

InfoSheet : GROUP B STREPTOCOCCUS

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What is it?

A bacterium known as Lancefield group B Streptococcus agalactiae, GBS for short. It is a normal inhabitant of the genital tract or lower gastrointestinal tract in 5–40% of pregnant women tested. In Victoria the rate of positive tests is about 18.5% from 2003 data.

In the non pregnant woman GBS is mostly a harmless bacterium. However, it is not harmless to babies, who as a result of a still partially immature immune system, are very vulnerable. If babies become colonized with GBS (from their mothers) they may quickly develop a life threatening infection.

For the most part most women with GBS are asymptomatic. However occasionally if she has a high colony count she may develop a urinary tract infection which would need to be treated. If an asymptomatic mother has a positive GBS screen, antibiotics during labour and delivery are recommended to protect the baby from becoming infected.

Why is the mother given antibiotics?

This is to prevent the transmission of the GBS to the baby. Usually GBS is highly susceptible to penicillin, and if a dose is given to the mother at least 4 hours before the delivery of the baby, the baby is much less likely to be colonized and then develop disease. If the mother is known to be allergic to penicillin, there are other alternatives such as cefazolin or clindamycin. Penicillin is preferred because it is most specific.

What are the chances that a baby will get GBS disease?

This depends on a number of factors:

1. Is mother known or unknown to be a carrier? (most of the babies that develop GBS disease are born to mothers who are GBS positive)
2. Did mother get a dose(s) of antibiotic in a timely manner? (A dose must be into mother >4 hrs prior to delivery to be considered to be effective)
3. How long were the mother's membranes ruptured? (greater than 18 hours increases risk).

4. Was the mother heavily or lightly colonized?
5. Did the mother have fever in labour or other signs indicative of infection of the membranes (amnionitis or chorioamnionitis)?
6. Was the baby born at less than 37 weeks' gestation? (greatly increases risk to baby).
7. Is this a multiple pregnancy? The risk of GBS infection may be higher with twins.

It appears that although the carriage rate of GBS may be around 20% (or 200/1,000) of mothers, the number of babies that actually get sick is more in the range of 1.19 to 3.6 per 1,000 live births. About 88% of babies that get sick are born to mothers who are GBS positive. (These numbers vary, and the above statistics are from recent data from London and Dallas in black, Hispanic and white women; ref. 11,12).

So, if a mother is known to be GBS positive, her chance of the baby contracting GBS disease is about 1–2%, if prophylaxis is not carried out. In Victoria with about 3,000 births a year, we could have in the range of 4 to 11 babies a year sick with GBS if antibiotic prophylaxis was not used, and a death every 10 to 15 years.

It is possible for a baby to develop GBS disease even though its mother screened negative for GBS. However, most affected babies are from culture-positive mothers. In 88% of positive babies this is the case. There may be a number of reasons for this. First of all our screening culture techniques are not perfect. Secondly a mother may only become GBS positive after the screen is done. For this reason it is recommended that the screen for GBS be done at around 35–36 weeks gestation.

If the mother is given at least one dose of antibiotic at least four hours before delivery, the transmission rate declines considerably (a 65% reduction in GBS infection was found in an epidemiological study by Schrag. (ref. 4)

Why don't we just use the "risk factor" based approach?

There is an increased risk to babies if the membranes are ruptured for more than 12–18 hours before delivery. In an attempt to reduce the

risk of GBS infection, a number of strategies have been suggested. One is to abolish routine GBS screening and treat mothers in labour if they have risk factors, such as prolonged rupture of membranes, fever, or a history of a previous baby infected with GBS

The problem is that in around 25 to 40% of the babies who do develop GBS disease, the mother has no risk factors. This has been verified in more than one study involving thousands of women.

Of the women that have a risk factor, such as fever during labour indicating chorioamnionitis, if we wait until the fever develops there is the chance of the infection becoming more established and less responsive to antibiotics. That is why the babies born to mothers who actually show signs of infection will need a pediatrician's assessment and possibly IV antibiotics for a longer time.

What happens if a baby does get sick from GBS?

GBS infection can present in a variety of ways. Most of the babies who develop GBS disease do so very quickly, however there are some babies who can develop GBS disease up to 12 weeks after delivery.. The incidence of "late onset disease" (>6days after birth to 3 months) is lower than early onset disease, at 0.5 to 1 per 1,000 live births.

"Early Onset GBS" disease may be diagnosed in a variety of ways. Within 24 hours:

- Blood culture taken and found to be positive(81%)
- No other sign of infection other than blood culture (44%)
- Respiratory depression (22%)
- Respiratory distress (31%)
- Signs of meningitis (3%)
- Hypoglycemia (3%)

Early blood cultures tend to be done in babies who are at high risk. For instance - if there is a history of prolonged membrane rupture, prematurity, fever etc.

The incidence of GBS disease is markedly increased in these babies, so they would be under increased surveillance.

How is a high risk baby monitored for GBS?

Based on the above findings, signs of sepsis, pneumonia, meningitis and hypoglycemia are the key factors.

Signs such as: lethargy, poor feeding thus reduced hydration, jaundice, abnormal

temperature, grunting or rapid respirations , irritability, would be monitored closely (e.g. q3h) for the first 24 hours.

What could be the outcome if a baby is not identified and treated?

The case fatality rate with GBS is very high, one study reported 8% (11). This is comparable to that of SARS.

In term babies it ranges from 2-8%, in babies below 1500 grams, almost 50%.

From the USA, 1600 infants die of GBS annually, and about an equal number have permanent neurological damage from meningitis (13).

What about GBS in the mother?

Of the mothers who have post-partum febrile complications, 15 to 25% of the infections involve Group B strep. Covering GBS is a major consideration in the choice of appropriate medications, which is why cefotetan, cefazolin, ampicillin or clindamycin are often part of the combination, usually along with gentamicin for gram negative coverage

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