GUIDELINE – PREVENTION OF EARLY ONSET GROUP B STREPTOCOCCUS (GBS) INFECTION

Guidance for Salisbury NHS Foundation Trust staff

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1. Indications

1.1 Background

Group B Streptococcus (GBS) infection is a type of bacteria which lives in the intestines, rectum, or vagina of 2 to 4 in every ten women in the UK (20 to 40%). This is often referred to as 'carrying' or being 'colonised with' GBS (Group B Strep Support.org (GBSS), 2024).

GBS infection is recognised as the most frequent cause of severe early-onset (< 7 days of age) infection in newborn babies. The GBS carriage rate varies among racial groups, with the highest rate in Black African ancestry and the lowest in people of South Asian ancestry (Royal College of Obstetricians (RCOG), 2017). In the UK, about 1 in 1600 of all babies develop a GBS infection (GBSS, 2024).

Most babies of mothers who carry GBS will come into contact with it during the labour/birth and the vast majority will not become ill. However, there is a small chance that the baby will develop a GBS infection. About 1 in 400 babies born to women known to carry GBS will develop a GBS infection (GBSS, 2024).

GBS infections are most common in babies during the first few days after birth, however babies can still develop GBS up to 3 months of age, and in very rare cases, beyond 3

months (GBSS, 2024). With prompt treatment, most babies will make a full recovery.

The infections that GBS most commonly cause in babies are sepsis, pneumonia and meningitis. GBS infections are categorised into:

- **Early onset GBS infection (0-7 days of age)**
  - Occurs in around 1 in 1750 babies in the UK
  - Around 60% of GBS infections are early onset
  - 1 in 19 (5.2%) of these babies will die
  - Of those who survive an early onset infection, 1 in 14 (7.4%) will have a long-term physical or mental disability
  - More likely to develop if:
    - The baby is born <37 weeks gestation – the earlier the birth, the greater the risk
    - The mother has previously had a baby who developed GBS infection
    - The mother is pyrexial in labour
    - The mother has tested GBS positive in the current pregnancy
    - The mother hasn't gone into labour within 24 hours of SROM

- **Late onset GBS infection (babies older than 7 days)**
  - Occurs in around 1 in 2700 babies in the UK
  - Around 40% of GBS infections are late onset
  - 1 in 13 (7.7%) of babies will die
  - Of those who survive a late onset infection, 1 in 8 (12.4%) will have a long-term physical or mental disability
  - More likely to develop if:
    - The baby is born <37 weeks gestation
    - The mother has tested GBS positive in the current pregnancy

Most early onset GBS can be prevented with intrapartum intravenous antibiotics prophylaxis (IAP). The risk of the baby developing early onset GBS drops significantly to around 1 in 4000 when appropriate antibiotic cover is administrated in labour.

At present, there is no known methods to prevent late-onset GBS infection.

1.2 Aim/Purpose

This guideline describes guidance to maternity staff on the prevention of early onset GBS infection, and how care should be managed when a pregnant woman is identified as having a current or previous GBS infection. It is intended to reduce avoidable harm to babies and provide accurate information to families.

1.3 Patient/Client Group

All pregnant women receiving care at Salisbury Foundation Trust (SFT) who are known GBS carriers.

1.4 Exceptions/contraindications

Non pregnant population

1.5 Staff & Equipment

All midwives, maternity care assistants, obstetric and paediatric doctors should follow this guidance for care of women booked at SFT who are known GBS carriers.

1.6 Training

All staff who are involved in the administration of antibiotics should be signed off their IV competencies and trained in EPMA.

1.7 Definitions

ANC	Antenatal clinic
ARM	Artificial rupture of membranes
BBA	Birth before arrival
EPMA	Electronic prescribing and medicines administration
GBS	Group B streptococcus infection
GBSS	Group B Streptococcus Support (charity supporting GBS)
HVS	High vaginal swab
IAP	Intravenous antibiotics prophylaxis
IOL	Induction of labour
IV	Intravenous
LVS	Low vaginal swab
NICE	National Institute for Health and Care Excellence
PPROM	Preterm prolonged rupture of membranes
RSO	Red star observations
RCOG	Royal College of Obstetricians and Gynaecologists
SFT	Salisbury Hospital NHS Foundation Trust
SROM	Spontaneous rupture of membranes
UTI	Urinary tract infection

2. Clinical Management

Antenatal Management

2.2 Universal Testing

All women should be asked at their booking appointment if they have any history of being a GBS carrier. Universal screening is not recommended in the UK since it may lead to increased IV antibiotic use, causing higher rates of anaphylaxis, medicalisation of labour, and antibiotic resistance. Women should be made aware that:

- Many women carry the bacteria and in most 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
- No screening test is entirely accurate. Between 17% and 25% of women who have a positive swab at 35-37 weeks of gestation will be GBS negative at birth and between 5% and 7% of women who are GBS negative at 35-37 weeks gestation, will be GBS positive at birth.
- Screening using routine culture methods is of low efficacy and it should be remembered that negative LVS/HVS or urine culture, do not exclude the presence of GBS
- In addition, many babies who are severely affected by GBS infection, are born prematurely, often before the suggested time for screening at 35-37 weeks
- Giving all carriers of GBS, intrapartum IAP would mean a large number of women receiving treatment they do not need. This may increase adverse outcomes for mother and baby.
  (RCOG, 2017).

