Early onset GBS disease

Clinical Guideline Presentation

45 minutes

Towards CPD Hours

Clinical Excellence Queensland

Queensland Government

References:

Queensland Clinical Guideline: *Early onset Group B Streptococcal disease* is the primary reference for this package.

Recommended citation:

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Disclaimer:

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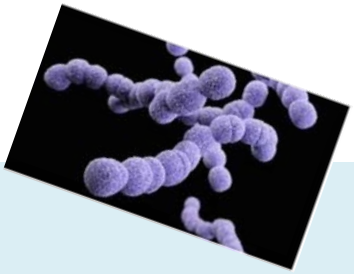
Objectives

- Understand the importance of risk stratification and identification of Group B Streptococcus (GBS) in pregnancy
- Identify risk factors for early onset Group B Streptococcal disease (EOGBSD)
- Identify how the risk of EOGBSD can be reduced (including intrapartum antibiotic prophylaxis (IAP))
- Identify appropriate neonatal care

Abbreviations

CS	Caesarean section
EOGBSD	Early onset Group B Streptococcal disease
EOS	Early onset sepsis
FBC	Full blood count
GBS	Group B Streptococcus
IAP	Intrapartum antibiotic prophylaxis
LOD	Late onset disease
PROM	Prelabour rupture of membranes

Group B Streptococcus



Why is GBS in pregnancy important?

- GBS is the most frequent cause of early onset (day 0-7) neonatal infection and can cause serious illnesses and even death in the newborn baby very quickly
- 7-29% of all healthy women are **colonised** in their lower genital tract with GBS
- These women are not sick and don't need any treatment. GBS can come and go at different times throughout pregnancy
- GBS can pass from the pregnant colonised mother to her baby during birth

Also referred to as:

- GBS
- Group B Streptococcal disease
- Group B Strep
- Streptococcus *algalactiae*

Early onset Group B Streptococcal disease occurs in the newborn 0-7 days after birth (most commonly in the first 72 hours).

Late onset Group B Streptococcal disease occurs in the newborn more than 7 days after birth. The risk is not reduced by intrapartum antibiotics.

Risk reduction

How can the risk of EOGBSD be reduced?

- Giving prophylactic antibiotics to women with risk factors when they are in labour, can reduce GBS transmission to the baby during birth
- It is vital there is a single service-wide, reliable and systematic approach to identifying women for whom intrapartum antibiotic prophylaxis (IAP) is indicated. This will help reduce ‘missed’ opportunities for IAP
- Auditing care so opportunities for further risk reduction can be identified

Risk factors for GBS

- Preterm labour (PTL) at less than 37+0 weeks (spontaneous or induced)
- Rupture of membranes (ROM) greater than or equal to 18 hours prior to birth
- Intrapartum maternal temperature greater than or equal to 38 ^{o}C if there is suspected or confirmed bacterial infection
- GBS colonisation in the current pregnancy or known carriage of GBS
- Previous baby with EOGBSD
- Clinical diagnosis of chorioamnionitis
- Another baby of multiple with early onset sepsis (EOS)

Different approaches to screening

Which women need antibiotics?

There are **two main approaches** to identifying which women need intrapartum antibiotics.

What approach does Queensland Health (QH) recommend?

QH recommends the **risk factor approach**. Refer to the guideline for positive and negative aspects of each approach.

Two main approaches

Risk factor approach

- Identify and treat with intrapartum antibiotics, all women with risk factors for EOGBSD

Universal screening approach

- Swab all pregnant women for GBS carriage at 35–37 weeks gestation
- Treat women with positive GBS results with intrapartum antibiotics
- Also treat women in preterm labour, or where GBS carriage status is unknown, or if the woman had a previous infant with EOGBSD

Intrapartum antibiotic prophylaxis (IAP)

When are antibiotics given?

- Assess women for **risk factors** during pregnancy and at the onset of labour
- If risk factors are present, recommend giving intrapartum antibiotic prophylaxis (IAP) at the onset of labour

What antibiotics are recommended?

- Benzylpenicillin 3 grams* IV as a loading dose at the onset of labour, and then
- Benzylpenicillin 1.8 grams* IV every 4 hours until birth

What is adequate IAP?

