Guide to:

Group B Streptococcus

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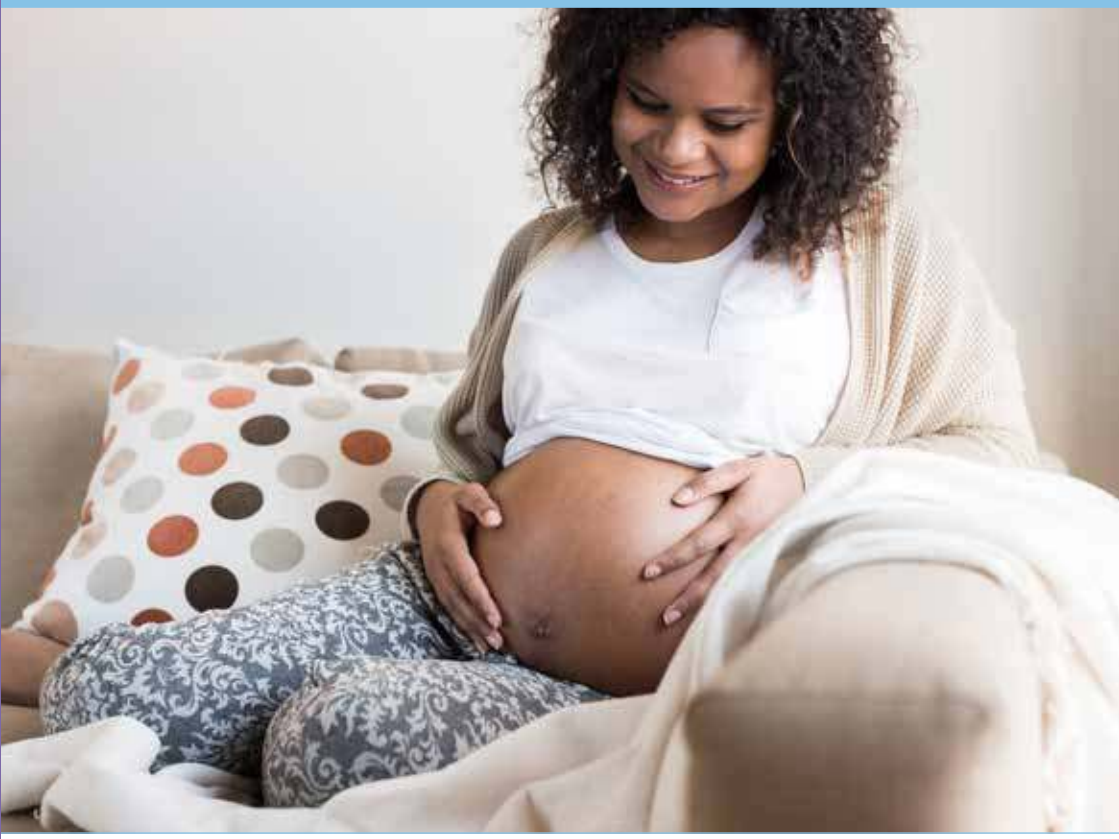
Recommendations for midwives



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Group B Streptococcal (GBS) disease is the most common cause of life-threatening infection in newborn babies, and the most common cause of meningitis in babies under 3 months (Muller-Pebody et al, 2011).

On average in the UK, two babies per day develop GBS infection; one baby per week dies from GBS and one baby per week survives with a long-term disability.

In September 2017, the Royal College of Obstetricians and Gynaecologists (RCOG) (Hughes et al, 2017) published a major update to their guidelines on preventing GBS infection in newborn babies. This article summarises the key changes, and signposts to more information.

Background, presentation and outcomes

GBS is a naturally occurring bacterium, carried in the vagina and lower intestine of approximately 20-25% of women in the UK (Daniels et al, 2011), without causing symptoms or harm to the carrier.

Two-thirds of infected babies present with early-onset GBS (EOGBS) at 0-6 days and the rest present with late-onset GBS (LOGBS) at 7-90 days (Heath, 2016).

EOGBS is more likely to present as sepsis and pneumonia, typically in the first day of life, caused by materno-fetal transmission around birth. The risk of EOGBS is considerably reduced by intrapartum antimicrobial prophylaxis (IAP) in labour (Lin et al, 2001). Worldwide, an estimated 205 000 babies developed EOGBS in 2015 (Seale et al, 2017).

LOGBS is more likely to present as meningitis and sepsis, and the source of the bacteria causing disease may be the mother, the environment or other sources. LOGBS is not preventable by IAP (Jordan et al, 2008). LOGBS is uncommon after 4 weeks of age and almost unknown after 12 weeks. Worldwide, an estimated 114 000 babies developed LOGBS in 2015 (Jordan et al, 2008)

Other GBS infections are a recognised cause of invasive disease in peripartum women, fetal infections, stillbirth and preterm labour. While most babies recover from their GBS infection, in 2015, an estimated 90 000 died and 10 000 survived with disability worldwide (Seale et al, 2017).

