GROUP B STREPTOCOCCUS – MANAGEMENT AND PROPHYLACTIC ANTIBIOTICS IN LABOUR

OBJECTIVE

To minimise the incidence of Early Onset Neonatal Infection due to Group B Streptococcus (GBS).

BACKGROUND

GBS is a recognised cause of bacterial infection in neonates up to three months of age and a significant cause of neonatal morbidity and mortality. Neonatal infection can be categorised as early or late, 80% is early onset (occurring within 7 days of birth) with 70% of these infected babies being symptomatic at birth, and 95% by 24 hours of age. GBS causes pneumonia, septicaemia or meningitis in babies. The incidence of Early Onset GBS infection in New Zealand is reported to be 0.5 per 1000 live births[1]. Prior to introduction of intrapartum antibiotics prophylaxis the incidence was 1-2 per 1000 live births[1]. Antenatal maternal colonisation with GBS is a recognised risk factor. Approximately 10-30% of women have recto-vaginal colonisation. Thus only a very small proportion of babies born to GBS carrying mothers will go on to become infected. On the other hand, the mortality rate for babies with Early Onset GBS Disease is approximately 5-10% (mostly preterm babies)[2].

GBS is a relatively common 'normal' bacteria in the lower intestinal tract, which tends to be present intermittently. It is usually harmless and cannot be eradicated by antibiotics. The vagina may also be colonised intermittently.

The use of intravenous antibiotics for well women with risk factors in labour, to reduce the risk of Early Onset GBS Infection, is known as Intrapartum Antibiotic Prophylaxis. This reduces but does not eliminate the risk of vertical transmission[3]. Rapid intrapartum diagnosis of GBS is not yet available.

The following guidelines are based upon recommendations of the GBS Consensus Working Party of the New Zealand College of Midwives, the Paediatric Society of New Zealand, the New Zealand committee of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists, the Royal New Zealand College of General Practitioners and Homebirth Aotearoa[2].

KNOWN GBS RISK FACTORS

- A previous baby affected by GBS infection
- GBS bacteriuria (of any count) this pregnancy
- Intrapartum maternal temperature ≥ 38ºC
- Pre-term labour (< 37 weeks) and imminent birth, with or without ruptured membranes
- Prolonged rupture of membranes ≥ 24 hours (unless negative 'GBS swab', as described below)
- GBS colonisation diagnosed in this pregnancy (Unless a subsequent negative screening test result is available, called a GBS swab, it is taken ≥ 37 weeks, a combined vaginal-rectal swab and the laboratory requested to use 'selective broth' process[2])

PREVENTION STRATEGIES

Two main strategies exist for minimising risk of early onset Neonatal GBS infection. These are first universal screening and treatment, and second a risk based approach to treatment. Universal screening and treatment is practised in the USA and Canada, whilst a risk based approach is adopted in other countries such as the UK and New Zealand. Despite universal screening and a much higher treatment rate in North America, the incidence of early onset neonatal GBS infection is not lower in the USA than in the UK, which offers a risk based approach. It is important to recognise that different populations have different carriage rates and different antibiotic sensitivities for GBS, and therefore the outcome of a particular strategy in one country cannot easily be transferred to another.

A risk factor based GBS strategy is recommended in New Zealand and antenatal GBS screening is not.

PRINCIPLES OF MANAGEMENT

- All women with risk factors for Early Onset Neonatal GBS Infection should be offered treatment in labour with intravenous Intrapartum Antibiotic Prophylaxis (see Appendix 1 for algorithm and Appendix 2 for antibiotic regimens).
- Intrapartum Antibiotic Prophylaxis is intended to have a narrow spectrum, to reduce the risk of antibiotic resistance and unwanted side effects. Oral antibiotics are ineffective in this context.
- Women with clinical signs of infection require immediate aggressive treatment with intravenous Broad Spectrum Antibiotic Therapy, instead of the Intrapartum Antibiotic Prophylaxis regimen.
- Penicillin allergy may be significant in this context and documentation of details of any previous immediate (within 24 hours) hypersensitivity reactions (eg. anaphylaxis, angioedema, laryngospasm, bronchospasm or urticaria) is important, and ideally part of antenatal assessment.