- Aim for at least one dose of antibiotics 4 hours prior to birth
- If given 2 hours prior to birth, this is still considered adequate prophylaxis for neonatal management

*Refer to an Australian pharmacopeia for full details of all drugs

Penicillin allergy

What if the woman has a penicillin allergy?

- Assess the **risk of anaphylaxis**
- Clinical history is the single most important component of diagnosis of antimicrobial hypersensitivity
- Seek expert advice as required

If history of penicillin hypersensitivity:

- Refer to an infectious diseases clinician
- Refer to the Therapeutic Guidelines
- Consider isolate susceptibility testing as appropriate to the clinical circumstances

*Refer to an Australian pharmacopeia for full details of all drugs

IAP not required

Intrapartum antibiotic prophylaxis is not required in the following circumstances:

- Elective caesarean section (no labour, no rupture of membranes) irrespective of GBS carriage
  - Routine surgical antibiotic prophylaxis for caesarean section is indicated
- GBS carriage detected in a previous pregnancy (even if GBS status is unknown in the current pregnancy)
- Threatened preterm labour with intact membranes where the risk of imminent birth is low

Caesarean section

Susan is 39 weeks pregnant. Her membranes are intact and she is not in labour. She is booked for an elective caesarean section (CS) today.

Is the risk of a newborn acquiring EOGBSD reduced by CS?

GBS can be transmitted from mother to infant even through intact membranes and even in the absence of labour.

However, the risk for transmission is very low until labour begins or membranes rupture.

This is why GBS positive women who have laboured or who have ruptured membranes require antibiotic prophylaxis even if they are undergoing caesarean section.

Should IAP be recommended to Susan?

No. Women with intact membranes and who are not in labour do not require IAP if they have a CS.

However, Susan should still have routine surgical antibiotic prophylaxis as for any surgical procedure.

If Susan goes into labour before her CS, should you recommend IAP?

Yes, recommend IAP if there is active labour or ruptured membranes prior to a CS.

GBS positive

At 29 weeks gestation Tania was admitted with threatened preterm labour which settled spontaneously. She was found to be positive for GBS on vaginal/rectal swab at that time. She is now 39 weeks, in labour, membranes intact, and no other risk factors.

Should Tania's GBS have been treated with antibiotics at 29 weeks?

No. As Tania was in **threatened** preterm labour and did not go into **established** labour at 29 weeks (i.e. birth was not considered imminent by her health care provider), IAP was not indicated.

A finding of vaginal/rectal GBS does not require treatment in the antenatal period.

Should you screen Tania again for GBS at 39 weeks?

No. It is not necessary to collect another swab for GBS. Tania can be considered at risk for early onset GBS disease based on the previous detection of GBS colonisation.

Does Tania need IAP in labour?

Yes. GBS colonisation in the current pregnancy is a risk factor for EOGBSD. Recommend IAP to Tania.

GBS bacteriuria

Chen had a urine culture that was positive for GBS early in pregnancy. This was treated with antibiotics and repeat urine cultures are negative.

Does Chen need IAP?

Yes, studies show that GBS bacteriuria is a sign of heavy colonisation which may not be entirely eradicated with treatment.

GBS bacteriuria in the current pregnancy is a risk factor for early onset GBS disease.

Recommend IAP to Chen. She does not need to be screened or retested for GBS to confirm her risk status.

If the urine culture is reported as greater than or equal to 10^5 cfu/mL, should Chen still be considered GBS positive?

Yes. If a urine culture is reported as positive for GBS, then the woman should be considered GBS positive for that pregnancy, regardless of the colony forming units/mL reported.

Obstetric procedures

Amniotomy and internal fetal monitoring (scalp electrode) is needed for Chen. She is receiving IAP.

Are these procedures contra-indicated for Chen because of her GBS status?

