Wrightington, Wigan and Leigh Teaching Hospitals
NHS Foundation Trust

Title of Guideline	**Group B Streptococcal neonatal disease**
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Division & Specialty	Surgery - Obstetrics
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Explicit definition of patient group to which it applies	Maternity patients
Abstract	
Statement of evidence base of the guideline Evidence Base (1-5)	

1a	Meta analysis of RCT
1b	At least 1 RCT
2a	At least 1 well designed controlled study without randomisation
2b	At least 1 other well designed quasi experimental study
3	Well –designed non-experimental descriptive studies (ie comparative / correlation and case studies)
4	Expert committee reports or opinions and / or clinical experiences of respected authorities
5	Recommended best practise based on the clinical experience of the guideline developer

Consultation Process	O&G Guideline Group
Target Audience	Maternity staff
This guideline has been registered with the trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt contact a senior colleague or expert. Caution is advised when using guidelines after the review date.	

Prevention of early onset Group B Streptococcal neonatal disease

Written by Raouf El Gawly, Camelia Faris & Robert Nelson, May 2003, revised June 2006, March 2008 and February 2012. Updated by Louise Wan February 2013, Papa Essilfie March 2016 and Amit Verma and Camelia Faris October 2017. Minor alteration for inconsistencies February 2019. Updated by Gail Watson to align with Obs 40 June 2020 (v9). Minor update about neonatal observations October 2020 (v9.1). Updated by Olivia Geering and Camelia Faris September 2023 (v10)

Introduction

Early onset group B streptococcus (EOGBS) disease is the leading cause of early onset neonatal sepsis in developed countries [1]. Most cases of early onset neonatal disease have an intrapartum pathogenesis, can be rapidly progressive and often lethal. Despite its relationship to neonatal morbidity and mortality, no consensus exists for an approach to its prevention. Evidence from both the United States and Australia shows that the adoption of prophylaxis policies significantly decreases the incidence [2, 3]. More recently the Group B Streptococcus Working Group of the Public Health Laboratory Service issued interim recommendations for best practice to be used while further data are collected [4]. Several characteristics of the organism such as high maternal carriage rates, the intermittent nature of this carriage, and the failure of antibiotics to permanently eliminate carriage have limited the success of proposed intervention protocols.

Approximately 15% of all UK pregnancies have risk factors for developing EOGBS. Counselling should include the risk of developing EOGBS disease in the presence of a particular risk factor and possible side effects of intrapartum antibiotic prophylaxis (IAP). The argument for prophylaxis may become stronger in the presence of more than one risk factor [7] (See Appendix A).

Aim of the Guideline

1. Identify women whose babies are at risk of GBS neonatal disease.
2. Offer antibiotic prophylaxis to women at risk
3. Liaise with the paediatric team to appropriately manage the high-risk neonate.
4. Counsel the mother on the currently available information on the subject.
5. Involve the mother in the decision to give prophylaxis and clearly communicate this decision in the maternity hospital and handheld notes.

Recommend IAP for prevention of EOGBS disease for: (See Appendix A for counselling points).

1. Any mother with a history of GBS infection in a previous baby.
2. GBS detected incidentally in the vagina, rectum or in urine at any time during the current pregnancy.
3. Preterm labour before 37 weeks

Chorioamnionitis diagnosed antenatally or intrapartum should be treated with broad spectrum antibiotics that also cover GBS and delivery should be planned. The following drugs are recommended: Ceftriaxone 1gram IV once daily (increase dose to 2grams once daily if booking weight 80kg or more) plus metronidazole 500mg IV 8 hourly.
For patients with a history of a severe Beta-lactam allergy (e.g. anaphylaxis) please discuss the antibiotic choice with a Consultant Microbiologist.

Antenatal Management

	Action	Rationale
1.	Do **NOT** offer routine bacteriological screening. Maternal request in the absence of previous GBS carriage is not an indication for screening.	Many women carry the bacteria and, in the majority of cases, their babies are born safely and without developing an infection. Screening women late in pregnancy cannot accurately predict which babies will develop GBS infection.

