PEDICTRIC RESOURCE EXPENDITURES IN CARDIAC SPECIALTY ENCOUNTERS (PRECISE): DEVELOPMENT OF A COST ADJUSTMENT MODEL FOR CONGENITAL HEART SURGERY

Moderated Poster Contributions
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Background: In response to societal pressure to reduce costs and increase value, we sought to develop a methodology to predict cost related to cardiac surgery in congenital heart disease. We combined clinical data from CPT coding and STS registry submissions, rather than administrative claims based metrics such as APR-DRG and CMI, with hospital resource use information.

Methods: Patients undergoing congenital heart surgery at Boston Children's Hospital were identified in fiscal years 2007 to 2009. Clinical databases, including CPT coding of the primary surgical intervention for the hospitalization, were collected prospectively and linked to total hospital charges for an episode of care. Surgery Cost Categories (SCCs) were developed to group types of surgical procedures using a combination of empiric data and judgment methodology. A multivariable model was built using SCC and additional case characteristics. After accounting for these factors, other determinants of cost following surgery were explored.

Results: In 3 fiscal years 2105 cases were available for analysis. 76 surgical procedure types were categorized in 7 SCCs yielding a grouper variable with an R2 of 47% for the outcome total hospital charges. Explanatory value increased with consideration of patient pre-operative status as determined by age, admission method, and ventilator dependence (R2=59%), and non-cardiac characteristics including weight category, presence of non-cardiac abnormalities, and a genetic syndrome other than trisomy 21(R2=62%). Additional variability in cost for congenital heart surgery was explained with addition of ECMO utilization and greater than one operating room visit during an episode of care (R2=74%).

Conclusions: Combination of clinical data with hospital resource utilization information resulted in a statistically valid predictive model for total hospital costs for congenital heart surgery admissions. This method leads to improved understanding of patients at risk for high resource utilization and could be an important tool for the next generation of institutional reimbursement.