GROUP B STREPTOCOCCUS (GBS) SCREENING AND PROPHYLAXIS

This LOP is developed to guide clinical practice at the Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this LOP.

1. AIM

- Prevention of Early Onset (0-7 days of age) Group B Streptococcus (EOGBS) sepsis in the neonate

2. PATIENT

- Pregnant woman

3. STAFF

- Medical and midwifery staff

4. EQUIPMENT

- Bacterial (blue top) swab
- Intravenous (IV) cannula

5. CLINICAL PRACTICE

Detection and Screening

- Discuss reasons for GBS screening with the woman
- Advise woman that the detection rate of GBS is approximately 70% with low vaginal swab (LVS) alone and approximately 85% when combined with perianal swab
- Recommend LVS +/- perianal swab to screen for GBS**:**
  - Between 35-37 weeks gestation
  - With preterm pre-labour ruptured membranes
  - With preterm labour
- Do not screen woman with known GBS bacteriuria/urinary tract infection (UTI) during current pregnancy as GBS bacteriuria is commonly associated with heavy genital tract colonisation. Treat this woman as GBS positive. Treat GBS in the urine during pregnancy if bacteriuria $>10^8$ colony forming units/Litre
- Do not screen woman with a previous GBS infected neonate. Treat this woman as GBS positive
- Perform LVS (by the woman or by staff) by inserting swab 2cm into vagina. Do not touch cotton end with fingers
- Perform perianal swab AFTER vaginal swab if woman consents
- Ensure cap fits firmly and make sure swab is correctly labelled
- Ensure sensitivity testing for woman with penicillin allergy is clearly requested on pathology form. South Eastern Area Laboratory Service (SEALS) routinely reports antibiotic sensitivity on positive cultures, but, other laboratories may not without specific instruction to do so
- Document reasons for declining screening, in antenatal records
- Confirm and document the GBS status at following antenatal visit in medical record and on antenatal card, and discuss recommended management
- Give woman Patient Information Leaflet (Appendix 1)

Intrapartum

- Administer intrapartum antibiotic prophylaxis (IAP) for a woman who has:
  - Positive GBS vaginal/perianal screening culture within 5-6 weeks of labour, including woman with planned caesarean awaiting delivery, if labour has commenced and/or rupture of membranes (ROM)
  - GBS bacteriuria/UTI during any trimester of the current pregnancy
  - Previous GBS infected neonate

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GROUP B STREPTOCOCCUS (GBS) SCREENING AND PROPHYLAXIS cont'd

- Unknown GBS status and any one of the following:
  - Temperature ≥ 37.5 degrees in labour
  - Rupture of membranes ≥18 hours before birth
  - Preterm labour < 37 weeks
- Administer IAP, ideally starting ≥4 hours prior to birth, until delivery as per Tables 1 and 2, and Appendix 2
- Recommend IAP commence prior to Artificial Rupture of Membranes (ARM) or once in established labour (whichever comes first) for woman who is GBS positive and being induced.
- Recommend induction of labour (IOL) for woman at term within 24 hours of ROM who is GBS positive or has other risk factors for EOGBS sepsis
- Do not give IAP for woman:
  - Having an elective caesarean section in the absence of ROM or labour. Usual antibiotic prophylaxis for caesarean section is recommended.
  - Who has a history of GBS colonisation in a previous pregnancy and who has screened negative in this pregnancy

Appropriate follow-up for neonate

- Refer to 'Group B Streptococcus (GBS) Infection – Monitoring and Management of a Neonate' LOP

6. DOCUMENTATION

- Medical Record
- Antenatal Card

7. EDUCATIONAL NOTES

- This LOP refers to GBS screening and treating only. If the woman has clinical chorioamnionitis, sepsis or fever in labour when GBS is known to be negative, appropriate work-up and treatment should be instigated as per Maternal Sepsis Pathway
- International consensus has not been reached on the best approach to the prevention of neonatal early-onset Group B streptococcus (EOGBS) sepsis. There is limited high level evidence to support a prescriptive approach to the adoption of either 'routine antenatal culture-based approach' or a 'risk factor-based approach'. Either approach can be used to identify women who may have Group B streptococcus (GBS) colonisation and for whom IAP should be offered to minimise intrapartum GBS transmission and the risk of neonatal EOGBS sepsis. NSW Health, in the 2016 update, has encouraged each Local Health District (LHD) to adopt either approach. RHW has chosen to continue with 'routine antenatal culture-based approach' [1, 2, 6]
- 15-25% of women are asymptomatic carriers of GBS
- EOGBS sepsis is a significant cause of perinatal morbidity and mortality with an incidence of 1:2000 births and a mortality rate of 4-6% [6]
- If untreated, 1 in 100 neonates of women known to be GBS positive will develop neonatal sepsis
- IAP minimises EOGBS sepsis. In Australia, IAP has led to a decline in the incidence of EOGBS sepsis in the past decade. The incidence of late onset GBS sepsis (7-89 days after birth) remains unchanged
- Clinical risk factors for EOGBS sepsis include: [3,6]
  - Preterm labour ≤37 weeks
  - Ruptured membranes ≥18 hours
  - Maternal fever ≥38 degrees during labour
  - Previous neonate with EOGBS sepsis
  - GBS bacteriuria/UTI during the current pregnancy
  - Clinical diagnosis chorioamnionitis

