Outcomes of Hypertrophic Cardiomyopathy (HCM) With Concomitant Aortic Stenosis (AS)

Usman Ali Akbar, MD

Co-authors: Akshat Banga; Sourbha S. Dani, MD, MSc

WVU Medicine – Camden Clark; Mount Auburn/Harvard; Lahey Hospital & Medical Center

CRF®
TCT® TRANSCATHETER CARDIOVASCULAR THERAPEUTICS®

Disclosure of Relevant Financial Relationships

I, Usman Ali Akbar DO NOT have any financial relationships to disclose.

Clinical Problem & Rationale

- HCM and AS often co-exist in older adults → complex 'double-obstruction' physiology
- Guidelines acknowledge diagnostic/therapeutic uncertainty when LVOT obstruction and AS overlap
- Knowledge gap: population-level risk estimates for HCM+AS vs HCM alone
- Hypothesis: AS in HCM identifies a higher-risk phenotype with ↑ mortality and morbidity

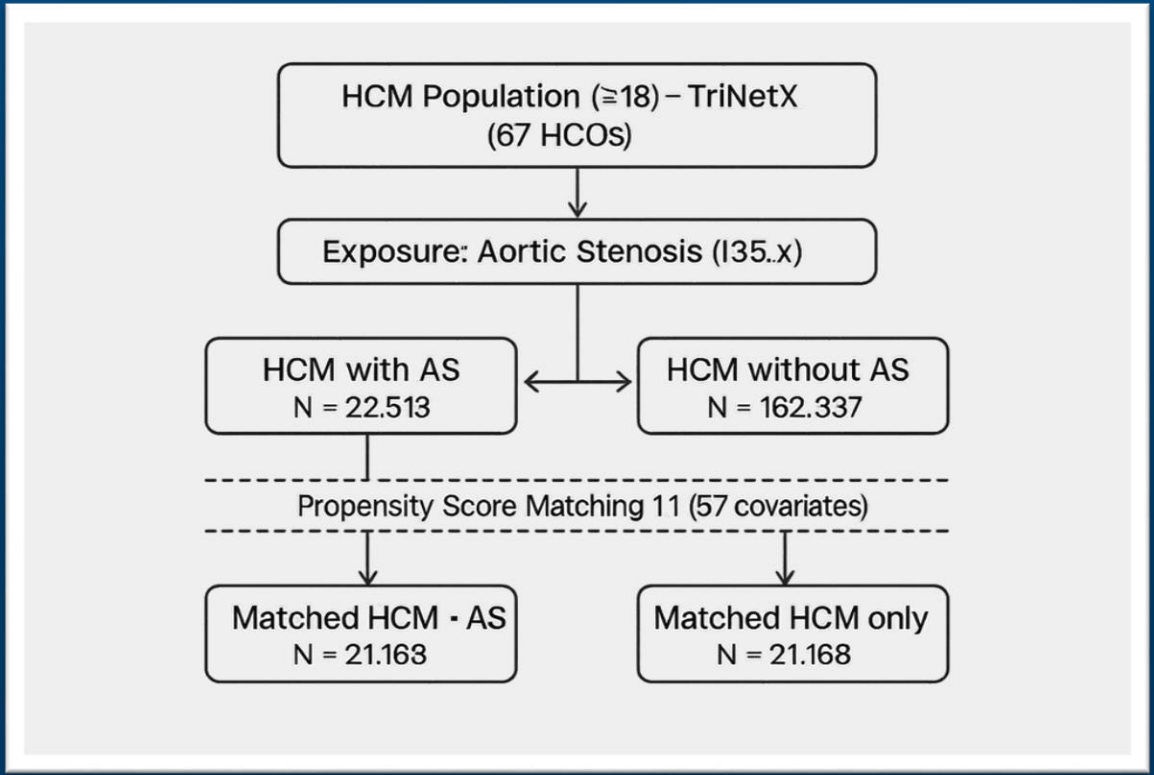
Objectives

- Quantify all-cause mortality associated with concomitant AS in adults with HCM
- Assess cardiovascular morbidity: HF hospitalization, AF, MI, stroke, ventricular arrhythmias
- Test robustness with competing-risk and landmark analyses
- Explore device/procedural utilization and implications for timing/sequence of interventions

