Natural History and Outcomes of Early Aortic Valve Replacement versus Conservative Management in Asymptomatic Severe Aortic Stenosis

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Disclosure of Relevant Financial Relationships

I, Justin Huang, do not have any financial relationships to disclose.

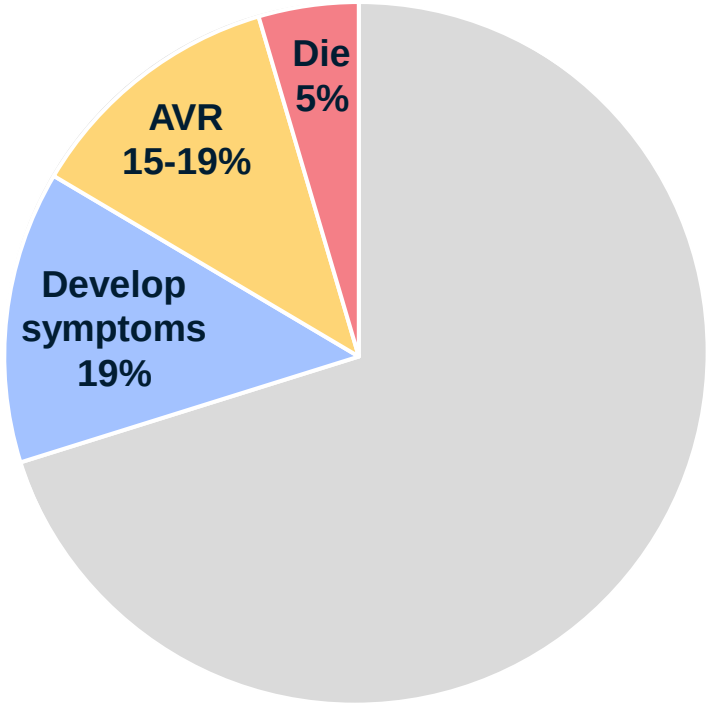
Indications for AVR in Asymptomatic Severe AS

Class 1	Class 2a	Class 2b
LVEF < 50%	Positive stress test	Decreasing LVEF on 3 images to <60%
Cardiac surgery for other indication	Very Severe AS (Vmax ≥ 5 m/s)	
	Increasing peak velocity by >= 0.3 m/s/year	
	BNP > 3x ULN	

Otto CM, et al. Circulation. 2020

Natural History of Asymptomatic Severe AS

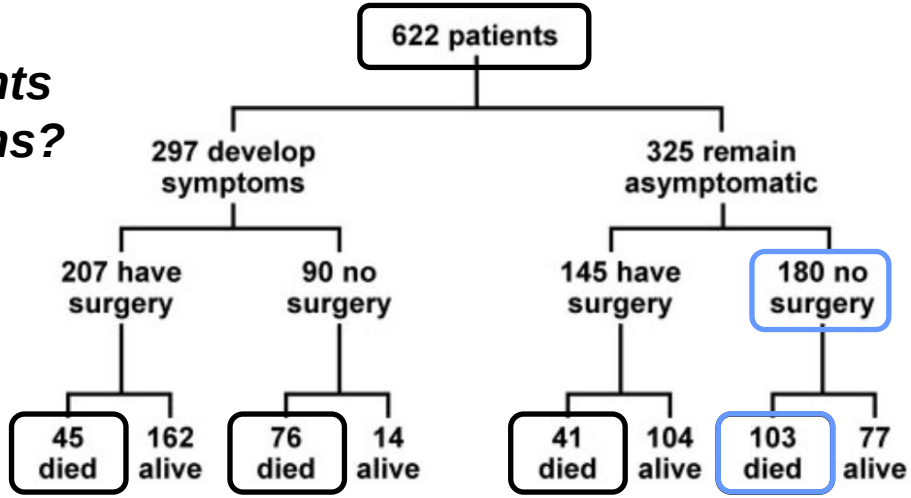
Each year, out of 100 patients with asymptomatic severe AS…