GROUP B STREPTOCOCCUS (GBS) SCREENING AND PROPHYLAXIS cont'd

- Adequate IAP is defined as antibiotics ≥ 4 hours prior to delivery [3]
- Preterm neonates are four times more likely to develop EOGBS sepsis than term neonates[1]
- Resistance to penicillin is rarely seen. Local data suggests up to 12% of GBS is resistant to clindamycin, and 13% is resistant to erythromycin [2,4]
- Women and staff need to be aware that the sensitivity of LVS alone is only around 70%. This can be increased to around 85% by sequential addition of perianal swab[2,3,6,9]
- GBS carriage is thought to fluctuate over time, and culture results have been shown to be less predictive of carrier status if more than 5 weeks have elapsed since sample collection. A GBS screen is therefore considered valid for approximately 5 weeks [2,8]
- Recommend repeating GBS screen if ≥ 6 weeks since LVS taken [2,8]
- Yancey et al (2006) showed positive predictive value of 87% (95% CI 83-92), and negative predictive value of 96% (95% CI 95-98) if screening was performed from 1-5 weeks before delivery, but, declined when 6 or more weeks had elapsed between the antenatal culture and delivery [11]
- The efficacy of penicillin administered intrapartum for the prevention of EOGBS sepsis was demonstrated in clinical trials. Penicillin has a narrower spectrum of antimicrobial activity and therefore might be less likely to select for resistant organisms. The dosage of penicillin used for intrapartum GBS prophylaxis is aimed at achieving adequate levels in the fetal circulation and amniotic fluid rapidly while avoiding potentially neurotoxic serum levels in the mother or fetus[4]
- Penicillin administered to a woman with no history of β-lactam allergy has a risk of anaphylaxis of 4/10,000 to 4/100,000. Mortality is rare in a fully medically staffed hospital setting[2]. Any morbidity associated with anaphylaxis is greatly offset by reduction in incidence of neonatal and maternal sepsis[4]
- The efficacy of alternatives to penicillin that have been used to prevent EOGBS sepsis among neonates born to penicillin-allergic women (including cefazolin, clindamycin, and vancomycin) has not been measured in controlled trials. Cefazolin has a relatively narrow spectrum of activity, similar pharmacokinetics and dynamics to penicillin, and achieves high intra-amniotic concentrations. In contrast, data on the ability of clindamycin, erythromycin and vancomycin to reach bactericidal levels in the fetal circulation and amniotic fluid are limited. Available data suggest that erythromycin and clindamycin provided to pregnant women do not reach fetal tissues reliably [4]
- Other strategies to reduce maternal colonization and vertical transmission have been studied, including intramuscular intrapartum antibiotic prophylaxis, antenatal (oral or intramuscular) antibiotics, and chlorhexidine vaginal wipes or douches; none of these have proven to be as effective as intrapartum IV penicillin in preventing EOGBS sepsis [3,7,9]

8. RELATED POLICIES / PROCEDURES / CLINICAL PRACTICE LOP

- Group B Streptococcus Infection - Monitoring and Management of a Neonate
- Ruptured Membranes – Pre Labour at Term
- Preterm Premature Rupture of Membranes (PPROM) – Assessment and Management
- Sepsis in Pregnancy and Postpartum
- Fever in labour flowchart
- Surgical Bundle for Abdominal Surgery
- Antimicrobial Guideline Obstetrics
- Preterm Labour - Diagnosis and Management
- Labelling of Injectable Medicines Fluids and Lines

9. RISK RATING

- High

GROUP B STREPTOCOCCUS (GBS) SCREENING AND PROPHYLAXIS cont'd

10. NATIONAL STANDARDS

- Comprehensive Care – standard 5

11. REFERENCES

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3. NSW Health. NSW Health Guideline Maternity - Maternal Group B Streptococcus (GBS) and minimisation of neonatal early-onset GBS sepsis https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/GL2017_002.pdf
4. Australian Therapeutic Guidelines. Antibiotic guidelines. Version 17 2020 viewed via eTG complete
5. Cheng PJ, Chueh HY, Liu CM, Hsu JJ, Hsieh TT, Soong YK. Risk factors for recurrence of group B streptococcus colonization in a subsequent pregnancy. Obstet Gynecol 2008; 111:704–9.
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REVISION & APPROVAL HISTORY

Reviewed and endorsed Maternity Services LOPs 2/2/20
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Amendment following new MoH PD July 2017
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Reviewed and endorsed Maternity LOPs group 18/6/13
Previous title *Group B Streptococcus : Guideline for Intrapartum Management*
Approved Quality Council 16/5/05
Maternity Services Clinical Committee 19/5/05

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/Appendix and tables

APPENDIX 1
PATIENT INFORMATION LEAFLET

Group B Streptococcus Information for Women

What is Group B Streptococcus (GBS)?

