



Timing of antibiotic prophylaxis for C-section: Better before incision?

Yes This meta-analysis found that preoperative administration of prophylactic antibiotics reduced the risk of postpartum endometritis and total infectious morbidity to a greater degree than administration at the time of cord clamp.

Costantine MM, Rahman M, Ghulmiyah L, et al. Timing of perioperative antibiotics for cesarean delivery: a metaanalysis. Am J Obstet Gynecol. 2008;199:301.e1-301.e6.

▶ EXPERT COMMENTARY

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This analysis included three randomized controlled studies involving 749 women; 377 received antibiotics before the skin incision, and 372 received them at cord clamp. Preoperative administration was associated with a clinically and statistically significant 53% decrease in endometritis (relative risk [RR], 0.47; 95% confidence interval [CI], 0.26–0.85, $p=.012$) and composite morbidity without any impact on suspected or proven neonatal sepsis or NICU admission. The meta-analysis demonstrated only a trend toward reduction in wound infection (RR, 0.60; 95% CI, 0.30–1.21; $p=.151$), but this finding is consistent with other studies exploring the impact of antibiotic prophylaxis and wound infection.

There is already a solid body of literature to support preoperative antibiotic prophylaxis for other clean or clean-contaminated surgery.¹ There is also substantive evidence that both elective and intrapartum C-sections benefit from antibiotic prophylaxis, with a statistically and clinically significant reduction in endometritis, wound infection, and composite morbidities, compared with no treatment.² There has been resistance to *preoperative* antibiotics for C-section because of a theoretical risk of masking neonatal sepsis.

WHAT THIS EVIDENCE MEANS FOR PRACTICE

This meta-analysis provides good evidence that we should change our practice to administer prophylactic antibiotics 1) for all cesarean deliveries and 2) before the skin incision whenever possible.

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Strengths of the study

- It was powered sufficiently to answer the fundamental question: Is there a benefit to the mother or risk to the newborn from preoperative antibiotics?
- The studies included were homogenous
- The analysis had biological plausibility
- The findings are congruent with other studies of antibiotic prophylaxis
- The same antibiotic was used in all studies, and both labored and elective cesarean deliveries were included.

Still a question about precise timing

More studies are needed to determine whether the dose of antibiotics should be weight-based and repeated for prolonged cases, as has been suggested for other surgical procedures. The optimal window for preoperative antibiotics also needs to be delineated. For scheduled procedures, including cesarean delivery, there is the luxury of timing the antibiotics fairly precisely 1 or 2 hours before skin incision. Intrapartum cesarean delivery is often unpredictable, is sometimes done in an urgent manner, and arguably carries an even higher risk of infectious morbidity. ❌

References

1. Classen DC, Evans RS, Pestotnick SL, Horn SD, Menlove RL, Burke JP. The timing of prophylactic antibiotics and the risk of surgical wound infection. *N Engl J Med.* 1992;326:281–286.
2. Small F, Hofmeyr GJ. Antibiotic prophylaxis for cesarean section. *Cochrane Database Syst Rev.* 2002;(3):CD000933.



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