Gahl et al. JAMA Cardiology. 2020.
Tan et al. Clinical Res. In Cardiol. 2025

Natural History Q's to Gauge Utility of Early AVR

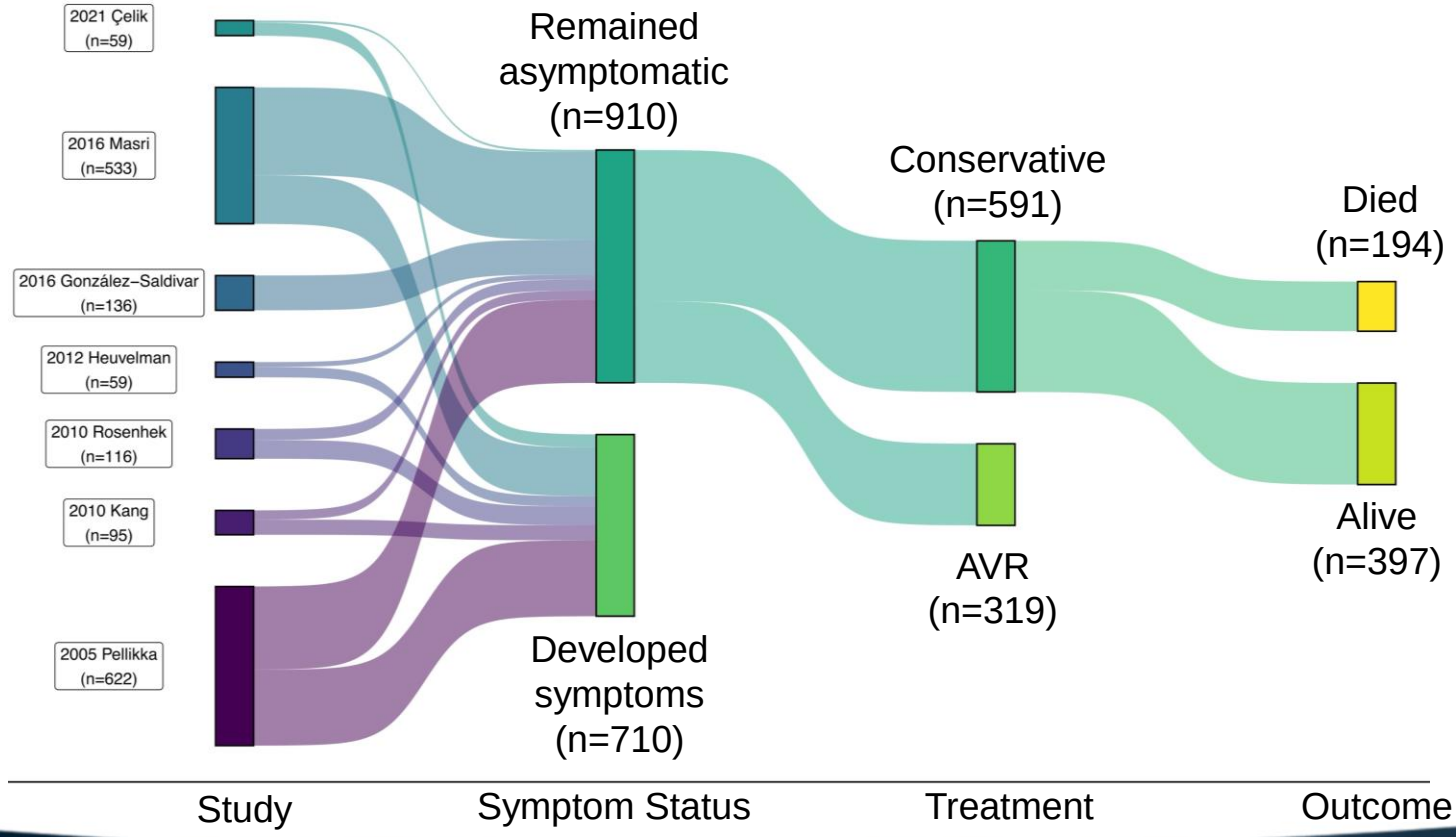
How many patients develop symptoms?



What if we don't operate on asymptomatic patients?

Pellikka et al. Circulation. 2005.