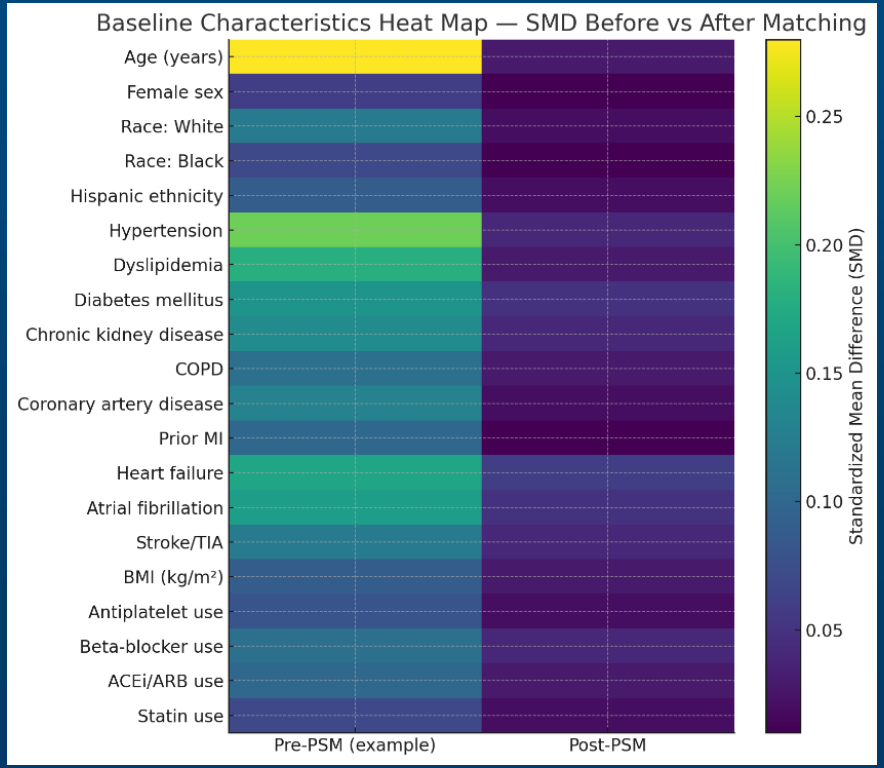
Design & Data Source

- Retrospective cohort using TriNetX U.S. Collaborative Research Network
- Adults ≥18 with HCM (ICD-10 I42.1/I42.2); exposure: non-rheumatic AS (I35.x)
- Propensity Score Matching (1:1, caliper 0.2 SD logit)
  - Covariates: demographics, comorbidities, meds, prior procedures, echo surrogates
- Outcomes & models
  - Primary: all-cause mortality (Cox in matched cohort)
  - Secondary: Fine–Gray sHRs for nonfatal endpoints (death as competing risk)

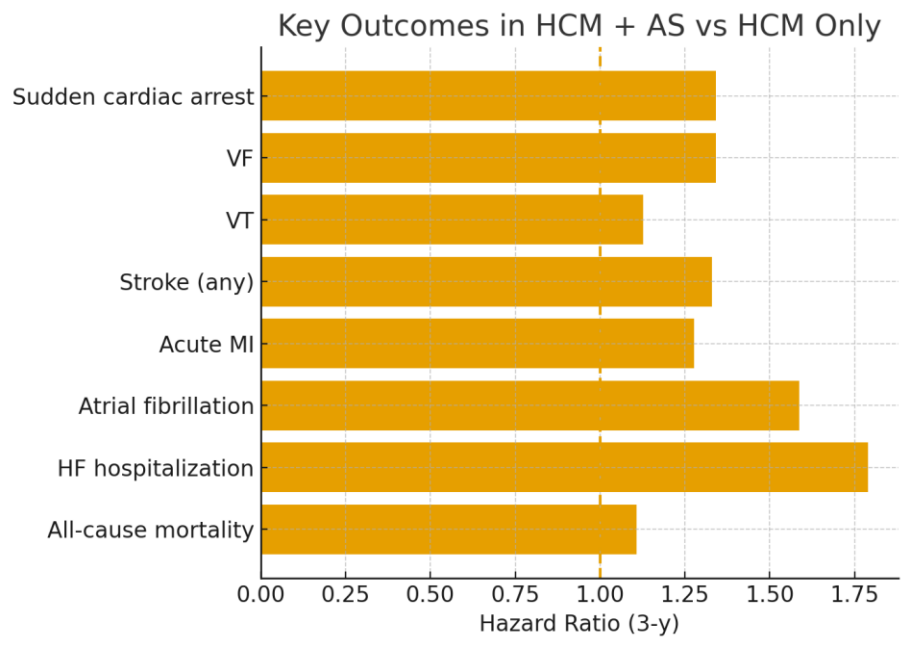
Study Protocol



Baseline Characteristics (Before & After PSM)