A global perspective

In the UK and Republic of Ireland (ROI), the rate of EOGBS disease rose by 19% between 2000-1 and 2014-15 to 0.57 per 1000 live births, and by 48% for LOGBS disease to 0.37 per 1000 live births (Heath, 2016). This is despite a national prevention strategy against EOGBS (Hughes, 2017).

These rates are significantly higher than the worldwide estimates (39% higher for EOGBS disease and 42% higher for LOGBS disease) (Madrid et al, 2017). Mortality rates are lower for EOGBS babies, however, with 5.2% dying in the UK and ROI (compared with 10% worldwide), although the mortality rates for LOGBS babies are similar to the global average (7.7% in UK and ROI and 7% worldwide). In the UK and ROI, 9.4% of GBS survivors had long-term disability in 2014-5, up from 7% in 2000-1 (Heath, 2016).

Key points for pregnant women

- GBS is one of the many bacteria that normally live in the vagina and rectum and which usually cause no harm
- Screening for GBS is not routinely offered to all pregnant women in the UK
- If a woman tests positive for GBS, the baby will usually be born safely and will not develop an infection. However, it can lead to the development of infections such as sepsis, pneumonia or meningitis
- Most EOGBS infections are preventable
- If GBS is discovered in urine, vagina or rectum during pregnancy, or a woman has previously given birth to a baby affected by GBS infection, or if a woman has carried GBS in her previous pregnancy, she should be offered antibiotics in labour to reduce the small risk of this infection to the baby. If the woman declines antibiotics in labour, the baby should be observed closely for at least 12 hours
- The risk of the baby becoming unwell is also increased if the baby is born preterm, if the woman develops a temperature in labour, or if the membranes rupture before labour
- If a baby develops signs of GBS infection, they should be treated with antibiotics immediately.

Maternal and fetal risks of GBS infection

Key risk factors for EOGBS are (Hughes, 2017):

- Maternal GBS carriage
- Previous baby with GBS disease
- GBS bacteriuria during the pregnancy
- Preterm birth
- Prolonged rupture of membranes
- Suspected maternal intrapartum infection, including suspected chorioamnionitis or pyrexia in labour.

What are the options to reduce the risk of EOGBS?

Most developed countries offer all pregnant women planning a vaginal birth a test for GBS carriage at around 35-37 weeks gestation. IAP is offered to those who test positive. Countries adopting this approach have seen their rates of EOGBS fall by 71-86% (Andreu et al, 2003; Daley and Isaacs, 2004; Jordan et al, 2008; Albouy-Llaty et al, 2012; Hung et al, 2018).

The UK is unusual in using a risk-factor approach to identify which women should be offered IAP (LeDoare et al, 2017), but this has led to an increase in EOGBS. The risk factors described by RCOG are poor predictors for which babies will develop EOGBS, with two-thirds having none (Heath, 2016). This is probably the main reason why the UK EOGBS prevention strategy has failed.

A pilot study investigating antenatal screening for GBS and IAP in London in 2014-5 reported an 80% reduction in EOGBS in babies born to screened women (Rao et al, 2017a). Once the trial was stopped and the risk-based strategy reinstated, the rate returned to the pre-pilot study level (Rao et al, 2017b).

Worldwide, the risk of EOGBS in a baby born to a woman positive for GBS at birth is 1-2% in the absence of IAP (Russell et al, 2017). In the UK, it is estimated that 1 in every 400 babies born to women carrying GBS develops EOGBS (Hughes et al, 2017).

When should IAP be offered?

RCOG recommends that IAP should be offered when the mother:

- Has previously had a baby who developed GBS disease
- Is in confirmed preterm labour
- Has had GBS detected during the current pregnancy from a vaginal and/or rectal swab test performed by an accredited laboratory
- Is pyrexial (38°C or greater) or has other signs of maternal infection in labour
- Has had GBS bacteriuria detected during the current pregnancy (women with a growth of greater than 105 cfu/ml during pregnancy should receive antibiotics at the time of diagnosis as well as IAP)
- Carried GBS in a previous pregnancy (in this scenario, she should be offered the option of IAP, or a GBS-specific enriched culture medium (ECM) test in late pregnancy with IAP offered if testing positive)

If the woman accepts IAP, it should be given as soon as possible once labour starts and at regular intervals until birth (National Institute for Health and Care Excellence (NICE), 2012). IAP given to women positive for GBS during the current pregnancy reduces the risk of EOGBS by around 90% (Lin et al, 2001). Penicillin G is the antibiotic recommended for IAP. For women allergic to penicillin, a cephalosporin should be used unless she has had a severe allergic reaction, in which case vancomycin should be used. Clindamycin is not recommended as the UK resistance rate is high (Hughes et al, 2017).

