

Outcomes of Transcatheter Aortic Valve Replacement in Cardiac Amyloidosis

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Disclosure of Relevant Financial Relationships

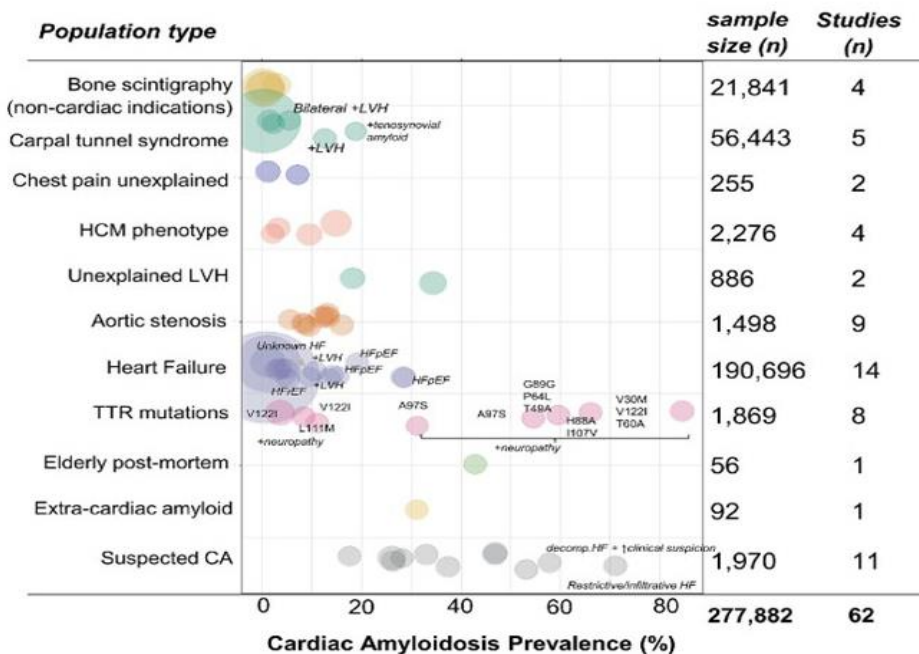
I, **Vaidehi Mendpara** DO NOT have any financial relationships to disclose.

Cardiac Amyloidosis in Aortic Stenosis - A Hidden but Frequent Overlap

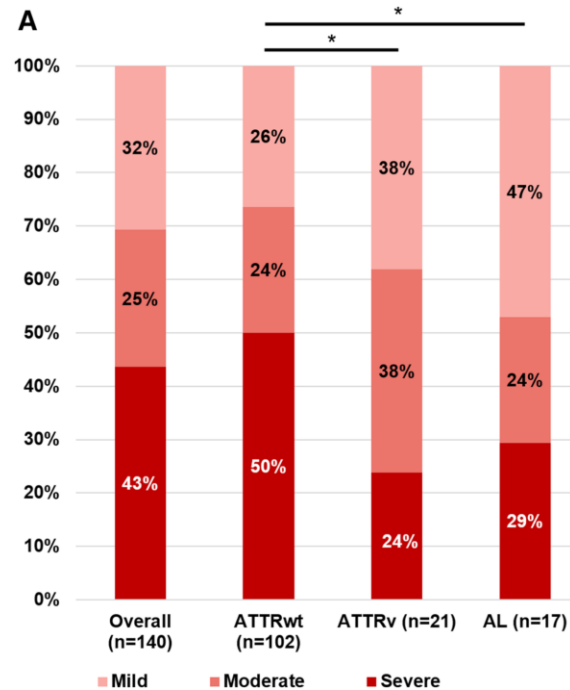
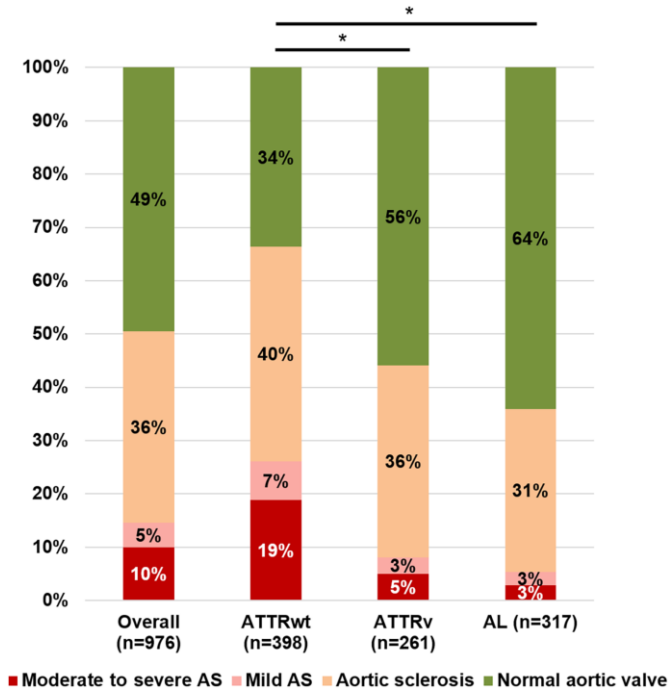
- ATTR amyloidosis is detected in **~11% of severe AS** patients and up to **18% in those >80 yrs.**

- Dual pathology** (AS + CA) leads to higher hospitalization rates, mortality and poor TAVR recovery if undiagnosed.