Natural History of Asymptomatic Severe AS

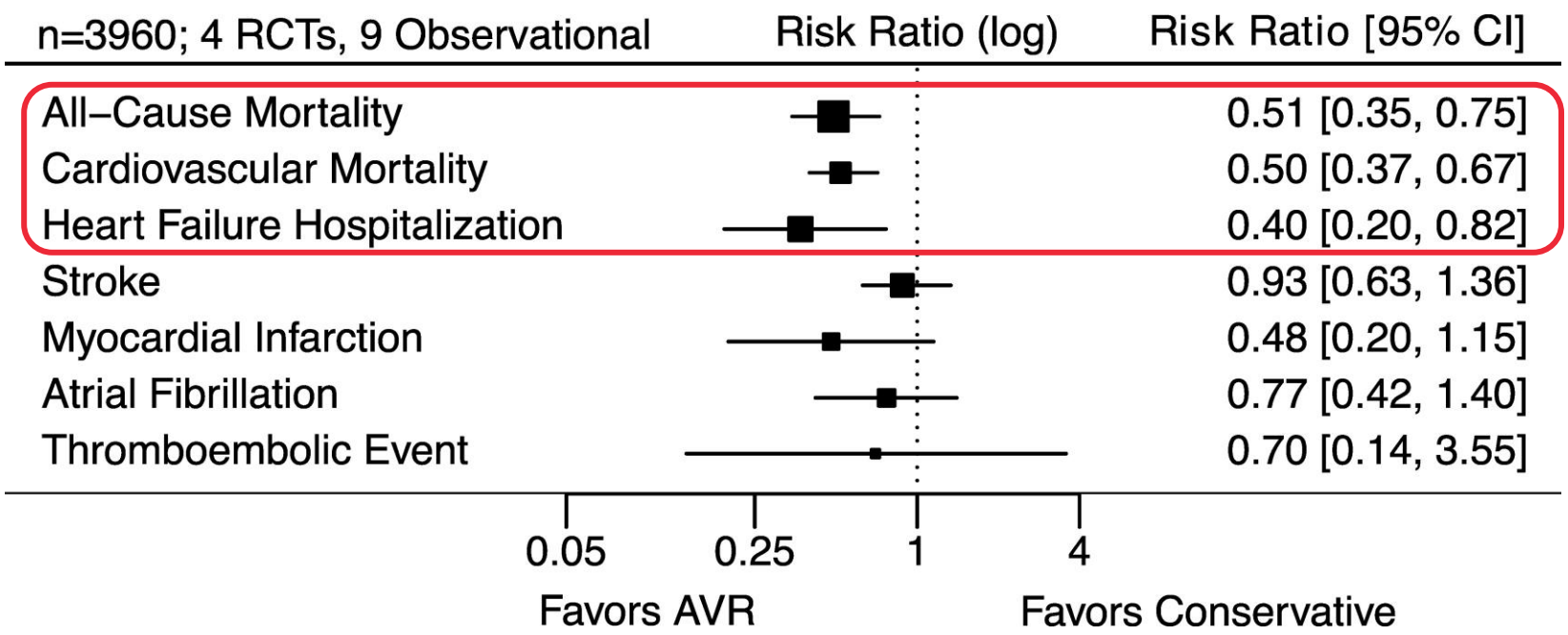


Mean FU 5.6 years (5 studies)
Median FU 4.1 years (2 studies)

RCTs of Early AVR vs Clinical Surveillance

	Mean or median FU	n	# AVR	Symptom Reporting	Inclusion Criteria
Généreux 2025 *Early TAVR*	3.8 yr	901	TAVR 455	Stress test (90%)	Age ≥65, LVEF ≥ 50%
Loganath 2025 *Evolved*	3.5 yr	224	TAVR 26 SAVR 80	Patient report	Age ≥18, LVEF ≥ 50% ↑Trop or LVH on ECG Myocardial fibrosis
Banovic 2024 *AVATAR*	5.3 yr	157	SAVR 78	Stress test	Age ≥ 18, LVEF ≥ 50%
Kang 2020 *RECOVERY*	6.2 yr	145	SAVR 73	Stress test if nonspecific sx	Age 20-80, LVEF ≥ 50%

