

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

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.

References

1. Reddy et al. Network meta-analysis of complete versus culprit-only revascularisation after myocardial infarction. *Journal of the American College of Cardiology (JACC)*; 2024.