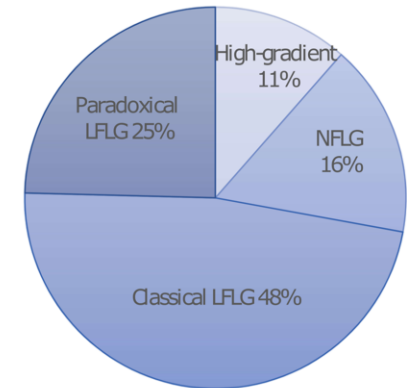
- Despite this, **only ~1%** of TAVR patients are coded with CA highlighting a major **underdiagnosis gap**



Grading of AS Severity Across CA Phenotypes

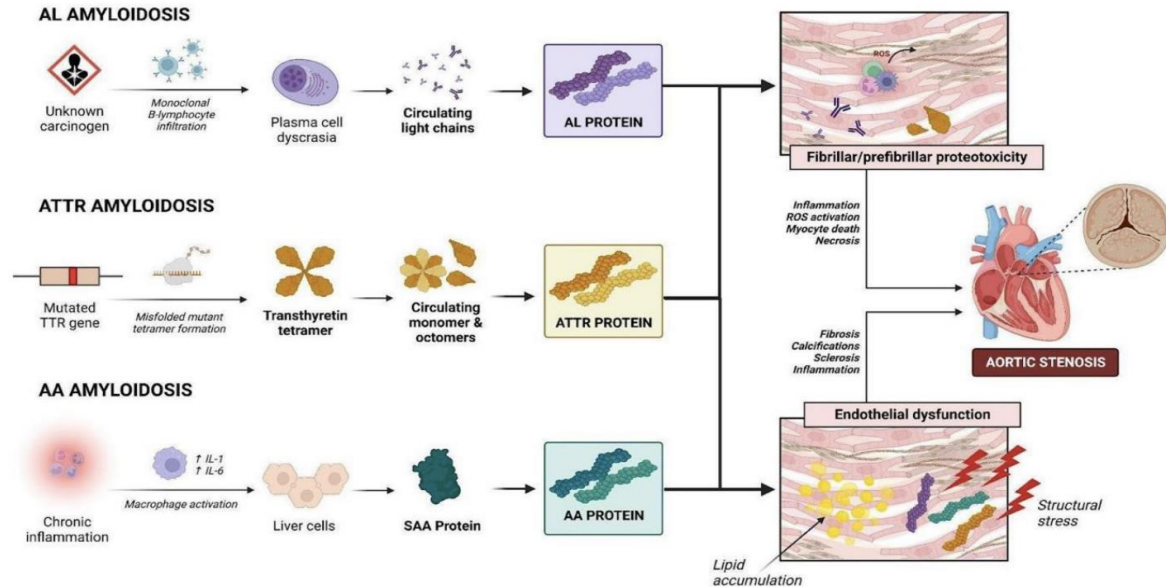


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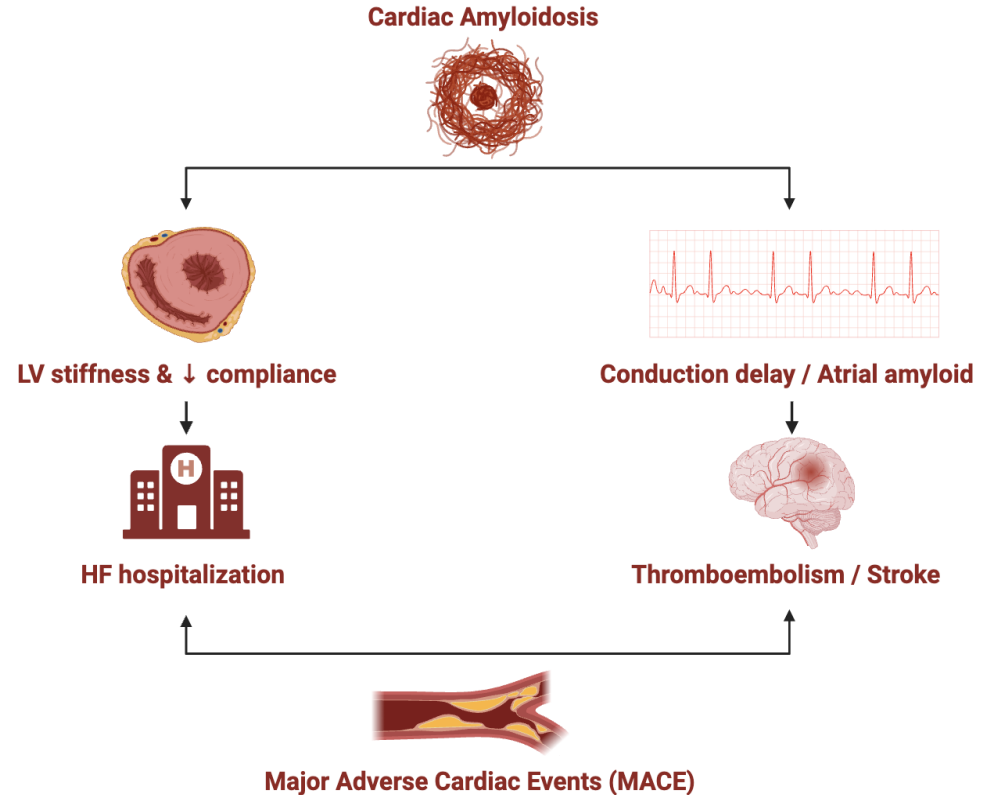
Pathophysiology: How Amyloidosis Promotes Aortic Stenosis

