

# Start Antibiotics Prior to C-Section Incision

*Data show this significantly reduces maternal infections, does not appear to harm newborns.*

BY KERRI WACHTER

FROM OBSTETRICS & GYNECOLOGY

Antimicrobial prophylaxis now should be given within 60 minutes of the start of a cesarean delivery, rather than after cord clamping,

The recommended change in practice comes from a new opinion by the American College of Obstetricians and Gynecologists' Committee on Obstetric Practice as Committee Opinion No. 465 (Obstet. Gynecol. 2010;116:791-2).

"Based on the latest data, prophylactic antibiotics given to pregnant women before a cesarean significantly reduce maternal infections and do not appear to harm newborns," Dr. William H. Barth Jr., chair of the committee, said in a statement.

"Anytime you have invasive surgery, you have an increased risk of developing an infection at the incision site," he said. Infection is the most common complication of cesarean delivery and can occur in an estimated 10%-40% of women who undergo cesarean delivery, compared with 1%-

3% of women who deliver vaginally, according to ACOG.

The committee recommends antimicrobial prophylaxis for all cesarean deliveries unless the patient is already receiving appropriate antibiotics. When it is not possible to begin administration within 60 minutes of the first incision—as with emergent delivery—prophylaxis should be administered as soon as possible.

Antimicrobial prophylaxis has been a common practice for cesarean deliveries. However, intraoperative antibiotics have been administered after umbilical clamping due to concerns about neonatal exposure to antibiotics. In particular, it has been theorized that antibiotics in neonatal serum could mask positive bacterial culture results in newborns and that fetal antibiotic exposure could lead to increased newborn colonization or infection with antibiotic-resistant organisms.

Older studies had suggested that when prophylactic antibiotics were given before the cesarean, pediatricians tended to do more invasive neonatal sepsis evaluations

and costs were increased, Dr. Barth said in an interview. "This was based on the fear that the antibiotics given to the mother would cross rapidly to the fetus and then mask the signs of infection in the newborn child." Pediatricians feared that the usual signs of sepsis might be masked by these antibiotics. Given this fear, tests such as blood draws and lumbar punctures that are useful in making a diagnosis of newborn sepsis tended to be used more frequently.

"However, based on recent randomized clinical trials and systematic reviews, giving the mother the antibiotics before the cesarean incision does not appear to increase problems in the newborn. None of the studies were large enough to say that definitively, but given the overall benefit to the mother, our committee—which included pediatricians—felt that this was the right thing to do," said Dr. Barth, chief of maternal-fetal medicine at Massachusetts General Hospital, Boston.

In fact, preoperative antimicrobial prophylaxis "does not appear to have any deleterious effects on mother or neonate," the committee wrote. Timing really does make a difference. In the studies reviewed, preoperative administration significantly reduced the rates of endometritis and to-

tal maternal infectious morbidity, compared with administration after cord clamping. Just as importantly, preoperative administration was not associated with an increase in neonatal infectious morbidity or the selection of antimicrobial-resistant bacteria causing neonatal sepsis.

The committee recommends that the infusion be timed so that a bactericidal serum level is reached by the time of skin incision. Therapeutic antibiotic levels should be maintained throughout the operation. Readministration is indicated at intervals of one or two times the half-life of the drug during longer procedures. The committee recommends using narrow-spectrum drugs that are effective against gram-positive and gram-negative bacteria and against some anaerobic bacteria—such as first-generation cephalosporins. Notably, obese women may require doses larger than the recommended 1 gram intravenous cefazolin (with a therapeutic dose maintained for 3-4 hours). Clindamycin with gentamicin is an acceptable alternative for women with significant allergies to beta-lactam antibiotics. ■

**Disclosures:** Dr. Barth said he had no conflicts of interest to disclose.

## Periconceptional Multivitamin Use May Prevent Preterm Birth

VITALS

**Major Finding:** Normal-weight women who took multivitamins in the periconceptional period were 16% less likely to give birth preterm than were women who did not take them; the benefit was due to a reduced risk of preterm birth after spontaneous preterm labor.

**Data Source:** An observational study of 27,259 women with singleton pregnancies enrolled in the Danish National Birth Cohort.

