GBS prevention strategies – UK & International (risk based, screening and vaccination)

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(risk based, screening and vaccination)

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• 1996 – Center for Disease Control and Prevention issues first consensus guidelines:
  
  – Obstetricians should adopt a strategy for the prevention of early-onset GBS disease.
  
  – Patients should be informed regarding the GBS prevention strategy
two approaches are appropriate to select women for the offer of Intrapartum Antibiotic Prophylaxis (in all cases of a previous baby affected or positive GBS urine culture in the current pregnancy IAP is recommended):

- Screening-Based Approach. All pregnant women should be screened at 35-37 weeks' gestation for anogenital GBS colonization

- Risk factor approach: one or more of the following risk factors is present at the time of labour or membrane rupture:
  - Gestational age less than 37 weeks
  - duration of membrane rupture greater than or equal to 18 hours
  - temperature greater than or equal to 100.4 F (greater than or equal to 38.0 C)
• Major differences in the new guidelines:

- Recommendation of universal prenatal culture-based screening for vaginal and rectal GBS colonization of all pregnant women at 35--37 weeks' gestation
- Updated prophylaxis regimens for women with penicillin allergy
- Detailed instruction on prenatal specimen collection and expanded methods of GBS culture processing, including instructions on susceptibility testing
- No prophylaxis for planned cesareans (no labor or rupture of membranes)
- Suggested algorithm for management of patients with threatened preterm delivery
USA - Incidence of early- and late-onset invasive group B streptococcal disease — Active Bacterial Core surveillance areas, 1990–2008

Screening pregnant women for GBS is routine in:

- USA
- Australia
- Argentina
- Belgium
- Canada
- France

- Germany
- Italy
- Spain
- Czech Republic
- Slovenia
- Hong Kong

And many more………. 
CDC 2010


- These 2010 guidelines were developed using an evidence-based approach in collaboration with several professional associations. They received formal endorsements from:
  - American College of Obstetricians and Gynecologists
  - American Academy of Pediatrics
  - American Society for Microbiology
  - American Academy of Family Physicians
  - American College of Nurse-Midwives
The key changes in the 2010 guidelines include the following:

• expanded recommendations regarding laboratory methods for the identification of GBS
• clarification of the colony-count threshold required for reporting GBS detected in the urine of pregnant women
• updated algorithms for GBS screening and intrapartum chemoprophylaxis for women with preterm labor or preterm prelabor rupture of membranes
• a change in the recommended dose of penicillin-G for chemoprophylaxis
• updated prophylaxis regimens for women with penicillin allergy
• a revised algorithm for management of newborns with respect to risk for early-onset GBS disease
8. Antenatal screening

Routine screening (either bacteriological or risk based) for antenatal GBS carriage is not recommended.

Approximately 15% of all UK pregnancies have one or more of the following risk factors:

- intrapartum fever
- prolonged rupture of membranes (PROM) greater than 18 hours
- prematurity less than 37 weeks
- previous infant with GBS

Approximately 60% of UK early-onset GBS cases have such risk factors.
Early onset GBS disease incidence per 1,000 births

Data from: CDC and Health protection reports, Public Health England
APPENDIX II

Indications for offering GBS-specific IAP:

- Previous baby with invasive GBS infection.
- GBS bacteriuria in the current pregnancy.
- Vaginal swab positive for GBS in current pregnancy.
- Pyrexia (>38°C) in labour (give broad-spectrum antibiotics to include GBS cover).
- Chorioamnionitis (give broad-spectrum antibiotics to include GBS cover).

IAP for GBS is not necessary if delivering by pre-labour lower segment caesarean section with intact membranes.
What about the next pregnancy?

- Woman has had IAP in the previous pregnancy with no early or late onset GBS disease
- No offer of IAP in the next pregnancy
- Background rate of GBS carriage is 20-25%
- Is the next pregnancy at average risk?
Recurrence rate of GBS carriage in a subsequent pregnancy

- **38%**

- **53%**

- **41%**

- **42%**
Recurrence of group B streptococcus colonization in successive pregnancies

- 395 women colonized in their first pregnancy
- 198 of these were colonized in their next pregnancy
- Recurrence rate 50%
- “These data support providing antimicrobial prophylaxis in unscreened parous women with known prior GBS colonization.”

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Recommendation 5.4 “women known to be colonised with GBS”:

- “Immediate induction of labour and IAP should be offered to all women with prelabour rupture of membranes at 37+0 weeks of gestation or more.”
- But what if the woman is a carrier and her GBS status is unknown?
- No induction or IAP are offered
Current situation in the UK

• GBS carriage found by chance:
  – Offer prophylaxis

• GBS carriage not known:
  – Ignore
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Maternal pyrexia associated with the use of epidural anaesthesia in labour.

Fig 1—Mean vaginal temperature (°C) in the two groups of patients during labour.