- **AL:** Light-chain toxicity → oxidative stress & fibrosis.
- **ATTR:** Misfolded TTR → myocardial + valvular deposition → calcification & stiffness.
- **AA:** Chronic inflammation → endothelial injury → structural stress
- **Common Pathway:** Inflammation + fibrosis → valve sclerosis → AS



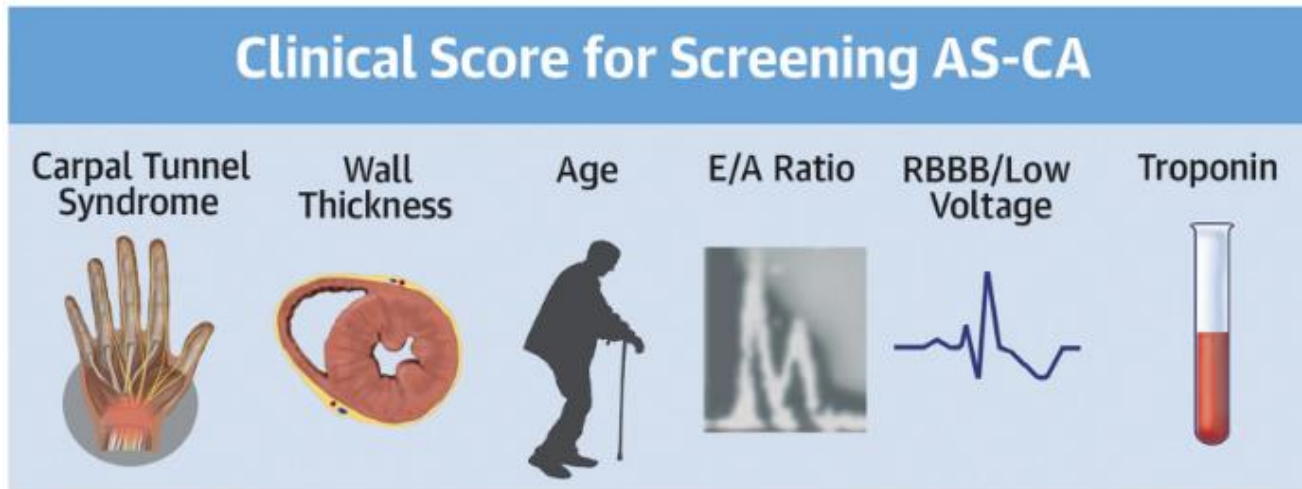
Mechanistic Insight: Cardiac Amyloidosis and MACE Pathways

- Amyloid infiltration → ↑ **LV stiffness**, ↓ **compliance** → HF hospitalization
- Atrial amyloid → **conduction delay** → stroke risk
- Combined → ↑ **MACE post-TAVR**



Who Should Be Screened — Targeting High-Yield Patients

- Simple **bedside score** identifies CA in severe AS.
- Higher score → greater likelihood of **coexistent amyloidosis**.
- Enables **targeted imaging** (PYP/DPD scan) for confirmation.



Diagnosing Cardiac Amyloidosis in Aortic Stenosis

Diagnosing cardiac amyloidosis in the presence of aortic stenosis

Clinical evaluation
with ECG & TTE
+/- CMR imaging



≥1 red flags on initial
examination requires
further follow-up



Bone scintigraphy &
serum protein & urine
electrophoresis



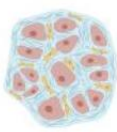
Consider additional
biopsies and histology



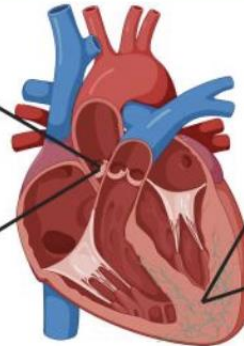
Calcification



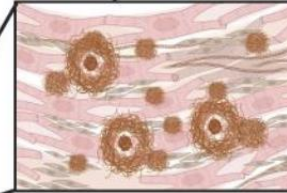
Fibrosis



Aortic Stenosis



Amyloidosis



Light chain
(AL-CA)

