Group B Strep in pregnancy & newborn babies

23 October 2013

Jane Plumb MBE, Chief Executive

Group B Strep Support

www.gbss.org.uk
Group B Strep Support: www.gbss.org.uk

Welcome to Group B Strep Support!

We can't give advice, but we can listen & offer Information. Email us at info@gbss.org.uk or call us at 01644 419-176

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Group B Strep Support: www.gbss.org.uk
GBSS Medical Advisory Panel

Prof Philip Steer BSc MD FRCOG (Chair)
Emeritus professor at Imperial College & consultant obstetrician at the Chelsea and Westminster Hospital, London

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Philippa Cox
Consultant Midwife, Supervisor of Midwives, Homerton Hospital, London

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Group B Streptococcus

Streptococcus agalactiae

• Colonisation
  – Asymptomatic & intermittent
  – Intestinal (<30% of adults)
  – Vaginal (<25% of women)

• Infection (1647 cases E,W & NI 2011)
  – Babies
  – Adults: the elderly, pregnant/postpartum women, others with underlying disease

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UK GBS disease 0-90 days: Age at onset

GBS infection in babies

• “Early onset” 0-6 days (~75% cases)
  – 90% show within 12 hours
  – Usually septicaemia and pneumonia
  – 11% mortality
  – 7% morbidity
  – 90% preventable IV Penicillin

• “Late onset” 7-90 days (~25% cases)
  – Usually meningitis and septicaemia
  – 8% mortality
  – 21% morbidity (up to 50% with meningitis)
  – No current prevention: good hygiene/education
Typical signs of early-onset GBS infection (0-6 days)

- grunting;
- lethargy;
- irritability;
- poor feeding;
- very high or low heart rate;
- low blood pressure;
- low blood sugar;
- abnormal *(high or low)* temperature; and
- abnormal *(fast or slow)* breathing rates with blueness of the skin due to lack of oxygen *(cyanosis)*.
Typical signs of late onset GBS infection (7-90 days)

- fever;
- poor feeding and/or vomiting;
- impaired consciousness;
- fever, may include hands & feet feeling cold, and/or diarrhoea;
- refusing feeds or vomiting;
- shrill or moaning cry or whimpering;
- dislike of being handled, fretful;
- tense or bulging fontanelle (soft spot on the head);
- involuntary body stiffening or jerking movements;
- floppy body;
- blank, staring or trance-like expression;
- abnormally drowsy, difficult to wake or withdrawn;
- altered breathing patterns;
- turns away from bright lights; and
- pale and/or blotchy skin.
EOGBS known risk factors

- Previous GBS baby 10 x
- GBS bacteriuria current pregnancy 4 x
- GBS found current pregnancy 3 x
- Maternal intrapartum fever (>38°C) 3 x
- PROM >18 hours 3 x
- Preterm labour 3 x

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Reducing EOGBS infection

• Intrapartum IV antibiotic prophylaxis
  – Only proven effective prevention method available
  – 90% prevention (Boyer, 1986)

• Intramuscular antibiotics pre-labour
  – Small studies & no GBS infection in control or treated group

• Vaginal flushing with chlorhexidine
  – No evidence it reduces EOGBS infection (Cutland, 2009)

• Oral Antibiotics
  – No evidence it reduces EOGBS infection (*treats GBS UTI*)
UK Guidelines

Routine screening of all pregnant women for GBS carriage not recommended

NICE Antenatal Care Guideline 2012 (review 2014)
http://guidance.nice.org.uk/CG62

UK National Screening Committee 2012 (review 2015/6)
http://www.screening.nhs.uk/groupbstreptococcus

Royal College of Obstetricians & Gynaecologists 2012 (review 2015)
www.rcog.org.uk/womens-health/clinical-guidance/prevention-early-onset-neonatal-group-b-streptococcal-disease-green-
Guidelines: Health Protection Agency

Processing Swabs for GBS carriage
- B 58 (2006 updated 2012)
- “...provides a standardised method for culture where clinicians decide to investigate specific patients …”

To improve sensitivity & specificity of detection of carriage at delivery:
- 35-37 weeks of pregnancy
- LVS & anorectal swabs
- Enriched culture medium

www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317132860736

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Group B Strep Support: www.gbss.org.uk
Guidelines: NICE Antibiotics for early onset neonatal infection

Published
August 2012

For women in labour identify and assess any risk factors for early-onset neonatal infection (see table 1). Throughout labour monitor for the emergence of new risk factors such as intrapartum fever higher than 38°C, or the development of chorioamnionitis.