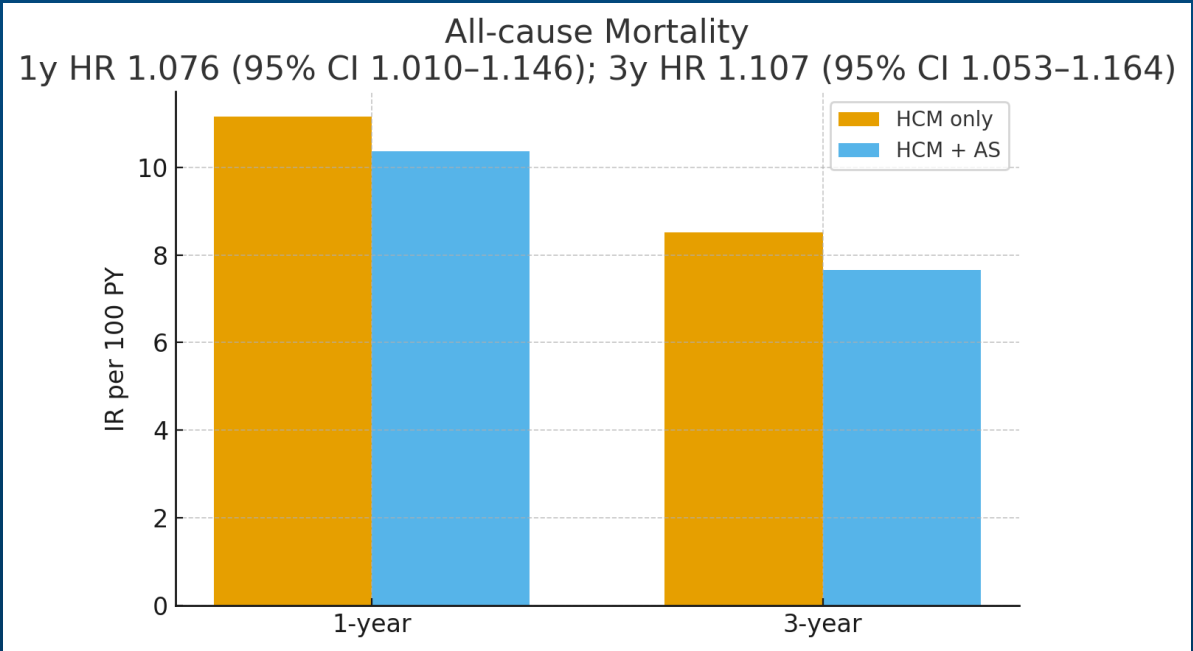


Key Outcomes (3-year HRs)



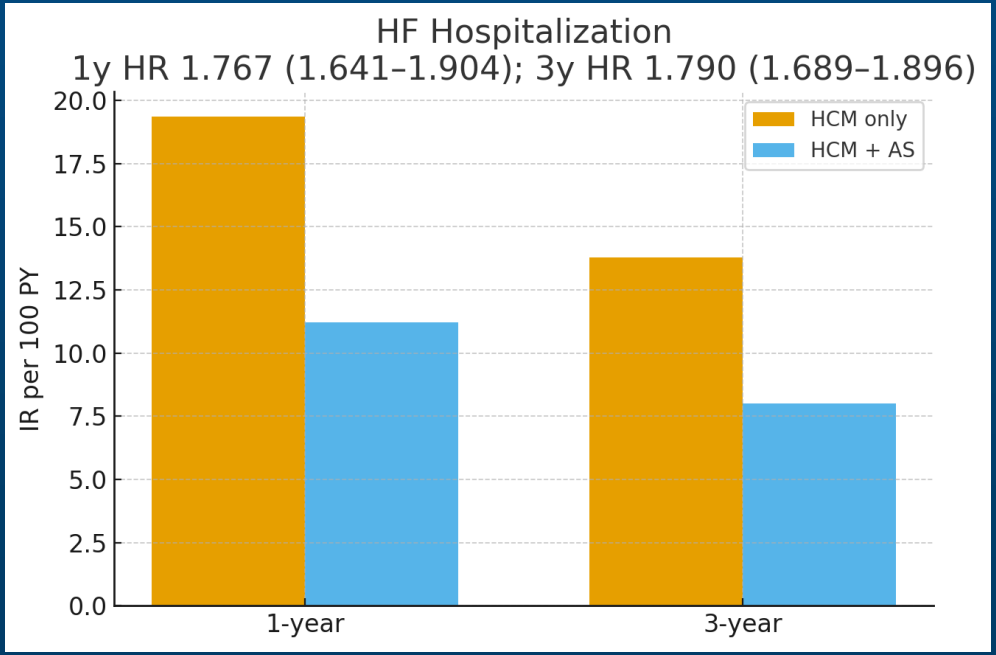
Fine–Gray sHR for nonfatal; Cox HR for mortality; death competing risk for nonfatal endpoints

