



KEY POINT SUMMARY

OBJECTIVES

The objective of this article was to provide an appropriate course as it pertains to lighting design in single room NICUs.

Lighting for Today's Neonatal Intensive Care Unit

Rizzo, P., Rea, M., & White, R. 2010 | *Newborn & Infant Nursing Reviews*. Volume 10, Issue 2, Pages 107-113

Key Concepts/Context

Lighting is a design feature in NICUs that needs to cater to and support all users of the NICU – the infant, the staff, and the family. The authors surmise that lighting should be quiet, reliable, efficient, maintenance-free, and flexible in accordance with the diverse and changing requirements of the NICU users. The article briefly outlines the specific requirements of these users, the relation between lighting and vision in a NICU, and the suitable light sources and lighting controls for a NICU.

Methods

Lighting resources were used and a goal-oriented approach was used to present the findings of the review. No systematic method was used for the review.

Findings

The following are the findings of the review:

- The three main users of a NICU environment are the infants, their family, and the staff who care for them. Their diverse needs are outlined below:
 - Infants: The quality and intensity of light are crucial to the optic health of a premature infant. Higher ambient light levels are associated with retinal disease in neonates, although there is no established causal link. Currently, the standard practice in NICUs is to maintain light levels lower than the recommended 1000 lux (for hospital wards) and use light-reducing interventions like blankets over the incubators.
 - Staff: High, glare-free lighting is essential to the effective and error-free completion of tasks in the NICU.



- Family: Given the anxiety a family of neonate goes through, their lighting needs entail something that is gentle and provides comfort.
- The following three concepts are significant to lighting and vision in the NICU:
 - Visual performance: Low-ambient lighting between 100-200 lux is adequate for seeing objects and materials in the NICU.
 - Glare: Glare from a light source or sunlight has the ability to reduce visual performance. Reflected glare can also create visual performance problems.
 - Color: Color Rendering Index, or CRI, typically used in the design industry to quantify the ability of a lamp to provide information about color, is not considered an adequate metric for the needs of the NICU. The Gamut Area Index, or GAI, together with the CRI has proven to be more effective.
- Three types of light sources are suitable for the NICU environment – fluorescent, incandescent, and light-emitting diodes or LEDs.
- Lighting control systems:
 - The preset controls can be programmed for several lighting possibilities, which can be confusing.
 - The controls for task lighting should be located near the light.

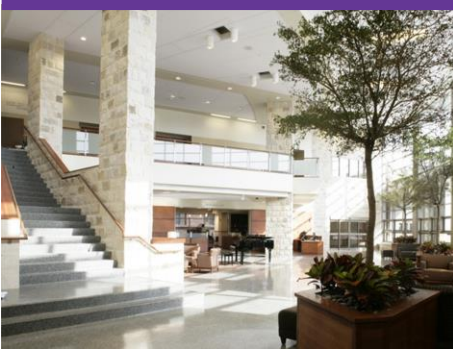
Limitations

The authors do not mention any limitations. It may, however, be noted that the authors do not refer to the methodology adopted for reviewing the resources for this study.

Design Implications

The authors suggest the following:

- Lighting
 - Ambient lighting:
 - Lighting to be indirect – illuminate the ceiling or walls
 - Suggest use of linear fluorescent luminaires in a soffit or with reflectors
 - Task lighting:



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- Provision of movable task lamps with simple controls attached to the lamps
 - Under-cabinet or undershelf lighting
 - Reading lamps in family spaces, staff lounges, and break rooms
 - Suggest use of fluorescent, incandescent, and LED lights
- Light controls
 - To be kept simple and at obvious locations
 - For ambient lighting, wall controls should:
 - Entail daytime, nighttime, and off settings
 - Be placed at 48 inches off the floor
 - For task lighting, controls should be illuminated for easy visibility and access.
 - Eliminate shiny surfaces in the NICU to avoid reflected glare.

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