AS-Logic: Computing the Tipping Point in Asymptomatic Severe Aortic Stenosis

Management of asymptomatic severe aortic stenosis (AS) has shifted from traditional watchful waiting to a contested debate over early intervention. Early surgical trials (RECOVERY, AVATAR) suggest benefit from prompt aortic valve replacement, whereas EVOLVED showed no advantage when intervention was triggered by myocardial fibrosis, and EARLY-TAVR demonstrated substantial benefit with transcatheter aortic valve replacement (TAVR). Pooling these small, heterogeneous trials with conventional random-effects meta-analysis risks overstating certainty. We developed AS-Logic, a single-page HTML/JavaScript evidence-synthesis dashboard that bakes conservative assumptions into the analysis. The tool implements Hartung Knapp Sidik Jonkman (HKSJ) random-effects meta-analysis, explicit prediction intervals, and an interactive fibrosis toggle that separates anatomically severe from fibrosis-selected populations. AS-Logic allows clinicians to explore how pooled hazard ratios, heterogeneity, prediction intervals and number-needed-to-treat change when EVOLVED is included or excluded and when TAVR and surgery are analysed together or separately. In doing so, it reframes the asymptomatic AS controversy from a simple early versus conservative question into a more nuanced tipping point defined by modality and patient selection.

References

1. Randomised trials of early intervention in asymptomatic severe aortic stenosis: RECOVERY, AVATAR, EVOLVED and EARLY-TAVR.