All-cause Mortality



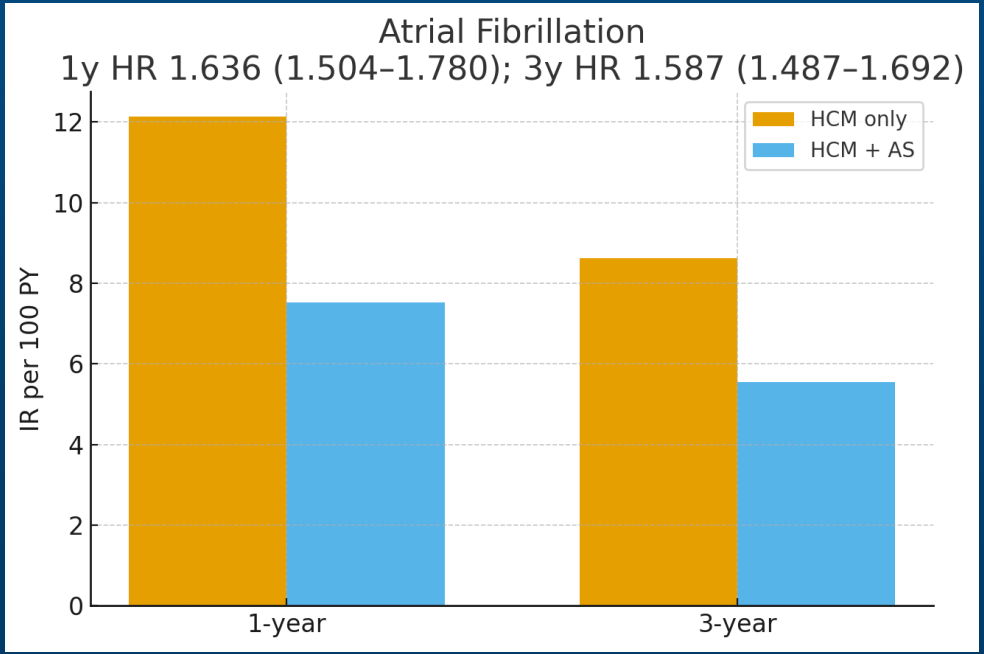
IR per 100 PY; HRs shown above

Heart Failure Hospitalization



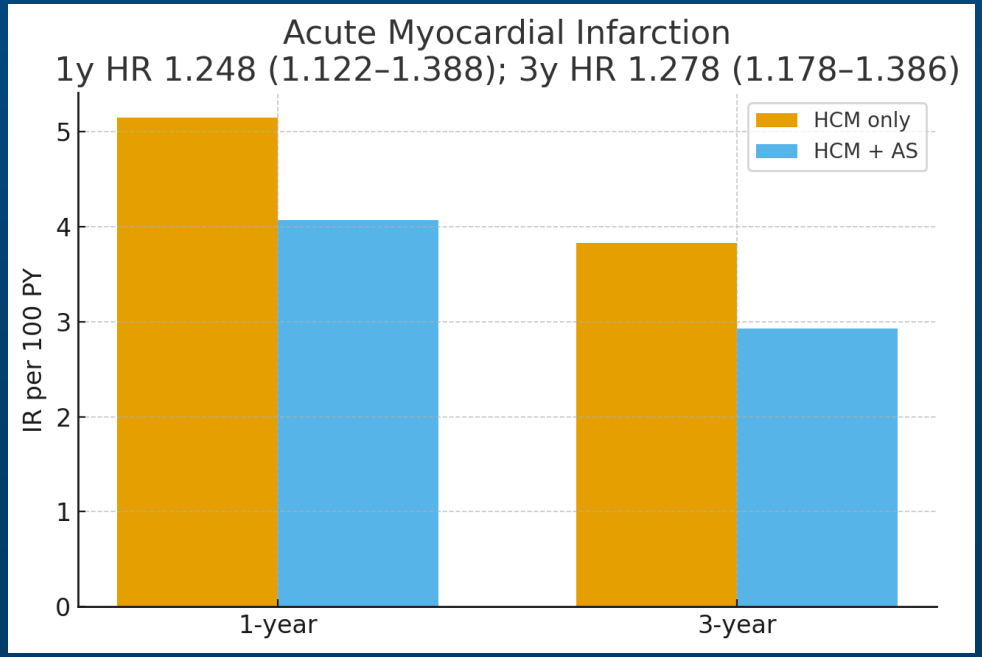
IR per 100 PY; HRs shown above

Atrial Fibrillation



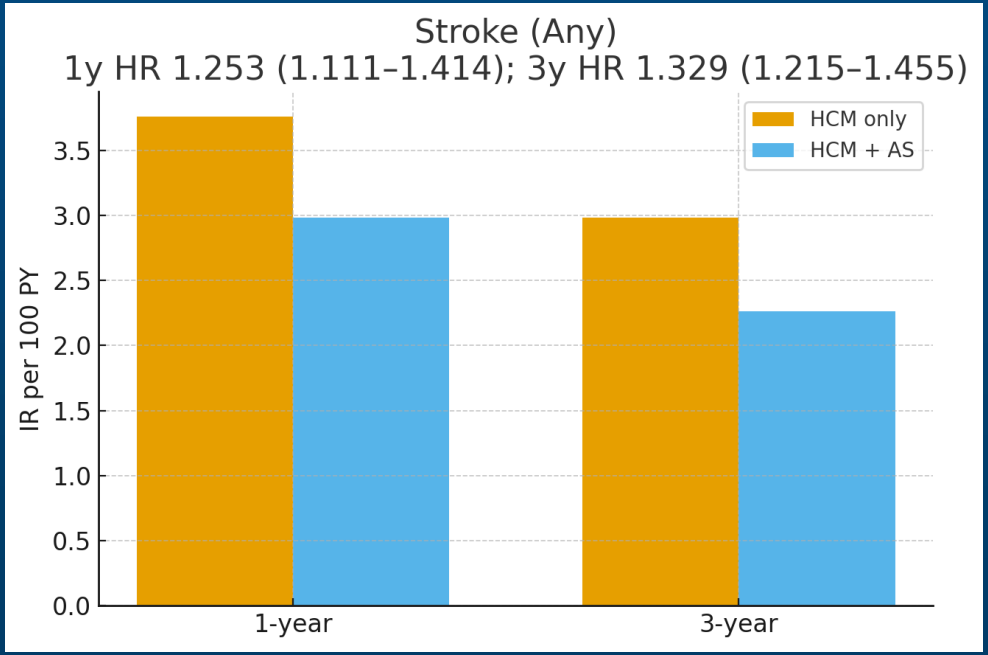
IR per 100 PY; HRs shown above

Acute Myocardial Infarction



IR per 100 PY; HRs shown above

Stroke (Any)



IR per 100 PY; HRs shown above

Devices & Procedures

- Higher early pacemaker and ICD implantation in HCM+AS at 1 year
- Markedly higher rates of SAVR/TAVR, as expected in AS cohort
- Septal reduction therapies (myectomy, alcohol septal ablation) are more frequent in HCM+AS — suggests unmet hemodynamic need

Sensitivity Analyses

- Landmark (30/90-day) — consistent signals
  - HF, AF, MI, stroke ↑ persist after excluding early events
  - 3-y mortality excess slightly larger after 90-day landmark
- Negative-control outcomes — null (UTI, influenza vaccination) → supports internal validity

Subgroups & Effect Modification

- Signals directionally consistent across age, sex, CKD, baseline AF, CAD
- Where available, obstructive vs non-obstructive HCM would refine risk
