Streptococci and E. coli continue to put newborns at risk for sepsis

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Bloodstream infections in newborns can lead to serious complications with substantial morbidity and mortality. What's more, the pathogens responsible for neonatal infections have changed over time. In recent years, however, antibiotic prophylaxis given to at-risk mothers has reduced the incidence of early-onset group B streptococcal infections among their babies.

A new nationwide, multi-site study aimed at determining current early-onset sepsis rates among newborns, the pathogens involved, and associated morbidity and mortality demonstrates that the most frequent pathogens associated with sepsis are group B streptococci (GBS) in full-term infants and Escherichia coli in preterm infants.

The study, which included nearly 400,000 newborns, also found that infection rates in newborns increased with decreasing gestational age and birth weight. The overall rate of infection was 0.98 per 1,000 live births; 0.41 per 1,000 live births involving GBS and 0.28 per 1,000 live births involving *E. coli*.

The study appears online April 25 and in the May 2011 issue of *Pediatrics*.

GBS emerged as the leading cause of early-onset sepsis and meningitis in newborns in the 1970s. In 2002, the Centers for Disease Control and Prevention recommended universal screening of women at 35 to 37 weeks of pregnancy followed by chemoprophylaxis for women with

GBS colonization.

Sepsis occurs when pathogenic bacteria enter the blood stream, causing systemic infection. In infants less than 72 hours old, sepsis is considered of early onset.

"Infections occur in almost one case per thousand live births," says Barbara Stoll, MD, lead investigator for the study. Stoll is the George W. Brumley, Jr., Professor and Chair, Department of Pediatrics in Emory University School of Medicine. "With approximately 4 million births a year in the United States, this equates to a substantial burden of disease. We estimate that approximately 3,000 infants a year develop early-onset sepsis. With current mortality rates, approximately 300 to 350 deaths per year are associated with neonatal sepsis. So, it's not inconsequential."

The study also shows that opportunities for prevention of neonatal GBS infections continue to be missed. "Missed opportunities for prevention of GBS include failure to screen all women who deliver at term, failure to provide antibiotics to all colonized women or to those who delivered preterm with unknown colonization status and false negative GBS screens among women who deliver with GBS infection," says Stoll.

"Our findings suggest that accurate point-of-care diagnostic tests at the time a woman comes in for delivery would enhance our ability to identify at-risk women."

In addition, the gap in linking electronic medical records between a woman's obstetrician and the hospital where she delivers can also impede prevention. "A community health record that links the medical record in a physician's office with the hospital where the woman gets care could enhance identification and therapy for at-risk women," says Stoll. "If a woman has been screened for GBS and is known to be colonized, that information should be available to the health care team taking care of

her at the time she is in labor."

Provided by Emory University