Impact of Early AVR on Asymptomatic Severe AS



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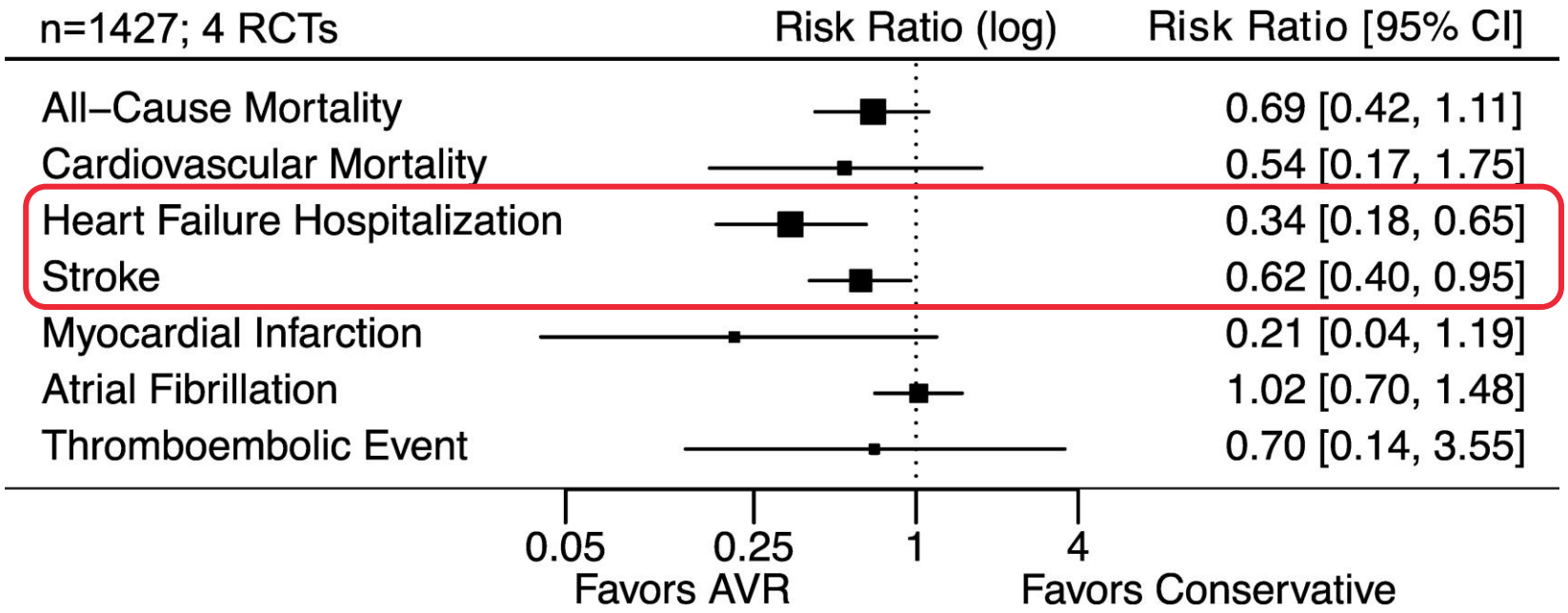
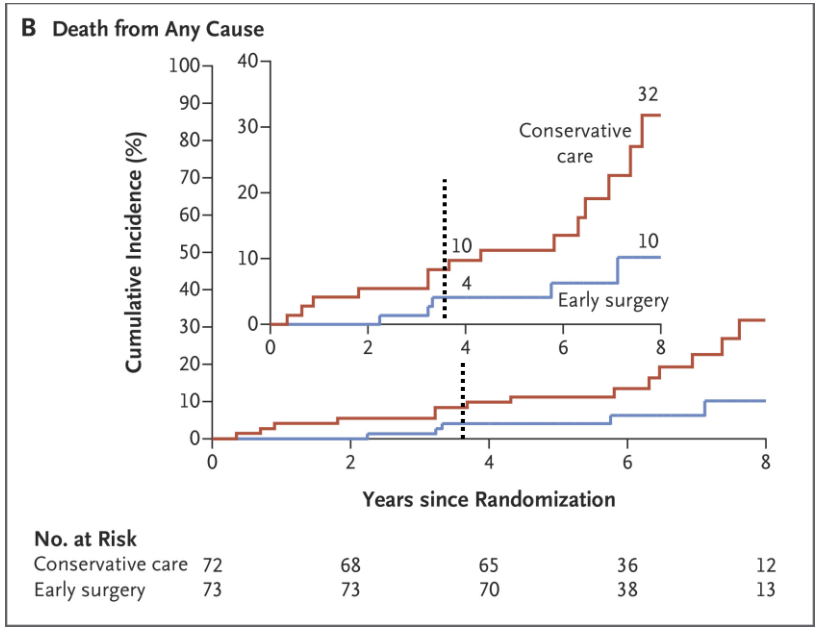
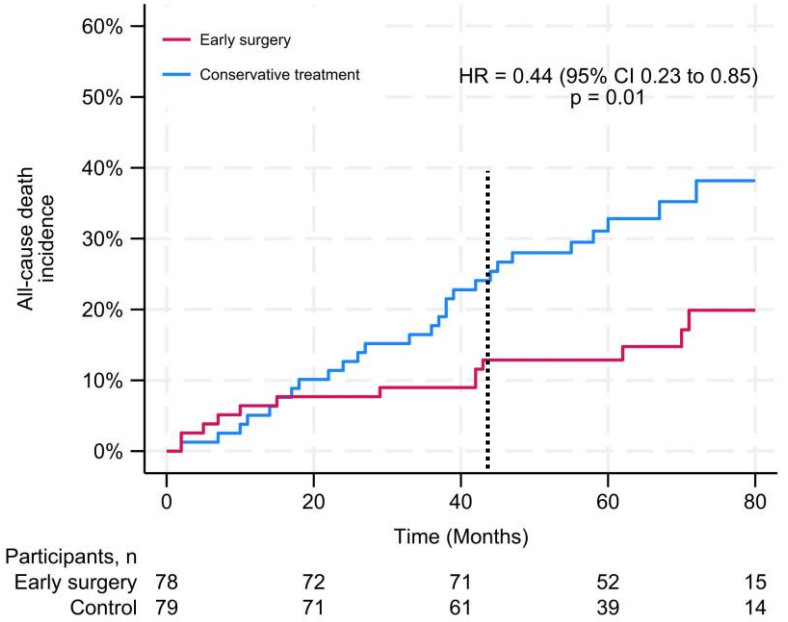