2.3 Management of GBS detected antenatally on vaginal/rectal swabs

- Antenatal treatment for vaginal or rectal colonisation does not reduce the likelihood of GBS colonisation at the time of birth and so is not indicated in this situation.
- Where GBS carriage is detected incidentally or by intentional testing in the current pregnancy (including private tests), women should be offered intrapartum IAP (RCOG, 2017)
- The woman's GP should be notified of the woman's GBS carriage.
- The woman should be given the RCOG GBS leaflet.
- The woman's GBS colonisation should be clearly documented in her maternity handheld records and in the front of her notes as an alert.

2.4 Management of GBS detected antenatally in the urine

- GBS bacteriuria is associated with a higher risk of chorioamnionitis and neonatal disease although it is not possible to quantify these risks accurately. Women with GBS bacteriuria should be offered intrapartum IAP.
- Women with GBS urinary tract infection (growth of greater than 10^5 cfu/ml):
  - If **symptomatic** of a UTI**,** women should receive appropriate antibiotics at the time of diagnosis**,** as well as intrapartum IAP.
  - If the woman is **asymptomatic**, a second urine sample should be sent for culture:
    - If the second sample is negative, the woman does not require antenatal treatment**,** but will **still** require intrapartum IAP
    - If the second urine sample has GBS growth greater than 10^5 cfu/ml**,** then this is confirmation **of asymptomatic bacteriuria (ASB)** and will require both antenatal treatment and intrapartum IAP.
  - GBS asymptomatic bacteriuria of pregnancy is usually treated with:

- Amoxicillin 500mg three times a day for 7 days
  OR
- Cefalexin 500mg twice a day for 7 days
  OR
- Nitrofurantoin 100mg modified-release twice a day for 7 days (avoid at term) (if urine culture result shows susceptibility)

- Asymptomatic women with GBS growth of < 10^5 cfu/ml do not require antenatal treatment, as low levels in the urine are more likely to be contamination, rather than a UTI. These women should still receive intrapartum IAP.
- The woman's GP should be notified of the woman's GBS carriage.
- The woman should be given the RCOG GBS leaflet.
- The woman's GBS colonisation should be clearly documented in her maternity handheld records and in the front of her notes as an alert.

2.5 Management of GBS detected in previous pregnancy/prior to current pregnancy

- Explain to women that the likelihood of maternal GBS carriage in this pregnancy is 50%.
- 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. In view of this potentially increased risk and the possibility of false-negative antenatal testing, intrapartum IAP should be recommended in such cases and maternal bacteriological tests are not recommended (RCOG, 2017).
- If the woman has a history of previous GBS carriage and no infection in their baby(ies), then intrapartum IAP should be offered.
- **The RCOG advise that a further option of antenatal bacteriological testing should be offered by enriched culture medium test for women with previous GBS carriage. This is currently being reviewed as an option in Salisbury, but is currently not available as an option. The woman can opt to have a private test and it should be recommended that any private test is an enriched culture sample as this has a higher detection rate than routine vaginal swabs.**

2.6 Membrane sweeps

Membrane sweeping is not contraindicated in women who are carriers of GBS. There is evidence that membrane sweeping does not increase the risk of early onset GBS disease (RCOG, 2017).

Intrapartum Management

2.7 Management of spontaneous labour/SROM at term of GBS carriers

- In the event of prelabour SROM, offer an immediate birth by IOL. For women who are

planning an elective caesarean birth their options should be discussed based on their medical history (RCOG, 2017). Intrapartum IAP should be commenced on admission.

- For women who present in spontaneous labour, intrapartum IAP should be commenced once labour is established/SROM (whichever occurs first).

2.8 Management of preterm spontaneous labour/PPROM of GBS carriers

- For those with evidence of colonisation in the current pregnancy or in previous pregnancies, the perinatal risks associated with preterm delivery at less than 34+0 weeks of gestation are likely to outweigh the risk of perinatal infection. 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 (RCOG, 2017).
- All women who present in preterm labour/PPROM should be recommended intrapartum IAP regardless of GBS status.