Intrapartum antibiotic prophylaxis

Offer intrapartum antibiotic prophylaxis using intravenous benzylpenicillin to prevent early-onset neonatal infection for women who have had:
- a previous baby with an invasive group B streptococcal infection
- group B streptococcal colonisation, bacteriuria or infection in the current pregnancy.

Manage prelabour rupture of membranes at term according to the recommendations in Intrapartum care (NICE clinical guideline 55).

Consider intrapartum antibiotic prophylaxis using intravenous benzylpenicillin to prevent early-onset neonatal infection for women in preterm labour if there is prelabour rupture of membranes of any duration.

Consider intrapartum antibiotic prophylaxis using intravenous benzylpenicillin to prevent early-onset neonatal infection for women in preterm labour if there is suspected or confirmed intrapartum rupture of membranes lasting more than 18 hours.
**Table 1 Risk factors for early-onset neonatal infection, including ‘red flags’**

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Red flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invasive group B streptococcal infection in a previous baby</td>
<td></td>
</tr>
<tr>
<td>Maternal group B streptococcal colonisation, bacteriuria or infection in the current pregnancy</td>
<td></td>
</tr>
<tr>
<td>Prelabour rupture of membranes</td>
<td></td>
</tr>
<tr>
<td>Preterm birth following spontaneous labour (before 37 weeks’ gestation)</td>
<td></td>
</tr>
<tr>
<td>Suspected or confirmed rupture of membranes for more than 18 hours in a preterm birth</td>
<td></td>
</tr>
<tr>
<td>Intrapartum fever higher than 38°C, or confirmed or suspected chorioamnionitis</td>
<td></td>
</tr>
<tr>
<td>Parenteral antibiotic treatment given to the woman for confirmed or suspected invasive bacterial infection (such as septicaemia) at any time during labour, or in the 24-hour periods before and after the birth [This does not refer to intrapartum antibiotic prophylaxis]</td>
<td>✓</td>
</tr>
<tr>
<td>Suggested or confirmed infection in another baby in the case of a multiple pregnancy</td>
<td>✓</td>
</tr>
</tbody>
</table>
Guidelines: NICE Abx for EONI 3

If the woman decides to take intrapartum antibiotic prophylaxis, give the first dose as soon as possible and continue prophylaxis until the birth of the baby.

Offer benzylpenicillin as the first choice for intrapartum antibiotic prophylaxis. If the woman is allergic to penicillin, offer clindamycin unless individual group B streptococcus sensitivity results or local microbiological surveillance data indicate a different antibiotic.

http://guidance.nice.org.uk/CG149
Guidelines: NICE Abx for EONI 4

Table 2 Clinical indicators of possible-early-onset neonatal infection (observations and events in the baby), including ‘red flags’

<table>
<thead>
<tr>
<th>Clinical indicator</th>
<th>Red flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altered behaviour or responsiveness</td>
<td></td>
</tr>
<tr>
<td>Altered muscle tone (for example, flappiness)</td>
<td></td>
</tr>
<tr>
<td>Feeding difficulties (for example, feed refusal)</td>
<td></td>
</tr>
<tr>
<td>Feed intolerance, including vomiting, excessive gastric aspirations and abdominal distension</td>
<td></td>
</tr>
<tr>
<td>Abnormal heart rate (bradycardia or tachycardia)</td>
<td></td>
</tr>
<tr>
<td>Signs of respiratory distress</td>
<td></td>
</tr>
<tr>
<td>Respiratory distress starting more than 4 hours after birth</td>
<td>✓</td>
</tr>
<tr>
<td>Hypoxia (for example, central cyanosis or reduced oxygen saturation level)</td>
<td></td>
</tr>
<tr>
<td>Jaundice within 24 hours of birth</td>
<td></td>
</tr>
<tr>
<td>Apnoea</td>
<td></td>
</tr>
<tr>
<td>Signs of neonatal encephalopathy</td>
<td></td>
</tr>
<tr>
<td>Seizures</td>
<td>✓</td>
</tr>
<tr>
<td>Need for cardio-pulmonary resuscitation</td>
<td></td>
</tr>
</tbody>
</table>