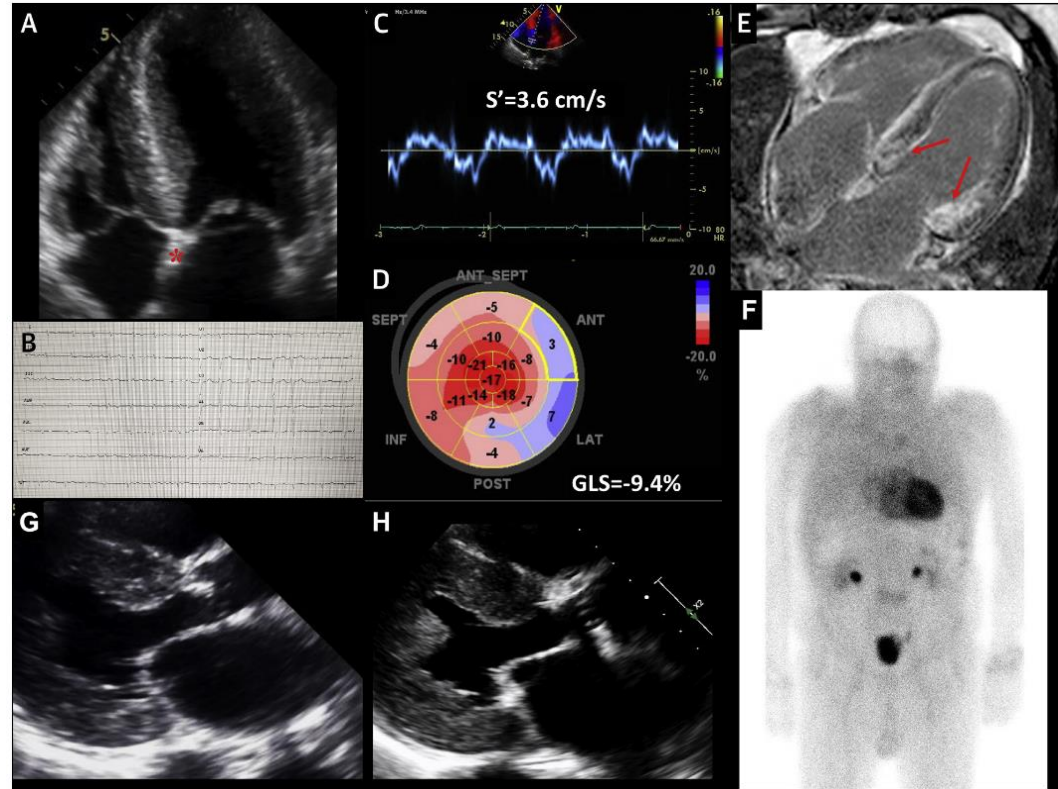


Transthyretin
(ATTR-CA)



Multimodality Imaging in Dual Pathology

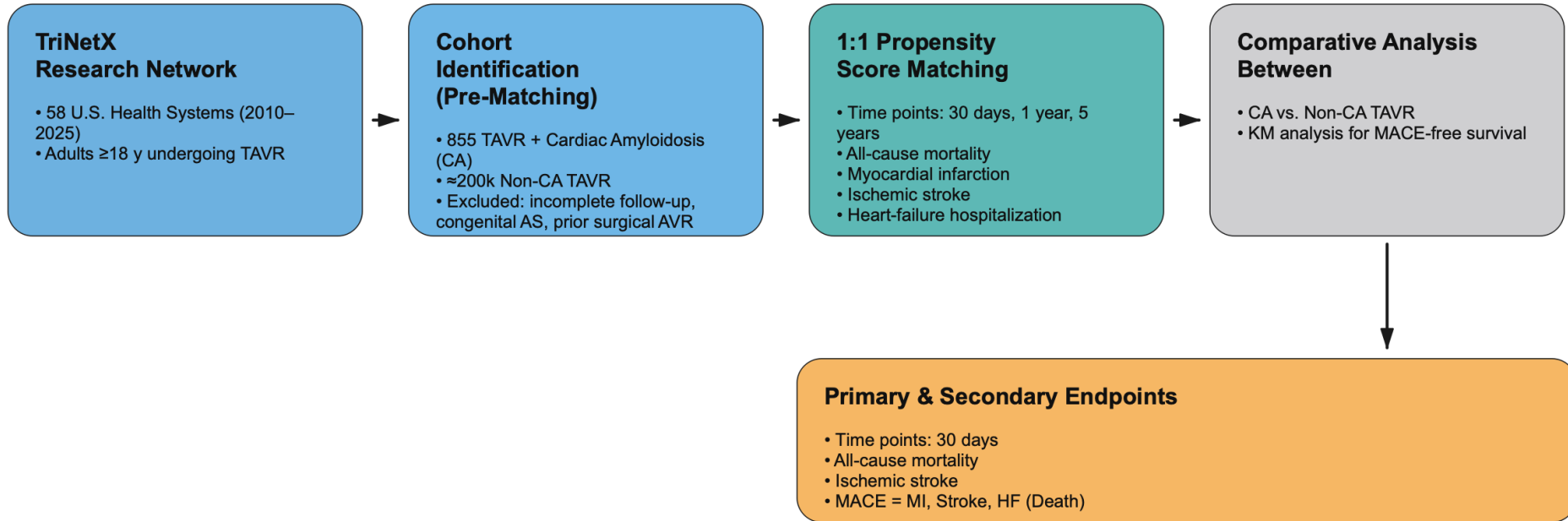
- **Echo:** Concentric LV hypertrophy, granular sparkling, $\downarrow S'$ (≤ 6 cm/s), apical strain sparing (GLS $\approx -9\%$).
- **ECG:** Low voltage despite LV thickening — “discordance” pattern.
- **CMR:** Diffuse subendocardial \rightarrow transmural late gadolinium enhancement (LGE).
- **Bone scan:** ^{99m}Tc -HMDP uptake (Grade 2–3) confirms ATTR-CA.



