

Cost-effectiveness of transcatheter aortic valve implantation versus surgical aortic valve replacement in low surgical risk aortic stenosis patients

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Objectives

- To review the data from the PARTNER 3 trial alongside economic data from Italy to assess the cost-effectiveness of transcatheter aortic valve implantation (TAVI) versus surgical aortic valve replacement (SAVR) in symptomatic severe aortic stenosis (sSAS) patients at low risk of surgical mortality.
- To address the lack of evidence on cost-effectiveness of TAVI with the SAPIEN 3 valve in the low-surgical-risk population of sSAS patients in Italy.

Study design

Multi-centre, retrospective, observational study.

Materials and methods

- A two-stage cost-utility model was developed to estimate changes in both direct healthcare costs and health-related quality of life using TAVI with the SAPIEN 3 valve compared with SAVR.
- Early adverse events associated with TAVI were captured utilising the PARTNER 3 trial dataset.
- These data fed into a Markov model that captured longer-term outcomes of patients, following TAVI or SAVR intervention.

Key results

- Analysis of findings estimated that TAVI with the SAPIEN 3 valve offers benefits over SAVR in terms of increased quality-adjusted life years (QALYs) with only a small increase in costs, representing an incremental cost effectiveness ratio (ICER) of €2989 per QALY gained.
- Despite slightly higher initial costs of TAVI, compared to SAVR, breakdown of these costs revealed that lifetime costs associated ‘disabling stroke’ and ‘treated atrial fibrillation’ were considerably higher for SAVR, than TAVI.
- The results were robust, with TAVI with SAPIEN 3 valve remaining cost-effective across several scenarios and in probabilistic sensitivity analyses.
- At a willingness-to-pay threshold of €30,000/QALY, TAVI with the SAPIEN 3 valve remains cost-effective compared to SAVR in 100% of simulations.

Limitations

There are inherent limitations of a cost-effectiveness analysis owing to:

1. Assumptions made in the presence of ‘best fit’ data or paucity of data
2. Extrapolations into time horizons modelled beyond the scope of existing input data
3. Under- and over-estimations potentially caused by differences in healthcare systems, or by the criteria for intervention and treatment selection within a specific system.

Conclusions

- The use of TAVI with SAPIEN 3 valve is likely to represent a more favourable clinical option than SAVR in sSAS patients at low risk of surgical mortality.
- In Italy, TAVI with SAPIEN 3 valve could provide a compelling value-based, highly cost-effective option over SAVR for this patient population, with an estimated ICER/QALY value well below the typical national threshold.
- Results from this study can support Italian policy makers and healthcare budget holders in optimising the management of patients with sSAS.

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