FOR WOMEN WHO CARRY GBS

You have probably been told you carry group B streptococcus (GBS). This is perfectly natural and normal – up to one in three adults carries GBS in the intestines and one in four women carries it in the vagina.

You may have heard that GBS can cause infection in newborn babies. This is true, but the bacteria don’t normally do this and just because you carry GBS does not mean that you (or your baby) will become ill. And if you know you carry GBS during pregnancy, that’s great because you can make the chance of your baby developing a GBS infection much smaller. Read on to find out how small the risk of GBS is to your baby and also to find out what to look out for during labour, birth and the first hours, days and weeks of your baby’s life.

The vast majority of babies born to women who carry GBS do not develop GBS infections. Using the information in this leaflet significantly reduces the likelihood of your baby developing GBS infection. Pregnancy can usually be managed so babies born to women who carry GBS are protected and born free from GBS infection.

You will have lots of questions and will need to talk to your health professionals about your circumstances. This leaflet has been put together with the help of our medical experts and other families to help you when planning your pregnancy, labour and baby’s birth, but is not a substitute for discussions with your doctors.

This leaflet gives details on:
- how best to stop babies developing GBS infections;
- what the symptoms of GBS infection are; and
- what is currently the most effective method of stopping GBS infections in newborn babies.

The information in this leaflet is based on our medical panel’s knowledge and on published research. Your health professionals may not have as comprehensive knowledge or experience, so share this leaflet with them. Sharing information about GBS with those who can make a difference in preventing GBS infection is vital.

Many busy health-care professionals are unaware how successful the preventative measures can be. Please help change this by displaying our posters on notice boards in hospitals, GP surgeries, etc. Our materials aren’t copyrighted: please download them from our website and give them to your health professionals.

Group B Strep Support is a national charity offering information and support to parents affected by GBS and to health professionals. We raise awareness of how most GBS infections in newborn babies can be prevented and are generating funds for continued research into GBS prevention. We rely on donations from parents and other interested parties to fund our activities.

Please contact us if you would like to:
- make a donation;
- join GBSS, be kept up to date with developments and receive our newsletter; or
- receive more information.

Group B Strep Support
preventing GBS infection in newborn babies

P O Box 203, Haywards Heath RH16 1GF
Tel/answerphone: 01444 416176 (phones manned weekdays 9.00 am to 3.00 pm)
Fax: 0870 803 0024 (calls charged at national rates)
E-mail: info@gbss.org.uk

www.gbss.org.uk
Contents

WHAT IS GROUP B STREPTOCOCCUS? ................................................................. 3
How does a baby get a GBS infection? 3
GBS colonisation 3
GBS infection 3
Current UK Guidelines 4
UK Tests for GBS carriage 5
Future Prevention 7

MINIMISING THE RISK OF GBS INFECTION IN NEWBORN BABIES .................. 8
What increases a newborn baby’s risk of GBS infection? 8
How can you minimise the risk of your baby becoming infected? 8

WHAT YOU CAN DO DURING PREGNANCY ............................................... 11
Women at increased risk of premature labour/birth 11
Caesarean sections 12
Prelabour & preterm rupture of membranes 12

ONCE LABOUR STARTS OR YOUR WATERS BREAK .................................... 14
When to go to hospital 14
Preterm labour 14
At hospital 14
The birth you’d planned 14

YOUR BABY HAS BEEN BORN - CONGRATULATIONS! ............................. 15

GBS INFECTION ......................................................................................... 17
Types of GBS infection 17
Treatment of GBS infection 18
Twins, triplets or more 18
Reinfection in babies 18

SOME FREQUENTLY ASKED QUESTIONS: .................................................. 18

OTHER INFORMATION ............................................................................... 25
GBS statistics 25
Key medical references 25
GBSS Medical Advisory Panel 26

GBSS Leaflet Order Form ........................................................................... 27

Membership Application Form .................................................................. 29
WHAT IS GROUP B STREPTOCOCCUS?

GBS stands for Group B Streptococcus (Streptococcus agalactiae), which is a common type of the Streptococcus bacterium. Around a third of all men and women in the UK carry GBS in their intestines without symptoms. GBS is a normal body commensal (an organism that lives on another without harming it) that, once present, cannot be eradicated from the body. Carrying GBS is perfectly natural and normal.

GBS often colonises the vagina, although carriage here may be intermittent. At any one time, the vaginas of approximately a quarter of all women of childbearing age are colonised with GBS. The most common source of the bacteria causing GBS infection in newborn babies is the mother’s vagina before or, less frequently, during delivery.

Thousands of newborn babies each year are exposed to GBS without ill effects - just why some babies are susceptible to the bacteria and develop infection (typically septicaemia, pneumonia and/or meningitis) and others don’t is not fully understood.

How does a baby get a GBS infection?

A baby develops GBS infection after it has been exposed to the bacterium. Where this exposure comes from may vary: if a baby has symptoms within first six days of birth (early-onset GBS infection), the GBS bacteria will most probably have been passed from the mother to her baby before or during delivery. Such transmission occurs if the mother is carrying GBS in her vagina at the time of delivery, and the bacteria either crossed the amniotic membranes or was passed to the baby during delivery.

If a baby shows symptoms of GBS infection after age six days (late-onset GBS infection), the bacteria may have been passed to the baby from the mother, but not necessarily. Some research showed that over 50% of cases of late-onset GBS infection were the same strain of GBS as the mother was carrying. Where the rest came from was unclear, but since GBS is passed from one person to another through skin to skin contact, someone who touched him/her will have exposed the baby to GBS.

Being exposed to GBS is perfectly normal and most babies exposed to GBS do not develop infection – they successfully fight off the bacteria. But there is no way of knowing which babies will be able to do this and which won’t.

GBS colonisation

GBS is a very common naturally occurring bacterium – it lives in the intestines of about a third of the population (men and women) and, once present, cannot reliably be eradicated.

GBS colonisation is when the bacteria live in the body without causing any harm or symptoms. Colonisation with GBS is normal and does not need treatment. People who have the bacteria in their bodies in this way are described as being ‘colonised’ or ‘carriers.’

GBS colonise the vagina in up to 25% of women, again without causing any symptoms - it does not cause increased vaginal discharge, soreness, painful intercourse, etc. Around 5% of the time, GBS may colonise the back of the throat.

GBS colonisation may be intermittent and the duration of carriage is unpredictable. Outside of the intestines, GBS colonisation may appear to be cleared by antibiotics but these areas will usually become recolonised, as antibiotics do not eradicate the GBS in the gut.

GBS may be passed from one person to another through hand contact, kissing, close physical contact, etc. As GBS is often found in the vagina and rectum of colonised women, it is commonly passed through sexual contact. There are no known harmful effects of carriage itself and, since the GBS bacteria do not cause genital symptoms or discomfort, GBS is not a sexually transmitted disease, nor is GBS carriage a sign of ill health or poor hygiene. No-one should ever feel guilty or dirty for carrying GBS – it’s normal.

GBS infection

GBS occasionally causes infection, most commonly in newborn babies around the time of birth, in the elderly, people with serious underlying medical conditions that impair the immune system and women during pregnancy or after birth. Around half of all GBS infections occur in babies aged less than one month and nearly all of the remainder occur in adults.

GBS infection is when the bacteria are actively causing disease directly by damage to cells or indirectly by the toxins (poisonous substances) they release and is diagnosed when GBS is grown.

GBS infection in newborn babies is relatively uncommon although the actual incidence of GBS infection in newborn babies in the UK is unclear - it is unlikely now that we will ever know the true figure, given the difficulty both of obtaining full...
actual incidence data and of knowing how much prevention is already occurring which is reducing the actual incidence figures. However, realistic estimates of the total incidence of GBS infection in babies in the UK are needed so that realistic estimates of the risks of newborn developing GBS infection can be made.

The British Paediatric Surveillance Unit of the Royal College of Paediatricians and Child Health undertook a study (Heath PT, Balfour G, Weiner AM, Efstatiou A, Lamagni TL, Tighe H, O’Connell LAf, Cofferekaj M, Verlander NQ, Nicoll A & McCartney AC on behalf of the PHLS GBS Working Group. Group B streptococcal disease in UK and Irish Infants <90 days of age. Lancet 2004 Jan 24, Vol 363(9405);292.) to determine the number of babies born in the UK and Republic of Ireland who develop GBS infection under age 90 days between 1st February 2000 and 28th February 2001. This found 0.7 per 1,000 babies born in the UK and Republic of Ireland developed culture-proven GBS infection, although the researchers admitted their figures under-reported the actual incidence of culture-proven cases of at least 0.9/1000 babies born. Another recent London study (Luck S, Tony M, d’Agapeyeff K, Pitt A, Heath P, Breathnach A & Bedford Russell A. Estimated early-onset group B streptococcal neonatal disease. Lancet, 2003 Jun 07; 361(9373); 1953-1954) estimated the incidence of culture-proven plus suspected cases of GBS infection to be 3.6 per 1,000 babies born, increasing the incidence of infection figure significantly – and both of these studies were conducted at a time when increasingly hospitals either had or were introducing protocols against GBS infection in babies.

GBSS’ medical advisory panel has looked at the available data for the UK and considers an incidence of GBS infection in newborn babies, where no preventative action is taken, of one in every 1,000 babies born to be a conservative estimate of the situation in the UK. Assuming an annual birth rate of approximately 700,000 babies for the UK, we estimate that GBS causes infection in at least 700 babies each year in the UK … but most of these infections are preventable.

Thousands of healthy babies are born every year to women who carry GBS, with no ill effects. However, carrying GBS at delivery does increase the risk of the baby developing GBS infection to around one in every 300 babies born (where no preventative measures are taken): 299 times out of 300, the mother’s and baby’s defence mechanisms successfully prevent infection developing. The risk of the baby developing a GBS infection really is quite small.

But if you know you carry GBS, you are bound to have some questions, particularly about how to minimise the risk of your baby developing a GBS infection. Until either your labour starts, there is nothing you can do which is known to prevent GBS infecting your baby. However, once labour starts, intravenous (through a vein) antibiotics given to you until your baby is born are the best way to prevent most GBS infections in newborn babies. This reduces the risk from approximately one baby developing GBS infection in every 300 babies born to women carrying GBS where no preventative measures are taken, to less than one in 6000 – a massive difference.

**Current UK Guidelines**

**NATIONAL INSTITUTE FOR CLINICAL EXCELLENCE (NICE)**

NICE’S Guidelines CG6 “Antenatal Care – Routine care for health pregnant women”, October 2003 (http://www.nice.org.uk/pdf/CG6_ANC_NICEguideline.pdf point 10.9) recommend that “pregnant women should be offered evidence based information and support to enable them to make informed decisions regarding their care … addressing women’s choices should be recognised as being integral to the decision making process.” And yet information on GBS is not routinely given to pregnant women – Most women are not informed about GBS (a survey conducted by Pregnancy & birth magazine found only 5% of the 1,000 pregnant women and new mothers surveyed had been informed about GBS either at an ‘antenatal class’ or ‘by their GP’) as part of their routine antenatal care, nor are most involved in deciding whether they should be tested for GBS carriage – they are simply not told it is possible.

The guidelines also recommend antenatal appointments for all pregnant women at 36 weeks’ gestation – ideal for reliable testing for GBS colonisation. But NICE don’t recommend such testing, saying “evidence of its clinical effectiveness and cost effectiveness remains uncertain.” However, all the evidence clearly demonstrates the clinical effectiveness of testing pregnant women for GBS and offering intravenous antibiotics in labour to higher-risk women – such interventions dramatically reduce the incidence of GBS infection in newborn babies and countries which have introduced such programmes have seen in their incidence of GBS infection fall dramatically, including in the USA, Australia, New Zealand, Belgium, France, Spain and Italy. The cost effectiveness issue is less clear-cut although a cost benefit study published in September 2007 indicated testing low risk women, plus antibiotics given to high-risk women and those found to carry GBS was a more cost-effective option than current practice- indeed routine testing for GBS could save the Government £37 million a year.

Disappointingly, although a review of the guidelines was published in March 2008, no updates were made to the sections relating to GBS, despite this being suggested by a variety of clinicians, health professionals’ organisations and by GBSS. This guideline is next due for review in March 2010.
ROYAL COLLEGE OF OBSTETRICIANS & GYNAECOLOGISTS (RCOG)

RCOG issued their Green Top Guideline No 36 "Prevention of early onset neonatal Group B streptococcal disease" in November 2003 (www.rcog.org.uk/resources/Public/pdf/GroupB_strep_no36.pdf). This important document is similar in many respects to the guidelines GBSS has been promoting since 1996, in that they quote likely incidences of GBS infection based on the presence of recognised risk factors and recommend intravenous antibiotics in labour for women in higher risk groups. However, the guidelines use the minimum incidence figures quoted in the Heath paper mentioned in GBS infection above and, therefore, not only underestimate the true incidence of GBS infection but, inevitably, also underestimate the risks to babies from GBS infection.

GBSS was happy to endorse these guidelines which, when fully implemented in the UK, will prevent the majority of lethal cases of GBS infection in newborn babies. We are currently working with national bodies to refine and improve the recommendations - GBSS views the guidelines as a key starting position as even more GBS infections could be prevented through adopting a culture-testing approach to GBS prevention as described below.

In 2007, RCOG published the findings of an audit to evaluate practice in UK obstetric units against their recommendations (see http://www.rco.org.uk/index.asp?PageID=1301). The audit started out by comparing international guidelines for early-onset GBS disease : highlighting the fact that, in contrast to the UK and New Zealand guidelines, most of the other countries surveyed recommended identifying women for intravenous antibiotics in labour by offering sensitive tests to all pregnant women. The audit reviewed hospitals’ protocols against GBS infection in newborn babies – of the 161 UK units which submitted their protocol, 4 units didn’t even have a protocol for GBS, of those that did, 35% didn’t mention the 2003 RCOG guideline and even when some of the recommendations were consistent with the RCOG guideline, only a minority of units had protocols that were entirely consistent with the guideline.

The audit reviewed hospitals’ practice as well - significant variation in practice was identified between different hospitals, between the three professions (obstetrics, midwifery and neonatology) and even between clinicians in the same unit! Variation was found in all aspects of the care offered to pregnant women, particularly with regard to which risk factors were used to identify who would be offered a bacteriological swab for GBS, the timing of swabs and the site(s) from which it/they are taken, which risk factors were used to identify who should be offered intravenous antibiotics in labour, which antibiotics and in what doses/timings are used and how newborn babies at risk of early-onset GBS disease are managed. Furthermore, most staff did not know if the Enriched Culture Medium (ECM) method of processing the swabs taken to detect GBS colonisation – which is recognised as optimal by both the RCOG and the Health Protection Agency) was used in their laboratories. At GBSS, we know of only a very few NHS hospitals that use the ECM method.

It is very disappointing that, in nearly 4 years since the RCOG Green Top Guideline on preventing early-onset GBS infection was published, more hospitals haven’t incorporated the recommendations into their own protocols. And, although the audit report made a series of recommendations to improve the situation, no detail was given as to how these would be achieved.

In March 2008, the Royal College of Obstetricians & Gynaecologists started its review process of the Green Top GBS Guideline issued in November 2003 (due for review in November 2006). The review should be completed within approximately two years.

NATIONAL SCREENING COMMITTEE

The National Screening Committee’s current policy position on group B Strep is that screening for this condition should not be offered (www.screening.nhs.uk/groupbstreptococcus). This is due for review on 31 December 2009. .

In May 2006, the UK National Screening Committee launched their GBS online learning package. This learning package has been developed to raise awareness of GBS amongst health care professionals. Developed by the Women’s Health Specialist Library (part of the National Library for Health), the learning package is based upon the current UK guidelines published by the Royal College of Obstetricians & Gynaecologists. It is divided into three sections - antenatal; delivery; and postnatal. Within each section there is the option to access an introduction to GBS, different clinical scenarios, a series of quiz questions to test knowledge and a FAQs section. You can access the GBS learning pack, which is primarily aimed at health care professionals, at www.whsl.org.uk/gbs.

UK Tests for GBS carriage

Colonisation of the vagina with GBS produces no symptoms and can be intermittent. To predict with the best accuracy the chances of carrying GBS at delivery, the best time to test for it is between 35–37 weeks of pregnancy. Carrying GBS in the vagina does not automatically mean a baby will develop GBS infection. Even more GBS infections in newborn babies could be prevented by offering all pregnant women sensitive testing at 35-37 weeks and also offering intravenous antibiotics to those found to carry GBS.
There are three tests for GBS carriage available to mothers — one is available on the NHS, usually called an HVS (High Vaginal Swab) or LVS (Low Vaginal Swab) test. The other — called the ECM (Enriched Culture Medium) test is available from a handful of NHS hospitals and privately. The Polymerase Chain Reaction or PCR test is only available from one website in the UK.

Currently, neither the HVS nor LVS test is routinely used to detect GBS carriage in the NHS. Moreover, these tests only detect carriage in up to 50% of women carrying the germ. The ECM test is considered the “Gold Standard” and is the best GBS testing available. It may miss a very small number of women who carry GBS, although it will not give a false positive result. The PCR test has not been validated for use in the UK and therefore GBSS cannot recommend its use.

**What are the tests?**

**The HVS/LVS test** involves taking a swab from the vagina. A positive result with the HVS test is very reliable — however it can give a falsely negative result for up to 50% of women carrying GBS when the test is done — leaving them under the false impression that they are not carrying GBS, and their baby is at no risk. An LVS is slightly more likely to detect colonisation than a HVS, but it is still gives many false negatives.

**The ECM (or Enriched Culture Medium) test** is much more sensitive test at detecting GBS colonisation and is available and from a handful of NHS hospitals and privately (it currently costs around £32 for a postal service). The test involves taking a swab from the vagina and rectum at 35–37 weeks of pregnancy, and posting them back to the laboratory. Earlier testing is not good at predicting GBS colonisation at delivery, and later testing increases the chance that the baby will be born before the result is available. It is important that you discuss this test with your health professional, and ensure they receive a copy of the test results. If done within five weeks of delivery, this test is very sensitive: if you have a positive result for GBS, there is an 87% chance that you will carry GBS at delivery. Similarly, if you have a negative result this is 96% predictive that you will not be carrying GBS at delivery.

**The Polymerase Chain Reaction or PCR test** is being offered in the UK through one website. Although this is believed to be a highly accurate and fast method of detecting GBS colonisation, it not been validated in the UK and therefore GBSS is unable to recommend its use.

**Why test?**

Testing is not essential, but it is the only way to know which babies are more likely to develop GBS infection, so that it can be prevented effectively.

Up to 40% of babies who develop early-onset GBS infection will be born to women whose only risk factor was unknown carriage of GBS around delivery — as GBS carriage is asymptomatic, without testing, these women whose babies are at higher risk can’t be identified.

Research has shown that significantly more early-onset GBS infections can be prevented by using a bacteriological testing strategy, rather than a risk-factor strategy alone.

If a woman carries GBS during her current pregnancy, she can be offered intravenous antibiotics in labour to minimise the risk of GBS infection developing in her newborn baby. And, if she chooses not to have the intravenous antibiotics, then knowledge of her GBS carriage status can still inform the management of her labour and delivery, and the baby’s first hours of life.

**Private Testing**

If a woman would like to have a private ECM test for GBS carriage, we know of only two laboratories in the UK from which this is available.

<table>
<thead>
<tr>
<th>Laboratory</th>
<th>Tel</th>
<th>Fax</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mullhaven Medical Laboratory</td>
<td>01234 831115</td>
<td>01234 831116</td>
<td><a href="mailto:info@mullhaven.co.uk">info@mullhaven.co.uk</a></td>
</tr>
<tr>
<td>The Doctors Laboratory</td>
<td>020 7307 7373</td>
<td>020 7307 7374</td>
<td><a href="mailto:tdl@tdlpthology.com">tdl@tdlpthology.com</a></td>
</tr>
</tbody>
</table>

The pregnant woman contacts either laboratory by phone, fax or e-mail and asks for a GBS Testing Pack. This is usually sent out the same day by first-class post. Once the test pack is received, then the swabs can be taken either by the pregnant woman herself, or by her health professional. Either way, the pregnant woman’s health professional should authorise the test and it is important to ensure that the health professional is also sent a copy of the results — the form allows for this.