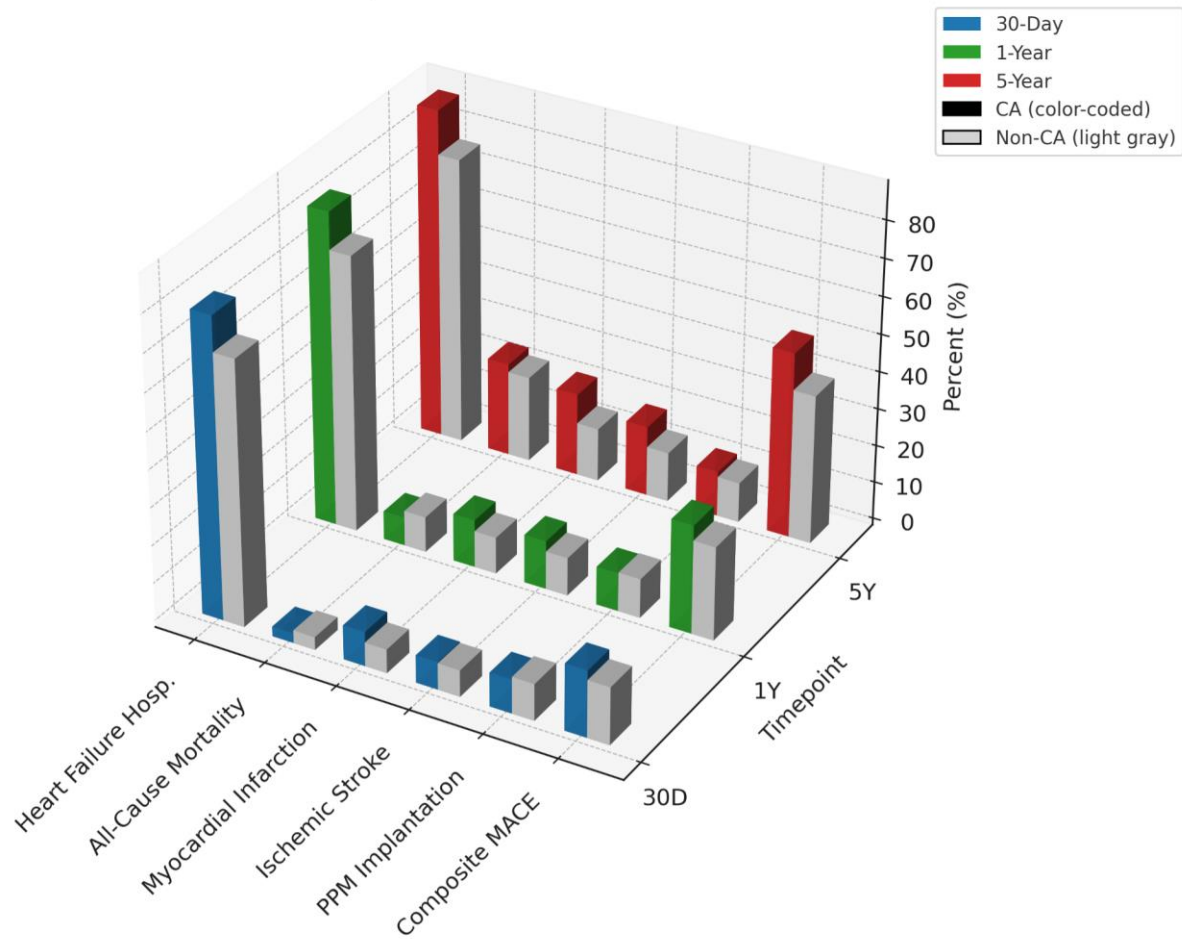
Why This Study Matters

- Dual pathology is common:** ~1 in 8 TAVR patients have underlying cardiac amyloidosis.
- Clinical gap:** Most prior studies were small, single-center, or retrospective → unclear whether CA worsens TAVR outcomes.
- Contradictory data:** Some series show higher mortality; others show outcomes similar to lone AS after TAVR.
- Unmet need:** No randomized or large multicenter evidence guiding screening, procedural risk, or long-term management.
- Goal of current analysis:** Define prevalence, outcomes, and prognostic factors of TAVR in CA + AS to inform clinical workflow and decision-making.

