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The Revascularisation Paradox: Statistical Fragility in the 2024 JACC Meta-Analysis: Methodological Critique & Simulation Synthesis

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Abstract

The recent JACC network meta-analysis by Reddy et al. concluded that complete revascularisation following MI reduced all-cause mortality by 15% when compared to culprit-only PCI. This finding contradicts the major CULPRIT-SHOCK trial. We propose that this discrepancy reflects important unaddressed heterogeneity: (1) inclusion of NSTEMI populations (FIRE trial) and (2) exclusion of cardiogenic shock.

Using a forensic simulation engine (RevascLogic), we show that when heterogeneity is corrected for using Hartung-Knapp-Sidik-Jonkman (HKSJ) variance estimation and competing-risk modelling, the apparent mortality benefit vanishes, indicating a balance between reduced recurrent ischaemia and increased procedural risk.

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