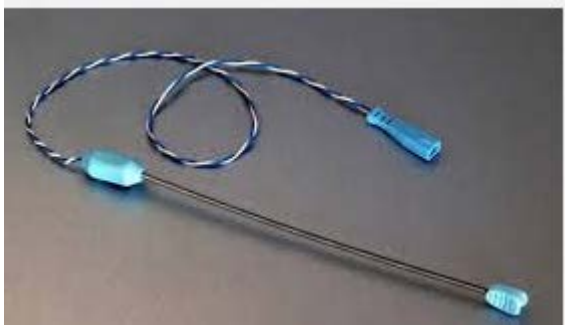
No. Although concern has been raised about performing obstetric procedures on GBS-colonised women, available data is not sufficient to determine if they are associated with an increased risk of early onset GBS disease.

Clinical judgement determines the use of obstetric procedures.

IAP continues.

Should you delay obstetric procedures until Chen has had 4 hours of IAP?

No. Medically urgent procedures should not be delayed in order to achieve a certain duration of IAP.



Temperature in labour

Lila is in early labour at 40 weeks. Her membranes are intact . She has been well and has no risk factors for EOGBSD. Lila develops a temperature of 37.6ºC.

Is IAP indicated for Lila?

No. IAP is not indicated for a temperature of 37.6 ºC alone. There may be a number of physiological reasons for this temperature (e.g. dehydration, neuraxial analgesia).

However, her temperature should be monitored regularly in labour.

If temperature is greater than or equal to 38 ºC, replace GBS specific antibiotics with broad spectrum antibiotic therapy that includes an agent active against GBS.

If maternal intrapartum temperature is greater than or equal to 38 ºC, notify paediatric staff immediately, as it may affect neonatal management. Investigate alternate causes of maternal pyrexia (e.g. medications/epidural).

Rupture of membranes

Term prelabour rupture of membranes

- Irrespective of GBS status commence when labour establishes (not before) if:
  - Duration of rupture of membranes (ROM) is greater than or equal to 18 hours at the onset of established labour
  - During established labour, the duration of ROM reaches or exceeds 14 hours and birth is assessed as unlikely before duration of ROM equals 18 hours (e.g. do not wait for duration of ROM to equal 18 hours to commence IAP)

Preterm prelabour rupture of membranes

- Where possible, manage women at less than 34 weeks with PPROM as per guidelines as the risk of prematurity outweighs the risk of GBS infection
- When labour ensues (or caesarean section) recommend IAP regardless of GBS status
- IAP prior to the onset of labour is known to prolong latency, and reduce maternal and fetal infection following preterm prelabour rupture of membranes
- Refer to Queensland Clinical Guidelines:
  - *Antenatal corticosteroids*
  - *Preterm labour and birth*
  - *Preterm prelabour rupture of membranes*

Clinical indicators of early onset sepsis (EOS)

Which babies are at risk of EOGBSD?

All newborn babies are at risk of infection irrespective of gestation, maternal risk factors or IAP administration.

Clinical signs of sepsis can be non-specific and subtle and a **high index of suspicion** is required.

Risk assessment

Diagnosis of EOS is an ongoing challenge.

- Preterm babies (less than 37+0 weeks) are at increased risk of EOGBSD compared to term babies
- Adequacy of IAP is an important protective factor for at babies born to women with risk factors
- Use of an early onset sepsis calculator is associated with a reduction in antibiotics

Clinical signs of EOS

- Unexpected need for cardiopulmonary resuscitation
- Respiratory distress (e.g. tachypnoea, apnoeic episodes, grunting, chest recession etc)
- Cardiovascular (e.g. tachycardia, bradycardic episodes, hypotension etc)
- Gastrointestinal (e.g. poor feeding, vomiting, abdominal distention, bilious aspirates/vomits)
- Central nervous system (e.g. lethargy, irritability, seizures)
- General (e.g. pallor, jaundice, hypothermia or temperature instability, hypoglycaemia or hyperglycaemia, metabolic and/or respiratory acidosis)

Criteria for investigation of sepsis

Investigate and treat

- Baby with any of the following:
  - Clinical signs of neonatal infection
  - Maternal history of clinical chorioamnionitis
  - History of sibling with EOGBS
- Baby less than 37 weeks gestation AND inadequate IAP with any of the following:
  - GBS colonisation in current pregnancy
  - GBS bacteriuria in current pregnancy
  - Preterm labour at less than 37+0 weeks
  - ROM more than 18 hours
  - Maternal intrapartum temperature more than 38 °C (not attributed to neuraxial analgesia)

