

## **Successful Control of Methicillin-Resistant *Staphylococcus Aureus* (MRSA) Colonization Using Surveillance Cultures in a Newborn Intensive Care Unit (NICU)**

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**Background:** MRSA colonization and infection is an increasingly recognized problem in NICUs.

**Objective:** To assess the effectiveness of a comprehensive screening and isolation program for controlling MRSA colonization for all patients admitted to a large tertiary NICU after 9/00, and to describe the patient characteristics of infants with MRSA colonization and invasive disease.

**Design/Methods:** All NICU infants were screened weekly by nasal/rectal swabs for MRSA. Colonized patients were isolated and cared for as a cohort. Data collection included demographics, clinical course, and age at colonization of culture-positive infants from the start of screening to 12/05. We also recorded the antibiotic (abx) resistance pattern of all MRSA isolates to assess whether it was consistent with hospital-acquired or community-acquired (CA) MRSA.

**Results:** During the study period, 6265 infants were admitted to the NICU. Sixty-nine infants had positive screening cultures for MRSA; 40 of these were identified in the first two years of the surveillance program. The number of cases fell by 50% in each of the subsequent two-year periods (incidence of MRSA colonization in 2000: 32/1000 vs 2005: 2.8/1000,  $p < 0.01$ ). The median gestational age at birth for colonized infants was 30 weeks [range 23-40, IQR 26,32]. Median postnatal age at the time of the first positive culture was 11 days [range 1-88, IQR 6,20]. Ten of the 69 colonized infants developed invasive infection; infected infants were of lower GA (median 26 weeks) than colonized ones ( $p < 0.01$ ). Of the cases in 2000 and 2001, 29/40 had identical abx resistance patterns, suggesting that these represented a single MRSA strain. This strain was not identified after 2001, but multiple different strains were identified thereafter. Only 8/69 (11%) of the isolates had abx resistance patterns consistent with CA-MRSA.

**Conclusions:** A program of weekly surveillance cultures to detect MRSA colonization and isolation of affected infants successfully controlled its spread and resulted in a significant decrease in the colonization burden in our NICU. Routine screening and isolation of colonized or infected infants should be considered to help control the spread of antibiotic resistant infections in NICUs.