Clinical and Economic Consequences of Delayed TAVR

A Real-World Data Study

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Within the prior 24 months, I have had a financial relationship with a company producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients:

Nature of Financial Relationship	Ineligible Company
Consultant Fees/Honoraria	Edwards Lifesciences Medtronic Boston Scientific Shockwave Medical, Inc.

All relevant financial relationships have been mitigated.
Faculty disclosure information can be found on the app

Background and Study Objective

AS is life-threatening but treatable

AS is life-threatening, and its progression is unpredictable – however AVR saves lives!

Significantly longer delays for the non-invasive treatment alternative

Patients who get a TAVR wait on average 2 months longer than those who get a SAVR

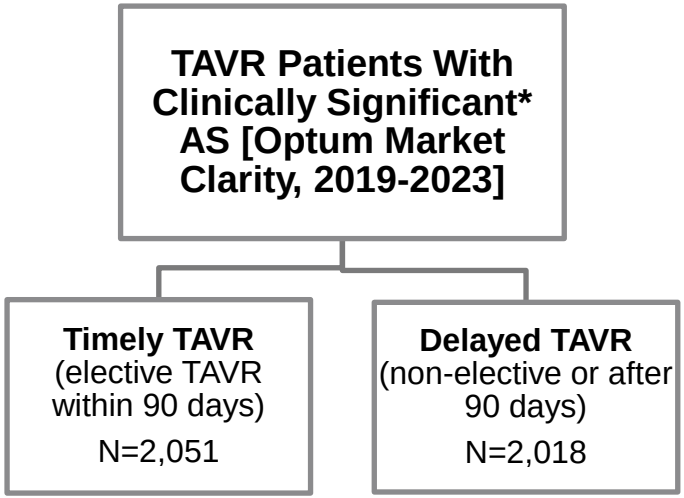
Consequences of delayed TAVR

What are the clinical and economic consequences of delayed TAVR?

Abbreviations: AS = Aortic Stenosis; AVR = aortic valve replacement; SAVR = surgical aortic valve replacement; TAVR = transcatheter aortic valve replacement

Methods

COHORTS OF INTEREST



OUTCOMES (3-Years Following TAVR)

Clinical

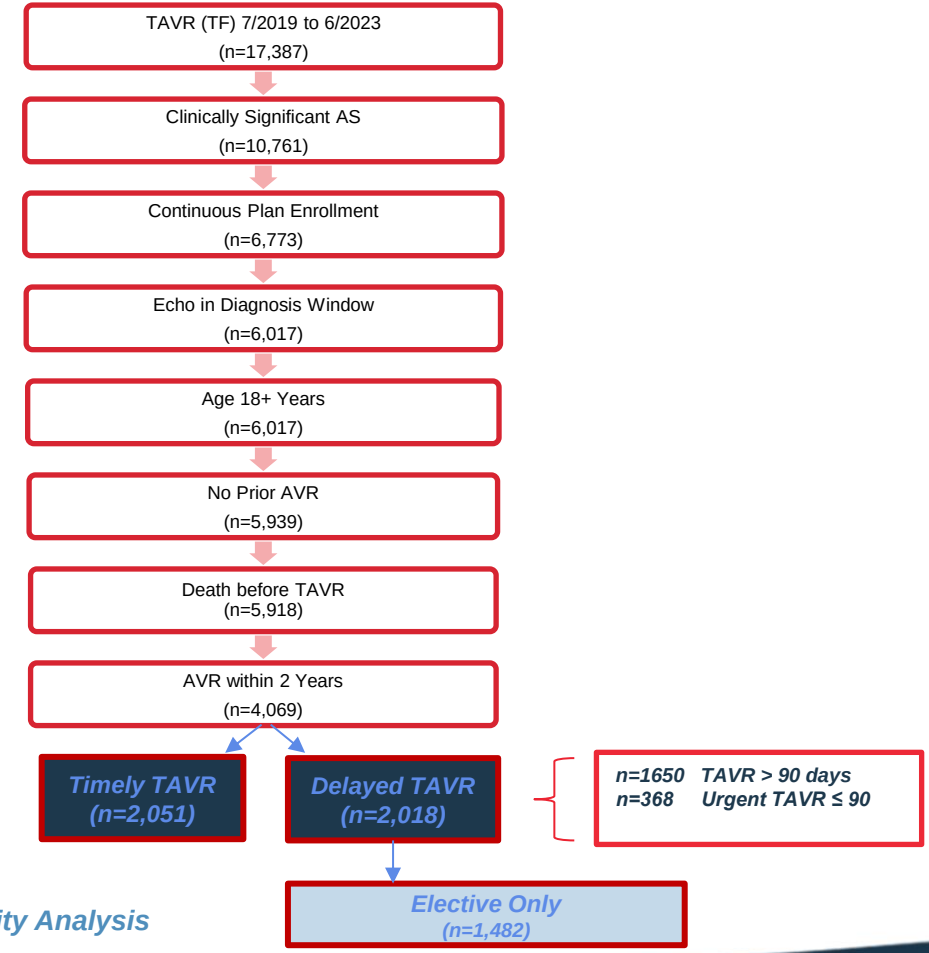
- **Composite**
  - Death
  - Heart Failure Hospitalization
  - Disabling Stroke