Can we prevent LOGBS?

The key risk factors for LOGBS are preterm birth, maternal GBS carriage and young maternal age (Pintye et al, 2016). Until a vaccine is available, there are no known ways of preventing LOGBS. Hand hygiene is essential before handling a baby under 3 months of age (although this is not GBS-specific).

Although LOGBS is less common, parents should be aware of symptoms and should seek an urgent medical review if the baby shows any of these (Group B Strep Support (GBSS), 2018). With prompt and appropriate treatment, most babies will make a full recovery.

Myth-busters

Once a carrier, always a carrier?

If a woman was positive for GBS in a previous pregnancy, she should be offered a GBS-specific ECM test at 35-37 weeks' gestation to determine carriage status close to birth (Hughes et al, 2017). GBS carriage can be intermittent, but GBS status

usually changes over months, not hours or days (Yancey et al, 1996). The result of an ECM test is highly predictive GBS carriage status for the next 5 weeks, during which most will give birth. If the pregnancy continues more than 5 weeks, the result is less predictive, and a re-test may be considered (Public Health England, 2015).

Any vaginal swab test will do?

The GBS-specific ECM test is different from a standard swab test for vaginal discharge (using a standard test, GBS will be isolated in 40-50% of cases where the woman is positive). The ECM test requires swabs taken from both the low vagina and rectum, with samples processed as soon as possible using enriched culture media (GBSS and RCOG, 2017). Midwives should specifically state 'test for GBS' on the request form (Hughes et al, 2017).

Should carriers avoid membrane sweeping, water birth and induction of labour?

There are no contraindications to membrane sweeping, water birth or induction of labour in women who are GBS carriers.

Will elective caesarean section and intrapartum vaginal cleansing prevent EOGBS?

Intrapartum vaginal cleansing has no impact on GBS infection in babies. Caesarean sections are not recommended as a method of preventing EOGBS, as GBS can cross intact amniotic membranes to cause infection in the fetus. There are risks associated with caesarean sections for the woman and baby, and IAP is both highly effective and low-risk. IAP should be offered to GBS-positive women undergoing a caesarean section if labour begins or her membranes have ruptured, and should be continued until the surgery. Additional IAP specifically against GBS is not recommended in the absence of labour or ruptured membranes (Hughes et al, 2017).

RCOG recommends informing all women about the risks of GBS

The first recommendation in the RCOG's latest guideline is that all pregnant women should be provided with an appropriate information leaflet about GBS (Hughes et al, 2017).

What should midwives do if a woman requests screening and does not qualify for testing?

RCOG (Hughes et al, 2017) recommends that if a woman tested positive for GBS in a previous pregnancy, she should be offered either IAP in her next labour, or a GBS-specific ECM test 3-5 weeks before her due date and IAP if she tests positive. This should be available on the NHS.

RCOG states that a maternal request is not an indication for a GBS-specific ECM test, since the UK National Screening Committee (2008) does not recommend universal bacteriological screening of all pregnant women for GBS.

With greater awareness of GBS in pregnancy, more women may request testing. Some will qualify for ECM testing on the NHS but others may want to test privately. It is important for midwives to provide accurate information and signpost women to where they can get the correct test. There are a number of private tests available that provide GBS-specific ECM results, processed in accredited laboratories following the PHE standard.

Summary

Midwives are vital to ensuring that expectant parents receive information about GBS, understand the issues and the limitations of NHS services, and can make informed decisions about what is right for them and their babies.

To do this, midwives need to be well informed themselves. GBSS and RCOG's (2017) leaflet provides information about GBS during pregnancy, labour, and in the early days post-birth. Since not every health professional will have time to read the full 26-page guideline (Hughes, 2017), GBSS (2017) has produced an 8-page summary, which, as Trusts incorporate the new guidelines, could prove a useful tool.

