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MRSA, MSSA Infections Both Carry a 25% Mortality Rate in VLBW Infants

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[Authors and Disclosures](#)

May 4, 2010 (Vancouver, British Columbia) — *Staphylococcus aureus* invasive infections due to methicillin-sensitive *S aureus* (MSSA) far outnumber methicillin-resistant *S aureus* (MRSA), according to a study presented here at the Pediatric Academic Societies 2010 Annual Meeting. Although both types of infection are uncommon, they have a high mortality rate.

Overemphasis on the detection of MRSA infections might come at the cost of missed cases of MSSA infections in this patient population, researchers warned meeting attendees.

The results indicate that clinical emphasis on the detection of MRSA-related invasive infections might mean that clinicians overlook the danger posed by MSSA.

"Many perceive that MRSA is a more virulent or more serious pathogen. While there are certain molecular types of MRSA that result in more severe infections than other molecular types of MRSA, this evaluation shows that overall, in extremely premature neonates, MRSA and MSSA infections have comparable morbidity and mortality," study presenter Andi Shane, MD, MPH, from Emory University School of Medicine in Atlanta, Georgia, told *Medscape Pediatrics*.

An invasive infection with either MRSA or MSSA, although uncommon, was a death sentence for 25% of very low birth weight (VLBW) infants.

The multicenter study used the data-gathering power of the National Institute of Child Health and Human Development Neonatal Research Network (NRN). A total of 9407 VLBW infants (defined as being 40 to 1500 g at birth) were treated from January 1, 2006 to December 31, 2008 at the 20 participating NRN centers studied.

The data collected were from time of birth to hospital discharge or hospital day 120, or to time of death. Early-onset infection (defined as occurring within ≤ 72 hours of birth) and late-onset infection (defined as occurring more than 72 hours after birth) were confirmed with the detection of bacteria or fungi in blood or cerebrospinal fluid. Infants who died in the first 3 days of life were excluded, because they had not lived long enough to have developed late-onset infection. Treatment was always for 5 days or more.

The relative risks for MRSA and MSSA infection considered by the researchers were antibiotic use by the mother, sex of the newborn, gestational age, race/ethnicity, and the presence of a major birth defect.

Of the 8444 eligible infants, 2196 (26%) had a confirmed infection that was predominantly late-onset (2053 cases, 24%). *S aureus* infections occurred in 316 of the infants (3.7%).

Of these 316 infections, MRSA accounted for 88 of the cases, which represented 1% of all the infants and 28% of all those with *S aureus* invasive infections. MSSA was much more pronounced, with 228 cases, representing 2.7% of all infants and 72% of the *S aureus* invasive infections.

Extreme prematurity (gestational age of 28 weeks or less) was the greatest risk factor for both MRSA and MSSA invasive infections. There were no significant differences in rates of morbidity during hospitalization at birth between VLBW infants with MRSA and with MSSA.

As well, examination of a standard battery of conditions associated with morbidity in premature infants did not reveal any notable differences between newborns infected with MRSA or MSSA.

However, the data from the reporting centers revealed "a striking difference between MRSA rates." Nine centers did not report any MRSA invasive infections during the 2-year study, and the MRSA rates among the remaining centers varied widely (range, 4% to 69%).

"These differences could represent differing background rates of MRSA in the community and in the hospitals in which the neonatal intensive care units are located. Furthermore, it is possible that different infection-prevention strategies and other center-specific practices could account for these differential rates," Dr. Shane told *Medscape Pediatrics*.

Ethnicity might also play a role. There were proportionally more non-Hispanic blacks at some centers. Analysis of the ethnic make-up of the patient populations at all 20 centers revealed an increased risk for MRSA infection in non-Hispanic black newborns than in non-Hispanic white newborns (relative risk, 1.83; 95% confidence interval, 1.15 - 2.93).

"This study provides timely and provocative data," said Morven Edwards, MD, professor of pediatrics at Baylor College of Medicine in Houston, Texas.

"It would be very interesting to know how Staphylococcus infections present in newborns, compared with other bloodstream infections," Dr. Edwards added.

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