Mid Essex Hospital Services NHS
NHS Trust

PREVENTION AND TREATMENT OF EARLY ONSET NEONATAL SEPSIS	CLINICAL GUIDELINES Register No: 09160 Status: Public

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A. Appendix A -Recommendations for screening and intrapartum treatment for GBS carriers and their neonates

1.0 Purpose

1.1 To identify infants most at risk of developing Group B Streptococcal (GBS) sepsis and ensure the correct treatment strategy is undertaken.

1.2 To identify those needing intrapartum antibiotics which reduce the incidence of invasive GBS disease by up to 70% with the risk factor strategy.

2.0 Equality and Diversity

2.1 Mid Essex Hospital Services NHS Trust is committed to the provision of a service that is fair, accessible and meets the needs of all individuals.

3.0 Introduction

3.1 GBS is the commonest serious bacterial pathogen affecting neonates, varying in incidence between 1 to 4 cases per 1000 live births for the most serious form, early-onset infection (<48 hours).

3.2 GBS infection in the neonate can be extremely serious and life threatening. Infants may develop meningitis, septicaemia or pneumonia. Infants who survive GBS may be left with neurological problems including hydrocephalus and deafness.

3.3. Up to 30% of mothers may be colonised with GBS. Antibiotic treatment during pregnancy is not effective at clearing colonisation and is not recommended.

3.4 Where risk factors exist, the administration of prophylactic antibiotics during labour and at least two hours prior to delivery has been shown to reduce the frequency of neonatal GBS infection.

3.5 If the infant is well at 24 hours despite having no intra-partum or neonatal antibiotics, there is a very low chance of developing GBS disease.

4.0 Risk Factors for sepsis

- Suspected or confirmed rupture of membranes for more than 18 hours in a preterm birth
- Preterm birth following spontaneous labour (before 37 weeks' gestation)
- Clinical Chorioamnionitis.
- Twin with suspected sepsis or Early onset group B Strep disease (EOGBSD)
- Invasive group B streptococcal infection in a previous baby
- Positive GBS vaginal culture at delivery
- Prolonged rupture of membranes >24hours in term infants
- Maternal group B streptococcal colonisation, bacteriuria or infection in the current pregnancy
- Maternal intrapartum fever >38°C during labour
- Prelabour rupture of membranes > 24 hours in term infants
- 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.
- Evidence of maternal sepsis (positive blood cultures, raised white blood cell count (WBC) or raised CRP)

5.0 Signs and Symptoms

5.1 Many infants with sepsis present with symptoms at or soon after birth, 90% of cases present clinically before 12 hours of age. Neonatal sepsis can progress rapidly to death.

5.2 Early onset (EOGBSD) accounts for up to 80% of infant cases of sepsis and usually presents with respiratory distress (grunting, tachypnoea, retractions, cyanosis and/or apnoea) or with non-specific signs of sepsis, such as tachycardia (heart rate >160/min) and hypotension (mean BP < 30 mm Hg). Meningitis occurs in 6-15%, with estimates of long term neurologic sequelae in 15-30% of survivors.

5.3 Typical signs of sepsis include:

- Grunting
- Poor feeding and or vomiting
- Lethargy; irritability
- Low blood sugar
- Abnormal temperature, heart rate and/or breathing rate
- Altered behaviour or responsiveness
- Altered muscle tone (for example, floppiness)
- Respiratory distress starting more than 4 hours after birth
- Hypoxia (for example, central cyanosis or reduced oxygen saturation level)
- Jaundice within 24 hours of birth
- Apnoea
- Seizures
- Signs of respiratory distress
- Metabolic acidosis (base deficit of 10 mmol/litre or greater)
- Local signs of infection (for example, affecting the skin or eye)
- Unexplained excessive bleeding, thrombocytopenia, or abnormal coagulation (International Normalised Ratio greater than 2.0)
- Signs of shock

5.4 A Lumbar puncture should be considered when the infant is stable and for infants with an CRP above 20

6.0 Risk Factor Strategy for Treatment

6.1 Risk factor strategy for the mother requiring intrapartum IV antibiotics > 4 hrs pre-delivery (**Not required** if elective caesarean section with no labour and intact membranes)

- Previous baby GBS disease
- Treated this pregnancy for GBS infection
- Vaginal swab positive for GBS this pregnancy
- Maternal pyrexia >38º for more than 1 hour
- Preterm labour

6.2 Newborn infants with one red flag or two risk factors sepsis should have full diagnostic evaluation is indicated (i.e. a full blood count (FBC), C-reactive protein (CRP), blood culture and lumbar puncture if feasible prior to intravenous administration of a broad-spectrum antibiotic

6.3 Other factors to be taken into account with term infants

- If the mother has a single risk factor the baby should be observed for signs of sepsis only with observations as per protocol for 12 hours.

