

SHORT META-ANALYSIS · Peer-reviewed · Published · Live dashboard figures

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

Niraj S Kumar, Ruhani Singh & Mahmood Ahmad

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KEY WORDS aortic stenosis; meta-analysis; randomised trials; transcatheter aortic valve replacement; TAVR; surgical aortic valve replacement; SAVR; evidence synthesis; early intervention; cardiac surgery; interventional cardiology

Abstract

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.

Interactive dashboard figures

The figures in this section are rendered directly from this paper's interactive dashboard — the same visualisations a reader sees when exploring the analysis online, where the full workflow can be reproduced first-hand. **Interactive dashboard:** <https://mahmood726-cyber.github.io/as-logic/>

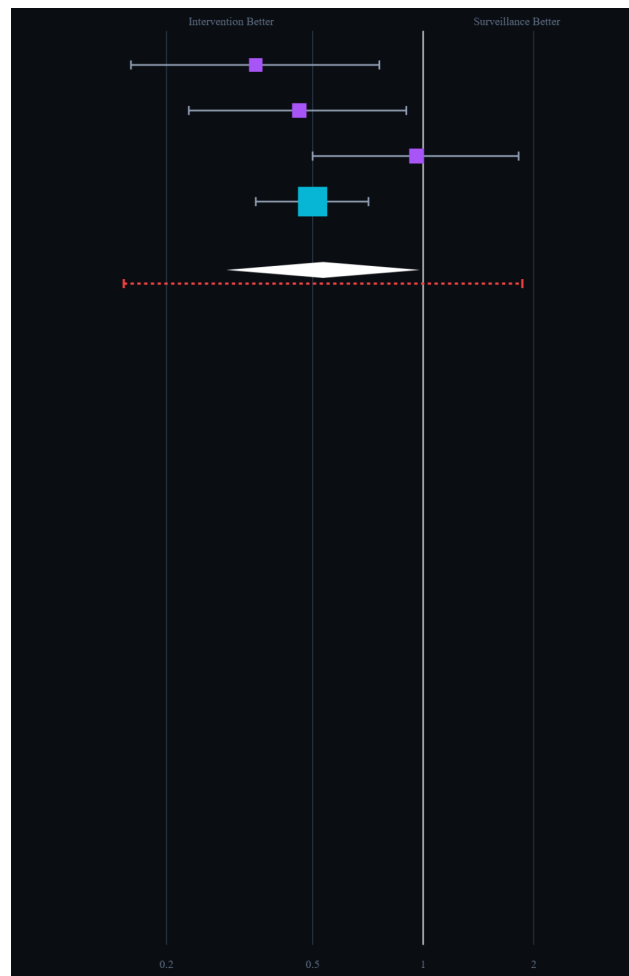


Figure 1. Dashboard figure 1 Rendered directly from the article's live interactive dashboard.

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