Water birth for women with GBS: a pipe dream?

The effectiveness of intravenous antibiotics means that women carrying GBS but no other risk factors should not be denied the water birth they desire, say **Jane Plumb**, **Dawn Holwell**, **Rosa Burton** and **Philip Steer**

Although only a relatively small proportion of women give birth in water, many more use birthing pools during labour. Most UK maternity units have plumbed birthing pools, as well as portable ones used for home births. For some women, labour and birth in water are important features of their birth plans – but this is not available for all women. The Royal College of Obstetricians and Gynaecologists (RCOG) and Royal College of Midwives (RCM) stated in April 2006 that, 'All healthy women with uncomplicated pregnancies at term should have the option of water birth available to them and should be able to proceed to a water birth if they wish' (RCOG/RCM 2006).

Approximately 25 per cent of labouring women in the UK are likely to carry Group B Streptococcus (GBS) (Easmon 1986). Although GBS is the most common cause of life-threatening infection in newborn babies in the UK (Heath et al 2004), this is still a relatively uncommon occurrence. More than 99 per cent of babies don't have a problem even if their mother carries GBS, so should simply carrying GBS (without any other risk factors) prohibit a water labour or birth?

GBS infection in newborn babies

Most GBS infections occur within the first week of life (Heath et al 2004) – early-onset GBS disease. It usually presents as sepsis or pneumonia, and less often as meningitis. Late-onset GBS disease occurs in babies aged one week or more, with most infections evident in the first three months of life. They are more likely to have meningitis, osteomyelitis or septic arthritis. Babies unlucky enough to become infected with GBS often require long stays in hospital. Even with the best medical care, 10 per cent of infected babies die (Heath et al 2004) and up to half of the survivors of GBS meningitis suffer permanent, long-term sequelae (Bedford et al 2001). These range from mild learning disabilities to severe mental retardation, impaired sight, impaired hearing and lung damage.

> Perhaps one in four women having a water birth unknowingly carries GBS, yet no significant differences in neonatal infections after water birth have been reported

Intrauterine infection of the fetus results from GBS ascending from vaginal colonisation – this is very rare if the membranes are intact. Babies are usually exposed to GBS when the membranes break and during their passage through the birth canal. Most only become colonised (Centers for Disease Control and Prevention 2002) and remain well, but the unlucky ones develop early-onset GBS infection.

Although GBS can cause clinical infections (for example, a urinary tract infection) in pregnant women, colonisation is usually asymptomatic. During pregnancy or the postpartum period, women can contract amnionitis, endometritis, sepsis or, very uncommonly, meningitis caused by GBS. However, GBS disease in the mother is rarely serious and very few women die of their infection.

Any baby showing symptoms consistent with GBS infection or meningitis during his/her first three months should trigger an urgent medical review (see Table 1). If the baby has GBS infection or meningitis, early diagnosis and treatment are vital – delay can be fatal.

Risk factors in babies

In the UK, between 0.5 and 3.6 per 1,000 babies develop early-onset GBS disease (Heath et al 2004, Luck et al 2003). The risk is relatively low if the mother is simply a carrier, but increases substantially if she has one or more additional risk factors (Oddie and Embleton 2002) (see Table 2). In this case, the health professional should discuss with the mother the use of intravenous penicillin (or another antibiotic if she is penicillin-allergic) at intervals from the onset of labour to minimise the risk to the baby. The recommended antibiotic regime (RCOG 2003) is described in Table 3. This treatment will reduce the risk of infection by about 90 per cent (Law et al 2005).

TABLE 1 Symptoms of GBS infection in babies

Symptoms of early-onset GBS infection

- Grunting
- Poor feeding
- Lethargy (being abnormally drowsy)
- Irritability
- Abnormal (high or low) temperature, heart rate or breathing rate
- Low blood sugar
- Low blood pressure

Symptoms of late-onset GBS infection and meningitis

- Fever
- Impaired consciousness
- Poor feeding and/or vomiting
- 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

Concerns over water labour/birth

Many women with additional risk factors (such as a fever or prolonged rupture of the membranes) will be advised not to use a birthing pool anyway, and may be monitored more closely. But what about mothers whose only risk factor is a finding of GBS while they are pregnant? These women are at relatively lower risk, and yet are often not allowed to have a water birth. Judith Gardner, who had a water birth at home with her second baby and plans the same for her third, due next month, says, "I was diagnosed with GBS when expecting my first child. To achieve a home water birth, we had to employ an independent midwife as we were not supported in our birth choices by the local midwives."