- If there is a history of PROM then 12 hours of observations as per the guideline for postnatal observations (08074).

- If the mother has at least 2 of the above risk factors and has received no treatment or has received antibiotics within the 4 hours prior to delivery, the infant should be screened and treated.

- If mother has had at least 1 dose of Intrapartum antibiotics (penicillin or Ampicillin) in a time period greater than 4 hours before delivery, GBS has been adequately treated and GBS is removed as a risk factor.

6.4 Preterm (<37 weeks)

- Follow above guidance as for term babies but note that prematurity is already a risk factor.

- Therefore the baby only needs one more risk factor to require screening and treatment if no intra-partum treatment was commenced.

6.5 Screening and IV Antibiotics MUST be given to the infant if they are:-

- Symptomatic at any gestation with symptoms of sepsis.

- In multiple births if one baby is diagnosed with GBS disease treat all infants

- He/she has a sibling who had neonatal GBS disease (culture proven sepsis or meningitis)

- 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

- Having seizures

- A term infant requiring mechanical ventilation

7.0 Screening and Treatment of the Infant

7.1 A full diagnostic evaluation is indicated i.e. a full blood count (FBC), C-reactive protein (CRP), blood culture

7.2 A lumbar puncture should be performed if feasible prior to intravenous administration of a broad-spectrum antibiotic in all infants with clinical signs or suspicion of Meningitis. .

7.3 If the infant is not clinically stable do not delay starting antibiotics, perform the lumbar puncture as soon as possible after commencing antibiotics.

7.4 A repeat CRP should be collected prior to the 2nd dose of Gentamicin and sent with a gentamicin level at 36 hours. If there is a rise in the CRP at the 2nd test a LP would be indicated

7.5 Commence Benzyl penicillin 25mg/kg twice daily this can be increased to 50mg/kg twice daily in the case of Meningitis. Gentamicin 5mg/kg 36 hourly (Refer to EOE Antibiotics/Sepsis Guidelines)

7.6 In Preterm infants with a history of meconium liquor amoxicillin 50mg/kg BD should be added to cover for Listeria this can be increased to 100mg/kg BD if suspected CSF involvement

7.7 A well neonate having PROM or GBS observations or being treated for suspected sepsis with intravenous antibiotics can be cared for on the postnatal ward with its mother receiving regular observations and returning to the NNU for it's antibiotics

7.8 A clinically unwell infant or one below 35 weeks gestation should be admitted to the Neonatal Unit

7.6 Duration of treatment:

- Septicaemia – 5-10 days (discuss with consultant and microbiology)
- Meningitis – 10-14 days minimum
- Arthritis – 2-3 weeks
- Osteomyelitis – 3-4 weeks

8.0 Documentation

(Refer to the 'Guideline for maternity record keeping including documentation in handheld records'. Register number 06036)

9.0 Infection Prevention

9.1 All staff should follow Trust guidelines on infection prevention by ensuring that they effectively 'decontaminate their hands' before and after undertaking any patient contact.

9.2 All staff should ensure that they follow Trust guidelines on infection prevention. All invasive devices must be inserted and cared for using High Impact Intervention guidelines to reduce the risk of infection and deliver safe care. This care should be recorded in the Saving Lives High Impact Intervention Monitoring Tool Paperwork (Medical Devices).

10.0 Staff and Training

10.1 Teaching sessions on the identification of the at risk neonate will be available on a monthly basis to all midwifery staff.

10.2 All medical staff will have training in the identification of at risk infants and the rationale for observation, investigation and treatment of these infants

10.1 Medical and advanced neonatal nurse practitioner (ANNP) nursing staff involved in the prescription of antibiotics will have training in identification of correct antibiotic and the antibiotic protocol. This will be recorded as part of their appraisal.

10.2 Tools such as the British National Formulary for Children (BNF) for prescribing antibiotics will be available on each ward.

11.0 Audit and Monitoring

11.1 Audit of compliance with this guideline will be considered on an annual audit basis in accordance with the Clinical Audit Strategy and Policy (register number 08076), the Corporate Clinical Audit and Quality Improvement Project Plan and the Maternity annual audit work plan; to encompass national and local audit and clinical governance identifying key harm themes. The Women's and Children's Clinical Audit Group will identify a lead for the audit.