Increased surveillance and FBC

- Baby 37+ 0 weeks or more gestation AND inadequate IAP with any of the following:
  - GBS colonisation in current pregnancy
  - GBS bacteriuria in current pregnancy
  - Preterm labour at less than 37+0 weeks
  - ROM more than 18 hours
  - Maternal temperature more than 38 °C (not attributed to neuraxial analgesia)

Increased observation

- Baby 37+ 0 weeks or more gestation AND adequate IAP with any of the following:
  - GBS colonisation in current pregnancy
  - GBS bacteriuria in current pregnancy
  - Preterm labour at less than 37+0 weeks
  - ROM more than 18 hours
  - Maternal temperature more than 38 °C (not attributed to neuraxial analgesia

Routine care

- Baby (any gestation) born by elective CS (no labour no ROM) without risk factors for EOGBSD or signs of infection
- Baby born to woman without risk factors for EOGBSD or signs of infection

Investigation of sepsis

Any baby with clinical signs of sepsis requires a full diagnostic evaluation and empirical antibiotic therapy started (within one hour) regardless of adequacy of IAP, other obstetric risk factors or maternal GBS status

- **Minimum investigations**
  - Clinical surveillance for signs of infection including EOS
  - Prior to antibiotics:
    - Full blood count (FBC) with differential and platelet count
    - Blood cultures—ideally, collect at least 1 mL of blood
- **Other investigations**
  - Lumbar puncture
  - Chest x-ray if respiratory signs present
  - Serial CRP and/or PTC levels to guide duration of antibiotic treatment
- **Optional investigations**
  - C-reactive protein (CRP) and/or procalcitonin levels (PCT)
    - Single values may give false positive or negative results
    - Serial CRP and/or PTC levels may be useful to guide duration of antibiotic treatment

Term with maternal risk factors

Baby Lucy is born normally at 40 weeks gestation. Her mother had risk factors for EOGBSD and received IAP during labour.

Does Lucy need additional care?

It depends on whether Lucy's mother received **adequate** IAP or not.

If **adequate IAP** was given:

- Clinical surveillance for 48 hours
- Discharge at 24 hours if well and home care suitable

If **inadequate IAP** was given:

- Clinical surveillance for 48 hours
- Collect a full blood count
- Discharge before 48 hours not recommended

Adequate IAP
For neonatal management, IAP administered at least two hours prior to birth is considered adequate

Admission to newborn baby unit
Not usually required if there are no clinical indications

Preterm with maternal risk factors

Baby Ahrn is born prematurely at 32 weeks gestation

What care is indicated for Ahrn?

If IAP was **adequate**:

- Routine clinical surveillance especially the first 48 hours for signs of sepsis
- Collect a full blood count

If IAP was **inadequate**:

- Collect a full blood count
- Collect blood cultures
- Commence antibiotics within 30 minutes
- Perform a lumbar puncture if:
  - Blood cultures positive or
  - Clinical signs of infection
- Other investigations as indicated

Risk factors

Prematurity is a risk factor for EOGBSD

Preterm babies are more susceptible to infection.

Empirical antibiotic therapy

- Recommended empirical antibiotic therapy is:
  - Benzylpenicillin or ampicillin
  - **PLUS** gentamicin
- Refer to NeoMedQ neonatal medicine monographs

Discharge advice

What advice do you give a woman who has had baby with EOGBSD?

- IAP is recommended during next labour
- Her next baby is at increased risk of EOGBSD
- To inform health care providers in the next pregnancy that a previous baby had EOGBSD
- Breastfeeding/breast milk is safe in women who are GBS positive

Late onset disease (LOD)

- IAP has no effect on occurrence of LOD
- Is more common in babies with low birth weight and early preterm
- Most common presentation of LOD is sepsis followed by meningitis

General advice to parents

- Signs of sepsis
- Importance of seeking medical assistance if baby unwell