SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

To lower the mean ambient noise level within a level IV NICU by 10% from baseline measurements in the span of a year.

Noise reduction in the neonatal intensive care unit: A quality improvement initiative

Ahamed, M. F., Campbell, D., Horan, S., & Rosen, O. 2017 | *American Journal of Medical Quality*. Volume 0, Issue 00, Pages 1-8

Key Concepts/Context

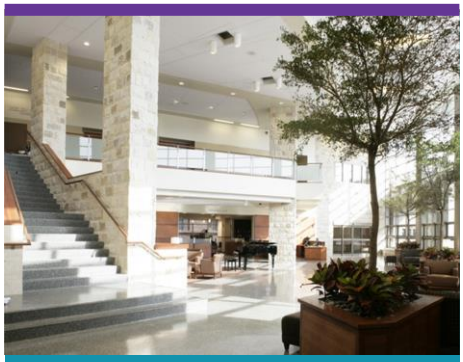
Elevated noise levels are regularly associated with adverse health effects among patients within healthcare environments. Infants are particularly vulnerable to elevated noise levels due to the immaturity of their auditory pathways, implying that neonatal intensive care units (NICUs) have an even greater responsibility for reducing noise levels. The American Academy of Pediatrics proposes that NICU noise levels remain below 45 decibels, but studies have found that average NICU noise levels range from 50 to 75 decibels. Best practices for reducing noise levels in busy NICUs are presently unclear.

Methods

This study took place at a level IV NICU that treats more than 650 neonates annually. Baseline noise levels were taken in January 2014, and an initiative to lower mean noise levels was enacted from February 2014 to January 2015. This initiative employed the Plan-Do-Study-Act (PDSA) cycle designed by the Institute for Healthcare Improvement. Noise levels were continually monitored while changes were implemented within the NICU. Employees were educated on the causes of noise and how they might be avoided.

Findings

Following the PDSA cycles, the mean noise level within the NICU decreased from 62.4 dB in January 2014 to 56.1 dB in January 2015. The sharpest decrease occurred after assigned daily noise monitors were used. Overall peak noise levels were also reduced from 115 dB to 70 dB during the study period. In sum, PDSA cycles and the use of noise monitoring systems successfully decreased the NICUs noise levels by 10%.



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Limitations

The authors note that the distribution of noise data to employees and other stakeholders after each shift may have modified staff behavior during the study. The authors also note that this study took place in an NICU that featured minimal soundproofing technology and a design that was originally intended to hold fewer beds than were present while data were being gathered. Since this study took place in one location, these results may not be universally applicable to all NICUs.

Design Implications

While soundproofing structures and increased space between patient beds can help reduce perceived noise levels within NICUs, staff and designer educational regimens concerning the causes of noise can also help improve the sonic environment. Noise monitors could be designed for consistent integration into NICUs so that staff members can remain aware of how they might contribute to the sonic environment.

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AIA Academy of Architecture for Health of the American Institute of Architects

ASHE American Society for Healthcare Engineering, A personal membership group of the American Hospital Association

AAHF Academy of Architecture for Health Foundation

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