The vaginal and rectal swabs should be taken (by the health professional or the pregnant woman) at 35–37 weeks of pregnancy — they can be done earlier but then they may not be as reliable in predicting GBS carriage at delivery. They may be done later, but then there’s an increasing risk that the baby will be born before the test result is available! The swabs are then sent direct to the laboratory (with payment) in the envelope provided as part of the GBS Testing Pack.

The laboratories undertake to have the results available within three working days of receipt of the swabs and to post out the results on that day to the health professional, with if requested a copy to the pregnant woman.
Future Prevention

GBS have been a recognised cause of serious infection in babies since the 1960s in the USA and the 1970s in Europe. Research in the decades following has shed considerable light on how GBS causes this particular type of infection.

Testing

Babies at greatest risk of developing GBS disease are those born to women who carry GBS during labour. Testing women during pregnancy for GBS is currently not done in the UK, largely because of the costs and logistics involved, although a cost benefit study published in September 2007 indicated testing low risk women, plus antibiotics given to high-risk women and those found to carry GBS was a more cost-effective option than current practice- indeed routine testing for GBS could save the Government £37 million a year.

Scientific evidence clearly shows such testing for GBS, using reliable culture methods (not routinely available on the NHS at present, though they are recognised as optimal both by the Royal College of Obstetricians & Gynaecologists and the Health Protection Agency) at 35-37 weeks’ gestation and then offering intravenous antibiotics from the onset of labour or waters breaking to all women colonised with GBS and to those women delivering prematurely or with a history of GBS, is a more effective way of preventing neonatal GBS infections than relying on risk factors alone. One paper estimated that a risk-factor approach would prevent 50-60% of GBS infection in babies, whereas a testing approach giving intravenous antibiotics in labour to women found to be GBS positive, plus to those delivering prematurely or with a history of GBS infection, would prevent 80-90% of GBS infection in babies.

The charity’s view is that sensitive testing should be offered to all low-risk women late in their pregnancy. Until it is, the charity recommends a risk-factor approach that if implemented, although not as effective as a testing approach, would still prevent the majority of GBS infections developing in newborn babies.

GBS Vaccine

Most GBS infections in newborn babies can be prevented and the focus in this paper is on stopping the preventable infections developing in higher-risk babies and their mothers. However, GBS infection also strikes babies who appear not to be ‘at risk’ at birth – approximately 40% of all cases of neonatal GBS infection occur in babies where there are no apparent risk factors, apart from GBS colonisation in the mother – which is usually unknown.

Significant effort around the world is being put into the development of a vaccine which, one day, will prevent almost all GBS infections in babies - not just those in ‘high-risk’ babies, but also those GBS infections which may not be prevented with antibiotics in labour: preterm babies and late-onset GBS infection, as well as preventing the less common adult GBS infection in mothers around the time of delivery, in the elderly and people with suppressed immune systems.

Considerable advances have been made in the vaccine field but a vaccine is still not ready for use: all the existing candidates still have significant technical problems associated with them: GBS are classified on the basis of type-specific capsular polysaccharides - nine serotypes have been identified: Ia, Ib, II, III, IV, V, VI, VII and VIII. The predominant serotypes have changed over time, vary in different geographic regions, and can be associated with different forms of the disease, so it’s important for a vaccine to be effective against all or at least most of the most virulent serotypes. .

However, it may be that science is not the major stumbling block for developing a GBS vaccine – there may also be concern about litigation which could make potential funders reluctant to sponsor the research. A recent paper by the Medical Screening Society’s Working Group on GBS disease demonstrates the strong case for a vaccine against GBS, calling for a trial to be undertaken with all urgency (Law MR, Palomaki G, Alfrevic Z, Gilbert G, Heath P, McCartney C, Reid T, Schrag S on behalf of the Medical Screening Society Working Group on GBS disease. The prevention of neonatal group B streptococcal disease. J Med Screen 2005;12:60-68), a view GBSS fully supports.

Even if an effective and multivalent GBS vaccine were developed in the next year ago, it would probably take another decade or so to become widely available. Until it is, we have the technology to prevent most GBS infections in newborn now by offering sensitive testing to women late in their pregnancy and offering intrapartum antibiotics to women whose babies are at higher risk of GBS infection.
MINIMISING THE RISK OF GBS INFECTION IN NEWBORN BABIES

What increases a newborn baby’s risk of GBS infection?
The most common source of the bacteria causing GBS infection in newborn babies is the mother’s vagina before or during delivery. However, most babies who are exposed to the GBS bacteria do not develop infection – they successfully fight off the bacteria. But, ahead of time, there is no way of knowing which babies will be able to do this and which won’t.

There are five situations where a baby is more likely to be exposed to GBS and run the risk of possible early-onset GBS infection. Each of the risk factors shown in the panel below increases the risk of GBS infection in a newborn baby.

RISK FACTORS FOR GBS INFECTION IN NEWBORN BABIES

- Mothers who have previously had a baby infected with GBS – risk is increased 10 fold
- Mothers who have been shown to carry GBS in this pregnancy or GBS has been found in the urine at any time during this pregnancy – risk is increased 4 fold
- Any of the following clinical risk factors – risk of GBS infection is increased 3 fold
  - Labour starts or membranes rupture before 37 weeks of pregnancy is completed (i.e. preterm).
  - Where rupture of the membranes if prolonged: more than 18 hours before delivery.
  - Where the mother has a raised temperature* during labour of 37.8°C or higher.
  - *If a woman has an epidural, a slightly raised temperature may be of less significance than in a woman with no epidural.

The chance a newborn baby will develop GBS infection for a woman not known to carry GBS and where no preventative intravenous antibiotics are given in labour is around one in every 1,000 babies. Most cases of early-onset GBS infection and resultant deaths follow deliveries with one or more of the above risk factors.

For a woman carrying GBS at delivery with no other risk factors and receiving no intravenous antibiotics in labour, the chance her baby will develop a GBS infection rises to approximately one in 300. If this same colonised pregnant woman is given intravenous antibiotics from the start of labour until delivery, that risk falls to less than one in 6,000.

Simply carrying GBS previously, without a positive test result this pregnancy, does not mean a woman should be offered intravenous antibiotics in labour unless one or more other risk factors are also present.

How can you minimise the risk of your baby becoming infected?
Preventing GBS infection is better than treating it – waiting to give antibiotics to the baby until after delivery will sadly sometimes be too late. Clinical randomised trials have proven that most GBS infections in newborn babies can be prevented by giving intravenous antibiotics to women whose babies are at increased risk from the onset of labour or waters breaking until delivery.

The data on the time it takes for the intravenous antibiotics to be effective is limited. Research shows that antibiotic penetration of the amniotic fluid seems only to reach a maximum at two hours and, preferring to be conservative, GBSS therefore recommends at least four hours of the intravenous antibiotics before delivery, where possible and, ideally, the pregnant woman will have received two or more doses before delivery. However, lesser times have proved beneficial: something is better than nothing. If only two hours administration is possible, this may be sufficient and should give considerable reassurance.

PREVENTION STRATEGY
To stop as many cases of GBS infection in newborn babies as possible, pregnant women in all of the above higher-risk situations should be given intravenous antibiotics in labour for at least four hours before delivery. Some women will prefer not to have the antibiotics, especially if their baby’s risk is only slightly increased, as the intravenous antibiotics would inevitably complicate an otherwise natural birth, plus antibiotics are associated with rare but significant side-effects (see page 22). The risk of a GBS infection in the baby must be balanced against the wishes and beliefs of the woman in labour and against the risk of her having an adverse reaction to the antibiotics.

As yet, there are no known methods for preventing late-onset GBS infections that develop after the baby is six days old.
Group B Strep Support

Adopting the following six key recommendations for preventing GBS infection in newborn babies – even without widespread reliable testing women for GBS carriage late in pregnancy - could stop at least 60% of GBS infection in newborn babies and 70% of resulting deaths:

**KEY PREVENTION RECOMMENDATIONS:**

Key to these guidelines is the use of intravenous antibiotics, which has proven to be very effective in preventing GBS infections in newborn babies if given from the start of labour or waters breaking until delivery. The use of any drug, including antibiotics, is not without risk however, so please discuss antibiotic options with your healthcare professional to make the best decision for you and your baby.

Our medical advisory panel’s key recommendations for preventing GBS infection in newborn babies are:

**Women at risk**

**Women at high risk should be strongly advised** to have intravenous antibiotics immediately at onset of labour until delivery. **At high risk means:**

- Women with GBS and another risk factor
- Women who may/may not have GBS, but have multiple risk factors
- Women who have had a previous baby infected with GBS
- Women with a fever during labour

**Women at increased risk should be offered** intravenous antibiotics immediately at onset of labour through to delivery. **At increased risk means:**

- Women who are known to carry GBS and do not have other risk factors
- Women who do not know whether they carry GBS but have one other risk factor not mentioned above

**Treatment approaches**

**Intravenous antibiotics against GBS infection in the baby should be given to the mother for at least 4 hours before delivery if possible** (if only 2 hours is possible, this may be sufficient and should give considerable reassurance)

**Intravenous antibiotics recommended for women in labour are:**

- **Penicillin G**: given as 3g (or 5MU) intravenously at first and then 1.5g (or 2.5MU) at 4-hourly intervals until delivery
- For women allergic to penicillin: **Clindamycin** 900 mg intravenously every 8 hours until delivery

Where infection of the membranes is diagnosed or suspected or where there is preterm prolonged rupture of membranes, broad-spectrum intravenous antibiotics should be given which include adequate GBS cover.

**IF YOU ARE ALLERGIC TO PENICILLIN OR ANY OTHER ANTIBIOTIC, YOU MUST TELL YOUR HEALTH PROFESSIONALS**

**Care after birth**

Babies born to mothers at increased/high risk who **HAVE received antibiotics for 4 hours before delivery should be:**

- carefully assessed by a paediatrician – if completely healthy no antibiotics for the baby are required. A period of monitoring (12-24 hours) may be appropriate for those at highest risk of infection.

Babies born to mothers at increased/high risk who **HAVE NOT received antibiotics for 4 hours before delivery should be:**

- Examined thoroughly and investigated by a paediatrician as appropriate.
- Started on intravenous antibiotics until it is known that the baby is not infected, unless the baby is completely well as determined following a robust baby examination carried out by a trained individual.

