Contemporary Costs Associated With Transcatheter Versus Surgical Aortic Valve Replacement in Medicare Beneficiaries

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Objective

To compare healthcare costs at 1 year in patients receiving transcatheter aortic valve implantation (TAVI) and surgical aortic valve replacement (SAVR) in contemporary practice using Medicare health insurance claims from the United States

Study design

Multi-centre, retrospective, noninterventional, observational study

Materials and methods

- Patients receiving either TAVI or SAVR between 2016 and 2018 were identified using data from the Medicare Dataset Standard Analytic Files 5% Fee for Service (FFS) database

- Patients from the TAVI and SAVR cohorts were categorized as low, intermediate, or high mortality risk based on 2 validated indices: Hospital Frailty Risk Score (HFRS) and the logistic European System for Cardiac Operative Risk Evaluation (logEuroSCORE)

- Healthcare costs at 1-year post-procedure were compared between TAVI and SAVR among patients who have low, intermediate, and high surgical risk, after adjustment for patient demographics

Surgical risk	logEuroSCORE	HFRS
High	>20%	>15
Intermediate	10%-20%	5-15
Low	<10%	<5

Definitions of patient surgical risk

Key results

- 9,746 patients were identified (4,834 TAVI; 3,760 SAVR) and included in the study

- Index hospitalisation costs were significantly lower with TAVI compared with SAVR across all risk groups when stratified to HFRS or logEuroSCORE; this was likely primarily driven by a lower length of stay of 5 days for TAVI compared to 8 days for SAVR during the index hospitalisation
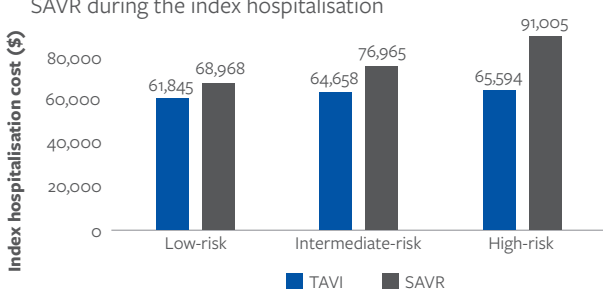
Comparison of index hospitalisation costs for each risk category (defined by logEuroScore)

- Follow-up costs at 1 year were generally lower with TAVI and this difference was more pronounced in the low-risk groups
  - logEuroScore: $9,763 versus $14,073
  - HFRS: $10,116 versus $12,880

- These data suggest that TAVI may emerge as an economically dominant strategy for all risk groups

Limitations

- Clinical parameters ascertained through sources of automated data could lead to over- or under-coding of diagnoses

- As the analytic cohort was drawn from a 5% sample of Medicare patients, sampling errors could lead to a non-representative population and affect the generalisability of the findings

- Since TAVI was not approved for low-risk patients between 2016 and 2018, patients receiving TAVI were likely of higher risk; findings may represent an underestimation of the true cost-savings associated with TAVI in the current era

Conclusions

- Based on a Medicare claims-based analysis utilising data from 2016 to 2018, TAVI is associated with lower health care costs across all risk levels when compared with SAVR

- These findings suggest that TAVI may be the preferred treatment strategy for patients with aortic stenosis from an economic standpoint

Key definitions

Medicare Fee for Service (FFS) payer database	A US-based database including information on all health care services which are covered for beneficiaries enrolled in Medicare Parts A (hospital coverage) and B (outpatient care).
Medicare Dataset Standard Analytic Files 5% Fee for Service (FFS) database	A US-based database that encompasses a nationally representative 5% sample of the Medicare FFS payer database.
Hospital Frailty Risk Score (HFRS)	Based on diagnostic code categories from all claims occurring at least 6 months for the purpose of generating a widely available tool with which to identify patients at a greater risk of adverse outcomes.
Logistic European System for Cardiac Operative Risk Evaluation (logEuroSCORE)	An established risk score used to predict 30-day mortality in patients undergoing cardiac surgery.

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