



## KEY POINT SUMMARY

### OBJECTIVES

To determine whether rates of colonization by MRSA, late-onset sepsis, and mortality are reduced in neonatal single-patient rooms.

### DESIGN IMPLICATIONS

When considering the mitigation of MRSA or other pathogen transmission in hospital design, increasing the numbers of single-patient rooms may not be the most effective solution. This study identified hand hygiene to be the only noticeable variable that affected MRSA levels; thus the quantity of hand-washing sinks and their placement should be carefully considered.

## Impact of neonatal intensive care bed configuration on rates of late-onset bacterial sepsis and methicillin-resistant *Staphylococcus aureus* colonization

Julian, S., Burnham, C. A. D., Sellenriek, P., Shannon, W. D., Hamvas, A., Tarr, P. I., & Warner, B. B. 2015 | *Infection Control and Hospital Epidemiology* Volume 36, Issue 10, Pages 1173-1182

### Key Concepts/Context

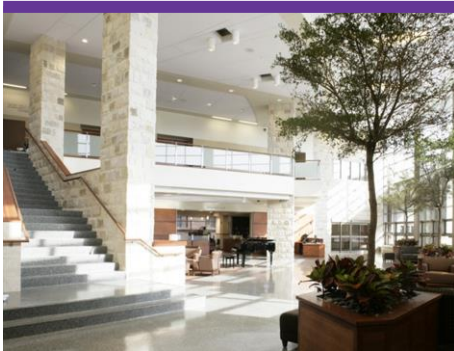
Late-onset infections are a continuing issue, causing notable levels of morbidity and mortality in neonatal intensive care units (NICUs), while also increasing the length of patient stay and financial burdens on healthcare institutions. Few previous studies have tested the hypothesis that infants in single-patient rooms have a lower risk of methicillin-resistant *Staphylococcus aureus* (MRSA) colonization, late-onset sepsis, and death.

### Methods

An American NICU with 36 single-patient beds and three open-unit rooms featuring nine to 14 beds was examined in this study. Nurse-to-patient ratios were 1:1-3 depending on the severity of illness. Bed assignments were based on bed availability and staffing without regard to acuity, diagnosis, or bed configuration. Bed location and microbiology results found in clinical datasets from these locations were analyzed over a period of 29 months. All patients were cared for using standard precautions, regardless of MRSA colonization status.

### Findings

A total of 1,823 subjects representing 55,166 patient days were included in the results. Patients in both the single-patient and open-unit rooms were similar in terms of birthweight, sex, gestational age at birth, sex, insurance type, race, and illness severity based on CRIB-II score, and maximum acuity score. Both the incidence of MRSA colonization as well as rates of confirmed late-onset sepsis (CLOS) in single-patient and open-unit rooms were similar. Hand hygiene variables were the only variables that seemed to affect MRSA colonization. Generally, single-



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patient rooms did not provide enhanced protection against MRSA colonization, CLOS, or the combined outcome of CLOS or death.

**Limitations**

All data used in this study were collected retrospectively. Visitor-to-patient transmission or interhost transfer of pathogens was not accounted for in this study. The authors note that this study did not address culture-negative sepsis, which could have led to overestimations of sepsis events.

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