Implementing these recommendations could reduce GBS infection in newborn babies by 60% and deaths from GBS in babies by 70%.
These recommendations will need periodic reappraisal to incorporate advances in technology, new research or other refinements but are we believe the most appropriate for Britain in the light of all data available at present.

Paediatric Prevention – EOGBS

With any policy that involves treating some women with antibiotics following the start of labour to prevent GBS infection, a strategy for the subsequent management of the newborn baby is required. This flowchart shows GBS’s recommended paediatric prevention strategy against early-onset GBS infection:

**Signs of possible infection in baby or mother**
- Yes
  - Baby examined thoroughly by a paediatrician
  - Full work up
  - Intravenous antimicrobial therapy
  - Review at 48 hours
- No

**Babys gestational age less than or equal to 35 weeks of pregnancy**
- Yes
  - Baby examined thoroughly by a paediatrician
  - Full work up
  - Intravenous antimicrobial therapy unless a robust examination determines he/she is completely healthy
  - Review at 48 hours
- No

**Risk factor(s) present and duration of maternal intravenous antibiotics pre-delivery less than four hours**
- Yes
  - Baby examined thoroughly by a paediatrician
  - Full work up
  - Intravenous antimicrobial therapy unless a robust examination determines he/she is completely healthy
  - Review at 48 hours
- No

**Risk factor(s) present and duration of maternal intravenous antibiotics pre-delivery at least four hours AND mother with no signs of infection**
- Yes
  - No work up
  - Baby discharged after careful assessment
  - Parenteral awareness of early signs of infection and given handout about GBS
- No

**Baby Work Up Tests:**
- Essential:
  - Full blood count (FBC)
  - C reactive protein (CRP) two tests, 12-24 hours apart
  - Blood culture; and
  - Two smears (e.g. choanal and perirectal)
- Optional:
  - a urine antigen test
**WHAT YOU CAN DO DURING PREGNANCY**

When you know you are pregnant, ensure the obstetrician in charge of your pregnancy is aware of your full medical history (especially relating to GBS).

Give every health professional a copy of this leaflet or our little ‘GBS & Pregnancy’ leaflet, and make sure they know you carry GBS. (Keep several leaflets with your birth plan, so they’re handy to give out.) Not only are you helping yourself by doing this, you may be helping others too!

Put our ‘GBS Alert’ sticker on the front of your hand-held notes to alert any health professionals that you carry GBS, and that you should be offered intravenous antibiotics as soon as possible once your labour has started. If you haven’t got one of our stickers, contact us and we’ll send one to you. Or ask your midwife or obstetrician – they may have some.

If you want intravenous antibiotics in labour (whether only in certain circumstances or regardless of other risk factors), check that you will be offered them. And remember to **tell your health professionals if you have ever had an allergic reaction to penicillin or any other antibiotic**.

Your obstetrician may be able to complete the necessary hospital form (authorising the intravenous antibiotics immediately on your arrival at hospital in labour) to keep in your notes. This should help you receive the antibiotics as soon as possible, rather than waiting for a doctor’s authorisation after you arrive.

If for any reason you aren’t satisfied with your obstetrician’s response, you may wish to seek a second opinion or even change your obstetrician: your GP can advise you on this. Seeking a second opinion is an accepted practice within medicine.

If you want intravenous antibiotics, make sure your hospital notes clearly detail the circumstances in which you are to receive this preventative medicine. Make sure the obstetrician in charge formally approves this and include the details in your birth plan. Make several copies of your birth plan and obstetrician’s formal approval to include in your own notes and to give to the midwife/midwives looking after you at the antenatal clinic and when you are in labour.

Find out the name(s) of the paediatrician(s) who will look after your baby after birth and give him or her a copy of this leaflet and/or the little ‘GBS & Pregnancy’ leaflet. You might want to check whether they will use our paediatric prevention strategy for treating your baby.

Your midwife and GP will understand if you are more nervous than other pregnant women. So, if there is anything you are unsure of during your pregnancy, check it out with your midwife or GP.

**Women at increased risk of premature labour/ birth**

No antibiotics tested so far can prevent a mother going into premature labour for any reason, including because of GBS.

Current opinion is that a substantial proportion of premature labours may be associated with infection including perhaps as many as 50% of spontaneous labours (i.e. when the baby is not being delivered prematurely for medical reasons). It appears that almost any organism that normally lives in the vagina (and there are many that do) can cause this problem.

There is no way of ‘sterilising’ the vagina, or knowing in advance which organism will cause trouble, which probably explains why antibiotic treatment has not been shown to be effective (we don’t know which antibiotic to give in any specific case before the infection has actually occurred). Techniques to improve the ability of the cervix to keep infection out (such as special stitching techniques) may prove to be more effective in future.

Most obstetricians would agree that a woman who has had a premature labour which may have been caused by infection, with symptoms such as silent dilation or spontaneous premature rupture of membranes, and not caused by other unrelated complications (e.g. severe hypertension, placental abruption, etc.) is at raised risk of having another premature delivery in a future pregnancy.

On a theoretical basis, a course of antibiotics during pregnancy when the baby is at its most vulnerable may be beneficial. The idea that antibiotics may reduce vaginal colonisation with GBS and so reduce the risk of GBS causing preterm labour seems logical since studies suggest a relationship between heavy vaginal colonisation and premature labour. However, there is actually no data to support this. Indeed, a large UK study (the ORACLE trial!) produced no evidence that oral antibiotics prevent preterm labour. [The exception to this is erythromycin given to women whose waters ruptured prematurely: in this circumstance, the erythromycin both delayed delivery and reduced adverse outcomes in the babies.] Research suggests that oral antibiotics given for periods of longer than a week may be harmful to the mother and her baby, increasing antibiotic resistance and colonisation by resistant bacteria. However, there is no evidence that oral antibiotics given for up to a week are harmful.
If on theoretical grounds you want to try to reduce vaginal colonisation with GBS during the period when the baby may be at greatest risk then, in agreement with your doctor, a one-week course of oral antibiotics may be considered. Appropriate drugs include erythromycin (250 mg four times a day for a maximum of seven days) or, amoxycillin\(^2\) (500 mg three times a day for a maximum of seven days). There is no evidence this will be effective, but neither is there any evidence that this will be harmful to you or the baby.


\(^2\)The ORACLE trial found amoxiclav increased the risk of necrotising enterocolitis, a serious bowel disease, in babies and this antibiotic is therefore not recommended during pregnancy. Amoxiclav is a combination of amoxycillin and clavulanic acid. It is the combination that appears to cause problems, there is no evidence at present to suggest that amoxycillin on its own is harmful in this way.

**Caesarean sections**

Caesarean sections are not recommended as a method of preventing GBS infection in the baby. They do not eliminate the risk of GBS infection in the baby, since GBS can cross intact amniotic membranes to set up an infection in the baby (although they do reduce the risk). Furthermore, there are significant risks associated with Caesarean sections; plus the recommended intravenous antibiotics during labour are highly effective and low risk.

Our medical panel’s recommended course of action with regard to GBS and Caesarean sections is as follows:

**Elective Caesareans**

There is no evidence to show intravenous antibiotics are indicated against GBS when a woman known to carry GBS is having an elective Caesarean unless she is in labour or her membranes have ruptured. If a baby is at higher risk of developing GBS infection and the mother is having an elective Caesarean AND is in labour or her waters have broken, she should be offered the recommended intravenous antibiotics as soon as possible after the onset of labour, ideally for at least four hours before delivery.

The baby would only need intravenous antibiotics against GBS infection if born prematurely or if there are signs of possible infection in either the mother or the baby.

**Emergency Caesareans**

If a woman carries GBS and needs an emergency Caesarean, she should be treated as for an elective Caesarean – no intravenous antibiotics are indicated against GBS unless she is in labour. If she is in labour, she should be treated as for a normal labour up until the time when an emergency Caesarean section becomes necessary, when she should be delivered immediately.

The treatment of the baby for GBS would follow the charity’s normal paediatric recommendations.

**Prelabour & preterm rupture of membranes**

Prelabour and preterm rupture of membranes (PPROM) are not usually related to GBS but, as PPROM is a risk factor for GBS infection, the GBS risk must be addressed. Management of PPROM may be complex and requires the input and judgement of the obstetric team. It may or may not include the administration of antibiotics for reasons other than the prevention of GBS infections.

PPROM is a signal that the chance of the baby contracting GBS infection is increased. It is therefore recommended that the mother receive intravenous antibiotics at the onset of labour, which is the only time that research has demonstrated such an intervention is effective. This may be in addition to other oral antibiotics given for other reasons.

This situation is a complex one medically where a number of different approaches can be taken. Our experts suggest the following as a typical approach against GBS infections developing in newborn babies for women whose membranes rupture without other signs of labour, based on their experience and available research, but please remember other interventions may be more appropriate based on the individual case:

**Where the pregnant women is at less than 36 completed weeks of pregnancy:**

Give the pregnant women intravenous penicillin as soon as a diagnosis of labour is made, continuing them for the next 48 hours, regardless of any other oral antibiotics that may be administered;

Discontinue the intravenous penicillin after 48 hours if labour has stopped or the diagnosis turns out not to have been correct; and

Resume intravenous penicillin if any sign of infection appears or the woman is once again diagnosed to be in labour.
WHERE THE PREGNANT WOMAN IS AT 36 OR MORE COMPLETED WEEKS OF PREGNANCY AND IS KNOWN TO CARRY GBS OR ONE OR MORE CLINICAL RISK FACTORS ARE PRESENT:

Administer intravenous penicillin to the pregnant woman immediately, continuing them until the baby is born; and Induce labour.

WHERE THE PREGNANT WOMAN IS AT 36 OR MORE COMPLETED WEEKS OF PREGNANCY IS NOT KNOWN TO CARRY GBS AND NO OTHER CLINICAL RISK FACTORS ARE PRESENT:

As soon as it is apparent that the membranes will have been ruptured for more than 18-24 hours before delivery,

Recommend the induction of labour; and
Offer IV antibiotics to the pregnant woman.

