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Single-Family Room, Neonatal Intensive Care Unit Design

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ABSTRACT

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Introduction

There has been an increasing trend in adopting the Single-family room (SFR) neonatal intensive care unit (NICU) model in multiple institutions. This rising trend is driven mostly by the positive impact on both short and long term medical and neurodevelopmental outcomes, compared to the open bay unit design. From multiple observations increasing parental involvement seems to be the key factor in improving the different aspects of neonatal outcomes; mainly in the subset of neonates born at less than 30 weeks of gestational age.

Advantages and Disadvantages of the SFR Design

SFR design provides several benefits in the aspect of neonatal care; including, the neonates, caregivers, and neonatal staff. For the neonates; studies have shown that the SFR design provides more suitable, low noise environment for premature infants during their relatively long period of hospitalization, compared to the open bay design [1]. Also; in the SFR units, it more feasible to control illumination density to provide light levels that can mimic the physiological day/night shifts [1]. Regarding short term adverse outcomes; Stevens D et al. [2] showed in a relatively large sample, that there was no statically significant difference between the infants cared for in both designs including; grade 3 or 4 intraventricular hemorrhage, retinopathy of prematurity, chronic lung disease, or unplanned extubating. Domanico et al. [3] Showed that infants cared for in the SFR unit had decreased incidence of mortality, nosocomial sepsis, and recorded apneic episodes. Another outcome measure they used was breastfeeding succus; which was shown to be more efficient and sustained in the SFR units compared to the open baby design. Comparing the financial aspect, the increased cost of SFR units can be balanced by the significantly decreased length of stay in SFR units compared to the open bay unit [4]. When the long-term outcomes were evaluated; higher parental involvement observed in the SFR resulted in improved neurobehavioral outcomes at discharge, [5] and both cognitive and language scores at eighteen months of age assessed using Bayley score [6].

Caring for neonates in SFR design improved parents' satisfaction significantly and provided a more convenient model to provide family-centered care and shared decision-making opportunities [7]. In addition to the advantages as mentioned earlier, SFR design resulted in increased staff satisfaction as well as stress level when compared to the open bay model [8]. In spite of these observed advantages; concerns and some reservations exist about the possibility of limited observation of critically ill infants. Concerns also exist about disturbing the teamwork environment by separating the nurses to take care of their closed isolated assigned beds, compared to the open bay unit. The workspace isolation can result in difficulties to provide enough coverage during routine breaks or while transferring neonates for procedures or imaging studies. The use of advanced technological monitoring devices as well as increased the number of staffs can provide potential opportunities to overcome the disadvantages associated with the SFR design [9].

Conclusion

Multiple positive effects on the neonates, caregivers, and neonatal intensive care unit staff of the single-family room units have been shown from the multiple observations performed in the previous two decades. These effects observed early in life translated to better neurodevelopmental outcomes at later ages.

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None.

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