contents



## 1. Introduction

Early-onset neonatal bacterial infection (infection with onset within 72 hours of birth) is a significant cause of mortality and morbidity in newborn babies. Scientific literature report that there can be unnecessary delays in recognizing and treating sick babies. In addition, concern about the possibility of early-onset 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 early-onset neonatal infection is managed in healthy babies. The approach taken is to:

a. prioritise the treatment of sick babies
b. minimise the impact of management pathways on healthy women and babies
c. use antibiotics wisely to avoid the development of resistance to antibiotics

**Causative organism**: In neonates, the most common causative organisms are Streptococcus agalactiae (Group B streptococcus), Escherichia coli, S pneumoniae and Listeria monocytogene.

Group B Streptococcus (GBS) is a leading cause of neonatal infection in the developed world, resulting in congenital pneumonia, septicaemia, and meningitis. In the U.K., the reported prevalence of early onset neonatal infection is 0.48 per 1000 births, with a 10% mortality rate.

It is estimated that 14% of UK women are colonised with GBS, 36% of babies born to colonised women are themselves colonised, and 3% of colonised babies develop bacteraemia. In women known to be GBS carriers, the risk of early-onset GBS sepsis is highest in those with additional intrapartum clinical risk factors (i.e. Prematurity < 37 weeks, prolonged rupture of membranes > 18 hours, fever in labour > 38C). The risk always remains high in women who have had a previous child affected by GBS sepsis, regardless of swab results in the current pregnancy.

In women colonised with GBS, the neonatal risks are:

**With no intrapartum risk factors**

| Neonatal Complication | No antibiotic prophylaxis | With antibiotic prophylaxis |
|---|---|---|
| Early-onset GBS sepsis | 1 in 250 | 1 in 6000 |
| Mortality from GBS | 1 in 6250 | 1 in 150,000 |

**With intrapartum risk factors** (preterm gestation, ROM >18 hours, maternal fever)

| Neonatal Complication | No antibiotic prophylaxis | With antibiotic prophylaxis |
|---|---|---|
| Early-onset GBS sepsis | 1 in 100 | 1 in 2200 |
| Mortality from GBS | 1 in 2500 | 1 in 55,000 |

Appropriate and complete intrapartum antibiotic prophylaxis will prevent more than two-thirds of neonatal GBS sepsis. However, it does not completely eliminate the risk and some cases will still occur.

***Management of women at risk of GBS see obstetric guideline G2***

## 2. Purpose and Outcomes

To reduce the risk of early onset neonatal sepsis, but not late-onset disease.

## 3. Abbreviations

CED - Childrens Emergency Dept.
CRP - C-Reactive Protein
FBC - Full Blood Count
GBS - Group B Streptococcus
GP - General Practitioner
NEWS- Neonatal Early Warning score
ROM - Rupture of Membranes
U & E - Urea & Electrolytes

## 4. Key Responsibilities and Duties

It is important that all Staff are aware of the importance recognising the risk factors and clinical indicators for early onset neonatal infection that this is clearly documenting this in the notes and paediatricians informed. (see Appendix A for further management)

It is also important that all staff are aware of the importance that on the detection of GBS infection either in the urine or on HVS during pregnancy that this is clearly documented in the records and the women must then be informed of these findings and given information on the risks.

## 5. Observations following birth

Following birth the baby will require as a minimum:

- Neonatal Early Warning score (NEWS) chart to be commenced and observations to be undertaken hourly for the first 2 hours (i.e. 1hr & 2hrs following birth) to include:
  - heart rate
  - respiration rate
  - temperature
  - feeding
  - general well being

If observations are stable can be transferred to ward 314, any concerns should be escalated to the paediatric team.

- once warded a further 2 hourly observations for 10 hours (making a total period of 12 hours) to be carried out, again any concerns to be escalated to the paediatric team.
- if observations are stable at the end of this time period the baby can go to daily observations, otherwise will require paediatric review.

## 6. Investigations

Prior to starting antibiotics: FBC, +/-U&Es, CRP, and Blood culture to be taken.
Repeat CRP 18-24hrs later (prior to stopping antibiotics)
Any positive results must be communicated to the GP and woman and the staff member document the findings within the health records and on maternity special instruction.