If the woman is allergic to penicillin, then alternatives should be given as stated in the prevention strategy (see page 8), at the recommended doses.
ONCE LABOUR STARTS OR YOUR WATERS BREAK

When to go to hospital
If the circumstances arise in which you want intravenous antibiotics during labour until delivery, for the best protection you should receive them for at least four hours before delivery. However, the earlier they are given the better once labour starts or your membranes rupture. So go to hospital as soon as you suspect your waters have broken or are leaking, or you’re in labour - it would be reasonable for a woman who knows she carries GBS to get to hospital within an hour of this happening.

Phone the labour ward before you leave home to alert them … and tell them that you’ll need the intravenous antibiotics as preventative medicine against GBS. And, when you arrive at hospital, give your notes and birth plan to the midwife, reminding her that you need the intravenous antibiotics because of GBS.

Preterm labour
Although other causes are more common, GBS is a rare cause of preterm labour (labour occurring before 37 weeks’ gestation). The symptoms of preterm labour are, generally, much subtler than those of full-term labour.

In the unlikely event that you need this information, the following are the most common indications of preterm labour:

- tightenings (can feel like the baby moving)
- vaginal spotting
- lower back pain
- change or increase in vaginal discharge
- loss of mucus plug
- pelvic pressure
- loose stools
- menstrual-like cramps
- the most common symptom, in addition to the above, is simply the pregnant woman feels something is not right.

We suggest you have a low ‘let’s check this out’ threshold with regard to any of the above symptoms: if in doubt, contact your midwife or labour ward and explain your concerns (and why you may be more concerned than other pregnant women).

If you are in preterm labour, you need intravenous antibiotics for your baby as soon as possible and the hospital may be able to give you drugs that halt your labour. So get to the hospital as quickly as you can, taking your notes with you. If your labour is very premature (before about 34 weeks’ gestation), your local hospital may need to send you to another hospital with better facilities for dealing with babies born so early.

At hospital
If you want them, the recommended intravenous antibiotics should be given to you as soon as possible after your arrival at hospital. Tell everyone who looks after you in hospital (or ask your partner to) that you carry GBS and (if you do) that you want intravenous antibiotics immediately to protect your unborn baby – keep telling them until you get them. And remember to tell your health professionals if you have ever had an allergic reaction to any antibiotic, including penicillin.

Nothing is totally without risk but, even if it’s a false alarm, it would be reasonable for you to have the antibiotics … and then have them again when it’s for real! If it’s not a false alarm, time is being wasted when you could be protecting your baby.

Once you’ve had two doses of intravenous antibiotics at 4-hourly intervals before your baby’s birth, s/he has had the best protection available from GBS infection. Remind your medical staff you need the antibiotics every four hours until your baby arrives. It’s unlikely you’ll need to be a nuisance but if necessary do: it’s your baby you’re protecting.

The birth you’d planned
Having intravenous antibiotics shouldn’t prevent you from having the birth you’d originally planned. What normally happens is that a cannula (a thin tube) is inserted into a vein, usually in the back of your hand, and remains there until after the baby arrives. The antibiotics are then given to you through this cannula at the required intervals, either by slow injection (over several minutes) or by drip (over half an hour or so). You don’t have to be attached to a drip the whole time – when the antibiotics have gone through, the cannula can be detached from the drip and you’re then free to move around as you wish and to have (almost) the birth you’d planned.
YOUR BABY HAS BEEN BORN - CONGRATULATIONS!

IF YOU'VE RECEIVED AT LEAST FOUR HOURS OF INTRAVENOUS ANTIBIOTICS BEFORE YOUR BABY'S BIRTH.

The risk of your baby developing a GBS infection is still small, but remind the medical staff, especially the paediatrician looking after your baby and the midwife looking after you, that you carry GBS and so your baby has a higher risk of developing GBS infection.

A paediatrician should carefully assess babies born to mothers at increased/high risk who HAVE received antibiotics for 4 hours before delivery – if completely healthy, no antibiotics for the baby are required. A period of monitoring (12-24 hours) may be appropriate for those at highest risk of infection.

And remind them of this when there is a change of staff.

IF YOU DIDN’T RECEIVE AT LEAST FOUR HOURS OF INTRAVENOUS ANTIBIOTICS BEFORE DELIVERY.

The risk of your baby developing a GBS infection is still small, but remind the medical staff, especially the paediatrician looking after your baby and the midwife looking after you, that you carry GBS and so your baby has a higher risk of developing GBS infection.

Babies born to mothers at increased/high risk who HAVE NOT received antibiotics for 4 hours before delivery should be:
- Examined thoroughly and investigated by a paediatrician as appropriate.
- Started on intravenous antibiotics until it is known that the baby is not infected, unless the baby is completely well as determined following a robust baby examination carried out by a trained individual.

And remind them of this when there is a change of staff.

ANTIBIOTICS FOR YOU

You don’t need antibiotics after the birth for GBS colonisation provided you are well. The intravenous antibiotics during labour and delivery are for your baby, not you – GBS colonisation does not need to be treated. It’s normal!

GENERAL POINTS FOR THE BABY’S FIRST THREE MONTHS

The following suggestions apply to all newborn babies, not only those where GBS has been isolated from the baby or mother.

Handling your (or anyone else’s) baby

GBS can be found on the hands and in the respiratory tract of a colonised person and may be passed on to the baby from repeated exposure after birth (e.g. from family members, other parents, hospital staff, etc.). Everyone (including the parents), whether they know they carry GBS or not, should wash their hands and carefully dry them before handling a baby for his/her first three months of life (soap and water are perfectly adequate), and it must be emphasised how important it is to dry the hands thoroughly as well as wash them thoroughly. These are normal good hygiene measures for a young baby, irrespective of GBS.

Visitors

As long as visitors are well and without upper respiratory infections, coughs, colds, etc., there is no need to limit visitors or limit visitors’ handling of the baby (although, again, it’s a good idea for people to wash and dry their hands thoroughly before they do in the early days – this is good paediatric hygiene, irrespective of the issue of GBS).

Going out

The baby may be taken out, although ideally probably not for the first 2-3 weeks, especially if the weather is bad. If possible, the baby shouldn’t be taken to very crowded areas where there might be close contact with respiratory viruses and other illnesses, for example, to shopping centres, supermarkets, etc.
If your baby needs medical treatment once you’re home
If you need to contact a doctor about your baby during the first three months, make sure the doctor is aware of your history of GBS. And in the unlikely event that your baby has had a GBS infection, make sure the doctor knows that too since a baby who has had a GBS infection is at slightly increased risk of reinfection.

Immunisation and GBS
GBS is not a factor in the decision to immunise a healthy baby born to a woman with a history of GBS.
GBS Infection

Most GBS infections in babies are apparent at birth and should be detected and treated in hospital. Study your baby carefully yourself for any sign that he or she is not well. Unfortunately, in the most severe cases, infection can take hold very quickly so draw the nurses’, midwives’ and doctors’ attention to anything that concerns you.

Types of GBS infection

GBS infection is diagnosed when the bacteria are grown from body fluids that are usually sterile, such as blood or spinal fluid. These are known as cultures and normally take a day or two to complete. GBS infection in newborn babies is usually described as early or late-onset.

Early-onset GBS infection

Roughly 80-90% of all GBS infection in babies occurs in the first six days of life and is usually apparent at birth. This ‘early-onset’ GBS infection is most common after obstetric complications, such as low birth weight, prematurity, prolonged rupture of membranes and maternal fever. Early-onset GBS infection most commonly presents as sepsicaemia, followed by pneumonia and meningitis. At least 60% of early-onset GBS infection is preventable using the risk-factor based prevention strategy recommended by our medical advisory panel, and significantly more if intravenous antibiotics in labour were offered to all GBS carriers identified by universal reliable testing of women late in pregnancy.

Symptoms of early onset GBS infection

Just in case you need this information, the typical symptoms of early onset GBS infection (developing in the first six days of life) in babies include:

- grunting
- poor feeding
- lethargy (being abnormally drowsy)
- irritability
- abnormal (high or low) temperature, heart rates or breathing rates
- low blood sugar
- low blood pressure

You may choose to stay in hospital for a couple of days, after which time GBS infection in babies becomes increasingly uncommon – only 1-2 out of 10 GBS infections in babies develop after the first six days of life (and by age three months GBS infection in babies is very rare indeed).

Late-onset GBS infection

Approximately 10-20% of GBS infection in babies occurs after the baby is six days old, most commonly presenting as GBS meningitis, followed by sepsicaemia, focal infection and pneumonia. This ‘late-onset’ GBS infection normally develops by age one month, but rarely up to age three months. Late-onset GBS infection in newborn babies is associated with prematurity, prolonged rupture of membranes, multiple births and the mother carrying GBS.

Until a vaccine is developed, there are no known methods for preventing late-onset GBS infection in babies.

Symptoms of late onset GBS infection

Your baby is at a little less risk of developing GBS infection as each day passes, but you may like to know the usual symptoms of late-onset infection (developing after day 6).

Typical symptoms of late-onset GBS infection are:

- fever;
- impaired consciousness;
- poor feeding &/or vomiting.
Symptoms of meningitis
GBS can cause meningitis in babies. Typical symptoms of meningitis, any of which could develop and some may not be present at all, include:

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

Trust your instincts – it is your baby! If your baby shows signs consistent with GBS infection or meningitis, call your GP immediately. If your GP isn’t available, go straight to the nearest PAEDIATRIC Accident & Emergency Department. Early diagnosis and treatment are essential to combat late-onset GBS infection – delay can be fatal.

ADULT GBS INFECTION
GBS is a rare cause of infection in adults, most often affecting the elderly or those with underlying medical problems that impair the immune system. GBS infection can develop in women during pregnancy or after birth, typically as urinary tract infection, chorioamnionitis (chorioamnionitis is an infection of the membranes and amniotic fluid), post-delivery endometritis (inflammation of the lining of the uterus following birth), septicaemia (blood poisoning) after delivery and infection after Caesarean sections. These infections usually respond quickly to speedy antibiotic therapy.

Treatment of GBS infection
GBS infection needs to be treated promptly and aggressively: high doses of intravenous antibiotics should be given as soon as possible and antibiotic therapy shouldn’t be stopped prematurely (i.e. intravenous antibiotic therapy should be continued for at least 10 days or 14 days if meningitis is present). Given this, the majority of babies with GBS infection can be treated successfully with penicillin, although some will require all the expertise of a neonatal intensive care unit (and sick babies may have to be transferred to a different hospital with specialised facilities). Sadly, even with full intensive care, between one and two out of every 10 infected babies will die from their GBS infection (around 15% of babies from early-onset and around 5% from late-onset infection).

