DOES LOCATION OF ADMISSION AFFECT RESOURCE UTILIZATION AND OUTCOME AFTER NEONATAL CARDIAC SURGERY? A MULTI-CENTER STUDY

Oral Contributions
Room 31C
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Abstract Category: 11. Congenital Heart Disease: Pediatric
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Background: Neonatal cardiac surgeries are resource intensive with high costs and significant hospital lengths of stay (LOS). Location of initial admission unit may impact resource use and outcomes. Understanding this relationship may allow modifications to improve efficiency. We compared resource use, costs, and outcomes in neonates undergoing cardiac surgery by location of initial admission unit and sought to determine factors contributing to differences.

Methods: Data was collected from the Pediatric Health Information Systems database (38 hospitals) on neonates (age < 30 days) undergoing cardiac surgery (2004-13). Hospital costs, LOS, and mortality were adjusted for disease severity (RACHS-1 score), prematurity, genetic syndrome, prostaglandin use, low birth weight, payer, admit year, race and compared by admission unit. Costs were modeled using multivariate gamma regression models with log link and were adjusted by region to 2013 dollars. The impact of complications (including infections, ECMO use, and cardiac arrest) on differences in cost were analyzed.

Results: There were 20,995 patients admitted (neonatal ICU (NICU) 45%, cardiac ICU (CICU) 37%, pediatric ICU (PICU) 13%, other 5%). Adjusted odds of mortality was 0.59 (95% Confidence Interval (CI) 0.43-0.80, p<0.001) in the CICU compared to the NICU. Median cost was $108,710 (interquartile range (IQR) $67,550-185,890) and median LOS 21 (IQR 13-36) days. After controlling for the above factors, CICU admission was independently associated with lower hospital cost (-$7,372, 95% CI -$5,826, -8,917, p <0.001), and shorter hospital LOS (-3.5 days, 95% CI -3.2,-3.8, p <0.001). While all categories of costs were lower, the biggest differences were in room and other charges. Of factors examined, the presence of infection led to the largest change in costs between the CICU and NICU.

Conclusion: After controlling for patient and institutional factors, initial admission of neonates undergoing cardiac surgery to the CICU is associated with lower adjusted mortality, costs, and LOS when compared to the NICU. ICU specialization may result in better outcomes and more efficient resource use.