## 7. Other investigations to consider for the baby

- Consider Lumbar Puncture if --
  Clinical symptoms and signs suggest meningitis or
  CRP>10mg/lit or
  Positive blood cultures or
  Patient not improving on antibiotics
- Do not routinely perform urine microscopy and culture for early onset sepsis.
- Do not routinely perform skin swab
- For purulent eye discharge only send eye swab for Chlamydia or gonococcus
- For umbilical infection (purulent discharge or cellulitis) – perform blood culture, take swab and start antibiotics (Flucloxacillin and Gentamicin) Stop Gentamicin once culture results indicate absence of gram negative sepsis

## 8. Antibiotics for suspected infection

Use intravenous Benzylpenicillin with Gentamicin as the first-choice antibiotic regimen for empirical treatment of suspected infection unless microbiological surveillance data reveal local bacterial resistance patterns indicating a different antibiotic.
Antibiotics should be given within 1 hour of decision to treat

## 9. Stopping antibiotics

Consider stopping antibiotics in well babies (with no clinical indicators of infection) after 36 hours if blood cultures are negative, initial suspicion of infection was not very strong, baby's clinical condition and CRP level & trends are reassuring.
A positive blood culture can occur between 24hrs and 120hrs (5 days), in these cases the microbiologist will contact the on-call neonatologist to action.

## 10. Antibiotics in proven infection

Sepsis without meningitis

In neonates with positive blood cultures or if negative blood culture but strong suspicion of infection: Intravenously (IV) for 10-14 days

- 1st line of treatment: Benzyl penicillin & Gentamicin IV.
- 2nd line of treatment Flucloxicillin and Gentamicin IV

Consider longer if the baby is still unwell or on microbiologist's advice depending on the pathogen identified.

Proven Meningitis –

- Unknown Pathogen - change antibiotics to Cefotaxime and Amoxicillin
- If GBS identified - continue on Benzylpenicillin for 14 days and Gentamicin for 5 days
- If Listeria – continue Amoxicillin and Gentamicin (stop Cefotaxime)
- If Gram Negative organism – continue Cefotaxime +/- Gentamicin for 21 days / seek microbiologists advice.

## 11. Review

Babies on antibiotics should be reviewed every 24 hours by a paediatrician.

## 12. Discharge

Babies on antibiotics can be discharged promptly after stopping antibiotics. Paediatrician to give the woman a copy of the patient information leaflet (Appendix C) and a point of contact for advice to parents and carers which should be GP/ NHS direct or to present to CED if unwell. Community midwife to review baby with in 24 hours of discharge if less than 7 days of age otherwise notify the Health visitor of discharge. GP should be informed in writing prior to discharge regarding increased risk of sepsis in the patient.

In Neonates with proven GBS sepsis/meningitis, GP and the obstetric team should be informed in writing regarding increased risk of sepsis in subsequent pregnancies.

