

# Cost-effectiveness of Transcatheter versus Surgical Aortic Valve Replacement for treatment of Severe Aortic Stenosis in India

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## RECOMMENDATIONS

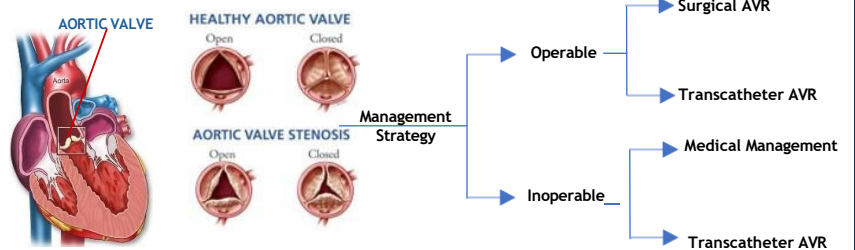
- Although TAVR delivers measurable gains in survival and quality-adjusted life-years across high-, intermediate-, and low-risk patients with severe aortic stenosis, at current device prices it does not represent good value for money for inclusion in publicly financed health insurance schemes in India.
- Price-threshold analyses demonstrate that substantial reductions (two-third or more) in transcatheter valve prices is required for TAVR to approach cost-effectiveness

## KEY FINDINGS

- Lifetime treatment costs with TAVR are 2–3 times higher than SAVR across all surgical risk groups, reaching ₹15.9–16.7 lakh per patient versus ₹5.6–7.4 lakh for SAVR
- TAVR providing modest survival benefits with 0.24 – 0.46 additional QALYs than SAVR across surgical risk groups.
- The incremental cost per QALY gained with TAVR compared to SAVR is ₹43.6 lakh among high-risk, ₹26.6 lakh among intermediate-risk, and ₹23.6 lakh among low-risk patients, which exceeds India's cost-effectiveness threshold (1 time GDP per capita) as well as severity modified threshold (1.5 times GDP per capita).
- Despite better outcomes over medical management (1.18 additional QALYs), the incremental cost per QALY gained is ₹16.2 lakh, which surpasses the cost-effectiveness threshold.

## BACKGROUND

- Aortic stenosis (AS) is the most common valvular heart disease, with prevalence sharply increasing with age; an estimated 10% of Indians over 60 years (~1.49 crore people) are affected, and nearly 51 lakh may need aortic valve replacement.



- Surgical Aortic Valve Replacement (SAVR) is the gold-standard treatment, providing substantial survival benefits but requiring open-heart surgery with significant risks, especially in elderly and frail patients.
- Up to 30% of eligible patients do not undergo SAVR, mainly due to advanced age, multiple comorbidities, inoperability, or reluctance to have open-heart surgery.
- Transcatheter Aortic Valve Replacement (TAVR) offers a less invasive alternative, demonstrating high procedural success (>90%), better tolerability, and comparable survival in high-risk or inoperable patients.
- Evaluating the cost-effectiveness of TAVR versus SAVR in India is critical, as expanding access to TAVR could address a significant unmet need among older adults unable or unwilling to undergo surgery.

### Population

Scenario 1: Surgically operable patients aged 65 years with severe aortic stenosis, stratified as low, intermediate and high surgical risk  
Scenario 2: Surgically inoperable patients aged 65 years with severe aortic stenosis

### Intervention

Transcatheter aortic valve replacement (TAVR) using balloon-expandable valve

### PICO

### Comparator

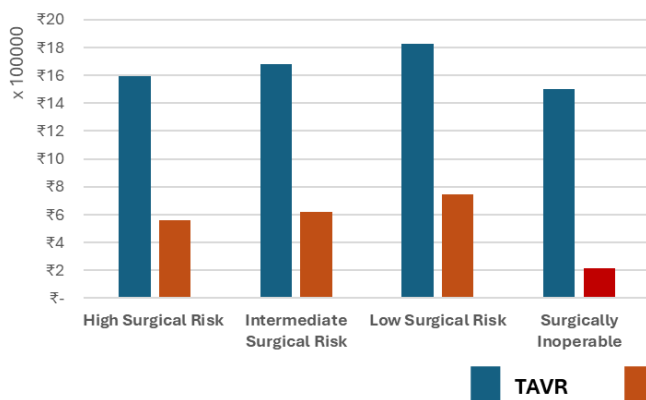
Scenario 1: Surgical aortic valve replacement (SAVR) receiving Bio-Prosthetic Valve  
Scenario 2: Medical Management including Balloon Aortic Valvuloplasty

