Group B Streptococcus in Pregnancy and the Newborn UHL Obstetric Guideline

University Hospitals of Leicester NHS Trust

Trust ref: C97/2008

Contents

1. Introduction and who the guideline applies to:

This guideline applies to all clinical healthcare professionals working within the Clinical Management Group of Women's and Children's who may be involved in the antenatal, intrapartum and postpartum care of women and babies at risk of Group B Streptococcus infection. The purpose of this guideline is to provide guidance to prevent early-onset neonatal group B streptococcal (EOGBS) disease.

Background:

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 0.57 per 1000 births, with a 2-3% mortality rate amongst term babies[1].

Early-onset GBS disease is defined as infection occurring within 7 days of birth, although 90% of cases will occur in the first 24 hours[2].

It is estimated that 20-40% of UK women are colonised with GBS and that 36% of babies born to colonised women are themselves colonised, and 3% of colonised babies develop bacteraemia[3, 4, 5].

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. preterm delivery, membrane rupture > 18 hours, maternal fever). 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.

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.

The principle adverse effect of short-duration antibiotic prophylaxis is allergic reactions. The risk of a severe anaphylactic reaction to penicillin is estimated at 1 in 10,000, and fatal anaphylaxis estimated at 1 in 100,000[5]. Any anaphylactic reaction in the mother carries a high risk of fetal compromise. Much more common are minor allergic reactions such as a rash, which occur in up to 10% of women.

Related documents;

- Antibiotics for Neonatal Infection UHL Neonatal Guideline
- Prematurity Prevention for Women at High Risk of Spontaneous Preterm Labour UHL Obstetric Guideline
- Antimicrobial Summary UHL Womens Guideline

2. Management of Group B Streptococcus in Pregnancy and the Newborn

2.1 Screening

Universal Screening for Group B Streptococcus carriage is not currently recommended.

GBS is common commensal within the gastro-intestinal tract and vagina and colonises approximately 20-40% of pregnant women[5].

Genital tract carriage of GBS can be transient, sporadic, intermittent or chronic. Coupled with this, specialised techniques for both taking and processing the swabs are necessary to maximise detection.

For these reasons, investigations for GBS colonisation by non-specific swabs taken randomly throughout pregnancy may miss up to 60% of those colonised at delivery. Swab results may be negative and falsely reassuring.

It is estimated in the UK to prevent 1 neonatal death from early onset GBS disease, 24 000 women would have to be screened, and 7000 women treated with intrapartum antibiotics[5]. There is also concern that widespread use of penicillin may encourage bacterial resistance, and that neonatal antibiotic exposure may affect gut flora.

Although it is recognised that other countries do recommend universal screening in pregnancy[2], and that patient support groups advocate a universal screening policy[6], universal screening in the UK is not currently recommended for the reasons outlined above[5].

Some women may choose to undergo private GBS testing. If it found to be colonised, women should be offered intrapartum antibiotics.

2.2 Antenatal 'At risk' identification

All women identified antenatally as "at risk" of neonatal GBS infection should have the appropriate birth plan documented.

Women 'at risk' of neonatal GBS infection are considered as follows:

- A woman with a previous child affected by GBS neonatal sepsis.
- GBS colonisation detected in a previous pregnancy
- GBS carriage demonstrated in this pregnancy, either on genital tract swabs or urine culture

The recurrence of GBS colonisation after GBS was detected in the previous pregnancy is approximately 50% [1]. In view of this, routine antibiotic prophylaxis will be offered to all women who had GBS carriage identified in a previous pregnancy.

The Antenatal Core Midwife will ensure that:

- **A GBS sticker has been placed inside the front cover of the maternity notes of women 'at risk' of GBS to enable these women to be easily identified.**
- **A red alert sticker (A) is on the outside of the notes**
- **An alert is generated on the electronic patient record clinical database system.**
- **An intrapartum care plan is completed and filed for this current pregnancy**

Women who require counselling by medical staff should be referred to the General Obstetric antenatal clinic if booking at Leicester Royal Infirmary or a Consultant antenatal clinic if booking at Leicester General Hospital.

2.3 Actions when GBS Colonisaton is identified

If GBS colonisation is identified opportunistically at any stage of a pregnancy, the Antenatal Screening Team will inform the Antenatal Core Midwives.

An automatic report should be generated daily and sent to the Antenatal and Newborn Screening Team to inform them of all people in whom GBS colonisation has been identified, in order that they are managed appropriately.