GBS is a germ that lives in the vagina and rectum of 15-25% of Australian women. It is not a sexually transmitted infection. It usually causes no symptoms and is not harmful to the woman. If it is passed from the mother to her baby during labour, it can occasionally cause a serious illness for the newborn baby.

What does this mean for my baby?

Many babies will come in contact with GBS during labour and birth. Most babies are not harmed by contact with GBS at birth. Approximately 1% of babies exposed to GBS at birth will develop an infection. Of the babies who develop an infection a small number will develop pneumonia or meningitis which can be life threatening.

Is there a test to see if my baby is at risk of GBS infection?

At the RHW, all women are recommended a vaginal and perianal swab at 35-37 weeks' gestation. Your caregiver will collect this for you or explain to you how you can collect the swab yourself.

How can my baby be protected from developing an infection?

If you have tested positive to GBS in the last 5-6 weeks of your current pregnancy, you will be recommended antibiotics by injection into a vein, during labour, to prevent infection. The usual antibiotic is Penicillin. Other antibiotics are available to women who have Penicillin allergy.
There are also other circumstances in which women are recommended antibiotics:

- if you have GBS on a urine test
- if you have had a previous baby infected with GBS
- if you have a fever in labour
- if there has been no swab and your waters have been broken for more than 18 hours
- if you labour before 37 weeks' gestation.

Are there risks with having antibiotics?

Some women will get side effects such as nausea or diarrhoea. Rarely, an allergic reaction may occur. For most women antibiotics are safe.

Do the antibiotics guarantee that my baby will not develop an infection?

No. Screening and treatment reduces risk of infection.

Do I need antibiotics if I am having an elective Caesarean Section?

Yes, but for different reasons that will be explained to you at the time of your caesarean section.

What do I do if my swab shows GBS, my waters break, and I do not go into labour?

Prolonged rupture of the membranes increases the risk of infection. You will be advised to have an induction of labour within 24 hours.

If I have GBS on a swab, does my baby have extra monitoring after delivery?

Only if you have other risk factors or treatment was ≥4 hours pre-birth.

What are the signs of a baby with an infection?

Some of the physical signs of an infection include: a high temperature and difficulty breathing. If you notice this in your baby, please alert your midwife or doctor.

Table 1. **Guideline for IAP for EOGBS - Term ≥ 37/40**

Clinical Status	GBS pos		GBS unknown		GBS neg	
	In labour		In labour		In labour	
	Yes	No	Yes	No	Yes	No
Intact membranes	IV antibiotics	No antibiotics	No antibiotics	No antibiotics	No antibiotics	
Ruptured membranes	IV antibiotics	Plan IOL within 24hrs	No antibiotics if ROM <18 hrs IV antibiotics if ROM > 18 hrs		No antibiotics	
Previous GBS infected neonate (regardless of current GBS status)	IV antibiotics	No antibiotics	IV antibiotics	No antibiotics	IV antibiotics	No antibiotics
Febrile >37.5°C	IV antibiotics	Manage as per SEPSIS pathway and: - consider IV antibiotics if: ≥ 2 yellow zone observations ≥ 1 yellow zone observations and clinical concern - give IV antibiotics if any RED ZONE observations				

Table 2

Guideline for IAP for EOGBS - Preterm < 37/40

Clinical Status	GBS pos		GBS unknown		GBS neg	
	In labour		In labour		In labour	
	Yes	No	Yes	No	Yes	No
Intact membranes	IV antibiotics	No antibiotics	IV antibiotics	No antibiotics	No antibiotics	
Ruptured membranes	IV antibiotics	Refer to antibiotic guideline for PPROM	IV antibiotics	Take HVS/LVS Refer to antibiotic guideline for PPROM	No antibiotics	
Previous GBS infected neonate (regardless of current GBS status)	IV antibiotics	No antibiotics	IV antibiotics	No antibiotics	IV antibiotics	No antibiotics
Febrile >37.5°C	IV antibiotics	Manage as per SEPSIS pathway and: - consider IV antibiotics if: ≥ 2 yellow zone observations ≥ 1 yellow zone observations and clinical concern - give IV antibiotics if any RED ZONE observations				

Appendix 2: **Flow chart for Group B Streptococcus (GBS) Prophylaxis antibiotic choice**