11.2 The findings of the audit will be reported to and approved by the Multi-disciplinary Risk Management Group (MRMG) and an action plan with named leads and timescales will be developed to address any identified deficiencies. Performance against the action plan will be monitored by this group at subsequent meetings.

11.3 The audit report will be reported to the monthly Directorate Governance Meeting (DGM) and significant concerns relating to compliance will be entered on the local Risk Assurance Framework.

11.4 Key findings and learning points from the audit will be submitted to the Clinical Governance Group within the integrated learning report.

11.5 Key findings and learning points will be disseminated to relevant staff.

12.0 Guideline Management

12.1 As an integral part of the knowledge, skills framework, staff are appraised annually to ensure competency in computer skills and the ability to access the current approved guidelines via the Trust's intranet site.

12.2 Quarterly memos are sent to line managers to disseminate to their staff the most currently approved guidelines available via the intranet and clinical guideline folders, located in each designated clinical area.

12.3 Guideline monitors have been nominated to each clinical area to ensure a system whereby obsolete guidelines are archived and newly approved guidelines are now downloaded from the intranet and filed appropriately in the guideline folders. 'Spot checks' are performed on all clinical guidelines quarterly.

12.4 Quarterly Clinical Practices group meetings are held to discuss 'guidelines'. During this meeting the practice development midwife can highlight any areas for further training; possibly involving 'workshops' or to be included in future 'skills and drills' mandatory training sessions.

13.0 Communication

13.1 A quarterly 'maternity newsletter' is issued to all staff to highlight key changes in clinical practice to include a list of newly approved guidelines for staff to acknowledge and familiarise themselves with and practice accordingly. Midwives that are on maternity leave or 'bank' staff have letters sent to their home address to update them on current clinical changes.

13.2 Approved guidelines are published monthly in the Trust's Staff Focus that is sent via email to all staff.

13.3 Approved guidelines will be disseminated to appropriate staff quarterly via email.

13.4 Regular memos are posted on the guideline and audit notice boards in each clinical area to notify staff of the latest revised guidelines and how to access guidelines via the intranet or clinical guideline folders.

14.0 References

National Institute for Clinical Excellence guidelines [CG149] Neonatal infection: antibiotics for prevention and treatment (2012) NICE

Rosie Hospital Neonatal Intensive Care Handbook, Cambridge (2013)

Risk Factors/Clinical Indicators for Sepsis

Use table 1 to identify risk factors for early-onset neonatal infection

Use table 2 to identify clinical indicators of early-onset neonatal infections

1 X Red flag = treat
2 X risk factors = treat
1 X risk factor and clinically well = Observe

Table 1

Risk factor	Red flag
Invasive group B streptococcal infection in a previous baby	
Maternal group B streptococcal colonisation, bacteriuria or infection in the current pregnancy	
Pre-labour rupture of membranes	
Preterm birth following spontaneous labour (before 37 weeks' gestation)	
Suspected or confirmed rupture of membranes for more than 18 hours in a preterm birth	
Intrapartum fever higher than 38°C, or confirmed or suspected chorioamnionitis	
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]	**Yes**
Suspected or confirmed infection in another baby in the case of a multiple pregnancy	**Yes**

Table 2

Clinical indicator	Red flag
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	
Respiratory distress starting more than 4 hours after birth	**Yes**
Hypoxia (for example, central cyanosis or reduced oxygen saturation level)	
Jaundice within 24 hours of birth	
Apnoea	
Signs of neonatal encephalopathy	
Seizures	**Yes**
Need for cardio–pulmonary resuscitation	
Need for mechanical ventilation in a preterm baby	
Need for mechanical ventilation in a term baby	**Yes**
Persistent fetal circulation (persistent pulmonary hypertension)	
Temperature abnormality (lower than 36°C or higher than 38°C) unexplained by environmental factors	
Signs of shock	**Yes**
Unexplained excessive bleeding, thrombocytopenia, or abnormal coagulation (International Normalised Ratio greater than 2.0)	
Oliguria persisting beyond 24 hours after birth	
Altered glucose homeostasis (hypoglycaemia or hyperglycaemia)	
Metabolic acidosis (base deficit of 10 mmol/litre or greater)	
Local signs of infection (for example, affecting the skin or eye)	