**Disclosures:** Dr. Catov reported that she had no relevant conflicts of interest.

BY SUSAN LONDON

FROM THE ANNUAL MEETING OF THE SOCIETY FOR PEDIATRIC AND PERINATAL EPIDEMIOLOGIC RESEARCH

SEATTLE — Use of multivitamins around the time of conception may protect against preterm birth, but the benefit depends on a woman's weight and the type of preterm birth, according to findings of a cohort study among more than 27,000 Danish women.

Normal-weight women were 16% less likely to give birth preterm if they took multivitamins in the periconceptional period. This reduction was due to a lower risk of preterm birth after spontaneous (idiopathic) preterm labor. In contrast, overweight women were not less likely to have a preterm birth if they took multivitamins periconceptionally. Also, use did not reduce the risk of preterm births that were medically indicated or that occurred after premature rupture of membranes (PROM).

"Our data suggest that multivitamin use around the time of conception and implantation may reduce risk of idiopathic preterm labor among normal-weight women," lead investigator Janet M. Catov, Ph.D., said at the meeting. The dose of vitamins may have been insufficient in overweight women or perhaps they had higher levels of systemic inflammation, she speculated. "As we better understand the complexity of overweight and obesity in pregnancy, I hope that we might better understand that."

"The fact that we did not see a relationship to membrane rupture suggests that what we might be describing are more sort of early and important characteristics of pregnancy that may... set the stage, if you will, for successful pregnancy or less successful pregnancy," she commented.

Explaining the rationale for the study, Dr. Catov, assistant professor of epidemiology at the University of Pittsburgh, noted that women's nutritional status is likely important for placentation, and abnormal placentation has been associated with both spontaneous and medically indicated preterm births. "Previous work by our group and others has suggested that periconceptional multivitamin use is related to reduced risk for preeclampsia, early preterm birth, and growth restriction."

The investigators analyzed data from the Danish National Birth Cohort, which enrolled pregnant women in Denmark between 1997 and 2003.

Analyses were based on women who were recruited at more than 5 weeks' but less than 24 weeks' gestation of a singleton pregnancy, provided detailed information on vitamin use in the periconceptional period (extending from 4 weeks before the last menstrual period to 8 weeks after), and had a live birth.

To look more closely at the issue of timing of multivitamin use, they subdivided the periconceptional period into a preconceptional period (4 weeks before last menstrual period to 2 weeks after) and a postconceptional period (2 weeks after last menstrual period to 8 weeks after). To look at the issue of frequency of multivitamin use, within each 6-week period, they classified use as partial (3 weeks or less) or regular (4 weeks or more).

A total of 19,677 women reported at least some use of multivitamins periconceptionally, and 7,582 did not report any use. Users were somewhat less likely to be younger than age 25 than were nonusers (13% vs. 19%, respectively), to be overweight, defined as having a prepregnancy body mass index of 25 kg/m<sup>2</sup> or greater (28% vs. 33%), to smoke (14% vs. 23%), to get no physical exercise (62% vs. 68%), to have low socioeconomic status (3% vs. 7%), and to be multiparous (48% vs. 57%). Users were somewhat more likely to have a health-conscious diet than were nonusers (21% vs. 14%).

Overall, in adjusted analyses, multivitamin users were significantly less likely than nonusers to give birth preterm, meaning before 37 weeks' gestation (hazard ratio, 0.88). But after stratification by weight, this benefit was seen only among women who were of normal weight, defined as having a prepregnancy BMI of less than 25 kg/m<sup>2</sup> (HR, 0.84).

Timing and frequency of multivitamin use were important, according to Dr. Catov. Normal-weight women were significantly less likely to have a preterm birth if they partially used multivitamins preconception and regularly used them post conception (HR, 0.77) or

regularly used them in both periods (HR, 0.82). However, they did not have a significant reduction in risk if they only used them regularly post conception or used them partially in both periods.

"Future studies are needed to determine the actual nutrients that might be involved ... and to really understand what mechanisms might be involved," she concluded. "We also need to better understand the relationship between periconceptional multivitamin use and adverse events, and that work is actually under way with our colleagues in Denmark." ■



The effect was limited to idiopathic preterm labor in normal-weight women.

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