Long-Term Clinical Outcomes Following Transcatheter Aortic Valve Replacement: A Decade of Data

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Disclosure of Relevant Financial Relationships

I, Judah Rajendran, DO NOT have any financial relationships to disclose.

Background

- TAVR has transformed the management of severe aortic stenosis.
- Short- and mid-term outcomes are well established.
- However, long-term (>5 year) durability and clinical outcomes remain less understood.
- Understanding late complications can inform post-TAVR surveillance and care.

Study Objective

- To evaluate **10-year clinical outcomes** among patients undergoing TAVR between 2010–2019 using a large multicenter database (TriNetX).
- Focus on mortality, recurrent heart failure, hospitalizations, and major adverse cardiovascular events (MACE).

Methods

- **Data Source:** TriNetX database (2010–2017).
- **Study Population:** 3,582 adults who underwent TAVR.
- **Follow-up:** Up to 10 years (median 1,545 days).
- **Endpoints:** Mortality, recurrent HF, MACE, stroke, MI, AKI, pacemaker implantation, major bleeding, endocarditis, and vascular complications.
- **Analysis:** Descriptive statistics and longitudinal outcome assessment.

Baseline Characteristics

- Mean age: 72.6 ± 8.1 years
- Female: 42.7%
- Comorbidities:
  - Heart failure: 69.9%
  - Diabetes mellitus: 46.6%
  - Atrial arrhythmias: 38.7%
  - Chronic kidney disease: 36.9%
  - Ischemic heart disease: 76.7%

Long-Term Outcomes (10 Years)

- **Mortality:** 44.3%
- **Recurrent heart failure:** 67.1%
- **All-cause hospitalization:** 61.9%
- **MACE:** 31.7%
- **AKI:** 32.4%
- **Stroke:** 15.2%
- **Myocardial infarction:** 18.8%

Complications and Procedural Trends

- **Permanent pacemaker:** 10.1%
- **Major bleeding:** 21.5%
- **Vascular complications:** 0.5% → reflects procedural advances over time.

Outcome summary

Outcome	10-Year Incidence (%)
Mortality	44.3
Heart Failure	67.1
All-Cause Hospitalization	61.9
MACE	31.7
AKI	32.4
Myocardial Infarction	18.8
Stroke	15.2
PPM	10.1
Major Bleeding	21.5
Vascular Complications	0.5

Discussion

- Despite improved procedural safety, long-term morbidity and mortality remain high.
- Heart failure recurrence and rehospitalization are frequent and drive adverse outcomes.
- Findings emphasize the need for structured post-TAVR follow-up and optimization of comorbidities.
- Future work: durability of transcatheter valves and tailored risk-stratification models.

Conclusion

- TAVR patients face substantial long-term morbidity and mortality.
- Continued surveillance and multidisciplinary post-procedural management are crucial.
- Advances in valve design and patient selection may improve 10-year outcomes.