2.	If positive for GBS in previous pregnancy discuss the options of IAP, or bacteriological testing in late pregnancy and then offer of IAP if still positive If performed, bacteriological testing should ideally be carried out at 35–37 weeks of gestation or 3–5 weeks prior to the anticipated delivery date.	The likelihood of maternal GBS carriage in this pregnancy is 50% if a woman had GBS detected in a previous pregnancy Assuming that approximately 50% of women will be recurrent carriers, the risk of EOGBS disease should be approximately 2 to 2.5 times that quoted for the total population. The risk of EOGBS disease in the baby in this circumstance is likely to be around 1 in 700 to 1 in 800. At this risk level, some women would choose IAP and others would not. Bacteriological testing in this circumstance would help to refine the risk. A positive bacteriological test in this circumstance would indicate a risk of 1 in 400, but the risk would be 1 in 5000 if the mother is GBS negative. A significant number of mothers may therefore choose to avoid IAP if they test negative.
	For women who have had an affected baby in the past screening is not indicated as IAP would be offered anyway	Mothers who have had a previous baby affected by early- or late-onset GBS are at increased chance of another affected baby compared with women of similar carrier status who have not had an affected baby. The reasons for this increased risk are not clear but may indicate persistence of carriage of a virulent strain of GBS or a deficient immune response.

3.	Swabs taken should be LVS and anorectal swab. A single or two different swabs can be used. If sending a single swab, obtain a swab from distal vagina first followed by the rectum. Use a charcoal swab. There is as yet no order set for this on HIS so need to handwrite the request on the form.	Public Health England has published a standard for the detection of GBS carriage. The standard notes that optimum yield will be achieved with swabs obtained from the lower vagina and the anorectum. A single swab for both sites of collection is rational but two different swabs can be used. HVS should not be collected as they have a lower sensitivity.
4.	Arrange for all mothers who had an affected baby in previous pregnancy or are found to harbour GBS in vaginal swab, anorectal swab or MSU in the current pregnancy to be seen in the hospital antenatal clinic. Place GBS sticker in handheld notes and orange hospital notes. Add an alert on Euroking	To share information, increase awareness of the mother and help her to ask further questions and make an informed choice in relation to offered treatment. Give information leaflet.
5.	**All pregnant women should be provided with an appropriate information leaflet** Document in the notes that the leaflet has been given Discuss with the mother the pros and cons of antibiotic treatment in labour (See Appendix A).	To allow an informed decision.
6.	Document in hospital notes the patient decision in relation to intrapartum prophylaxis.	To communicate the plan of management in labour to admitting staff.
7.	When taking history of drug allergy document reaction experienced, e.g. with penicillin. Just writing allergic to penicillin is not helpful.	Penicillin is a very effective antibiotic. It could be life saving. “vaginal discharge”, “not felt well” etc. are not allergic reactions. Urticaria, rash or swelling of the mouth and throat (angio-oedema), bronchospasm are features of anaphylaxis.

8.	**Treat all those with positive GBS MSU at the time of diagnosis.** Treat for seven days for both asymptomatic and symptomatic patients. Amoxycillin 500mg orally 8 hourly. For patients allergic to penicillin use Cephalexin 500mg orally 12 hourly or Nitrofurantoin 100mg orally 12 hourly. Treat for two weeks for pyelonephritis patients. Do not use nitrofurantoin and escalate the dose of cefalexin according to severity of infection Repeat MSU following treatment. **Remember intrapartum prophylaxis is also indicated.**	Positive MSU indicates heavy colonization, has a risk of ascending renal infection and is associated with a risk of preterm labour. Erythromycin is not effective for the treatment of GBS in urine To check for cure.
9.	Positive GBS swabs should not be treated antenatally unless symptomatic (vaginitis with purulent or offensive vaginal discharge).	There is no evidence that antenatal treatment will eradicate GBS from the vagina or prevent neonatal infection.
10.	Patients who were found to be carriers of GBS (either in a HVS LVS, anorectal swab or MSU) should be advised to be admitted with early signs of labour or soon after rupture of the membranes (ROM).	To start intrapartum antibiotic prophylaxis as early as possible in the labour. Prophylaxis is beneficial if given at least 4 hours before delivery.

