



KEY POINT SUMMARY

OBJECTIVES

To investigate fluctuations in nosocomial infection rates within a neonatal intensive care unit over a four-year observation period.

Reduced nosocomial infection rate in a neonatal intensive care unit during a 4-year surveillance period

Chen, Y. C., Lin, C. F., Rehn, Y. J. F., Chen, J. C., Chen, P. Y., Chen, C. H., ... & Huang, F. L. 2017 | *Journal of the Chinese Medical Association*. Pages 1-5

Key Concepts/Context

Infants receiving treatment within neonatal intensive care units (NICUs) are subject to higher rates of nosocomial infection. This may be due to the immature nature of infant immune systems as well as the nature of modern diagnostic and therapeutic procedures. However, further research is needed to better understand how the physical environments of NICUs contribute to nosocomial infection rates. Recently, the concept of “bundles” was developed by the Institute for Healthcare Improvement. Bundles give healthcare providers more reliable ways to deliver treatment to patients who require treatments with inherent risks.

DESIGN IMPLICATIONS

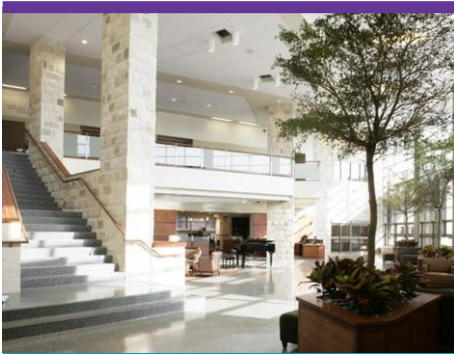
The use of evidence-based “bundles” for the administration of treatment may help reduce infections during particularly high-risk procedures. Additionally, providing extra space between patient beds, as well as sinks and washbasins, could help further reduce infection rates within NICUs. Additional isolation facilities also appeared to contribute to reduced infection rates.

Methods

This study took place within one 14-bed NICU within a Taiwanese hospital. This NICU admitted an average of 130 babies each year. The NICU underwent renovations in 2010, supplying it with three catheter-based bundles, as well as more space between beds and sinks, and new isolation facilities. The bundles were intended to prevent ventilator-associated pneumonia, central line-associated bloodstream infections, and Foley-associated urinary tract infections. The authors developed an infection control monitoring sheet documenting episodes of nosocomial infection, infection sites, microorganism species, and study periods. Data were collected for 24 months before and after NICU renovation. A total of 512 cases were studied during this period.

Findings

Average hospital stay in the old NICU was 27.53 days and 25.82 in the new NICU. No significant differences were found in the total number of microorganism species between the old and new NICUs, except for *K. pneumoniae*, which saw a decline in infection rates from 4.6% to 0.7% in the new NICU. Overall, the use of the bundles,



The Center for Health Design:
Moving Healthcare Forward

The Center for Health Design advances best practices and empowers healthcare leaders with quality research that demonstrates the value of design to improve health outcomes, patient experience of care, and provider/staff satisfaction and performance.

Learn more at
www.healthdesign.org

along with the added space between beds and sinks and the inclusion of new isolation facilities in the new NICU seems to have contributed to reduced infection rates: the average rate of nosocomial infection decreased from 6.26 cases per 1000 patient-days to 4.09 cases per 1000 patient-days.

Limitations

This study took place in one NICU, and the findings may not be universally applicable to other NICU facilities. The authors note that no clinical presentation analysis of neonatal patients was conducted. Additionally, surveillance was not performed of environmental bacteria.

The Knowledge Repository is provided with the funding support of:



Additional key point summaries provided by:

