# MIDIRS ReView

# Antibiotics for Group B Strep: are they effective?

**Ohlsson A, Shah VS (2009).**
Intrapartum antibiotics for known maternal Group B streptococcal colonization.
*Cochrane Database of Systematic Reviews*, issue 3.
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**Group B haemolytic *streptococci* (GBS) is currently one of the most common causes of morbidity and mortality from neonatal infection, with around one in 2000 babies developing GBS bacterial infections through vertical transmission. Many areas have introduced guidelines which recommend screening women for GBS during pregnancy and offering intrapartum antibiotic prophylaxis (IAP) to women in an attempt to prevent neonatal infection. This, however, involves treating large numbers of women with antibiotics, which carry risks to both them and their babies. A 2009 update to the Cochrane review of this area (Ohlsson & Shah 2009) looked at the issues in depth and this article summarises the key points of that review.**

## Background

- Rates of GBS colonization vary widely between populations, and most people experience no symptoms.
- The aetiology of neonatal sepsis varies by time and place; GBS has been one of the most common causes of neonatal infectious morbidity since the 1970s.
- Pressure from parents and the media was a factor in the introduction of guidelines for GBS prevention.

**Neonatal GBS disease occurs in two time frames:**

- EARLY ONSET (EOD): occurs during the first seven days of life though 90% of cases are present within 24 hours; this review cites evidence for a significant number of risk factors, including GBS bacteriuria during pregnancy, gestational age less than 37 weeks, preterm labour/birth and birth weight less than 2500g.
- LATE ONSET (LOD): occurs after seven days of life and up to the end of three months; risk factors include non-white race and preterm birth.

**Preventative measures include:**

- vaccination (an area in which the reviewers see further advances as likely)
- chlorhexidine vaginal washes (which reduce bacterial load but showed no effect on rates of EOD)
- intrapartum antibiotic prophylaxis to women with known GBS colonization.

It is the latter which is the focus of this review, and the reviewers locate the need for this review in relation to a number of issues:

**1) The current approach means that large numbers of women and babies are exposed to the side effects and adverse events associated with antibiotics:**

*'Most women colonized with GBS are asymptomatic, so screening is necessary if these women are to be identified. However, of the women in labor who are GBS positive, very few will give birth to babies who are infected with GBS. Hence, giving IV antibiotics to all women in labor who are GBS positive will put a large number of women and babies at risk of adverse effects unnecessarily. These adverse effects include potentially fatal anaphylaxis, increase in drug-resistant organisms and the medicalization of labor and the neonatal period (RCOG 2003).'* (Ohlsson & Shah 2009: 4)

**2) The many discrepancies and uncertainties that exist in this area:**

*'[N]umerous guidelines with different recommendations have been published by various organizations…Although these current guidelines are based on studies of poor quality (Ohlsson [& Myrh] 1994), there seems to be a temporary association between the introduction of guidelines and a decline in the GBS EOD rate (CDC 2005; CDC 2007; Schrag 2002). However, there has been no reduction in LOD GBS disease in infants (CDC 2007). Mortality has decreased. The same literature has been interpreted differently by different professional organizations."* (Ohlsson & Shah 2009: 4)

**3) The fact that, while research has shown that antibiotics do reduce the vaginal GBS colony count in women (McNanley *et al* 2007), it does not necessarily follow that antibiotic prophylaxis will impact neonatal morbidity or mortality rates:**

*'A critical review of randomized controlled trials of intrapartum chemoprophylaxis of perinatal GBS infections identified numerous methodological flaws (Ohlsson and Myhr 1994). Whether we are using the optimal strategy for GBS management in pregnancy has been questioned (Yudin 2006). A Cochrane review adopting high-quality methodology is, therefore, justified.'* (Ohlsson & Shah 2009: 4)

"The same literature has been interpreted differently by different professional organizations"

"The use of IAP did not significantly reduce the incidence of all cause mortality, mortality from GBS infection or from infections caused by bacteria other than GBS"

## The review

**The primary objective of this review was:**

*'To assess the effect of intrapartum antibiotics for maternal Group B haemolytic streptococci (GBS) colonization on mortality from any cause, from GBS infection and from organisms other than GBS.'* (Ohlsson & Shah 2009: 5)

The reviewers sought randomized or quasi-randomized trials which had assessed the impact of intrapartum antibiotics on GBS colonization and infections in babies born to women who were known to be colonized with GBS during pregnancy. Both reviewers assessed the quality of each of these studies according to the Cochrane guidelines, in order to determine whether they were of a high enough standard to be included in the review. The authors of such reviews pay particular attention to possible sources of bias that may call the results of the included studies into question.

Four trials involving 852 women were included in the review. Three of these compared either ampicillin or penicillin with no treatment and the fourth compared ampicillin with penicillin. The reviewers found that the risk of bias was high; their concerns included (but were by no means limited to) that:

*'No study reported on a pre-set sample size. No placebo was used in the three studies comparing one antibiotic versus no treatment…Consequently, patients, care providers and researchers in these three studies were not blinded to group assignment…These three studies were published more than 19 years ago. Two studies reported on results after different numbers of women had been enrolled…In one study the authors clearly waited for an additional neonatal outcome in the control group…and when this outcome occurred they published their final report…In addition, they changed their level of significance…In [one] study women who developed intrapartum fever were excluded as were their offspring from the analyses, which is remarkable in a study that attempted to prevent infections. In 11% of the women randomized the maternal and neonatal outcomes were not reported…[In another study] the authors did not state in which group the only neonatal infection occurred and they do not provide a definition for their outcomes of suspected infection and chorioamnionitis.'* (Ohlsson & Shah 2009: 9)

These issues affected the reviewers' ability to draw conclusions from the trials, although the findings of the studies show that antibiotics had no statistically significant effect on the primary outcomes:

*'The use of IAP did not significantly reduce the incidence of all cause mortality, mortality from GBS infection or from infections caused by bacteria other than GBS.'* (Ohlsson & Shah 2009: 1)

The reviewers did find that, when the studies were combined, intrapartum antibiotic prophylaxis appeared to reduce EOD GBS, but again noted that this result may well be a result of bias. In looking at the implications of this review for women and midwives, the reviewers' own conclusions included that:

*'Ideally the effectiveness of intrapartum antibiotics to GBS colonized women to reduce neonatal GBS infections should be studied in adequately sized double blind controlled trials. The opportunities to conduct such trials have likely been lost as practice guidelines have been introduced in many jurisdictions. It should be noted that the guidelines have changed many times, indicating that they are not based on clear evidence informing best clinical practice.'* (Ohlsson & Shah 2009: 1)

"it is easy to understand how the experience of losing a baby could lead to a desire to do something in order to prevent others from having the same experience"

## Summary and discussion

This area of practice is a controversial one. As the reviewers note, the pressure to implement some kind of prophylaxis came from parents and the media, and it is easy to understand how the experience of losing a baby could lead to a desire to do something in order to prevent others from having the same experience. Unfortunately, there is no way of preventing all cases of GBS disease, there is a lack of evidence of effectiveness of intrapartum antibiotic prophylaxis and there are significant ramifications of continuing to recommend this to large numbers of women. While there exist a number of examples of maternity care in which practice does not correlate with the evidence, the fact that the reviewers see further research as being limited because of the current guidelines in place in many areas makes this situation particularly extreme. The combination of the pressure to 'do' something in an attempt to prevent tragedy and the perceived difficulty of going against entrenched guidelines - whether or not they are evidence-based - would appear to have led to a situation where we may be doing more harm than good, without any means of working out if and how we could do better.

## References


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