ANTENATAL MANAGEMENT OF GROUP B STREPTOCOCCUS

INCIDENTAL FINDING OF GBS ON VAGINAL SWAB

An incidental finding of vaginal and/or rectal GBS colonisation during pregnancy is not to be treated with antibiotics, as GBS cannot be eliminated from its reservoir in the large bowel.

An incidental finding of GBS in pregnancy greater than 5 weeks before labour is unreliable (PPV 43%, NPV 80%4), and may result in unnecessary intervention in labour.

A GBS SWAB

It is recommended that women are re-swabbed at ≥ 37 weeks gestation, using the following technique:

- Low vaginal and rectal swab (use same swab for both)
- The request form must clearly state 'GBS screen' and 'use selective broth process'. The local laboratories in Canterbury are able to perform this assay.

This result is used to inform labour management. If this swab returns with no evidence of GBS colonisation, ***Intrapartum Prophylaxis is not required***, even in the event of prolonged ROM[2, 11].

GBS BACTERIURIA OR GBS URINE INFECTION DURING PREGNANCY

Where GBS bacteriuria (of any count) is confirmed on urine culture at any stage in pregnancy, a short course of an **appropriate antibiotic regimen is recommended according to the sensitivities as reported by the laboratory; such as oral amoxicillin 500 mg TDS for 5 days, or oral nitrofurantoin 50 mg QDS for 5 days.** A follow-up MSU, 2-4 weeks after treatment is recommended to confirm eradication of GBS from the bladder.

Intrapartum Antibiotic Prophylaxis is recommended.

ESTABLISHED PRE-TERM LABOUR

In the event of pre-term labour before 37 completed gestation, refer to the related guideline **Pre-Term Labour** (GLM0027).

PRE-TERM PRE-LABOUR RUPTURE OF MEMBRANES

In the event of pre-term pre-labour rupture of membranes, refer to the related guideline **Pre-term Pre-Labour Rupture of Membranes** (GLM0028).

PRE-LABOUR CAESAREAN SECTION

Women with risk factors for GBS who have intact membranes and no signs of infection and require pre-labour elective or emergency caesarean section ***do not require*** prophylaxis for Early Onset GBS Infection.

PRE-LABOUR RUPTURE OF MEMBRANES AT TERM

In the event of pre-labour rupture of membranes at term, for women who are well with no risk factors for GBS, refer to the related guideline **Pre-Labour Rupture of Membranes at Term** (GLM0043).

PRE-LABOUR RUPTURE OF MEMBRANES AT TERM WITH GBS RISK FACTORS

Women *with risk factors* for Early Onset GBS Infection who are well and have pre-labour rupture of membranes (ROM) at term are at higher risk of having a baby affected by Early Onset Neonatal GBS Infection, and it is recommended that they are offered an induction of labour as soon as practicable, with Intrapartum Antibiotic Prophylaxis (see Appendix) recommended ***at commencement of the induction***.

Women with:

- **A previous baby affected by GBS infection, and/or**
- **GBS urine infection in this pregnancy, and/or**
- **GBS colonisation in this pregnancy** (unless a subsequent negative 'GBS swab' result is available: taken ≥ 37 weeks, combined vaginal-rectal swab, and the laboratory requested to use 'selective broth' process[2]) and/or
- **Prolonged ROM (≥ 24 hours)**
  - Women who do not establish in labour by 24 hours after ROM are to be offered an induction of labour at this time, or as soon as practicable after it, AND be offered prophylactic antibiotics **at the time of intervention**.
  - Women in spontaneous labour, who do not give birth before 24 hours after ROM require the offer of prophylactic antibiotics at 24 hours post ROM.
  - Women with negative GBS swab result from GBS swab (as detailed above) **do not require** Intrapartum Antibiotic Prophylaxis, even if they have prolonged ROM >24 hours[2,7,11], although they may choose to have it.
- **Signs of infection in association with pre-labour ROM at term**
  - These women require careful assessment and the immediate offer of intravenous Broad Spectrum Antibiotic Therapy. If vaginal birth is appropriate it is recommended that they are offered an induction of labour as soon as possible.

