 Importance of Cost-Comparison Analysis in Comparing Operative and Transcatheter Closure of Atrial Septal Defects

We read with interest the manuscript by Ooi et al. (1), “Transcatheter Versus Surgical Closure of Atrial Septal Defects in Children: A Value Comparison,” and Dr. Bacha’s (2) accompanying editorial. Ooi et al.’s study adds to mounting literature that transcatheter interventions represent superior value to surgery. However, it also raises several methodological issues that deserve further attention.

First, as alluded to by Ooi et al. (1) and Bacha (2), patient-level factors influence both choice of intervention and outcomes. Numerous statistical approaches have been developed to address confounding by indication. Donald Rubin (3) has written persuasively about applying propensity scores to insure appropriate overlap between cohorts and adjust for confounding by indication. We have used this technique in cost-comparison studies of atrial septal defect closure (4) and pulmonary valve replacement (5).

Second, short-term follow-up costs can be influential in value. These are not included in Ooi et al. (1) and likely favor transcatheter closure. In the case of atrial septal defect closure, including readmission within 30 days revealed additional cost benefit (a marginal increase of $2,700 USD [2012] per surgical closure) (4). This was almost entirely due to post-pericardiotomy syndrome following surgery, which is common, often requires reintervention, and, tragically, can result in mortality. Addition of empirical follow-up costs or sensitivity analyses is relevant to achieving accurate comparisons between strategies.

Third, the optimal methodology to measure value across centers remains a challenge. Bacha (2) contends that cost data are “essentially arbitrary.” Charging policies vary between hospitals, but cost-to-charge ratios are widely used to convert these charges into comparable costs. Until methods to measure cost to individual services are validated for our field, cost-to-charge ratios remain the only method for empirically measuring costs. Though not an optimal measure of value, the resultant costs are useful to: 1) measure differences in resource utilization and efficiency of care delivery between centers; and 2) integrate different aspects of outcome when comparing two treatment strategies. Cost is not a perfect measure of value, which is better quantified with marginal cost effectiveness. There are challenges to measuring quality of life in children, and quality-adjusted life-years or similar statistics have not been used in pediatric cardiology to date. It remains imperative for those invested in the field to work toward the development of validated measures of value including both economic cost and “quality.” As these superior measurements are developed, one ignores progress in the field at their own peril.

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REFERENCES


REPLY: Importance of Cost-Comparison Analysis in Comparing Operative and Transcatheter Closure of Atrial Septal Defects

We appreciate the insightful comments by Drs. O’Byrne and Glatz regarding our paper “Transcatheter Versus Surgical Closure of Atrial Septal...