Antimicrobial prophylaxis for cesarean delivery has been a general practice for cesarean deliveries because it significantly reduces postoperative maternal infectious morbidity. Recently, several randomized clinical trials investigated the timing of antimicrobial prophylaxis for cesarean delivery. The Committee on Obstetric Practice recommends antimicrobial prophylaxis for all cesarean deliveries unless the patient is already receiving appropriate antibiotics (eg, for chorioamnionitis) and that prophylaxis should be administered within 60 minutes of the start of the cesarean delivery.

Surgical research data support antimicrobial prophylaxis administration, ideally within 30 minutes and certainly within 2 hours of the time of skin incision, to prevent surgical site infection. In one study, 1.4% of patients who received perioperative antimicrobial prophylaxis within 3 hours after skin incision had wound infections, versus 0.6% of patients who were given preoperative prophylaxis in the 2 hours before skin incision. The infusion should be timed so that a bactericidal serum level is established by the time of skin incision, and to maintain therapeutic levels throughout the operation. For longer surgical procedures, readministration of the drug is indicated at intervals of one or two times the half-life of the drug (using the same dose). Narrow-spectrum antibiotics that are effective against gram-positive bacteria, gram-negative bacteria, and some anaerobic bacteria, such as a first-generation cephalosporin, are mainly used for prophylaxis for cesarean delivery. After a single 1 gram intravenous dose of cefazolin, a therapeutic level is maintained for approximately 3–4 hours. A larger dose may be indicated if a woman is obese. For women with a significant allergy to β-lactam antibiotics, such as cephalosporins and penicillins, clindamycin with gentamicin is a reasonable alternative.

In a 2007 randomized, controlled trial designed to examine maternal infectious morbidity rates after cesarean delivery, 175 and 182 women received antibiotics preoperatively and after umbilical cord clamping, respectively. The administration of cefazolin (1 g, intravenously) 15–60 minutes before cesarean delivery (preoperative group) was associated with a significant reduction of endometritis of 1% compared with a rate of 5% in women who received the same medication after umbilical cord clamping (cord-clamp group). There was no significant difference in the rates of postoperative wound infections in the two treatment groups. Overall, the total postoperative infection rates were decreased significantly from 11.5% to 4.5% in the preoperative group compared with the cord-clamp group. There were no differences in the rates of neonatal sepsis, neonatal intensive care unit admission, or neonatal sepsis due to resistant organisms, although the study was not designed with sufficient power to address these secondary outcomes.
In 2005, another randomized controlled trial evaluated the administration of cefazolin (2 g, intravenously) at the time of skin incision (at-incision group) compared with administration after umbilical cord clamping in women in labor undergoing cesarean delivery (cord-clamping group) (3). The investigators observed a significant decrease in endometritis (7.8% versus 14.8% in the at-incision group and the cord-clamping group, respectively), but not wound infection (3.9% versus 5.4% in at-incision group and cord-clamping group, respectively) (3). The initial power analysis for this study suggested that 270 women per group were needed, but the interim analysis determined a need for only 150 per group; therefore, the study was stopped with 153 and 149 women per group for the at-incision and cord-clamping groups, respectively. In addition, the infection rates for both groups in this study were three times higher than in the 2007 study. There were no differences in rates of neonatal intensive care unit admission, neonatal sepsis, or suspected sepsis between the groups although this study also was underpowered for evaluation of these secondary outcomes. The only other randomized trial examining cefazolin was smaller (90 patients), and found no significant difference in maternal infectious outcome (4). These investigators observed similar rates of endometritis (2% versus 2.4% in the preoperative antibiotic group and the after-cord-clamping group, respectively) and wound infection (2% versus 4.9% in preoperative antibiotic group and after-cord-clamping group, respectively) (4, 8).

From these data, it would appear that preoperatively administered antimicrobial prophylaxis does not appear to have any deleterious effects on mother or neonate. Preoperative administration significantly reduces endometritis and total maternal infectious morbidity compared with administration of antibiotics after umbilical cord clamping (8). These data further suggest that preoperative antimicrobial prophylaxis for cesarean delivery is not associated with an increase in neonatal infectious morbidity or the selection of antimicrobial resistant bacteria causing neonatal sepsis. However, because the studies were not powered to analyze those outcomes, additional prospective evaluation is warranted.

The Committee on Obstetric Practice recommends antimicrobial prophylaxis for all cesarean deliveries unless the patient is already receiving appropriate antibiotics (eg, for chorioamnionitis) and that prophylaxis should be administered within 60 minutes of the start of the cesarean delivery. When this is not possible (eg, need for emergent delivery), prophylaxis should be administered as soon as possible.

References