Kelly O'Haire reports that "once I was told I had GBS, I was basically told that I would not be allowed in the birthing pool due to me having to have intravenous antibiotics for at least four hours before I gave birth, so we discounted it". And Lisa Chidley says, "I had tried everything between the date of finding out I had GBS and giving birth to get my local hospital and consultants to allow me to go into the active birthing unit within the hospital where I could experience a more relaxed environment and the possibility of a water birth. This was not to be the case, and I was very disappointed."

The reasons given to women – apart from just 'it's against hospital policy' – centred on infection control, the risk of early-onset GBS disease and the 'difficulty' of delivering the recommended intrapartum antimicrobial prophylaxis.

Infection control issues

During a normal birth, the pool will become contaminated by amniotic fluid, blood and faeces, which could present a risk for neonatal or postpartum infection if not cleaned properly (a baby is born with lots of its mother's antibodies on board and so is relatively tolerant of its mother's bugs but not those of someone else). So pools should be thoroughly cleaned between each use and kept as clean as possible during labour – the RCM/RCOG joint statement says:

> *All birthing pools and other equipment…should be disposed of or thoroughly cleaned and dried after every use, in accordance with local infection control policies… Midwives should use universal precautions and follow local trust infection control guidelines.* RCOG/RCM 2006

Perhaps one in four women having a water birth unknowingly carries GBS, yet no significant differences in neonatal infections after water birth have been reported (Zanetti-Dallenbach et al 2006b), so the risk of neonatal infection appears to be low. Minimising contamination of the water by strict adherence to cleaning procedures for pools should reduce the risk even further, as with any infection.

> 'To achieve a home water birth, we had to employ an independent midwife as we were not supported in our birth choices by the local midwives'

There is no suggestion from research that any more than standard hygiene measures need to be taken in the cleaning of the pool before or after use by GBS carriers. The only published research specifically on water birth and GBS (Zanetti-Dallenbach et al 2006a) showed no statistical difference in GBS carriage in the newborn babies after a water birth, although GBS was more often detected in the pool water after a water birth than after a water labour followed by birth out of water.

TABLE 2 Risk factors for GBS infection in newborn babies

1. Where the pregnant woman has previously had a baby who developed a GBS infection.
2. Where the pregnant woman is found to carry GBS during the pregnancy.
3. Where the pregnant woman has GBS bacteria in her urine at any time during the pregnancy (which should be treated at the time of diagnosis).
4. Where labour or membrane rupture is preterm (before 37 completed weeks of pregnancy).
5. Where there is prolonged rupture of membranes (more than 18 hours before birth).
6. Where the pregnant woman has a raised temperature (37.8°C or higher) during labour*.

*In the presence of an epidural, a slightly raised temperature may be of less significance than in a woman with no epidural

Risk of early-onset GBS disease

Although the absolute risk of early-onset GBS disease for babies born to women carrying GBS is low, about 40 per cent of babies who develop this form of the disease are born at term to healthy women with uncomplicated pregnancies (Heath et al 2004).

Most women won't know whether they carry GBS – there is no national screening programme for GBS carriage in the UK, and the method the NHS usually offers (when testing is offered at all) is a standard high vaginal swab which detects only about 50 per cent of carriers (Yancey et al 1996). The 'gold standard' Enriched Culture Medium (ECM) method is only available privately and from a handful of NHS hospitals, although it is the national standard method for processing swabs for GBS carriage (see Bacteriological Standard Operating Procedure 58 from the Health Protection Agency Evaluation and Standards Laboratory, www.hpa-standard methods.org.uk/documents/bsop/pdf/bsop58.pdf).

GBS carriage can be temporary, so the predictive value of sensitive screening tests is not clinically useful unless performed within five weeks before birth (Yancey et al 1996). Many women with GBS colonisation in one pregnancy will not be colonised during a subsequent pregnancy and vice versa. Therefore, a positive GBS swab before the current pregnancy does not mean that a woman automatically needs intrapartum antibiotics; she needs to be tested again.

If a woman has a positive GBS swab during the current pregnancy, in the absence of other risk factors the risk of her baby becoming infected is low – only about 2-3.6 per 1,000 births (Heath et al 2004, Luck et al ►

Water birth for women with GBS: a pipe dream?