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Andreu A, Sanfeliu I, Vinas L et al. Decreasing incidence of perinatal group B streptococcal disease (Barcelona 1994-2002). Relation with hospital prevention policies. Enferm Infecc Microbiol Clin 2003; 21(4):174–9. [Article in Spanish]

Albouy-Llaty M, Nadeau C, Descombes E, Pierre F, Migeot V. Improving perinatal Group B

streptococcus screening with process indicators. J Eval Clin Pract. 2012; 18(4): 727-33

Daley AJ, Isaacs D, Australasian Study Group for Neonatal Infections. Ten-year study on the effect of intrapartum antibiotic prophylaxis on early onset group B streptococcal and Escherichia coli neonatal sepsis in Australasia. Pediatr Infect Dis J 2004; 23(7):630–4

Daniels J, Gray J, Pattison H et al. Intrapartum tests for group B streptococcus: accuracy and acceptability of screening. BJOG. 2011; 118: 257-65

Group B Strep Support. Updated Group B Strep Guidelines. Key points for health professionals. 2017. http://bit.ly/2t6CkQ3 (accessed 16 June 2018)

Group B Strep Support and Royal College of Obstetricians and Gynaecologists. Group B Streptococcus (GBS) in pregnancy and newborn babies. 2017. http://bit.ly/2M3Almj (accessed 16 June 2018)

Group B Strep Support. Late onset GBS infection (age 7-90 days). 2018 . http://bit.ly/2K2VgJ5 (accessed 16 June 2018)

Heath P. Group B streptococcal disease in infants. BPSU Annual Report 2015-2016. London: British Paediatric Surveillance Unit; 2016

Hughes RG, Brocklehurst P, Steer PJ, Heath P, Stenson BM on behalf of the Royal College of Obstetricians and Gynaecologists. Prevention of early-onset neonatal group B streptococcal disease. Green-top Guideline No. 36. BJOG 2017; 124:e280–e305

Hung LC, Kung PT, Chiu TH et al. Risk factors for neonatal early-onset group B streptococcus-related diseases after the implementation of a universal screening program in Taiwan. BMC Public Health. 2018; 18(1): 438

Jordan HT, Farley MM, Craig A et al. Revisiting the need for vaccine prevention of late-onset neonatal Group B Streptococcal Disease: A multistate, population-based analysis. Pediatr Infect Dis J. 2008; 27(12): 1057-64

Le Doare K, O'Driscoll M, Turner K et al. Intrapartum antibiotic chemoprophylaxis policies for the prevention of Group B Streptococcal Disease worldwide: systematic review. Clin Infect Dis. 2017; 65(suppl_2): S143-51

Lin FY, Brenner RA, Johnson YR. The effectiveness of risk-based intrapartum chemoprophylaxis for the prevention of early-onset neonatal group B streptococcal disease. Am J Obstet Gynecol. 2001; 184(6): 1204-10

Madrid L, Seale AC, Kohli-Lynch M et al. Infant Group B Streptococcal disease incidence and serotypes worldwide: systematic review and meta-analyses. Clin Infect Dis. 2017; 65(suppl_2): S160-72

Muller-Pebody B, Johnson AP, Heath PT et al. Empirical treatment of neonatal sepsis: are the current guidelines adequate? Arch Dis Child Fetal Neonatal Ed. 2011; 96:F4-8

National Institute for Health and Care Excellence. Neonatal infection (early onset): antibiotics for prevention and treatment [CG149]. 2012. https://www.nice.org.uk/guidance/CG149 (accessed 18 June 2017)

Pintye J, Saltzman B, Wolf E, Crowell CS. Risk factors for late-onset Group B Streptococcal disease before and after implementation of universal screening and intrapartum antibiotic prophylaxis. J Pediatric Infect Dis Soc. 2016; 5(4): 431-8

Public Health England. UK Standards for Microbiology Investigations: Detection of Carriage of Group B Streptococci. London: PHE; 2015

Rao G, Nartey G, McAree T et al. Outcome of a screening programme for the prevention of neonatal invasive early-onset group B Streptococcus infection in a UK maternity unit: an observational study. BMJ Open. 2017a; 7(4): e014634

Rao G, Townsend J, Stevenson D et al. Early-onset group B Streptococcus (EOGBS) infection subsequent to cessation of screening-based intrapartum prophylaxis: findings of an observational study in West London. BMJ Open. 2017b; 7(11): e018795

Russell NJ, Seale AC, O'Sullivan C et al. Risk of early-onset neonatal Group B Streptococcal disease with maternal colonization worldwide: systematic review and meta-analyses. Clin Infect Dis. 2017; 65(suppl_2): S152-9

Seale AC, Bianchi-Jassir F, Russell NJ et al. Estimates of the burden of Group B streptococcal disease worldwide for pregnant women, stillbirths, and children. Clin Infect Dis. 2017;65(suppl_2): S200-19.

UK National Screening Committee. Group B Streptococcus: The UK NSC Policy on Group B Streptococcus screening in pregnancy. 2008. www.screening.nhs.uk/groupbstreptococcus. (accessed 16 June 2018)

Yancey MK, Schuchat A, Brown LK, Ventura VL, Markenson GR. The accuracy of late antenatal screening cultures in predicting genital group B streptococcal colonization at delivery. Obstet Gynecol. 1996; 88: 811–5

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