

Surveillance Fails to Stop MRSA in Neonatal ICU

BY ROBERT FINN

A 7-year program of intense surveillance and isolation in a neonatal intensive care unit failed to eradicate methicillin-resistant *Staphylococcus aureus* colonization.

At the beginning of the period, in August 2000, the incidence of colonization with methicillin-resistant *Staphylococcus aureus* (MRSA) at Boston's Brigham and Women's Hospital neonatal ICU was 1.79 cases per 1,000 patient-days. By 2005 the incidence had declined substantially—to 0.15 cases per 1,000 patient-days—but it rose to 1.26 cases per 1,000 patient-days in 2007 (Pediatrics 2009;123:e790-6).

During that time investigators isolated 14 different MRSA strains from infants in the NICU, suggesting that MRSA was

Over a 7-year period, investigators isolated 14 different MRSA strains from infants in the hospital's NICU, suggesting that MRSA was introduced repeatedly and by multiple sources.

introduced repeatedly and by multiple sources. "This may explain why our continuous MRSA surveillance program did not result in permanent eradication of MRSA in the unit," wrote Dr. Mary Lucia Gregory of the department of neonatology, Beth Israel Deaconess Medical Center, Boston, and her colleagues.

Strains found from 2000 to 2004 tended to be hospital associated, while those found from 2006 to 2007 tended to be community associated, the investigators said.

The retrospective study involved 7,997 infants, 102 of whom were either colonized or infected with MRSA (1.3%). All infants were screened weekly with nasal/rectal cultures. In all, 19,090 screening cultures were collected and analyzed during the surveillance program. Hospital charges, which were not billed to insurers, exceeded \$1.5 million during this period.

Not all infants who were colonized with MRSA had an invasive infection. The proportion with an invasive infection ranged from 8% in 2001 to 33% in 2005. Investigators detected no statistically significant differences between the 15 infants who were infected and the 87 who were merely colonized. There was a trend, however, toward lower gestational age and older postmenstrual age at discharge for the infected infants.

Of the 15 infected infants, 9 (60%) had a soft tissue infection without bloodstream infections, and the other 6 (40%) had MRSA in blood cultures.

Seven of the infants with soft tissue infections had skin pustules, and the other two had ear drainage. Two of the infants with bacteremia developed septic arthritis. There were no confirmed cases of meningitis, although one infant's

condition was judged too unstable for a lumbar puncture, and that patient was treated for presumed meningitis. One infant died of MRSA sepsis.

All six of the infants with bloodstream infections received treatment with intravenous vancomycin, as did six of the nine infants with soft tissue infections. The remaining three were treated with topical or oral antibiotics. Treatment failed to eradicate MRSA colonization in one of

the six bloodstream infections and in eight of the nine soft tissue infections.

Infants developed positive MRSA cultures a median of 12 days following admission to the NICU, with a range of 1-119 days. Clinicians made no attempt to decolonize infants during the study period, and investigators were unable to determine the total duration of MRSA colonization. At discharge, 63 (62%) of the 102 infants remained colonized.

In comparing the 63 infants who remained colonized at discharge with the 39 who did not, the investigators found two statistically significant differences. The infants who were colonized at discharge had a higher median gestational age (32 weeks vs. 27 weeks) and a higher median birth weight (1,650 g vs. 1,120 g).


The investigators indicated that they had no financial relationships relevant to the study. ■

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