Methodology

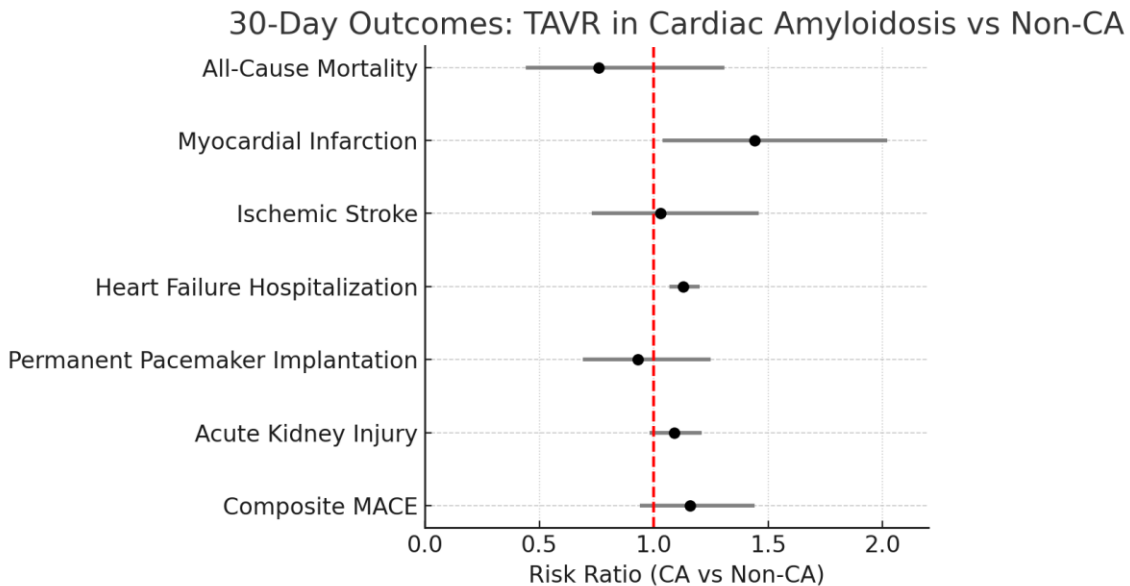


Outcomes



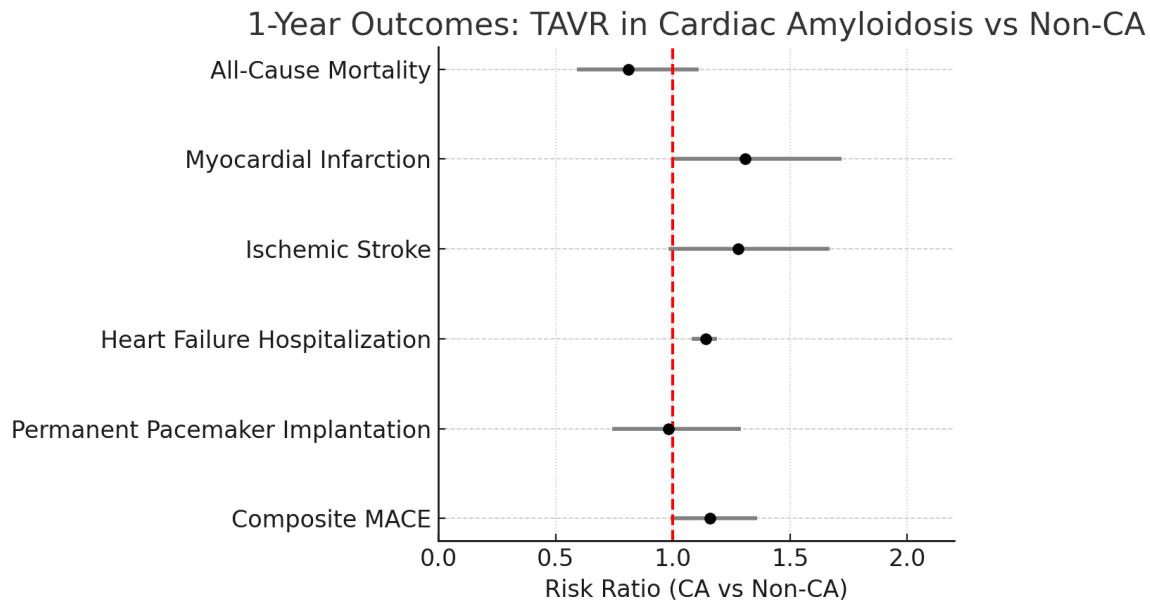
Outcomes: 30-Day

- **All-cause mortality** comparable
- **MI** higher in CA
- **Stroke** similar between groups
- **HF hospitalization** markedly higher
- **Pacemaker** requirement comparable