11.	Streptococcal groups C,D,F,G, or ungroupable streptococci found on a swab will NOT qualify for intrapartum GBS prophylaxis. These patients should only be treated if symptomatic (signs of vaginitis e.g. purulent offensive discharge or signs of inflammation). Consideration should be given to treating any women who are identified to have Group A streptococci (CMACE 2011) [9].	There is no evidence that these streptococcal groups are linked to early onset neonatal sepsis and that prophylaxis is associated with improved neonatal outcomes. Group A streptococcal septicaemia has been identified as causing a significant number of maternal deaths (CMACE 2011) [9].
12.	GBS patients admitted with **Preterm** PROM should be managed according to Guideline Obs 78 Preterm Prelabour Rupture of Membranes. For <34 weeks conservative management is appropriate For those at more than 34^{+0} weeks of gestation it may be beneficial to expedite delivery if a woman is a known GBS carrier IAP should be given to all those in preterm labour whether or not they are colonised are GBS colonised	The Oracle study showed beneficial effect of this policy[5]. Perinatal risks associated with preterm delivery at less than 34^{+0} weeks of gestation are likely to outweigh the risk of perinatal infection. There is evidence that IAP is useful even in non-GBS colonised patients with PROM and preterm labour as preterm infants are at higher risk of GBS sepsis
13.	Patients admitted with prelabour rupture of membranes at 37 weeks gestation (or greater) and also known to be GBS carriers in the current pregnancy should be offered IAP and IOL as soon as possible.	To reduce the risk of early GBS neonatal disease.
14.	GBS carriage does not affect the method of induction of labour. Membrane sweeps are not contraindicated	There is no evidence infection is increased

Intrapartum Management

	Action	Rationale
1.	For all patients whether identified at risk or not, on admission to labour ward check hospital notes, microbiological filed results and HIS for any previous cultures with GBS.	To ensure that patients that may benefit from prophylaxis are not missed.
2.	**PRETERM LABOUR** IAP is recommended for women in confirmed preterm labour <37 weeks	The risk of GBS infection is higher with preterm delivery and the mortality rate from infection is increased (20–30% versus 2–3% at term) and this therefore justifies IAP in all cases of preterm labour.
3.	Indications for GBS prophylaxis • Previous GBS infected infant • GBS carriage in this pregnancy • Confirmed preterm labour before 37 weeks	

4.	If GBS prophylaxis is indicated insert a cannula and start appropriate antibiotic **Benzylpenicillin 3gm slowly intravenously as a loading dose followed by 1.5gm intravenously at four hourly intervals until delivery.** If allergic to Penicillin but not severe allergy **cefuroxime, 1.5 g loading dose followed by 750 mg intravenously every eight hours until delivery*.** If the allergy to beta-lactams is severe then intravenous **vancomycin (1 g every 12 hours)** is recommended. This must be give slowly over 60 minutes. * If GBS from antenatal cultures have shown resistance to penicillin advice should be sought from a Consultant Microbiologist ideally before labour and the recommended appropriate antibiotics documented in the antenatal notes and ordered to be available on labour ward.	To get maximum benefit the first dose of antibiotics should be given at least four hours before delivery. Antibiotics should be started as soon as possible or at the start of induction process
5.	Women with documented GBS colonisation who decline IAP should be advised that the baby should be very closely monitored for 12 hours after birth, and discouraged from seeking very early discharge from the maternity hospital	Women should be made aware that the risk of the baby developing EOGBS infection is higher than if they had received IAP. The overall risk remains low.
6.	Waterbirth is not contraindicated as long as IAP is given	
7.	Alert the paediatrician of the risk and whether antibiotics were given at least four hours before delivery.	To implement paediatric protocol and monitor the baby.