Twins, triplets or more
If a baby develops GBS infection and is one of a multiple birth, then the same antibiotics should be given intravenously to the other baby/babies as a preventative measure, even if they appear well.

Reinfection in babies
Reports indicate a baby who has recovered from a GBS infection is at low but slightly increased risk of re-infection (around 1-3%).

There is no established evidence to recommend any specific treatments to prevent recurrent GBS. A few practitioners may prescribe a daily penicillin dose for the baby for the first 3 months of life, in the belief that it may prevent GBS infection. There is no evidence to support this practice, although Penicillin given in this way has been shown to reduce the risk of infection with another related bacteria, called pneumococcus, in individuals who have lost their spleens.
SOME FREQUENTLY ASKED QUESTIONS:

How do people become carriers of GBS?
GBS may be passed from one person to another through hand contact, kissing, close physical contact, etc. As GBS is often found in the vagina and rectum of colonised women, it is commonly passed through sexual contact.

There are no known harmful effects of carriage itself and, since the GBS bacteria do not cause genital symptoms or discomfort, GBS is not a sexually transmitted disease, nor is GBS carriage a sign of ill health or poor hygiene.

No-one should ever feel guilty or dirty for carrying GBS – it’s normal.

What are the chances of my baby developing a GBS infection?
The following are estimates of the chances a baby in Britain will become infected with GBS if no preventative measures are taken and no other risk factors are present:

I in 1,000* where the woman is not known to be a carrier of GBS;
I in 400 where the woman is carrying GBS during the pregnancy;
I in 300 where the woman is carrying GBS at delivery; and
I in 100 where the woman has had a previous baby infected with GBS.

*This is a broadly accepted estimate of the number of GBS infections in newborn babies that would occur if no preventative intravenous antibiotics in labour are given and this estimate has been used throughout this document. However, recent UK research has suggested this may be a serious underestimate of the incidence of GBS infection in newborns, which could be as high as 3.6 per 1,000.

If a woman who carries GBS is given antibiotics during labour through delivery in accordance with our medical advisory panel’s recommendations (see Key Prevention Recommendations: on page 9), the baby’s risk is reduced significantly.

I in 8,000 where the mother carries GBS during pregnancy;
I in 6,000 where the mother carries GBS at delivery; and
I in 2,200 where the mother has previously had a baby infected with GBS.

The vast majority of pregnancies can be managed so that babies are protected and born free of GBS infection.

Should I take antibiotics before I get pregnant to get rid of the GBS?
No antibiotics tested so far seem able to do this reliably. Antibiotics may temporarily eradicate vaginal colonisation with GBS, but colonisation in the intestines will remain and recolonisation of the vagina will occur.

I carry GBS in my vagina. Does my partner need to be tested?
No. Colonisation with GBS is normal and does not need treatment. A third of the adult population carries GBS, without symptoms – you don’t need to be tested for it, nor do you (or he) need antibiotics for it. GBS is not a sexually transmitted disease. Carrying GBS is not a disease at all!

Will antibiotics get rid of GBS colonisation from my vagina during pregnancy?
Antibiotics won’t necessarily get rid of colonisation in the vagina and, even when they do, they will do so only temporarily - recolonisation will occur. Evidence shows taking antibiotics before labour does not reliably eradicate GBS carriage - and there’s no evidence that it reduces the incidence of GBS infection in newborn babies either. Studies have shown no substantial difference in GBS carriage at delivery between women treated with antibiotics during pregnancy and those not treated. In one study, nearly 70% of colonised women treated with antibiotics for 12 to 14 days during the third trimester (28 to 40 weeks of pregnancy) were colonised three weeks later and again at delivery.

Antibiotics during pregnancy for GBS carriage are not indicated. GBS cultured from a vaginal swab show the vagina is colonised with GBS, not infected. No antibiotics tested so far have been shown to eradicate GBS reliably from the body so, even if antibiotics clear the GBS colonisation of the vagina (and they may not), recolonisation from the intestines will occur. Evidence shows taking antibiotics neither gets rid of GBS carriage nor reduces the incidence of GBS infection in newborn babies. Antibiotics have been proven to be highly effective at stopping GBS infections in newborn babies when given intravenously to the pregnant woman as soon as her membranes have ruptured or labour has started.
Does having the IV antibiotics during labour mean that the GBS will be eradicated?

GBS is a very common naturally occurring bacterium, which lives in the intestines of about a third of the population (men and women) and, once present, cannot reliably be eradicated.

Once labour starts, intravenous (through a vein) antibiotics given to the mother until her baby is born are the best known way to prevent most GBS infections in newborn babies. They work in two ways. Firstly, the antibiotics start to cross to the baby within minutes of their being given to the mother – this means that, ideally, the baby will be born with fighting doses of antibiotics in his or her system which will help to stop any infection from starting. Secondly, they may temporarily reduce the level of GBS carriage in the mother’s vagina, which may mean the baby is exposed to fewer GBS bacteria during delivery. However, antibiotics won’t eradicate the mother’s GBS carriage, just suppress it for this crucial period.

Do I need antibiotics if GBS is found in my urine?

Yes, though remember to tell your health professionals if you have ever had an allergic reaction to penicillin or any other antibiotic. Urine is supposed to be sterile so, if GBS is found in your urine, you should be treated with oral antibiotics when diagnosed and this treatment repeated until urine tests come back clear. A 5-day course would be appropriate and it’s important the urine is retested 7-10 days after finishing the antibiotics.

Treatment for a GBS positive urine sample, whether you have symptoms of a urine infection or not, is essential during pregnancy since, if left untreated, such infections can cause kidney damage and have been linked to preterm labour.

Should I be tested regularly for GBS?

No. If you have had a positive test result for GBS at any time during your current pregnancy, you should be offered intravenous antibiotics from the start of your labour, until delivery.

The conventional test available on the NHS is unreliable – it misses up to 50% of GBS carriers. There is a reliable test but this is only available privately (see the next question and the item on page 6).

And if you get another positive result from the conventional test, all it tells you is that you are still carrying GBS. If it gives you a negative result, all it tells you is you may not be still carrying GBS (but remember the negative test results aren’t very reliable). Neither of these results should make any difference to your being offered intravenous antibiotics in labour.

Are the tests for GBS colonisation reliable?

The conventional tests available are not very reliable when they give a negative result – they give a falsely negative result up to 50% of the time when they should be positive! On the other hand, if you get a positive conventional test result, that is very reliable.

There is more information about the different tests available in the UK on page 6.

Any positive result (conventional, ECM or PCR) means you should be offered intravenous antibiotics as soon as possible after the start of your labour or membrane rupture to protect your baby from GBS infection.

[GBS fully endorses the availability of reliable antenatal GBS testing but has no links to nor receives any money from any particular laboratory. Indeed we hope many other laboratories will follow The Doctors Laboratory’s example in offering this test and, as they do, we'll provide details of their service too.]

I am on a course of antibiotics for a chest infection. Will that affect the results for the GBS test?

The antibiotics may make it more difficult to grow the GBS so, in an ideal world, you should not take the swabs for the GBS test until at least seven days after you’ve finished the course of antibiotics; the longer the delay, the more reliable the result.

It should be remembered that even a negative result from a swab test done at 35-37 weeks of pregnancy can’t be 100% predictive that you won’t be carrying GBS at delivery (although it is highly likely you won’t), since a very small proportion of women will acquire carriage in the intervening weeks. A positive result however does mean that you should be offered the recommended intravenous antibiotics in labour.
I carried GBS in my last pregnancy - my baby was fine. Do I need IV antibiotics this time?

GBS can quite naturally come and go from the vagina so the bacteria can be there one month and not the next ... and back again at some other time (though research has shown that, using sensitive tests, the results are highly predictive of colonisation status for around five weeks). There is currently no good data that can predict carriage of GBS over periods of a year or more. However, since there may be some increased chance of a woman carrying GBS in a pregnancy if GBS has been isolated previously, it is the view of our medical panel that, if possible the pregnant woman should be offered a reliable (ECM) test at 35-37 weeks of pregnancy to establish whether she is still carrying GBS. If the test is positive, then she should be offered intravenous antibiotics as soon as possible once labour has started.

If a reliable ECM test result is not available and labour starts after 37 weeks of pregnancy, then the view of our medical panel is that previous carriage status should be treated as an additional risk factor (increasing the risk of a baby developing GBS infection where preventative antibiotics in labour are not given) so the risk of acquiring carriage between doing the test and giving birth is very small.

I had a GBS infection after the birth of my last baby. Will any babies I have in the future be more at risk of GBS infection?

There's no research on which to answer this. Our medical panel's view is that a postnatal GBS infection is unlikely to increase the risk of any future babies developing GBS infection above that of simply being a carrier. In this situation they would recommend you have a sensitive test for GBS carriage late in your next pregnancy to find out your status at that time.

What happens if I get a negative ECM test result?

A woman who has a negative ECM (enriched culture medium) test result at 35 plus weeks of pregnancy does NOT need to be offered intravenous antibiotics in labour to prevent GBS infection in her baby (but antibiotics may be indicated for other reasons). Research shows that, if performed within five weeks of delivery, an ECM test giving a negative result is 96% predictive of GBS not being carried at delivery (4% of women acquired carriage between testing and delivery) so the risk of acquiring carriage between doing the test and giving birth is very small.

If a woman has not had an ECM test result OR the less reliable conventional test has been negative during the pregnancy, she should be offered intravenous antibiotics from the onset of labour if one or more risk factors listed above (see page 8) is present.

A woman who has previously had a baby who developed GBS infection should ALWAYS be offered intravenous antibiotics in subsequent pregnancies, from the onset of labour or membrane rupture until delivery, regardless of any test results.

And a woman who has had any positive test result (from the urine, vagina or rectum) during the current pregnancy should also be offered intravenous antibiotics from the onset of her labour or membrane rupture until delivery.

I had a positive result early in my pregnancy. Should I be tested again?