The Screening Team should then inform the Antenatal Core Midwives of all positive results in women who are pregnant or early postnatal.

The screening team and maternity records staff will send GP letters and stickers previous obstetric notes as required for women who have not had a recent maternity episode with UHL.

The Antenatal Core Midwives will inform the woman of her result and ensure the appropriate birth plan is documented in all the relevant systems.

If the woman is currently pregnant then the Antenatal Core Midwife will put a 'GBS' sticker inside the front cover of the notes, and a red alert sticker on the outside of the notes, prepare an intrapartum care plan, contact the woman by telephone to inform her of the result, and send a patient information leaflet.

If medical counselling is required then an appointment at the General Obstetric Clinic (LRI) or named consultant clinic (LGH) should be made.

If it is not possible for the Antenatal Core midwife to contact the woman to inform her by telephone (at any gestation), the woman must be sent a text stating that we have urgent results that we need to discuss and they should ring into AAA/PAS.

Send an urgent message to the community office with the details so that the community midwife can inform the lady of the results – continue to sticker the notes and complete the Intrapartum care plan.

- It is not appropriate to write to the lady with these results especially near to Term as the message may not be received prior to the birth.

If the woman has delivered and;

- **Is still an in-patient** then the Antenatal Core Midwife / Ward Midwife will inform the paediatricians, counsel the woman and give her a patient information leaflet and put a GBS sticker on the notes for future pregnancies.

OR

- **Has been discharged** then the Antenatal Core Midwife / Ward Midwife will contact the Community Midwife and General Practitioner. She will ensure that the Community Midwife is confident to discuss the result with the woman and has a patient information leaflet to give to the woman.

2.5 GBS carriage treatment

GBS carriage should only be treated antenatally if GBS bacteriuria is identified on an MSU or a woman complains of a symptomatic vaginal discharge for which no other cause can be found.

Women carrying GBS should not routinely be treated antenatally. There is no evidence that antenatal treatment reduces the risk of colonisation at the time of delivery[5].

Asymptomatic GBS bacteriuria indicates heavy Group B Streptococcus genital colonisation. More importantly, asymptomatic bacteriuria with any organism is associated with a significantly higher rate of preterm delivery and premature rupture of membranes.

The recommended treatment antenatally is:

Amoxicillin 500mgs tds orally for 7 days

Or

Refer to the Antimicrobial website

A repeat midstream specimen of urine should be collected two to four weeks after completion of the course of antibiotics and treatment repeated as necessary.

See UHL Guideline for UTI Management for full details of urinary tract infection management.
N.B. Intrapartum antibiotic prophylaxis and other precautions should still be taken, regardless of any antenatal treatment.

2.6 GBS management in labour

The following women should be considered as ‘at risk’ of neonatal GBS infection and offered

intravenous antibiotic prophylaxis when in active labour:

1. Women with a previous baby affected by neonatal GBS sepsis.
2. Women in whom GBS carriage has been demonstrated in this pregnancy, either on genital tract swabs or urine culture
3. Women in whom GBS carriage has been demonstrated in a previous pregnancy, either on genital tract swabs or urine culture
4. Pyrexia in labour (defined as Temperature ≥38°C or two temperatures of 37.8 - 37.9°C two hours apart)
5. Women in confirmed preterm labour

It is recommended that women considered at risk of neonatal GBS sepsis, as defined above, should receive intrapartum antibiotic treatment[5]. This includes women with a positive result obtained by private GBS testing.

GBS prophylaxis in preterm labour

The incidence of EOGBS is significantly higher in babies born after spontaneous preterm labour compared to term (2.3/1000 preterm births), and has a 20-30% mortality rate in preterm babies. All women in confirmed preterm labour, whether with intact membranes or following PPROM, should receive intrapartum antibiotic prophylaxis. This includes women undergoing induction of labour at <37 weeks for any indication (both with intact membranes and PPROM) and also undergoing pre-labour Caesarean section with ruptured membranes. Women who are being delivered by pre-labour Caesarean section with intact membranes do not require GBS prophylaxis at any gestation.

Women with low grade pyrexia in labour

Women who are not known to carry GBS, but have intrapartum pyrexia (defined as temperature ≥38°C or two temperatures of 37.8 - 37.9°C two hours apart) have a risk of EOGBS disease of 5.3/1000 (versus a background risk of 0.5/1000) [12, 13] and should receive antibiotics in labour. Please see 'pyrexia in labour guideline' for full details of recommended management.