Need for mechanical ventilation in a preterm baby

Need for mechanical ventilation in a term baby ✓

Persistent fetal circulation (persistent pulmonary hypertension)

Temperature abnormality (lower than 36°C or higher than 38°C) unexplained by environmental factors

Signs of shock ✓

Unexplained excessive bleeding, thrombocytopenia, or abnormal coagulation (International Normalised Ratio greater than 2.0)

Oliguria persisting beyond 24 hours after birth

Altered glucose homeostasis (hypoglycaemia or hyperglycaemia)

Metabolic acidosis (base deficit of 10 mmol/litre or greater)

Local signs of infection (for example, affecting the skin or eye)
Guidelines: NICE Abx for EONI 5

What action to take for babies with

- One non-red flag risk factor or clinical indicator for EONI
- ≥1 red flag or ≥ 2 non-red flags
- babies with suspected EONI

For babies to be treated with antibiotics

- when to start treatment
- what tests not to perform
- standard duration of treatment, when to stop/extend
Guidelines: NICE Abx for EONI 6

Where there’s been concern about EONI, advise parents verbally & in writing to seek medical advice after discharge if baby:

• is showing abnormal behaviour (for example, inconsolable crying or listlessness), or
• is unusually floppy, or
• develops difficulties with feeding or with tolerating feeds, or
• has an abnormal temperature unexplained by environmental factors (lower than 36°C or higher than 38°C), or
• has rapid breathing, or
• has a change in skin colour.
Guidelines: RCOG (2003 & 2012) 1

Similar to NICE Abx for EONI plus

- Offer IAP & immediate induction for GBS carriers with prelabour ROM at ≥37 weeks
- No IAP against GBS for any prelabour ROM without known GBS carriage
- No IAP against GBS for planned Caesarean section without labour or ROM

Conflict with NICE Abx for EONI:

- No IAP for preterm labour (with or without ROM) & unknown GBS status - NICE says consider
These estimates are based on an incidence of EOGBS disease in the UK of 0.5/1000,4 which is likely to be the minimum incidence.

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Risk of EOGBS disease if IAP not given</th>
<th>Risk of EOGBS disease if full IAP given</th>
<th>Risk of death from EOGBS disease if IAP not given</th>
<th>Risk of death from EOGBS disease if full IAP given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrapartum fever (&gt;38°C)</td>
<td>1:189</td>
<td>1:943</td>
<td>1:1783</td>
<td>1:8915</td>
</tr>
<tr>
<td>Prolonged rupture of membranes (&gt;18 hours) at term</td>
<td>1:556</td>
<td>1:2777</td>
<td>1:9754</td>
<td>1:48 772</td>
</tr>
<tr>
<td>Prematurity (=37+0 weeks of gestation)</td>
<td>1:435</td>
<td>1:2173</td>
<td>1:2377</td>
<td>1:11 885</td>
</tr>
<tr>
<td>Prematurity (=35+0 weeks of gestation)</td>
<td>1:357</td>
<td>1:1786</td>
<td>1:1566</td>
<td>1:7829</td>
</tr>
<tr>
<td>Positive GBS swab in a previous pregnancy</td>
<td>1:1105</td>
<td>1:5525</td>
<td>1:10 424</td>
<td>1:52 122</td>
</tr>
<tr>
<td>Positive GBS swab in current pregnancy</td>
<td>1:434</td>
<td>1:2170</td>
<td>1:4094</td>
<td>1:20 471</td>
</tr>
</tbody>
</table>

EOGBS = early-onset group B streptococcus; IAP = intrapartum antibiotic prophylaxis.
England, Wales & NI Culture-provenEOGBS infection 2003-11

2003 RCOG guidelines introduced

Reported incidence per 1,000 live births

Source: Health Protection Agency
Countries routinely screening pregnant women for GBS