2.9 Caesarean birth

- Antibiotic prophylaxis specific for GBS is not required for women undergoing planned caesarean birth in the absence of labour and with intact membranes.

2.10 Induction of labour

- Method of induction should not vary according to GBS carrier status.
- Intrapartum IAP should be commenced as soon as an ARM is performed.

2.11 Place of Birth

- Women with known GBS infection in the current or previous pregnancy should be recommended to plan birth in hospital to allow IAP to be given in labour.
- Women who fit the criteria for use of pool and are well, i.e., apyrexial and in normal labour can use water for labour and birth, provided they are offered appropriate intrapartum IAP. (See SFT Water – Labour and Birth guideline)
- Women with known GBS infection in the current or previous pregnancy can have care and receive intrapartum IAP in the birth centre (see SFT Beatrice Birth Centre Alongside Birthing Unit SOP) providing:
    - They are otherwise low risk
    - They are suitable to birth in the birth centre
    - CTG monitoring is not indicated
    - The woman is apyrexial with no signs of infection
    - Their membranes have not been ruptured > 24 hours
    - Oxytocin is not indicated

2.12 Homebirth

- Women who choose to birth at home should have a comprehensive individualised discussion of risks surrounding early onset GBS infection of the newborn, due to intrapartum IAP not being available in the home setting. If the woman continues to choose to birth at home, a further discussion should take place which covers the recommendation

of transferring into the hospital post birth for a period of at least 12 hours to be able to complete GBS observations on the baby.

- A set of observations should be taken at birth and a further set taken during the initial examination of the newborn: any concern regarding neonatal condition, including abnormal observations or additional risk factors should trigger urgent referral to the unit for paediatric review and additional monitoring.
- If the woman declines to come into the hospital to birth during labour or for neonatal observations then this should be documented in the notes.
- If a woman experiences a BBA, the attending midwife should advise a transfer into hospital post birth for at least 12 hours of neonatal observations.
- If parents decline admission for observations following a planned/unplanned homebirth or BBA, signs of illness in the newborn should be discussed and advice given to bring the baby in if there are any concerns. A face-to-face midwifery review of mother and baby should occur on the first postnatal day, in line with routine postnatal care.

2.13 Antibiotic regime

IAP should be offered during labour to women who:

- Are in preterm labour (see preterm labour guideline)
- Have GBS colonisation, bacteriuria, or infection in their current pregnancy
- Have had GBS colonisation, bacteriuria or infection in a previous pregnancy
- Have had a previous baby infected with GBS infection (early or late onset)

Intravenous antibiotics should also be given to women who present with:

- A clinical diagnosis of chorioamnionitis
- Maternal pyrexia (>38.0C)

Give the first dose of antibiotics as soon as possible after established labour has started, SROM or ARM (whichever occurs first) or as soon as infection is clinically suspected, in the case of chorioamnionitis. **Intrapartum IAP is considered effective if a dose is given at least 4 hours before birth (though may be of some benefit as early as one hour after administration).**

Antibiotics should be continued until the birth of the baby if antibiotics are being given for GBS prophylaxis. In the event of clinically suspected/confirmed **chorioamnionitis**, the obstetrician should consider whether antibiotics **for the mother** should be continued postnatally on a case by case basis.

The optimal **duration** of **postpartum** IV antibiotic therapy for chorioamnionitis has not been determined conclusively. There is little evidence that oral antibiotics are beneficial following

discontinuation of IV antibiotics for chorioamnionitis. **Consider stopping** antibiotics once baby and birth products have been delivered and the patient is clinically well and afebrile.

Allergies	Women without chorioamnionitis	Women with suspected chorioamnionitis
No penicillin allergy	Use Benzylpenicillin 1st dose: 3g IV Benzylpenicillin followed by subsequent doses of 1.5g IV Benzylpenicillin every 4 hours.	Use Co-amoxiclav Co-amoxiclav 1.2g IV every 8 hours.
Penicillin allergy which is not severe	Use Cefuroxime 1st dose: 1.5g IV Cefuroxime followed by subsequent doses of 750mg IV Cefuroxime every 8 hours	Use Cefuroxime and metronidazole Cefuroxime 1.5g and 500mg metronidazole every 8 hours.
Severe penicillin allergy	Use Vancomycin 1st dose: 1g IV Vancomycin followed by subsequent doses of 1g IV Vancomycin every 12 hours.	Use Teicoplanin For women **under** 70kg: Give 400mg IV every 12 hours for 3 doses followed by 400mg IV once daily. For women **over** 70kg: Give 6mg/kg IV every 12 hours for 3 doses followed by 6mg/kg IV once daily. **plus** Metronidazole 500mg IV 8 hourly, **plus** Gentamicin 2mg/kg IV stat, then dose 8 hourly (1-1.5mg/kg/dose) as per conventional gentamicin policy; see Microguide