If you have had a positive GBS test result (from the vagina or rectum) during the current pregnancy, and no further tests, you should be offered intravenous antibiotics from the onset of labour or membrane rupture until delivery (antibiotics are recommended if the positive result was from the urine).

However, if the positive result was early in your pregnancy, you may have lost carriage by the time your baby is born. If you want to find out whether you are still carrying GBS, you can have a sensitive test at 35-37 weeks. If the sensitive test result is negative, then intravenous antibiotics are probably not indicated, since research shows that a sensitive test giving a negative result within five weeks of delivery is highly predictive of the mum not carrying GBS at delivery. The risk of acquiring carriage between doing the test and giving birth is very small.

Must I have intravenous antibiotics if I've had a positive result during this pregnancy?

If you have had any positive GBS test result from the vagina or rectum during the current pregnancy, you should be offered intravenous antibiotics from the onset of labour or membrane rupture until delivery. However, you may choose not to have them if there are no additional risk factors - only a small percentage of babies born to colonised mothers will develop
GBS infection. However, if you decide against antibiotics, it would be prudent for the baby to be observed by trained staff for at least 24 hours (and ideally for 48 hours). If the positive test was from the urine, this means that the GBS was more invasive, and so antibiotics will be recommended even if a vaginal swab is subsequently negative.

**I’m at risk of premature labour. Should I take long-term antibiotics?**

Along with many other bacteria found in the vagina, GBS can cause infection of the baby in the womb, which can result in preterm birth, stillbirth and late miscarriage. However, these are usually caused by a variety of factors other than GBS: genetic defects, gynaecological problems, other infections, etc. If a woman has had any of these problems in the past, she should make sure these possibilities are investigated fully by a consultant obstetrician at booking (or before) regardless of whether or not she is colonised with GBS. Such complications are uncommon and GBS is a rare cause of them.

For the antibiotics tested so far, their use throughout pregnancy does not prevent preterm delivery due to any cause, including GBS. Also, the effects of long-term antibiotics on the baby during pregnancy have not been assessed; although we know that short courses of, for example, amoxycillin, seem to be exceptionally safe (see our medical advisory panel’s view on page 11).

**I’m worried I won’t get 4+ hours of IV antibiotics before my baby is born.**

A very small study showed giving intramuscular penicillin eradicated GBS colonisation for at least six weeks in 75% of women known to carry GBS. So far, this very small study (50 of 78 women received intramuscular antibiotics) has not been repeated, so it is difficult to give advice based upon this data.

For women known to carry GBS where it is not expected that the intravenous antibiotics can be given for at least four hours before delivery, an intramuscular injection of 4.8 MU (2.9 g) of Penicillin G at about 35 weeks of pregnancy may be useful in addition to intravenous antibiotics given from the onset of labour or membranes rupturing until delivery to try to eradicate GBS colonisation until after delivery.

Regardless of whether you have intramuscular antibiotics to try to eradicate GBS colonisation, it is recommended that all women in higher risk categories be offered intravenous antibiotics from the onset of labour or waters breaking, plus at four hourly intervals until delivery.

There are downsides of intramuscular penicillin - the injection is painful, there is a small risk of an allergic reaction and of antibiotic resistance developing (see below). These risks are repeated with the intravenous antibiotics given in labour.

For intramuscular antibiotics, there are no known alternatives to penicillin for penicillin-allergic women.


**Should I be induced, with the IV antibiotics starting as I’m induced?**

Our medical advisers do not recommend induction for anyone as a way of combating GBS infection in babies. Carrying, or being at risk of, GBS is not a reason to be induced.

If you live a long way from the hospital or have a history of very fast labours, then induction is one way to try and ensure you get sufficient intravenous antibiotics in labour. However, induction is not without risk itself, especially before the due date. You should discuss the potential risks and benefits of an induction with your obstetrician, because they will vary dependent upon your personal circumstances.

If you need to be induced for obstetric or medical reasons, the recommended intravenous antibiotics should be started as soon as possible once labour has started or waters have broken (naturally or artificially), whichever happens first and should be repeated 4-hourly until delivery, and ideally for at least four hours before delivery.

**What are the potential risks of antibiotics?**

Taking antibiotics should not be done lightly – they can have side effects that need to be considered in relation to the potential benefits and it is important that you tell your health professionals if you have ever had an allergic reaction to penicillin or any other antibiotic.

Although good data is hard to find on this subject, the generally quoted estimated risks for penicillin are:

1 in 10 of the mother developing a mild allergic reaction, such as a rash;

1 in 10,000 of the mother developing a severe allergic reaction (anaphylaxis); and

1 in 100,000 of the mother developing fatal anaphylaxis, resulting in her death.
And severe complications can occur in the unborn baby even when the anaphylaxis developed by the mother is not life threatening, although this risk is probably overstated.

Although often quoted, these figures are generally accepted as being a significant over-estimate of the risk - a recent paper stated that, in the US between 1997 (the year after the CDC recommended intravenous antibiotics in labour for women whose babies were at higher risk of developing GBS infection) and 2001, an estimated 1.8 million women were given penicillin in labour and no deaths occurred, so an estimate of a 1 in 100,000 risk of death from penicillin anaphylaxis is likely to be an over-estimate. The prevention of neonatal group B streptococcal disease. MR Law, G Palomaki, Z Alfirevic, R Gilbert, P Heath, C McCartney, T Reid, S Schrag on behalf of the Medical Screening Society Working Group on GBS Disease. J Med Screen 2005;12:60-68.

Whenever antibiotics are taken, there are always risks of antibiotic resistance developing. When antibiotics are given to pregnant women, this could affect the mother and her baby. When antibiotics are given around birth and in the early weeks of life, there is the chance they may increase the likelihood of the baby developing allergies. Although a lot of press space is given to this, unfortunately data are lacking on whether it's the giving of antibiotics that causes the allergies, or whether there are other reasons (for example, genetics, environment, disease, etc.). This is yet another area where more research is needed!

Bearing all this in mind, you need to weigh up whether you consider the risks are acceptable in comparison with the potential benefits and, if so, in what circumstances you would want to be offered antibiotics.

What are the signs that GBS is affecting my unborn baby?
If your pregnancy is progressing normally, then there is no reason to suspect GBS is infecting your baby. If a GBS infection is present, you’ll usually go into labour or your membranes will rupture. And that’s the time to get to hospital as quickly as you can to receive the intravenous antibiotics to give your baby the best protection possible.

Will a Caesarean prevent GBS infecting my baby?
Caesarean sections do not eliminate the risk of GBS to a baby of developing GBS infection since the bacteria can cross intact amniotic membranes to set up an infection in the baby, although they do reduce the risk.

However, Caesareans are not recommended as a method of preventing GBS infection in babies: there are significant risks associated with a Caesarean section; and the recommended intravenous antibiotics during labour are both low risk and highly effective. See page 12 for our medical panel’s recommendations regarding Caesareans.

Are membrane sweeps safe for women who carry GBS?
Using a gloved finger passed through the cervix (neck of the womb) to separate the baby’s membranes from the lower part of the uterus is known as a ‘membrane sweep’. In women who are at or beyond the due date, it encourages spontaneous labour and can enable about 10% of women to avoid an artificial induction of labour.

There is currently no good evidence that membrane sweeps are harmful in women known to carry GBS. Indeed the results of trials of membrane sweeps don’t show any increase in problems caused by GBS in women having sweeps, and it is highly likely these trials would have included many women carrying GBS at the time.

However, there remains a theoretical risk that a membrane sweep might occasionally introduce GBS into the uterus, and so our medical advisory panel advises caution in using a membrane sweep for women known to carry GBS when there are other acceptable alternatives (for example, induction of labour with prostaglandin gel introduced into the vagina).

I want a water birth
There are no known contra-indications for a woman known to carry GBS having a water birth. As for all women carrying GBS during the current pregnancy, our medical advisory panel recommends they should be offered intravenous antibiotics from the onset of labour until delivery. It is not a good idea to get the cannula (which delivers the intravenous antibiotics to the mother) wet, but this can be managed - specially designed waterproof dressings are available which keep the site sterile and dry whilst still enabling the health professional to monitor the site visually.

I was GBS positive and had a water birth at home; can someone else “catch” GBS from the pool?
No. Research suggests that standard hygiene measures need to be taken in the cleaning of the pool before or after use by GBS carriers (and anyone else). So please do pass the pool onto your friend but – as you would anyway – please clean it properly before you do.
I want a home birth

Our medical advisory panel’s recommendations for stopping GBS infections in newborn babies are the same for home births as for hospital births - women whose babies are at higher risk of developing GBS infection should be offered intravenous antibiotics from the start of labour until delivery.

Home births are becoming increasingly popular and, if you want a home birth with intravenous antibiotics during labour until delivery, it may be possible for your midwife to give you intravenous antibiotics prescribed for you by your GP. This is not widely available. Some areas won’t permit intravenous antibiotics to be given at home - there is a small risk that you would get a severe allergic reaction to the antibiotics (see What are the potential risks of antibiotics? on page 22) and, obviously, there is no intensive care unit nearby. The risk is small but your health professionals may be anxious. Of course, around 25% of women having home births probably carry GBS in their vagina at delivery without knowing it. This issue needs to be discussed with your medical team.

Oral antibiotics are not recommended for women for GBS carriage during pregnancy or labour – quite simply, there’s no evidence that they prevent GBS infections in babies. If you have set your heart on a home birth, you may wish to consider having intramuscular antibiotics as outlined in I’m worried I won’t get 4+ hours of IV antibiotics before my baby is born. on page 22, though our medical advisory panel do not recommend them in lieu of intravenous antibiotics during labour, but they may be better than nothing if that really is the only alternative.

I want to breastfeed my baby

Our medical advisory panel strongly recommends you should be encouraged to breastfeed your baby. Although there have been isolated cases describing GBS infection possibly related to breast milk contamination, the advantages of breast feeding will, in our medical advisory panel’s opinion, greatly outweigh the remote risk of transmitting GBS via breast feeding. High hygiene standards need to be maintained for all breastfeeding mothers, with the hands and nipple areas being kept clean.

The intravenous antibiotics recommended above (see page 9) for pregnant women during labour through to delivery to protect her unborn baby from GBS infection are safe for breastfeeding mothers, although you should make sure your medical professionals know you intend to breastfeed your baby.