Antibiotic regime

Prophylaxis should be commenced once a woman is diagnosed as being in the active phase of labour using either:

Benzylpenicillin 3g IV stat, followed by 1.5g IV 4 hourly

Or **(if non-severe allergy to penicillin – see text below)**

Cefuroxime 1.5g IV stat, followed by 750mg IV 8 hourly

Or **(if SEVERE penicillin allergy**) Confirm by taking comprehensive history

Teicoplanin STAT
(400mg if <100kg booking weight, 600mg if ≥100kg booking weight)
(Repeat dosing is required after 12 hours if labour continues)

Clindamycin is no longer the antibiotic of choice in penicillin allergic women, due to high levels of resistance of GBS in the UK (16%)[5].The choice between cefuroxime or teicoplanin in penicillin allergic women rests on the severity of the penicillin allergy, with teicoplanin preferable in women with severe allergy (e.g. anaphylaxis, angioedema, respiratory distress or urticaria)[5].

Antibiotic treatment should be continued until delivery unless the diagnosis of active labour is subsequently refuted. This treatment should also be used for women who have two temperatures of 37.8°C – 37.9°C two hours apart.

For maximum benefit, at least one dose of intravenous antibiotics should have been given at least 4 hours prior to delivery[5]

If chorioamnionitis is suspected clinically or intra-partum pyrexia (defined as Temperature ≥38°C), then the above regime should be **replaced** by broad spectrum antibiotic cover as per UHL womens antibiotic guideline summary.

2.7 Care plans for women identified 'at risk'

Women identified antenatally as "at risk" of neonatal GBS infection & offered intravenous antibiotic prophylaxis will need specific intrapartum care plans for each of the following circumstances:

1. Induction of labour
2. Prolonged latent phase of labour
3. Pre-labour rupture of membranes
    - At term
    - Preterm
4. Caesarean section
5. Management in labour

Induction of labour

a) with prostaglandin

Occasionally (and unpredictably), some women will labour and deliver rapidly after prostaglandin administration, despite an initially unfavourable Bishop score.

To cover that eventuality, the initial priming dose of intravenous antibiotic (Benzylpenicillin 3g or Cefuroxime 1.5g or Teicoplanin 400mg or 600mg depending on weight – see page 6) should be given at the start of the induction.

This ensures that there is some antibiotic within the fetal circulation. More importantly, antibiotic levels within the amniotic fluid will be therapeutic and remain high for many hours, as it is metabolically inactive.

Regular antibiotic doses should commence once the woman is either in the active phase of labour (the cervix is >3 cms dilated) or the membranes have ruptured.

If the interval from the first dose to either the active phase of labour or membrane rupture exceeds 8 hours, the loading dose of benzylpenicillin (3g) should be repeated. If the interval is less than 8 hours, continue with the normal follow-up dosage (1.5g). If the induction extends over more than one day, the initial priming dose should be repeated after 24 hours.

b) by ARM

The standard prophylactic regime should be started two hours before ARM.
Oxytocin should be commenced promptly after ARM.

Prolonged latent phase of labour

In general, this should be managed as for "induction of labour with Prostaglandin". After an initial loading dose of antibiotic (Benzylpenicillin 3g or cefuroxime 1.5g or teicoplanin 400mg or 600mg depending on weight – see page 6, further doses should be withheld until the woman is either in

active labour (cervix ≥ 3 cm dilated) or the membranes have ruptured. Once the membranes rupture, labour should be actively managed. If the interval between the first dose and either the active phase of labour or membrane rupture exceeds 8 hours, the loading dose of Benzylpenicillin (3g) should be repeated.

Pre-labour rupture of membranes

a) At term (37 weeks and above)

The standard prophylactic antibiotic regime should be commenced immediately as for any woman considered to be at risk of neonatal GBS infection

Benzylpenicillin 3g IV stat, followed by 1.5g iv 4 hourly

Or ***(if non-severe allergy to penicillin)***

Cefuroxime 1.5g IV stat, followed by 750mg IV 8 hourly

Or ***(if severe penicillin allergy)This should be confirmed by taking comprehensive history***

Teicoplanin STAT

(400mg if <100kg booking weight, 600mg if ≥100kg booking weight)
(Repeat dosing is required after 12 hours if labour continues)