### Outcome

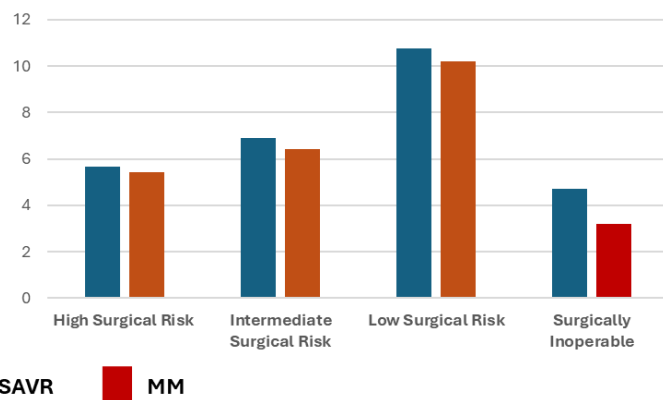
Incremental cost per Quality-Adjusted-Life-Year (QALY) gained

## ESTIMATED LIFETIME COST AND HEALTH GAINS

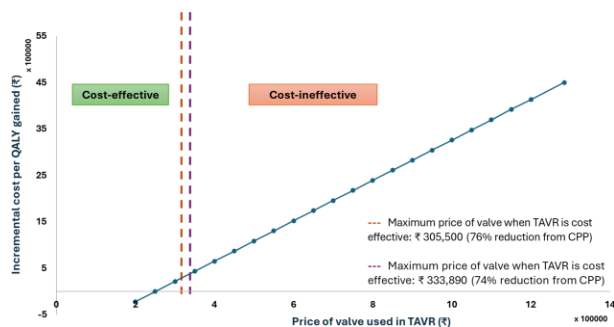
Estimated Per Patient Lifetime Cost



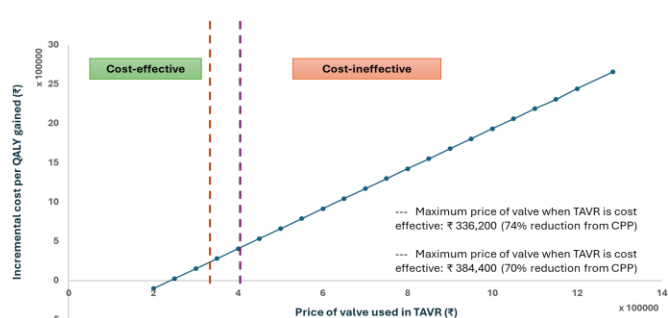
Estimated Per Patient QALYs



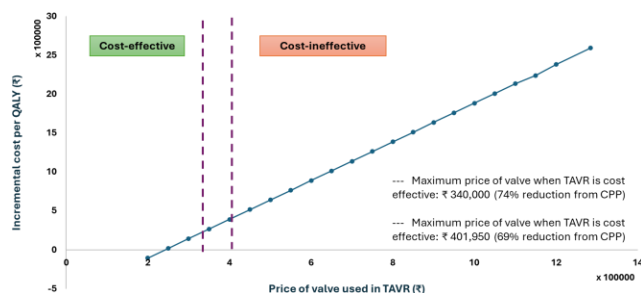
## PRICE THRESHOLD ANALYSIS



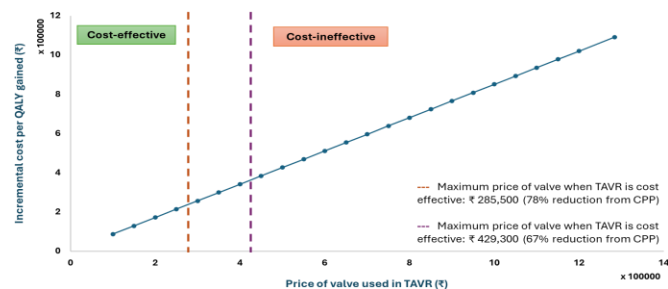
TAVR versus SAVR among High-Risk operable patients



TAVR versus SAVR among Intermediate-Risk operable patients



TAVR versus SAVR among Low-Risk operable patients



TAVR versus MM among Inoperable patients

## CONCLUSION

The price of trans-aortic heart valve should be reduced to at least two-third of its current procurement price of around ₹13 lakh for the value-based adoption of this procedure within India's publicly financed healthcare delivery system.