INTRAPARTUM MANAGEMENT

Intrapartum IV Antibiotic Prophylaxis is recommended to be offered to all women with GBS risk factors in active labour, or at the commencement of intervention resulting from the above risk factors, whether or not they have ROM. See Appendix 1 for algorithm and Appendix 2 for appropriate antibiotic regimens.

While the standard recommendations for prophylactic IV antibiotics for Early Onset GBS Infection is for them to be given only in the *active phase* of labour, it is recommended here that they be given at the time of intervention, eg. commencement of induction, and not delayed until labour is established. This is because there can be a considerable delay between intervention and active labour for these women with established risk factors for GBS infection, leaving the baby more vulnerable to infection.

The ***optimal duration*** of intrapartum prophylaxis is not yet established, it has previously been recommended that antibiotics are commenced at least four hours prior to birth. However, the evidence suggests that antibiotics may still be effective if there is likely to be at least one hour before the birth[6].

Inform the Neonatal team if there is a history of a previous baby affected by GBS infection or any suspicion of chorioamnionitis.

INTRAPARTUM MANAGEMENT IN THE PRIMARY UNIT SETTING

GBS risk factors are not necessarily a contraindication for a woman to birth in a primary unit. If the LMC is confident to give IV antibiotics within their own scope of practice, then discussions can take place with the woman and the primary unit manager to negotiate place of birth.

It is recommended that LMC's consult the obstetric team prior to commencing IV antibiotics in a primary unit. Only well women, at term and in active labour with GBS risk factors should be considered for primary unit birth. It is not appropriate for women in preterm labour or with any signs of maternal or fetal infection to be at a primary unit. It is recommended that they are admitted to Christchurch Women's Hospital.

Primary units will need to ensure that they have appropriate training and equipment in place to deal with the unlikely event of anaphylaxis.

MATERNAL FEVER AND SUSPECTED CHORIOAMNIONITIS

Maternal fever is a special risk category which requires Broad Spectrum Antibiotic Therapy and additional monitoring, including fetal monitoring.

Where there are clinical signs of infection, appropriate specimens including blood cultures are required before commencing antibiotic treatment.

Clinical signs of chorioamnionitis include maternal fever (≥ 38°C) with ≥ 2 of the following:

- abdominal tenderness
- vaginal discharge
- offensive liquor
- maternal tachycardia
- fetal tachycardia

NB ruptured membranes are not necessary for the diagnosis of chorioamnionitis.

Women with a fever or signs of chorioamnionitis require immediate treatment and intervention.

ANTIBIOTIC REGIMENS

These are detailed in the Appendix, for women with GBS risk factors with no signs of clinical infection and for those with signs of infection.

REFERENCES

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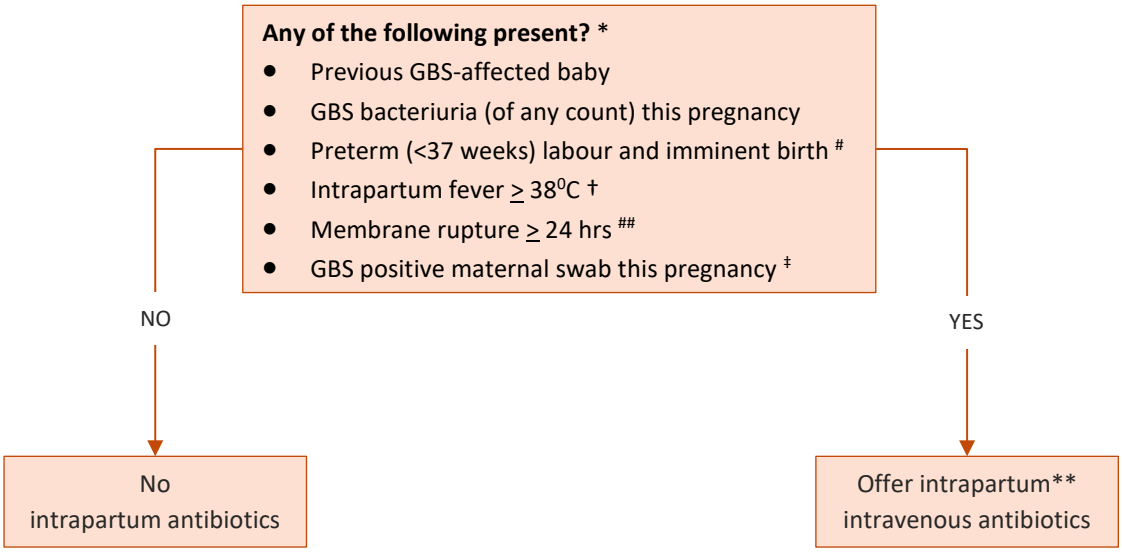
APPENDIX 1 GBS ALGORTHM