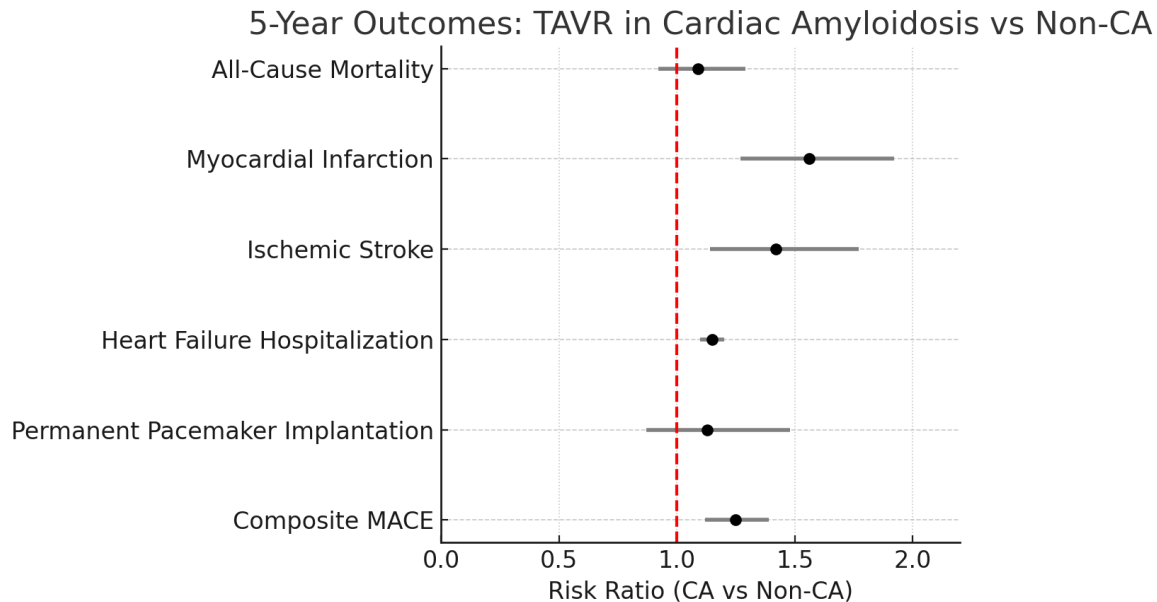
Outcomes: 1-Year

- **Mortality** remains similar
- **MI** trend higher in CA
- **Stroke** slightly increased but NS
- **HF hospitalization** persistently elevated
- **Pacemaker** implantation unchanged (~10 %).



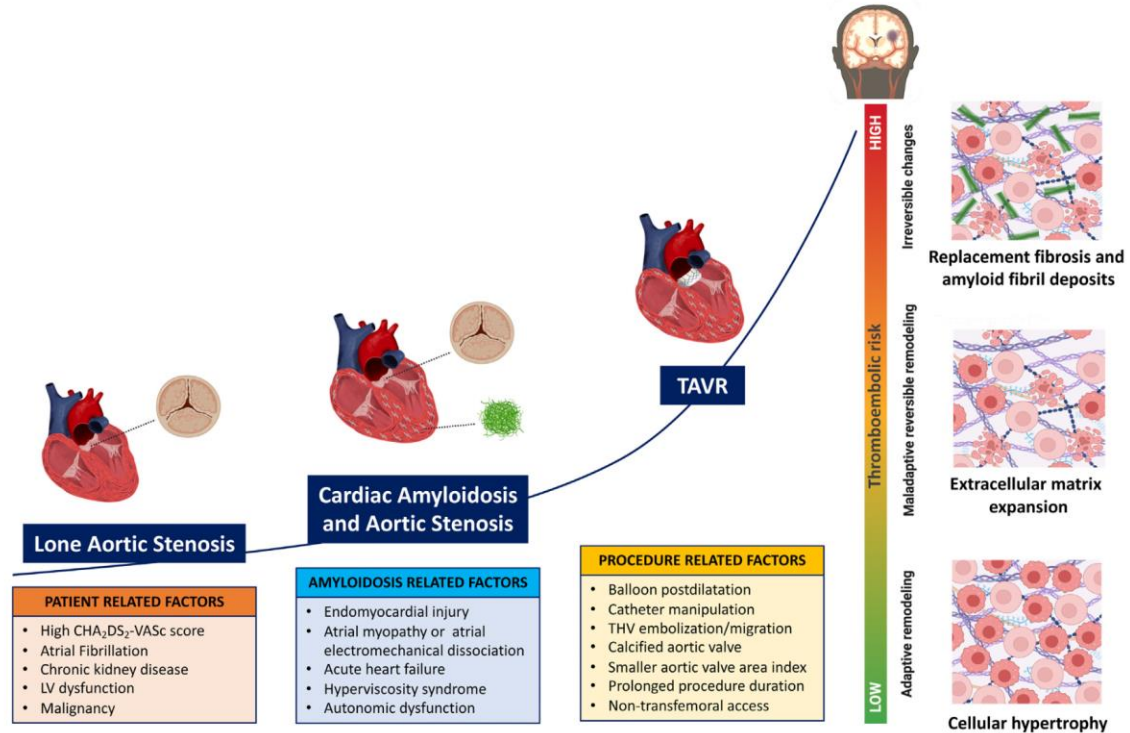
Outcomes: 5-Year

- **Long-term mortality** converges
- **MI** significantly higher
- **Stroke** risk elevated
- **HF hospitalization** remains greater
- **Pacemaker** rates comparable (~12 %).