CASE STUDY

Kate Calder Shepherdson, born at the Hull and East Yorkshire Women And Children's Hospital, at 5.20am on 26 February 2006, weighing 8.5lbs


Kate Shepherdson

Kate's mother Anna writes:

Only after a check-up following a bleed at 35 weeks was it discovered that I had GBS. Having planned a water birth at my local midwife-run centre – as I had had with my son, Thomas – I was very upset to find out this would not now be allowed.

My midwife, who backed my water birth plans, and the Group B Strep Support information she gave me, helped enormously. I also spoke to a woman who had had a water birth with GBS at the hospital I was transferred to, which was very encouraging and gave me a lot of confidence.

As Thomas's birth had only taken two hours, I was concerned I would not receive sufficient intravenous antibiotics before birth. I was prepared to stay in hospital for my daughter to have them afterwards instead, although I would try to receive them.

I arrived at hospital by 2am after an hour at home, but was not given antibiotics straight away as I requested – the midwife wanted to ensure my labour was established first. By 4am the cannula was inserted and the first dose was given relatively quickly. This was mildly uncomfortable although not painful. However, it did mean that I was slightly restricted while they were given, and this I found painful.

Meanwhile, they filled the birth pool and I got in straight away. It was probably clear to everyone that I would not have time for a second dose of antibiotics, and after only 20 minutes in the pool Kate was born. I did not notice the cannula in my hand, and keeping it dry was no problem.

After more than an hour with Kate (during which time she fed brilliantly), she was taken to SCBU for her intravenous antibiotics. I found this time the most difficult, as she was without me (but with my mum) for quite some time. The stay at hospital was longer than it might otherwise have been, although I had always planned to stay as long as possible, knowing what fun it would be with a newborn and two-year-old Thomas to look after!

Overall, I found carrying GBS a slight inconvenience, but it did not stop me having the birth I had planned.

2003, Law et al 2005). Moreover, intravenous intrapartum antibiotics have been shown to be very effective in preventing most (80-96 per cent) infections in the baby (Law et al 2005, Jeffery and Lahra 1998, Schrag et al 2000, Communicable Disease Surveillance Centre 1985). So, if the only risk factor is a positive GBS swab during the current pregnancy, and the mother chooses to have antibiotics, only about 0.1-0.7 babies per 1,000 will be infected.

Intravenous antibiotics reduce the risk of GBS infection so significantly that once a labouring woman receives her first dose, and assuming no situation arises that brings into question maternal or fetal wellbeing, why should a woman carrying GBS be denied the water birth she requests?

Delivering intravenous antibiotics

It is generally recommended that the intravenous antibiotics (see Table 3) should be given at least four hours before the birth, although a shorter time may be sufficient (Jeffery and Lahra 1998, Schrag et al 2000). They can be delivered either by a bolus dose or by an intravenous infusion. Either way, the drug is usually given via a cannula, which should be carefully sited to minimise the risk of inflammation of the vein, infection, clogging of the cannula and discomfort to the mother. The site needs to be kept dry but, provided it is well-sited and the mother helps (sometimes creative use of surgical gloves is required), this shouldn't be too much of a problem.

TABLE 3 Antibiotics against GBS infection in newborn babies

- Penicillin 3g IV as soon as possible after the onset of labour;

followed by

- Penicillin 1.5g IV four-hourly until birth;

or, in the case of penicillin sensitivity

- Clindamycin 900mg IV eight-hourly

Conclusion

A woman carrying GBS late in pregnancy is at raised risk of her baby developing early-onset GBS disease although, in the absence of other risk factors, the risk is still not very high. If the mother chooses to have

intravenous antibiotics, the risk of her baby getting infected is smaller than the average risk for the babies of mothers who have not been screened. Some hospitals' policies state that women known to carry GBS should avoid a water birth. No evidence supports this approach when the mother is simply GBS positive, without other risk factors.

The reason for the policy is unclear – perhaps because of the need to keep the cannula site dry, perhaps because women receiving intravenous antibiotics are perceived to be 'complicated', perhaps because of concerns over infection control. No published evidence supports denying these women the water labour and birth they want.

Perhaps the last word should go to another mother, Elizabeth Lydon, who says, "I managed to give birth in water with strep B with the help of a very assertive midwife... it was a lovely, relaxed birth and being in the water made so much difference". Isn't it time other normal, low-risk mothers who carry GBS are allowed to make this choice, too? **TPM**

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Group B Strep Support: www.gbss.org.uk
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PETITION THE PRIME MINISTER!
You can sign an e-petition asking that every pregnant woman in the UK is offered a reliable test for the Group B Strep bacteria:
http://petitions.pm.gov.uk/groupbstrep/

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