## 12. Monitoring Compliance and Effectiveness

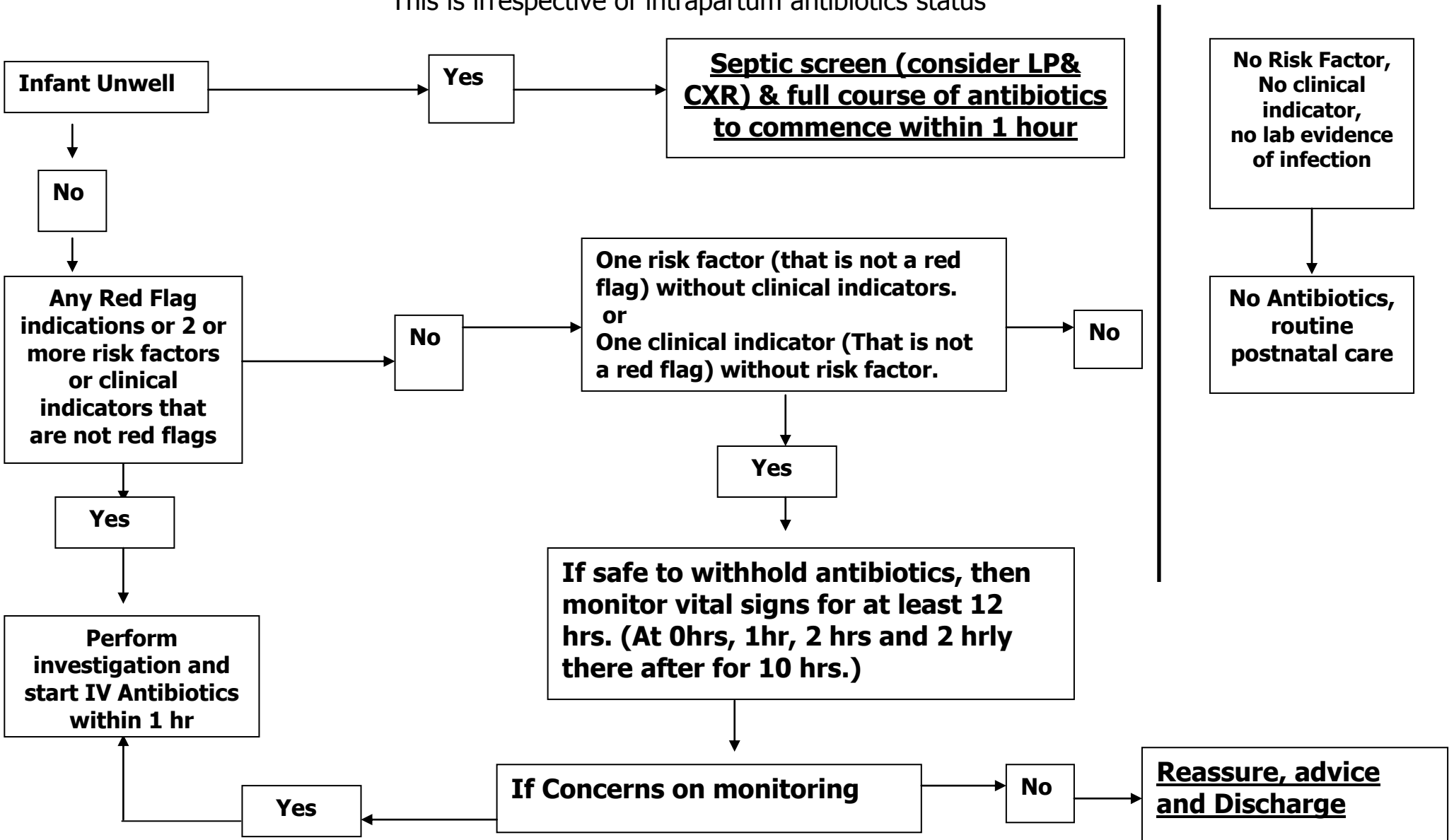
| | |
|---|---|
| Monitoring requirement | Review 8 cases where there is known group B haemolytic streptococcus present in mother or newborn |
| Monitoring method | Retrospective case not review |
| Report prepared by | Named person undertaking the audit/paediatrician |
| Monitoring report sent to: | Labour ward forum<br>Paediatric Audit Forum<br>Maternity Development Committee(for information) |
| Frequency of report | 3 years |

## 13. Reference

Clinical Guideline149 (CG149) Antibiotics for Early Onset Neonatal infection – National institute for clinical excellence (NICE) 22 August 2012

# Antibiotics for Early-Onset Sepsis

This is irrespective of intrapartum antibiotics status



| *Risk Factor for Sepsis (pregnancy related indicators) | Red Flag |
|---|---|
| **Invasive GBS infection in previous baby** | **X** |
| **Maternal GBS bacteriuria or infection in current pregnancy** | **X** |
| **IV antibiotics given to the women for confirmed or suspected invasive bacterial infection 24 hrs before or after birth or during labour ( this is not Intrapartum antibiotics)** | **X** |
| **Suspected or Confirmed infection in another baby in the case of multiple pregnancy** | **X** |
| **Suspected or confirmed ROM for more than 18 hrs in a preterm birth** | **X** |
| Maternal GBS colonization | |
| | |
| Preterm birth following spontaneous labour | |
| Intrapartum fever >38$^0$Cor suspected and confirmed Chorioamnionitis. | |