●, Pethidine group; ○, epidural analgesia group; vertical bars, SEM.
EPIDURAL Top up

Fetal scalp temperature

Maternal lower uterine segment temperature

Top up

EPIDURAL
TRIPLER ARMY MEDICAL CENTER, HAWAII
Epidural rate before October 1993 - 1%
After October 1993 - 83%

• Temperature in labour > 37.5°C rose from 8.2% to 26.2%
• Temperature > 38°C rose from 0.6% to 11%

1657 nulliparous women with term pregnancies and singleton vertex fetuses who were afebrile at admission

Epidural analgesia, intrapartum fever, and neonatal sepsis evaluation.
Randomized Trial of the Effects of Antibiotic Prophylaxis on Epidural-Related Fever in Labor

- 400 women with epidurals
- 200 given cefoxitin, 200 placebo
- Incidence of fever >38°C:
  - Antibiotics - 38%
  - Placebo - 40%

Anesth Analg 2014;118:604–10
Giving women with epidurals antibiotics because they are pyrexial is unnecessary unless they have other indicators of sepsis or they are GBS carriers
Recommendation 6.4:

• “Antibiotic prophylaxis for GBS is unnecessary for women with preterm rupture of membranes.”

• (NB this conflicts with NICE guidance on Antibiotics for Neonatal Infection CG 149, which says to consider IAP with penicillin with prelabour ROM or intrapartum ROM >18 hours)
Using vaginal Group B Streptococcus colonisation in women with preterm premature rupture of membranes to guide the decision for immediate delivery: a secondary analysis of the PPROMEXIL trials

- Risk of EOGBS disease in GBS positive women 15.2% with expectant management but reduced to 1.8% by immediate delivery.

- If GBS negative - early onset neonatal sepsis risk in neonates of GBS-negative women was 2.6% after expectant management and 2.9% with immediate delivery.

- “Women with PROM between 34 and 37 weeks might benefit from immediate delivery if they have GBS vaginal colonisation, while in GBS-negative women labour induction could be delayed until 37 weeks”.

BJOG. 2014 Sep;121(10):1263-72
RCOG ‘green-top’ Guidelines

- “Women presenting in uncomplicated spontaneous preterm labour with intact membranes are the same group of women as those recruited to the ORACLE trial, where there was evidence of harm in terms of adverse neurodevelopmental outcome including cerebral palsy in their infants at 7 years of age in the absence of any demonstrable benefit in the short term”.
RCOG ‘green-top’ Guidelines

- **But:**

- **Women in the ‘threatened preterm labour’ group in the Oracle trial were given erythromycin or augmentin or both for up to ten days – up to 40 doses**

- **Penicillin is a narrow spectrum antibiotic given only 1-4 times during labour**

- **Women with PPROM given antibiotics in the ORACLE study had no increase in adverse long term sequelae in the babies**
Recommendation 90:

“Offer women prophylactic antibiotics at CS before skin incision. Inform them that this reduces the risk of maternal infection more than prophylactic antibiotics given after skin incision, and that no effect on the baby has been demonstrated”

[new 2011]
Current RCOG/NSC approach is inconsistent

- GBS carriage found by chance is deemed sufficient to offer IAP
- Why should women with unknown status be denied the opportunity to find out if their baby is at risk?
- Logically, either we should know everyone’s GBS status, or ignore it completely.
- Risk based approach, if followed properly, would in any case result in 21% of women being offered IAP (Bazian, 2012) with only 29% being GBS +ve
- Why not give IAP to those actually at risk, and not give it to those who are negative?
Vaccines

- There are many different serotypes of GBS, each requiring a separate vaccine
- GSK has halted development of a trivalent vaccine (only 70% effective) but continues with a pentavalent vaccine
- Novartis phase II with trivalent vaccine completion due June 2016
- MinervaX starts phase I clinical trials
- A vaccine is always ‘five to ten years away’
Five key principles underpin the recommendations in this guideline:

1. Unless it is dangerous, families should be offered choice. The guideline includes recommendations to support families in making choices through provision of information and, where appropriate, reassurance.
Work in partnership with patients.

- Listen to, and respond to, their concerns and preferences.
- Give patients the information they want or need in a way they can understand.
- Respect patients’ right to reach decisions with you about their treatment and care.
95. There is no question in this case of Dr McLellan’s being entitled to withhold information about the risk because its disclosure would be harmful to her patient’s health…..

The “therapeutic option” is not intended to enable doctors to prevent their patients from taking an informed decision.

Rather, it is the doctor’s responsibility to explain to her patient why she considers that one of the available treatment options is medically preferable to the others, having taken care to ensure that her patient is aware of the considerations for and against each of them.
CONCLUSIONS

• Screening for GBS has reduced the incidence of EOGBS disease by up to 80% in many countries
• The risk factor approach is inconsistent and confusing and has not reduced the UK incidence of EOGBS disease
• Pregnant women and their families should be offered the choice of screening for GBS