Impact of Follow Up Duration: All Mortality

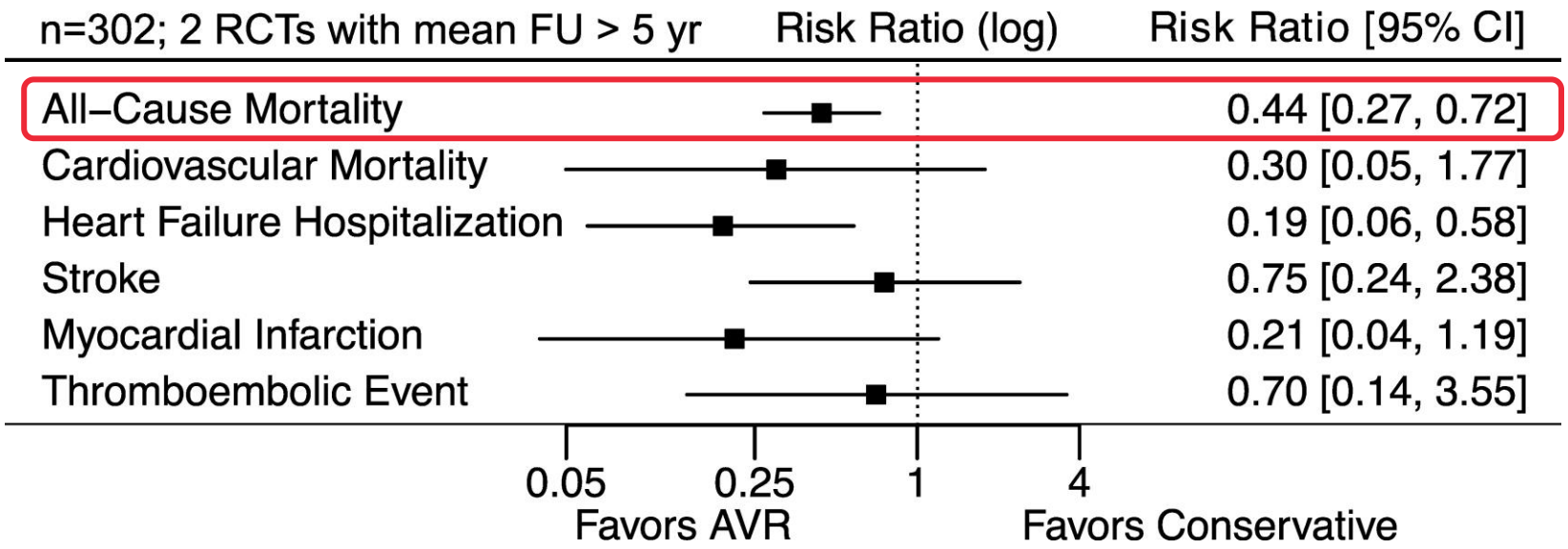


RECOVERY 2020



AVATAR 2024

Impact of Early AVR on Asymptomatic Severe AS



Impact of Close Clinical Surveillance on Outcomes

	% Surveillance to AVR	Median time from symptoms to AVR	HR for AVR Mortality Benefit
Généreux 2025 *Early TAVR*	87%	32d (18d – 58d)	0.93 (0.60 – 1.44)
Loganath 2025 *Evolved*	77%	100d (43d – 136d)	1.22 (0.59 – 2.51)
Banovic 2024 *AVATAR*	44%	123d (90d – 297d)	0.44 (0.23 – 0.85)
Kang 2020 *RECOVERY*	74%	Not reported	0.33 (0.12 – 0.90)

Takeaways: Natural History

Over a follow-up of ~5 years:

- Nearly half of asymptomatic patients developed symptoms
- 1/3 of asymptomatic patients under clinical surveillance died

Takeaways: Early AVR vs Surveillance

- Early AVR is associated with reduced HF hospitalization, and possibly reduced mortality, CV death, and stroke
- The lack of association between AVR and reduced mortality among only RCTs is likely influenced by
  - Exceptionally prompt conversion to AVR in the clinical surveillance group in Early TAVR
  - Shorter follow-up durations in Early TAVR and EVOLVED