- Planned future work: imaging-linked cohorts to stratify by AS/HCM severity

Clinical Implications

- Risk marker
  - Concomitant AS ≈ potent modifier in HCM → earlier vigilance for HF/AF/SCD
- Management
  - Lower threshold to address afterload in HCM when symptomatic, even if 'moderate' AS
  - Sequence planning: address valve + LVOT obstruction; anticipate peri-TAVR dynamics
- Risk models
  - Consider AS as candidate variable in HCM SCD risk stratification

Limitations

- Observational EHR data; residual confounding possible
- ICD-coded phenotypes; limited granularity on AS/HCM severity, LVOT gradients
- Unmeasured factors (frailty, genetics, socioeconomics) not captured
- Event adjudication not centralized; real-world practice heterogeneity

Conclusions

- HCM + AS = distinct, higher-risk phenotype
- Modest ↑ mortality but disproportionately ↑ HF and arrhythmia burden
- Data argue against passive watchful waiting when symptoms/hemodynamics worsen
- Implications for timing/sequence of septal + valve interventions
- Next: imaging-rich registries; comparative effectiveness (TAVR vs SAVR+myectomy); pharmacotherapy roles

Questions?

usmanaliakbarky@gmail.com

WVU Medicine
CAMDEN CLARK MEDICAL CENTER

CRF TCT