Prompt induction with oxytocin (as opposed to induction with Prostin or expectant management) is recommended, as it appears to significantly lower the risk of neonatal infection[9]. Propess should not be given. In the unusual situation where the mother is judged likely to deliver within two hours of starting oxytocin, then augmentation may be delayed by 2 hours. This decision remains a clinical one requiring individualisation.

b) Preterm (34 – 36 weeks)

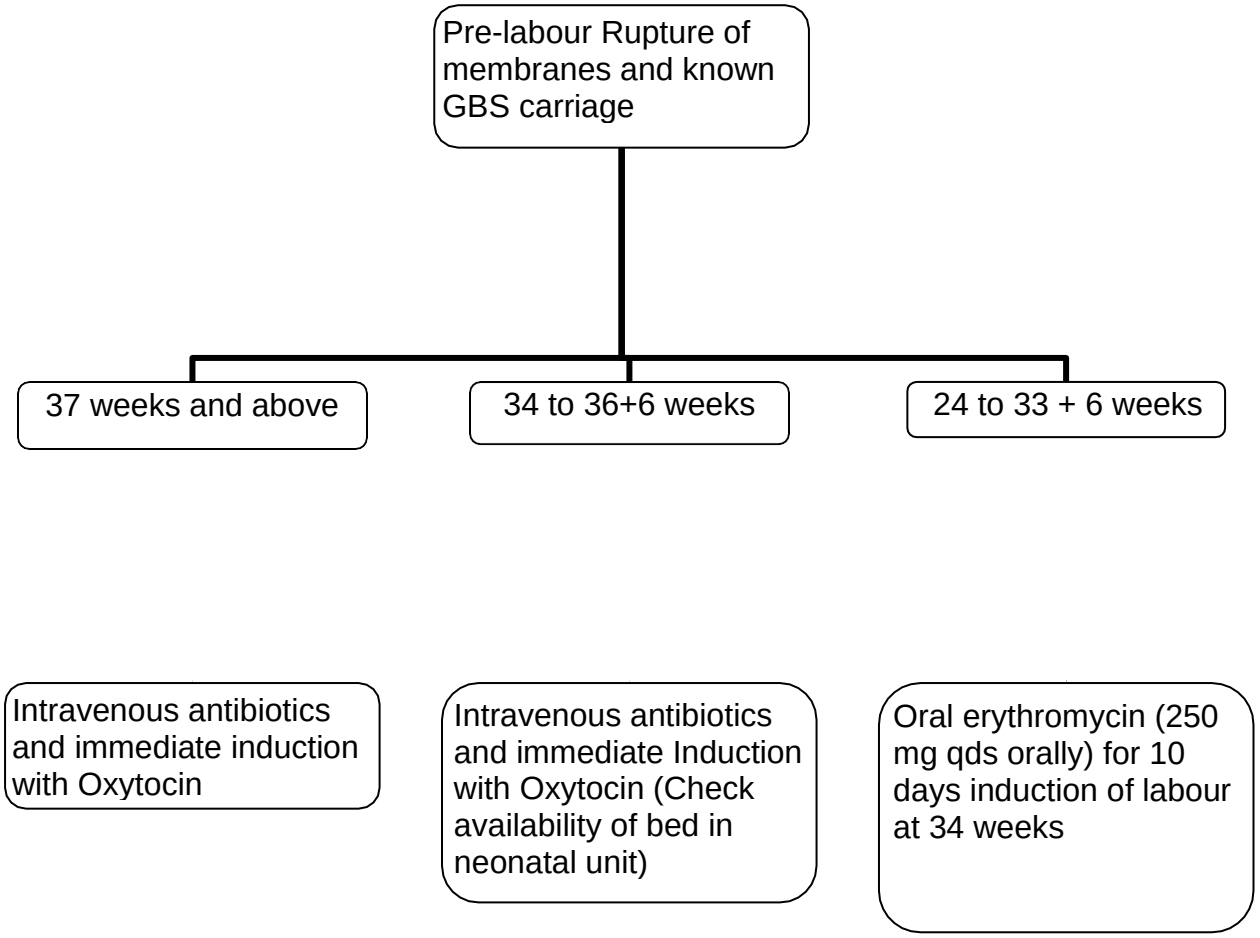
If confirmed GBS carriage in the current or previous pregnancies, these women should be offered immediate induction of labour with intrapartum antibiotic prophylaxis. If they are not known to carry GBS, then they should be managed conservatively with a planmade regarding timing of delivery. They should all receive antibiotic prophylaxis in labour (regardless of carriage status).

c) Preterm (24 - 33 weeks)

There is no evidence regarding the use of routine intravenous antibiotics in pPROM in GBS colonised women, and the practice is not routine[4]. However women with pPROM may undergo precipitate labour, and preterm neonates are at increased risk of early onset GBS sepsis.