*chart replaced 10/12/13 Dr G Joshi

| Clinical Indicators of possible – Early Onset Neonatal Infections | Red Flag |
|---|---|
| Respiratory distress starting 4 hrs after birth | X |
| Need for Mechanical ventilation in Term baby | X |
| Signs of Shock | X |
| Seizures | X |
| Altered behaviour or responsiveness | |
| Altered Muscle Tone (floppiness) | |
| Feeding Difficulties (e.g. feed refusal) | |
| Feed intolerance (vomiting, excessive gastric aspirates and abdominal distension) | |
| Abnormal Heart rate (brady or tachycardia) | |
| Respiratory distress | |
| Hypoxia (central cyanosis or reduced Oxygen saturations) | |
| Jaundice within 24 hrs of age | |
| Apnoea | |
| Sign of Neonatal Encephalopathy | |
| Need for Cardio-pulmonary resuscitation | |
| Need for Mechanical ventilation in Preterm baby | |
| Persistent pulmonary hypertension | |
| Temperature Abnormality (<36 degrees or >38degrees) | |
| Unexplained Excessive Bleeding, thrombocytopenia or abnormal clotting (INR >2) | |
| Oliguria persisting beyond 24 hours of birth | |
| Altered glucose homeostasis (hypo and hyperglycaemia) | |
| Metabolic Acidosis (BE > -10mmol/lit) | |
| Local signs of infection (e.g. Skin and eyes) | |

# Parent information leaflet on Group B Streptococcus (GBS)

**What is GBS?**
Group B streptococcus (GBS) is a common type of the streptococcus bacterium. Approximately a third of us have GBS in our intestines and a quarter of women carry it in the vagina. Most carriers are completely unaware that they carry GBS, as it can be difficult to detect and usually causes no problems or symptoms.

However, GBS can be a threat around the time of birth, infecting approximately 1 in 1000 newborn babies in this country. Although GBS infections in babies are relatively rare, the consequences can be serious. Of babies who develop the most severe forms of GBS infections, most will recover fully, but some survivors can have long term problems and about 10% die.

**When are GBS infections in babies most likely?**
There are recognised situations which increase the likelihood that a baby will be exposed to GBS and increase the risk of becoming infected. In these higher-risk situations, intravenous antibiotics are given during labour until delivery as a preventative measure to help protect the unborn child. This prevents most GBS infections from developing in babies. However despite these efforts a baby may still become infected.

**What are the signs of GBS infection in babies?**
The typical symptoms include grunting, poor feeding, lethargy, irritability, abnormal temperature, grey or blue colour and fast breathing rates. Most GBS infections are apparent shortly after birth or within the first week of life. This is called ‘early onset’ GBS disease.
Around 33% of GBS infections develop after the baby is 7 days old and is called “late-onset” GBS disease. It sometimes presents as meningitis. About 5%-10% of babies who develop late onset GBS die, and about a third suffer long-term disabilities. Even if antibiotics have been given to mother or baby, the baby may still present with late onset GBS.

The warning signs of late-onset GBS disease may include:

- fever
- poor feeding and/or vomiting;
- impaired consciousness.

The warning signs of meningitis include, as well as those above, any of the following:

- shrill or moaning cry or whimpering
- dislike of being handled, fretful
- tense or bulging fontanel (soft spot on head)
- involuntary body stiffening or jerking movements
- floppy body
- blank, staring or trance-like expression
- altered breathing patterns
- pale and/or blotchy skin

If your baby shows signs of late-onset GBS disease or meningitis, call your GP immediately. If your GP is not available, take the baby immediately to the nearest Accident and Emergency Department, or ring 999. If your baby has meningitis, early diagnosis and treatment are vital – delay could be fatal. The risk of a baby developing a GBS infection decreases with age. GBS infections are rare after one month of age and virtually unknown after three months. If you require more information about GBS, please ask your doctor or midwife.

## Documentation Control

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|---|---|---|---|---|
| Version / Amendment | Version | Date | Author | Reason |
| | 1 | Dec 2012 | Dr G Joshi<br>Consultant Paediatrician & Neonatologist | New |
| | 2 | Sep 2016 | Dr G Joshi | Review |
| **Intended Recipients:** All staff with responsibility for caring for the newborn infant | | | | |
| **Training and Dissemination:**<br>Cascaded through lead sisters/midwives/doctors<br>Published on Intranet; Circulation via email; notified in divisional newsletter | | | | |
| **EIRA stage 1 completed/stage 2 completed: n/a** | | | | |
| **To be read in conjunction with:** Prevention of Early onset neonatal group B streptococcal disease: intrapartum prophylaxis (**G2);** Management of the newborn in the event of Group B Streptococcal (GBS) infection (**G3)** | | | | |

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| Approved By: | 15/09/16: Maternity Guidelines Group: Miss S Raouf – Chair<br>08 /09/16 Maternity Development & Governance Committee/ACD- Dr Janet Ashworth<br>Head of Midwifery / Divisional Nurse Director: Mrs. J Haslam<br>19/09/16: Divisional Governance: Dr B Pearson - Chair |
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