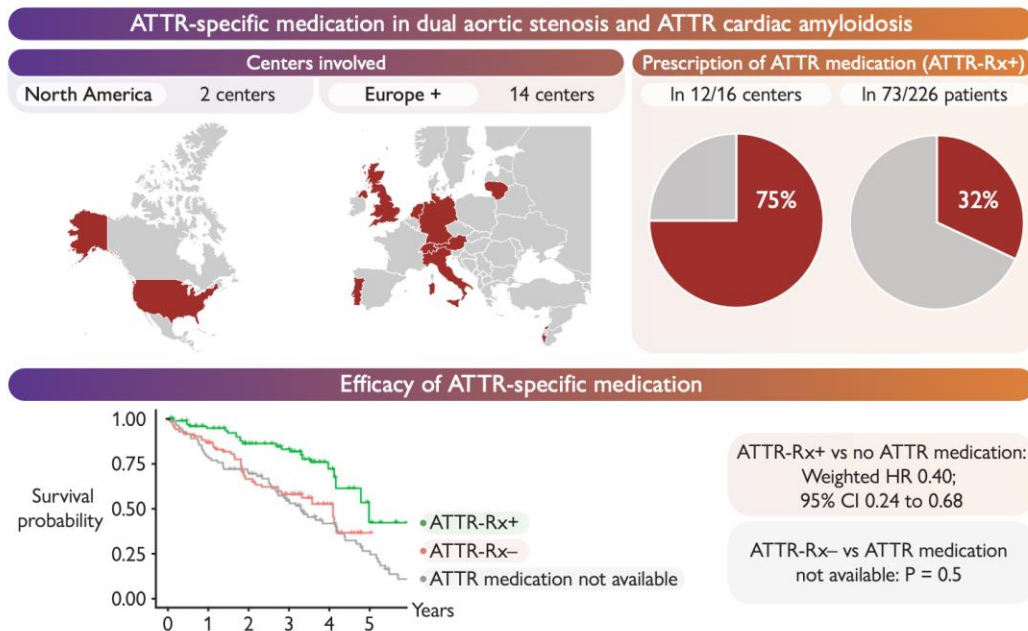
Stroke Risk in AS + CA After TAVR

- **↑ Stroke risk:** ~3× higher in CA + AS vs lone AS after TAVR.
- **Mechanisms:** Atrial amyloid → stiff atria, impaired emptying, thrombus formation.
- **Contributors:** AF, CKD, valve calcification, post-dilatation.
- **Takeaway:** Screen for CA; tailor antithrombotic strategy to reduce embolic risk.



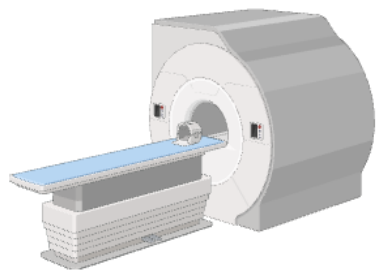
ATTR-Targeted Therapy in AS + ATTR-CA

- **Study:** 16-center international registry (Europe + North America).
- **Population:** 226 patients with dual AS and ATTR-CA.
- **Treatment:** Only 32% received *ATTR-specific therapy* (tafamidis, patisiran, etc.).
- **Findings:** ATTR-Rx+ significantly improved survival
– HR 0.40; 95% CI 0.24–0.68 vs untreated.



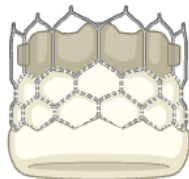
Clinical Workflow

A structured workflow **improves survival** and **reduces late complications** in dual AS + CA.



SCREEN

Identify high-risk AS patients for amyloidosis



REPLACE

Address fixed valve obstruction



TREAT

Modify disease progression



MONITOR

Prevent late complications

Strengths & Limitations of our study

Strengths:

- large multicenter dataset
- long follow-up
- real-world representation.

Limitations:

- Retrospective
- ICD-based CA identification
- lack of amyloid typing.

Conclusion

- ATTR cardiac amyloidosis coexists with AS in **~10–15% of TAVR candidates.**
- **TAVR outcomes:** similar survival, higher stroke and HF readmission.
- ATTR-targeted therapy **improves prognosis** post-valve replacement.
- **Screening** and **integrated care** essential for optimal outcomes.