SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

To elucidate the practical considerations and evidence involved in the selection of surface material finishes within the NICU.

Surface finish materials: Considerations for the neonatal intensive care unit (NICU)

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Key Concepts/Context

In this literature review, it is shown that a growing body of research has been focusing on how surface material finishes within neonatal intensive care units (NICUs) can contribute to the operational, clinical, and social aspects of health outcomes. These surfaces include ceilings, floors, work surfaces, walls, and upholstery. Dimensions such as durability, appearance, comfort, sustainability, sound attenuation, disinfection, and cleaning all factor into behavioral, psychological, physiological, and environmental outcomes. An overview of the different types of surface finishes is presented, and their relationship to these outcomes is described.

Methods

This literature review breaks down NICU-related surface material studies into the following categories: flooring, ceilings, walls, work surfaces, and casework and upholstery. The outcomes resulting from the implementation of different surface materials are then reviewed under the following categories: noise, hospital-associated infection (HAI), and environmental and human health.

Findings

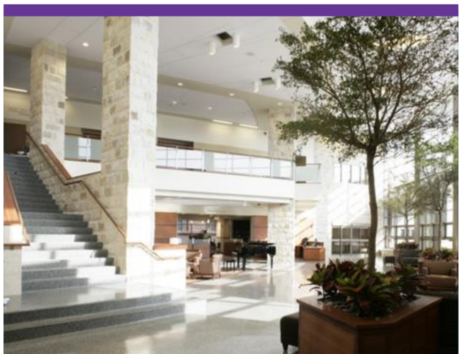
Analysis of previous studies showed that noise and HAIs were the two outcomes of most concern among both healthcare professionals and researchers. For noise reduction, several previous studies recommended coordinated efforts in the selection of materials for ceilings, floors, and walls in order to ensure optimum acoustic control. Carpeted floors and surfaces, along with sound-absorbing ceiling panels and tiles, were specifically mentioned as effective noise deterrents. Carpeted floors, when properly maintained, can be cost-effective, HAI-resistant, and noise-reducing solutions within the NICU. Walls and ceilings are generally not viewed as surfaces that present the risk of HAIs. Multiple studies noted that pathogens can dwell on work surfaces and countertops for up to seven days.

Limitations

This paper is a review of previously conducted studies. The author may have chosen studies tailored to specific outcomes or other variables of interest, and neglected other studies that may have presented undesirable assessments of materials or outcomes.

Design Implications

When selecting which material to use for any given surface within an NICU, clear goals should be made and different products assessed to achieve the desired outcome. Carpeted floors, if they are well maintained, can effectively reduce noise levels while also reducing floor-borne HAIs. Upholstery that is easy to clean and repair and that is also both nonporous and seamless is generally seen as ideal for both financial and HAI-related reasons. Materials used for work surfaces should be given special attention in relation to their surrounding environment and their anticipated amount of use, as these surfaces have a high pathogen retention rate.



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