8.	Women presenting in labour with pyrexia >38^{o}C should be treated with broad spectrum antibiotics which also cover GBS instead of IV benzylpenicillin or vancomycin.	GBS presents a high risk of neonatal sepsis (5.3/1000)
9.	GBS carriers having a planned Caesarean Section will need antibiotic prophylaxis **only** if; a. labour has started b. the membranes have ruptured c. had a previous affected baby	The risk of transmission of GBS is extremely small before the onset of labour with intact membranes. The benefits outside these situations may outweigh the risks associated with antibiotic administration.
10.	Non GBS carrier mothers admitted at term (after 37 completed weeks) with prelabour rupture of membranes (PROM) for more than 24 hours before the onset of labour carry a small risk of neonatal infection. Intrapartum antibiotics are not indicated but the neonates will require 12 hours of observation in hospital following delivery. **Note also Guideline Obs. 40 – Prelabour Rupture of Membranes at term.**	Prolonged rupture of the membranes gives a risk of 1% of serious neonatal infection.(6)
11.	The infant of a mother with risk factors for neonatal GBS infection should be referred to the paediatricians at birth and the planned observation of the infant should be documented in the baby notes. See **management of potentially infected neonate algorithm** in **Neonatal sepsis suspected (Page 3)** Use NEWS chart for observations.	The baby will need observation. Unless initial dose of IAP have been received more than four hours prior to delivery

12.	Counsel all mothers with GBS about warning signs for an unwell baby. • Poor Tone • Poor Feeding • Temperature • Increase respiration rate • Grunting • Pale	To detect EOGBS infection after discharge home.

References

1. RCOG Green TOP guideline on Group B Streptococcal disease, Early-onset GTG No 36 Published September 2017
2. NICE clinical guideline 235 (2023). Intrapartum care. Care of healthy women and their babies during childbirth. September 2023. www.nice.org.uk/guidance/ng235

Process for audit

An audit will be undertaken at least every 3 years which will audit compliance with this guideline. The audit which is part of the audit of immediate care of the newborn (Obs 93) will include as a minimum set of standards the following criteria

1. Proportion of pregnant women with the following indications for IAP who actually received IAP (100%):
    i. preterm labour
    ii. previous invasive GBS disease
    iii. known GBS carrier (however detected)
    iv. GBS bacteriuria or GBS urinary tract infection in current pregnancy.
2. Proportion of women who are pyrexial in labour who are offered appropriate antibiotics, including antibiotic for preventing EOGBS (100%).
3. Proportion of pregnant women who were colonised in a previous pregnancy who are offered testing and/or IAP (100%).

4. Proportion of pregnant women given high-quality patient information (100%).
5. Pecentage of professionals with knowledge and understanding of GBS carriage and EOGBS disease (100%).
6. Documentation of referral of the baby to paediatrician
7. Documentation of the care plan for observation of the infant

The audit will be presented at a monthly departmental multidisciplinary audit meeting following which an action plan will be formulated to correct any deficiencies identified and a date for re-audit planned.

The implementation of the action plan will be reviewed at the monthly audit meeting 3 months after presentation

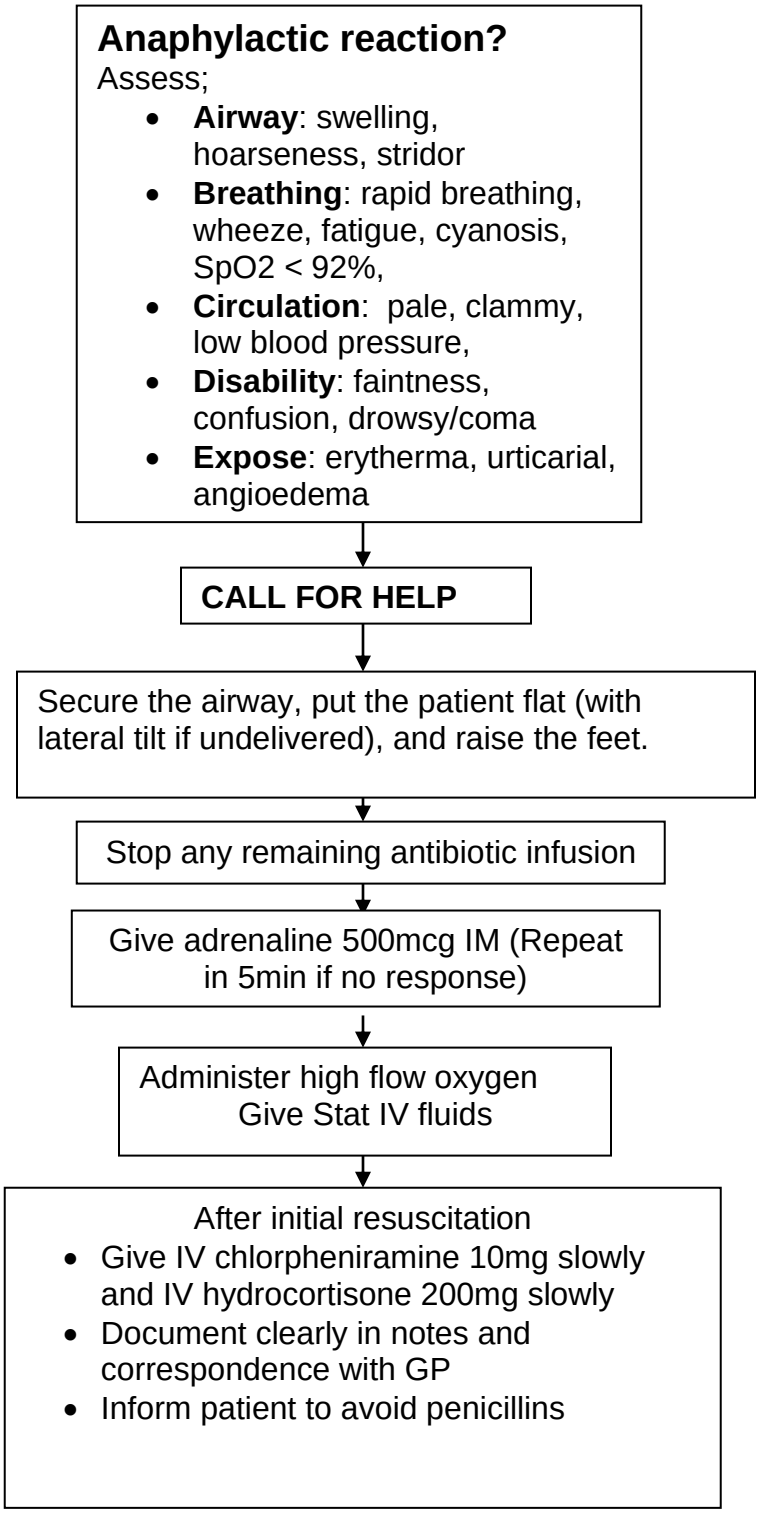
Appendix A: Information to be included in counselling

<table>
<tr><th>Risk Factor</th><th>Risk</th><th>Risk Reduction to infant</th><th>Maternal risk</th></tr>
<tr><td>No identified risk factors</td><td>0.5/1000</td><td></td><td></td></tr>
<tr><td>Previously affected baby with EOGBS</td><td>High (although not accurately quantified)</td><td rowspan="4">Intrapartum antibiotics are 80% effective at preventing EOGBS.
Mortality from EOGBS disease is 2-3% in term infants and 20-30% in preterm infants.
Intrapartum antibiotics will not prevent all deaths
NB: NICE recommends not giving antibiotics for prolonged ROM at term. Our paediatric colleagues feel that the evidence for not giving antibiotics is not robust and recommend its use (hence its inclusion in the indications).</td><td rowspan="2">Risk of giving beta-lactam antibiotics (penicillin) to the mother generally quoted as:
a.1:10mild reaction
b.1:1000severe reaction
c.1:1000.000 death from anaphylaxis

But a paper published in 2005 (Law and Palomaki) showed that there were no deaths due to anaphylaxis in 1.8 million women that received I.V. penicillin in labour.</td></tr>
<tr><td>GBS detected incidentally in urine or a swab</td><td>2.3/1000</td></tr>
<tr><td>Prolonged ROM at term</td><td>2.1/1000
Neonatal mortality (0.1/1000)</td><td>You need to give antibiotics to 10500 women to prevent one death</td></tr>
<tr><td>Preterm labour before 37 weeks</td><td>2.3/1000</td><td></td></tr>
</table>

GBS carriers requesting a waterbirth should be advised that there is no evidence against or for this choice. If a woman wishes to have a waterbirth every effort should be made to protect the I.V. cannula. The mother should be informed of the possible risk of infection in the presence of I.V access.

Appendix B: Management of anaphylaxis to penicillin (Adapted from Resus Council 2008-2012 – Emergency Treatment of Anaphylactic Reactions guidelines)



Pathway of Care (taken from the RCOG Green Top Guideline 2017)