If you develop mastitis or a breast abscess, you should seek medical advice regarding breast-feeding.

Is it safe to breastfeed my baby just after birth as my milk will contain antibiotics?

Any antibiotics that are safe to give to mothers during pregnancy are also safe in themselves in relation to breastfeeding.

The intravenous antibiotics recommended above for pregnant women during labour through to delivery to protect their unborn babies from GBS infection will already have passed in significant amounts to the baby while it was in the womb, and they provide important protection for the baby during labour and in the first few hours after birth. In comparison, the amounts passed in breast milk are small.

However, the continuing exposure to antibiotics in the milk can change the way the baby acquires its gut flora (the bugs the baby gets from its mother that help to digest food) and this can affect the way that the baby’s poo changes in the first days of life. So you should make sure your medical professionals know you intend to breastfeed your baby.

Is strep throat caused by the same bug as GBS?

No. S*rep throat is caused by group A Streptococcus (GAS or Streptococcus pyogenes) which, although it has a similar name and is from the same family of bacteria, is a bug with very different characteristics. Group A S*rep is carried by many perfectly healthy people and most commonly causes mild sore throats or skin infections (impetigo), although for every thousand such mild infections there are one or two that are more serious and can affect pregnant or recently delivered women – for example, toxic shock syndrome or necrotising fasciitis. Fortunately, these severe conditions are very rare.
OTHER INFORMATION

GBS statistics
Since the 1970s, group B streptococcus (GBS) has been recognised as the primary cause of bacterial infection in newborn babies, resulting in illness at birth and up to three months of age. However, GBS infection is still quite rare - overall, without preventative medicine, only around one in every 1,000 babies born in the UK develops such an infection.

- Assuming 700,000 babies are born each year in the UK, then without preventative medicine, of these approximately:
  - 230,000 babies are born to women who carry GBS;
  - 88,000 babies (one in every eight babies) become colonised with GBS;
  - 700 babies develop GBS infection, typically septicaemia (blood poisoning), pneumonia (inflammation of the lungs due to infection) or meningitis (inflammation of the membranes that cover the brain and spinal cord), usually within the first six days of life; and
  - 75 babies die, though this could be as many as 100.

Most GBS infection in newborn babies can be prevented, simply by giving pregnant women with risk factors intravenous antibiotics during labour until delivery. Medical research has proven this preventative medicine reduces the number of GBS infection in newborn babies by around 60%. Testing all pregnant women and offering intravenous antibiotics in labour to all found to carry GBS plus those delivering prematurely or with a history of GBS infection could prevent up to 90% of all GBS infection in babies (see above).

Key medical references


GBSS Medical Advisory Panel

The information in this leaflet is based upon our medical advisory panel’s knowledge and on recent research (published and unpublished). Your medical professionals may not have comprehensive knowledge or experience in this specialised area, so please make sure they have (and read) this leaflet. Sharing our information with people who can make a difference in preventing GBS infection is vital.

This leaflet has been checked for medical accuracy by our medical advisory panel, comprising:

- Prof Philip Steer (Chairman), Emeritus professor at Imperial College and consultant obstetrician at the Chelsea and Westminster Hospital in London
- Dr Christine McCartney OBE, FRCPath, Director of the Health Protection Agency’s Regional Microbiology Network
- Dr Alison Bedford-Russell MRCP, Consultant Neonatologist at Birmingham Heartlands Hospital
**GBSS Leaflet Order Form**

To order leaflets, please complete this form and send it to GBSS, PO Box 203, Haywards Heath, West Sussex RH16 1GF, or e-mail it to info@gbss.org.uk or order on 01444 416176. All of our current leaflets can be downloaded free of charge from our website at www.gbss.org.uk. You are welcome to photocopy our leaflets, but please photocopy them in their entirety.

We don’t charge for our leaflets, but GBSS is a small charity with limited funds and relies on donations to help defray costs. The cost of printing each leaflet excluding postage & packing (including p&p in brackets) is shown below for one of each item:

<table>
<thead>
<tr>
<th>No Req.</th>
<th>Leaflets:</th>
<th>Print Cost (Inc p&amp;p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.........</td>
<td>GBS &amp; pregnancy (introduction to GBS for pregnant women)</td>
<td>£0.08 (£ 0.50)</td>
</tr>
<tr>
<td></td>
<td>Bulk order of 50 leaflets</td>
<td>£4.00 (£ 6.50)</td>
</tr>
<tr>
<td></td>
<td>Bulk order of 100 leaflets</td>
<td>£8.00 (£11.00)</td>
</tr>
<tr>
<td>.........</td>
<td>Congratulations on the safe arrival of your baby (intro for parents where Mum or baby is colonised with GBS and the baby is well)</td>
<td>£0.25 (£ 0.80)</td>
</tr>
<tr>
<td>.........</td>
<td>Understanding your baby’s GBS infection (intro for parents of a GBS baby)</td>
<td>£0.25 (£ 0.80)</td>
</tr>
<tr>
<td>.........</td>
<td>GBS: The Facts (a detailed document, including medical reference list)</td>
<td>£1.25 (£ 2.25)</td>
</tr>
<tr>
<td>.........</td>
<td>If your baby was infected by GBS (detailed leaflet for parents of GBS babies)</td>
<td>£1.25 (£ 2.25)</td>
</tr>
<tr>
<td>.........</td>
<td>For women who carry GBS (detailed leaflet for women found to carry GBS during their current pregnancy)</td>
<td>£1.00 (£ 1.70)</td>
</tr>
</tbody>
</table>

**Posters:**

| ......... | Poster – Pregnant? Find out about GBS and reduce the risk to your baby | £0.15 (£ 1.30) |
| ......... | Poster – Labour & Delivery Prevention Guidelines for Neonatal Early Onset GBS Disease | £0.15 (£ 1.30) |
| ......... | Poster – Understanding your baby’s GBS infection. For Special Care Baby Units | £0.15 (£ 1.30) |
| ......... | Poster – Group B Strep Support “helping to save babies’ lives” A2 general poster | £0.25 (£ 2.60) |

**Other Materials:**

| ......... | Medical information pack (Folder containing small supply of introductory leaflets, plus GBS The Facts, one of each poster, a sheet of stickers & back issue of GBSS newsletter) | £7.50 (£10.00) |
| ......... | GBS Alert Stickers – 35 colour stickers for pregnant women’s notes | £0.35 (£ 0.90) |
| ......... | GBS Aware Stickers – 35 colour stickers for pregnant women’s notes | £0.35 (£ 0.90) |
| ......... | PowerPoint presentation for PC on CD – for health professionals | £5.00 (£ 7.40) |
| ......... | GBSS Balloons | |

Please provide your details overleaf.
Please tick all that apply:

- I enclose a donation of £................... for these leaflets
- Please send me a receipt
- I am a UK taxpayer. Please recover tax on my donation through Gift Aid.
- Please invoice me for these leaflets (including P&P costs)
- Please send me information about joining GBSS
- I am unable to contribute towards the cost of the leaflets
- Please add me to your mailing list

Name: ____________________________________________________________

Job Title: ___________________________________________________________

Hospital/Clinic/Medical Centre: ________________________________________

Address: ___________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Post Code: __________________

Tel No: _________________________ Date: _________________________

E-mail address: _______________________________________________________

Please share our information with others interested in GBS.

If you would like to provide us with any further information, or would like to make any comments, please do so here:

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________
MEMBERSHIP APPLICATION FORM

Please complete and return to Group B Strep Support, P O Box 203, HAYWARDS HEATH, West Sussex RH16 1GF. If you have any queries, phone us on 01444 416176, or e-mail us at info@gbss.org.uk.

Name(s)

Parent / Grandparent / Obstetrician / Paediatrician / Midwife / GP / Health Visitor / Other (please state)

Address

Postcode

Tel/Fax no:

E-mail address:

Please tick as appropriate:

☐ I/We enclose our cheque for my/our first year’s membership of the charity (see below)

☐ I/We would like to donate by Banker’s Order (please complete form on the reverse & return it to GBSS)

☐ I/We are the parents of a GBS baby

☐ Baby’s name

☐ Baby’s date of birth   _____ / _____ / _____   My baby developed GBS infection   Yes/No

☐ I/We would like to speak to other parents about GBS

☐ Please send me/us volunteer guidelines on

☐ fund-raising

☐ raising awareness

☐ becoming a contact person

☐ I/We would like to help Group B Strep Support by:

We charge a minimum annual membership fee. For this, you receive our 6-monthly newsletter and any updates. If you can afford a larger donation to help us achieve our aims of informing and supporting more families; raising awareness and improving practice within the medical profession; and funding medical research, that would be greatly appreciated and it would be put to good use!

I/We enclose a cheque or postal order payable to Group B Strep Support for a year’s membership:

<table>
<thead>
<tr>
<th>£9.00</th>
<th>£15.00</th>
<th>£24.00</th>
<th>£…………………</th>
</tr>
</thead>
<tbody>
<tr>
<td>student/unwaged (evidence may be required)</td>
<td>individual/family</td>
<td>overseas</td>
<td>voluntary donation</td>
</tr>
</tbody>
</table>

If you are a UK taxpayer, charities can claim back 28% of tax on donations made since April 2000, increasing our funds at the government’s expense! If you can help in this way, please tick the box and we will claim back some of your tax.

Signature

Date
GBSS - STANDING ORDER MANDATE

To: The Manager
Your Bank Name:
Your Bank’s Address:
Post code:

Please pay: Cafcash Ltd – CAF Gold
Sort code: 40 – 52 – 40
For the credit of: Group B Strep Support
Account No: 00091056
The sum of (in words and numbers please):

Commencing (date):
Every (frequency): Year / Month

Until (final payment date): further notice/.................................................................
(delete as applicable)

Name of account to be debited: (full name of your account) ……………………………
…….................................................................................................................................
Name and Address of Account Holder: (your full name and address)

Account No: (Your Bank Account No) .................................................................

Bank Sort Code: (Your Bank’s Sort Code) ……………… - ……………… - ………………

Signature_____________________________________ Date_______________

Please complete and return this form to Group B Strep Support (Charity No 1112065) at P O Box 203,
Haywards Heath, RH16 1GF or by e-mail to info@gbss.org.uk