Clinicians should be aware that there are some adverse effects of IAP which can include (rarely) maternal anaphylaxis, changes to neonatal bowel flora (with theoretical links to allergies, obesity and diabetes in childhood). There are no studies which suggest childhood development is affected.
Please see SFT Obstetric Antimicrobial Treatment and Peri-operative Antibiotic Prophylaxis guideline:
Microguide: Infection Guidance > Adult Antimicrobial Guidance - 11.22 < Body Systems < Obstetrics

Neonatal Care

2.14 Routine care of the newborn

- IAP regime should discontinue once the baby has been born, unless the mother has been suspected to have developed an infection such as chorioamnionitis.
- All babies should remain with their mothers unless the baby needs admission to the neonatal unit.
- Breastfeeding should be supported as there is no evidence of concerns regarding GBS transmission (RCOG, 2017).
- Standard postnatal care should continue with regular checks of the baby's wellbeing.
- A kaiser score should be calculated as quickly after delivery as possible which should be used to determine whether the baby needs antibiotic therapy/observations.

2.15 Neonatal observations

- If adequate intrapartum IAP for GBS was received by the mother (at least one dose at least 4 hours before birth), or planned caesarean took place without prior ruptured membranes, well babies will not require any specific red star observations (RSO). The risk of early onset GBS infection with effective intrapartum IAP reduces to a similar level to the general population and these babies can be managed as low risk and have standard postnatal care (GBSS, 2024).
- The babies of women who have received broad-spectrum antibiotics during labour for indications other than GBS prophylaxis may require investigation and treatment as per the NICE clinical guideline on early-onset neonatal infection (RCOG, 2017).
- For babies whose mothers have not received adequate IAP, RSO should be completed at 0, 1, and 2 hours, then 2 hourly until 12 hours of age (RCOG, 2017).
- Postnatal antibiotic prophylaxis is not recommended for asymptomatic term infants without known antenatal risk factors (RCOG, 2017).

2.16 Babies with clinical signs of early onset GBS

Babies who have clinical signs of neonatal infection should be referred urgently for a paediatric review and commence IV antibiotic treatment. Neonatal care should be in line with the SFT Neonatal infection (early onset): antibiotics for prevention and treatment guideline (Microguide – Child Health < Neonatology

2.17 Discharge Home

The parents of all babies who are discharged home from hospital, whether a period of observations have been completed or not, should be advised to seek urgent medical help (for example from maternity (<28 days), NHS 111, their GP or the emergency department) if they are concerned about their baby. Parents should be aware that any antibiotics given help to reduce the risk of early onset GBS and not a late onset (40% of cases are late onset). Parents should be advised to look out for the below signs and symptoms:

- Abnormal behaviour (for example inconsolable crying or listlessness) **or**
- Unusually floppy **or**
- Has an abnormal temperature unexplained by environmental factors (lower than 36.0C or higher than 38.0C) **or**
- Has abnormal breathing (rapid breathing, difficulty breathing or grunting) **or**
- Has a change in skin colour (for example where the baby becomes very pale, blue, grey or dark yellow) **or**
- Has developed new difficulties with feeding.

This advice should be given in person and in writing, as well as contact numbers for the maternity unit.
Babies who are unwell with sepsis and requiring admission to NICU should be followed up in paediatric outpatient clinic.

2.18 Advice for future pregnancies

When a woman is identified as having GBS colonisation during her current pregnancy she should be advised that if she is to become pregnant again:

- That her baby will be at increased risk of early onset GBS Infection
- She should inform her maternity care team that she has had a positive GBS infection test in her previous pregnancy.
- Her maternity care team will offer IAP during the labour.

3. Patient Information

RCOG (2017) Group B Streptococcus (GBS) in pregnancy and newborn babies
https://www.rcog.org.uk/media/xtmfktbh/pi-gbs-pregnancy-newbornnewlogo21.pdf

4. Evidence Base

References:

- GBSS Org Website - https://gbss.org.uk/
- RCOG (2017) Prevention of Early-onset Group B Streptococcal Disease (Green-top Guideline No. 36)

This guideline should be read in conjunction with:

- NICE (2021, updated 2024) Neonatal infection: antibiotics for prevention and treatment
- SFT Beatrice Birth Centre Alongside Birthing Unit SOP
- SFT Neonatal infection (early onset): antibiotics for prevention and treatment guideline
- SFT Obstetric Antimicrobial Treatment and Peri-operative Antibiotic Prophylaxis guideline
- SFT – Water – Labour and Birth guideline