- Australia*
- Argentina
- Belgium
- Canada
- Chile
- Czech Republic
- France
- Germany
- Hong Kong
- Italy

- Kenya
- Lithuania
- New Zealand*
- Oman
- Poland
- Spain
- Slovenia
- Switzerland
- USA

*Dual (screening or risk factors)
Reduction of EOGBS incidence in other countries

- Australia 82% (Daley et al, 2004)
- Spain 86% (Andreu et al, 2003)
- France 71% (Albouy-Llaty et al, 2011)
- USA 86% (Jordan et al, 2008)
Known risk factors for EOGBS infection

- Previous GBS baby: 10 x
- GBS bacteriuria current pregnancy: 4 x
- GBS found current pregnancy: 3 x
  - Maternal intrapartum fever (>38°C): 3 x
  - PROM >18 hours before birth: 3 x
  - Preterm labour: 3 x

40% of EOGBS babies have no risk factors

Without testing mums, carriage risk unidentified so preventative measures can’t be taken (Vergnano, 2009)
UK cost effectiveness studies

- Risk-factor-based screening is not cost-effective compared with screening based on culture.

- IAP directed by ECM screening at 35-37 weeks for low risk term women & treating all preterm & high risk women would be more cost effective

Kaambwa B et al. Cost-effectiveness of rapid tests & other existing strategies for screening and management of early-onset GBS during labour. *BJOG* 2010


The future?

Intrapartum testing

- Fast & accurate enough to direct adequate IAP
- Feasibility in a busy labour ward
- Labouring at home/births outside a CU?

Vaccine

- Effective against key serotypes
- How long before available?
Poll: July 2013

• 2,102 participants via online questionnaire
  – Update of May 2010 (2,226 participants)

• UK women
  – early pregnancy to youngest child 5 or younger
  – Full findings at [http://ow.ly/q10vF](http://ow.ly/q10vF)
Polls: 2013

Q: How/where did you hear about Group B Strep?

- At an antenatal class: 10 (2013), 11 (2010)

Group B Strep Support: www.gbss.org.uk
Polls: 2013

Q: From which of the following sources have you found information on Group B Strep since finding out about the condition?


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Polls: 2013

Q: Have been able to find sufficient information on GBS?

- I have found all the information I need: 2013 (44), 2010 (41)
- I have found some information, but would have liked more: 2013 (23), 2010 (24)
- I've not found anywhere near enough information: 2013 (8), 2010 (7)
- I've not found any information at all, but would like some: 2013 (9), 2010 (12)
- I've not found any information and I wouldn't like any: 2013 (16), 2010 (16)

Happy with information: 2013 (44), 2010 (41)
Need more information: 2013 (23), 2010 (24)
Don't need information: 2013 (8), 2010 (7)
Polls: 2013

Q: Has the knowledge of GBS impacted on your enjoyment of pregnancy?

- Yes, it has affected it a lot: 2 (2013), 2 (2010)
- Yes, it has affected it a little: 13 (2013), 10 (2010)
- No, it has had no effect: 88 (2013), 85 (2010)

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Polls: 2013

Almost all agree women should be informed of GBS & be offered option of test

- All pregnant women should be told about the option to have the reliable Group B Strep test privately (cost around £35) - 2013: 88%, 2010: 94%
- I would have taken a reliable test was offered to me free of charge on the NHS - 2013: 95%, 2010: 94%
- A reliable test for Group B Strep should be offered to all pregnant women as a matter of course at an antenatal appointment - 2013: 97%, 2010: 94%
- I want to be tested for Group B Strep/I would have wanted to be tested - 2013: 83%, 2010: 84%
- All pregnant women should be informed about Group B Strep by their GP or midwife as a matter of course at some point during their pregnancy - 2013: 95%, 2010: 95%

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Polls: 2013

The private test currently costs around £35. There is usually not the option to have the test free on the NHS, would you pay/ would you have paid this amount to take the test?

- Yes: 2013 - 60, 2010 - 56
- No, I don't think it is needed: 2013 - 22, 2010 - 17
- No, I cannot afford to spend this amount: 2013 - 18, 2010 - 27

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What we all want
Healthy Mum, healthy baby

www.gbss.org.uk/HealthProfs

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