* Except in women with intact membranes undergoing pre-labour elective caesarean section and have no fever.

\# Refer to the related guideline Pre-Term Labour/Birth (W&CH/GL/M/0027), for different antibiotic regimen.

† If chorioamnionitis is suspected, GBS chemoprophylaxis is insufficient and aggressive treatment with broad-spectrum antibiotics is required (see Appendix).

Intrapartum chemoprophylaxis is **not** required for women with a **GBS negative swab** (see below), even if ROM ≥ 24 hours, if no maternal fever/chorioamnionitis.

‡ A '**GBS swab**' is recommended, following an incidental GBS positive swab earlier in this pregnancy, to inform labour management recommendations. A **GBS swab** requires collection of a combined vaginal-rectal swab at ≥ 37 weeks gestation and a selective broth incubation step.

** While the standard recommendation is for the antibiotics to be given only in the *active phase* of labour, it is recommended here that they be given **at the time of intervention**, eg. commencement of induction, and not delayed until labour is established.

APPENDIX 2 ANTIBIOTIC REGIMENS

1) GBS RISK FACTORS WITH NO CLINICAL SIGNS OF INFECTION

Antibiotic prophylaxis[1]:

- IV Benzyl Penicillin
  - Initial dose **1.2 g***1 *(if allergic refer below)*
  - Subsequent doses **0.6 g** 4 hourly until birth

***1 Allergy to Penicillin?**

Low risk of anaphylaxis[2]
IV Cephazolin 2 g initially, then 1 g 8 hourly until birth

High risk of anaphylaxis[2]
IV Vancomycin 1 g initially, then 12 hourly until birth

2) GBS RISK FACTORS WITH CLINICAL SIGNS OF INFECTION

Broad spectrum antibiotic treatment:

- IV Amoxycillin
  - 2 g 6 hourly *2 *(if allergic refer below)*

AND

- IV Gentamicin
  - Initial dose of 4-6 mg/kg IV based on ideal body weight
    Calculation: ideal body weight (kg) = 45 kg + 0.9 kg for each cm over 150 cm in height[12]
  - Subsequent doses once daily, based on the results of Gentamicin therapeutic drug monitoring (contact Clinical Drug Information ext.80900 or the Ward Pharmacist)

AND

- Metronidazole 500 mg IV 12 hourly

***2 Allergy to Penicillin?**

Low risk of anaphylaxis[2]
IV Cephazolin 2 g 8 hourly until birth

High risk of anaphylaxis[2]
Contact Clinical Drug Information ext.80900 or the Ward Pharmacist

Notes

- Check manufactured product information sheets for drug reconstitution as this information changes from time to time.
- [1]New reduced dosages. Prophylaxis doses as recommended by NZ Consensus Working Party (2) and RANZCOG (7), and supported by evidence (6,8,9,10).
- [2]Low risk of anaphylaxis - women who do not have history of anaphylaxis, angioedema, respiratory distress or urticaria after penicillin or a cephalosporin.