Women who have preterm prelabour rupture of membranes between 24 and 33 weeks gestation and no clinical evidence of chorioamnionitis should be treated with oral erythromycin (250 mg qds orally) for 10 days. This has been shown to improve neonatal outcome[10] and is also active against GBS. If steroids have not previously been administered, two doses of dexamethasone (12mg intramuscularly) should also be given 12 hours apart. If the woman is unable to take erythromycin, 10 days of oral penicillin should be prescribed [1].

When the woman subsequently labours, the standard intravenous prophylactic antibiotic regime for GBS should be recommenced.



Caesarean section

For planned non-labour caesarean sections in women with intact membranes, antibiotic prophylaxis against GBS is not required[5].

Women in labour or with ruptured membranes requiring a Caesarean section should receive the standard intravenous prophylactic antibiotic regime for GBS. Where clinically feasible, two hours should have elapsed between the first dose and delivery.

Management in labour

a) Fetal monitoring. There is no evidence regarding the need for continuous fetal monitoring in women at risk of GBS. For women who are known to be colonised with GBS, but have no additional risk factors (e.g. prematurity, pyrexia) and have no additional indications for continuous fetal monitoring, intermittent fetal auscultation is appropriate.

b) Water birth. The evidence suggests that water birth is not contraindicated in women requiring GBS antibiotic prophylaxis [1]. The need for an intravenous cannula which should be kept clean and dry may be considered to preclude a water birth.

c) Home birth. There is currently no facility for community midwives to offer intrapartum antibiotic prophylaxis for GBS (need for cannulation, administration of intravenous antibiotics, facilities for treatment of adverse drug

reactions/anaphylaxis). Alternative drug regimens have unproven efficacy with regard to prevention of neonatal GBS sepsis. If women at risk of GBS wish to have a home birth they should be informed of these facts. They may choose to have a homebirth without antibiotic prophylaxis, and should be offered in writing the risks of neonatal GBS sepsis and additional risk factors that may be identified as outlined in the Background to this guideline.

2.8 Neonatal management

All babies born to women identified as "at risk" of neonatal GBS infection need to be assessed by the paediatrician within 2 hours of delivery, with the exception of term babies born to GBS colonised women with no additional risk factors (e.g. pyrexia), who have had adequate intrapartum antibiotics and are clinically well.
NB: Term babies born to women colonised with GBS, with no additional risk factors, who have had adequate intrapartum antibiotics and who are clinically well may be examined on the following day as part of the routine postnatal check.

All other babies born to women identified as 'at risk' of neonatal GBS infection should by assessed by the paediatrician within 2 hours of delivery.

The paediatrician should review the maternal notes, examine the baby for signs of infection, follow the paediatric algorithm (appendix 1) and document findings and any action plans in the health care record. These should be communicated to the parents and relevant health care professionals as appropriate.

If maternal colonisation with GBS is only recognised after delivery, the management should depend on the age of the baby and any additional risk factors present.

Occasionally a genital tract swab or MSU taken antenatally or during labour will be subsequently reported postnatally indicating maternal GBS colonisation. Management of the baby should depend on the age of the baby and any additional risk factors present.

Baby less than 48 hours old

Still in hospital
Inform ward and mother. Review of baby by paediatrician to be undertaken and documented.

Baby at home
Review the paediatric algorithm (appendix 1). If the algorithm suggests no active treatment or observation only, then the community midwife and GP should be informed to advise the mother and undertake review of the baby. This should be clearly documented in the health care record.

If the paediatric algorithm suggests that a septic screen or antibiotic treatment is required then the baby should be readmitted to the postnatal ward as follows:

- Inform neonatal SHO
- Inform postnatal ward of readmission
- Inform parents/community midwife of need for readmission

The paediatrician should review the baby upon its readmission and follow the paediatric algorithm. Findings and relevant management plans should be documented in the health care record and communicated to the parents and relevant health care professionals.

If you have any doubt regarding the correct management of a baby in these circumstances when you review the paediatric algorithm, please discuss with the neonatal SHO for advice.

Baby more than 48 hours old

Still in hospital
Inform ward and mother. Review of baby by paediatrician to be undertaken. This should be documented in the health care record.

Baby at home
The community midwife and GP should be informed to advise the mother and undertake review of the baby. The communication to relevant health care professionals should be documented in the health care record.

All of the above advice relates to clinically well babies. Unwell babies should receive urgent medical attention regardless of age, risk factors, and whether or not they are still in hospital.

Maternal Issues
Some of these microbiological specimens will have been taken postnatally because of clinical suspicion of infection. Both the woman and her community healthcare staff (GP, Community Midwife, etc) need to be informed due to the risk of endometritis, as well as the implications for subsequent pregnancies.

Treatment should only be recommended if accompanied by symptoms of endometritis and should be as per the UHL antimicrobial guideline.

2.9 Parental advice

Women identified as 'at risk' of neonatal GBS infection should be advised of the signs of neonatal GBS infection prior to discharge home with their baby.

There are two types of neonatal GBS infection:

Early onset 90% of early onset neonatal GBS infection will occur in the first 24 hours[5]. Typical signs include grunting, lethargy, irritability, reluctance to feed, rapid/slow heart rate, low blood pressure, high/low temperature, rapid/slow breathing and cyanosis.

Late onset, this usually develops between 6 days and 1 month of age, but may occur up to 3 months of age. It often presents as meningitis. Approximately 50% of cases of late onset GBS are believed to be acquired perinatally, the remainder being acquired in the community[11].
Intrapartum antibiotic prophylaxis reduces the risk of early onset neonatal GBS infection by 80%[5].
There is no preventative treatment for late onset disease.
Women identified as 'at risk' of neonatal GBS infection should be advised of the signs of neonatal GBS infection and given a patient information leaflet prior to discharge home with their baby. Hand washing prior to handling a newborn baby is recommended for all newborn babies, not only those born to mothers colonised with GBS.

3. Education and Training:

None

4. Monitoring Compliance:

Babies <37 weeks

- Baby was assessed to determine whether NNU admission required
- Maternal antibiotic treatment given appropriately
- Baby had appropriate measures where antibiotics given
- Baby had appropriate measures where antibiotics NOT given

Babies ≥ 37 weeks

- Baby was assessed to determine whether NNU admission required
- Maternal antibiotic treatment given appropriately
- Baby had appropriate measures where antibiotics given
- Where antibiotics not given, risk factor assessment took place
- Baby had appropriate measures where antibiotics NOT given and additional risk factors present

5. Supporting References:

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13. Oddie S, Embleton ND. Risk factors for early onset neonatal group B streptococcal sepsis: case–control study. BMJ 2002;325:308
14. NICE 2022 .nice.guidance/ng229/fetal-monitoring-in-labour-pdf.

6. Key Words:

GBS, Group B Streptococcus Infection, Pregnancy, Carrier

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

Sept 2000	**Guideline originally written by P McParland, Consultant Obstetrician**
August 2008	**Review by P McParland, Consultant Obstetrician and E Boyle, Consultant Neonatologist**
Sept 2011	**Review by E Boyle, Consultant Neonatologist**
Nov 2014	**Review by Y Jeve, C. Roy**

DEVELOPMENT AND APPROVAL RECORD FOR THIS DOCUMENT			
Guideline lead: P McParland - Consultant Obstetrician			Executive lead; Chief Medical Officer
Date	**Issue Number**	**Reviewed By**	**Description Of Changes (If Any)**
November 2019	V4	P McParland and L Matthews	Algorithm made clearer . GBS prophylaxis in preterm labour updated. History taking re penicillin allergy strengthened
June 2021	V4.1	H Ulyett	Added actions to take if unable to contact a woman with positive result, especially if found towards end of pregnancy.
March 2023	V5	P McParland V Kairamkonda	Updated neonatal algorithm to incorporate NICE https://www.nice.org.uk/guidance/ng195/chapter/Recommendations
September 2023	V6	H Fakoya – Consultant midwife L Taylor – Clinical Risk & Quality Standards Maternity guidelines group Maternity Governance group Women's quality & safety board	Maternal pyrexia parameters for referral to obstetric care and CEFM amended to align with **nice.guidance/ng229/fetal-monitoring-in-labour-pdf.** Changed ≥37.8 on 2 consecutive occasions 2 hours apart to 37.5°C or above on 2 consecutive occasions 1 hour apart.

Appendix 1: Neonatal algorithm for the management of the infant at increased risk for GBS sepsis