Economic**

- **Cost**
  - Total
  - Inpatient

* Clinically-significant = AS diagnosis + symptomatic + TAVR within 2 years of diagnosis (~severe)
** Economic models based on patients alive and enrolled in the 3-year follow-up period after TAVR discharge

Cohort Attrition



Baseline Demographic Characteristics

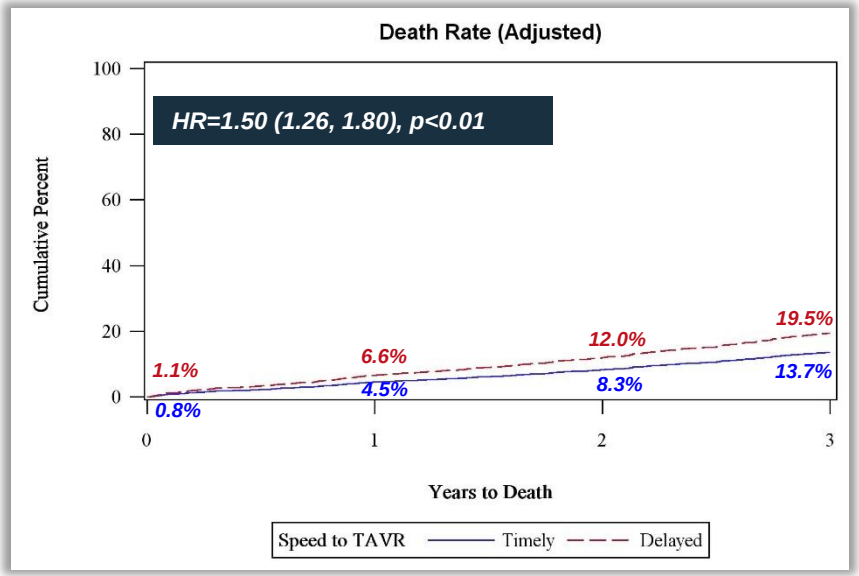
Variable		Timely TAVR	Delayed TAVR	Total
Sample Size		2,051 (50.4% of Total)	2,018 (49.6% of Total)	4,069 (100%)
Alive and enrolled in follow-up period after TAVR discharge		2,046 (99.8%)	2,001 (99.2%)	4,047 (99.5%)
Age (in years)		76.5 (7.9)	75.6 (8.5)	76.1 (8.2)
Female		872 (42.5%)	835 (41.4%)	1,707 (42%)
Caucasian Race/Ethnicity		1,886 (92%)	1,808 (89.6%)	3,694 (90.8%)
AVR Year	2019 (July – Dec)	248 (12.1%)	294 (14.6%)	542 (13.3%)
	2020	494 (24.1%)	505 (25%)	999 (24.6%)
	2021	532 (25.9%)	518 (25.7%)	1,050 (25.8%)
	2022	537 (26.2%)	449 (22.2%)	986 (24.2%)
	2023 (Jan – Jun)	240 (11.7%)	252 (12.5%)	492 (12.1%)

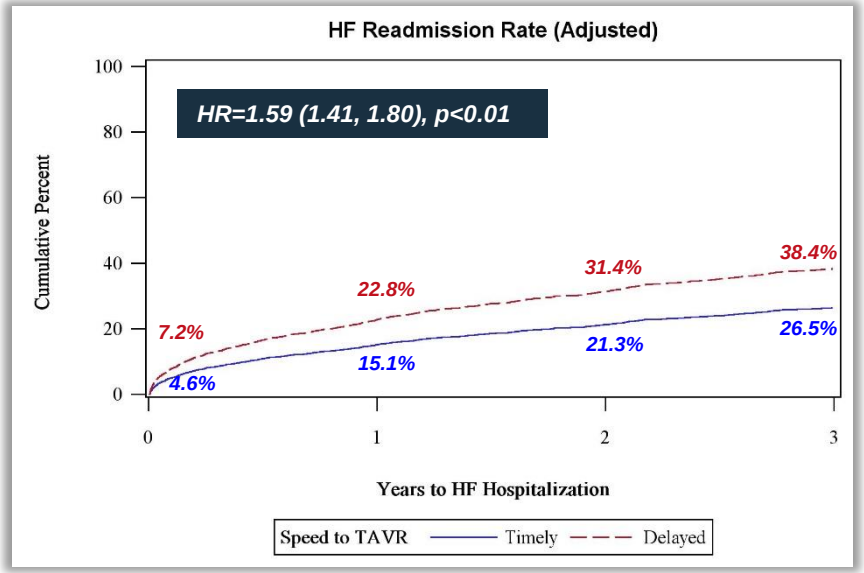
*Note: Categorical variables reported as # (% of column) and continuous variables reported as mean (standard deviation). * Not included for adjustment*

Baseline Clinical Characteristics

Variable	Timely TAVR	Delayed TAVR	Total
Sample Size	2,051 (50.4% of Total)	2,018 (49.6% of Total)	4,069 (100%)
Elixhauser Score	6.6 (2.7)	6.6 (2.8)	6.6 (2.8)
Hospital Frailty Risk Score	8.5 (7.7)	10.9 (9.4)	9.7 (8.7)
Bicuspid Aortic Valve	108 (5.3%)	86 (4.3%)	194 (4.8%)
Disabling Stroke Admission	53 (2.6%)	77 (3.8%)	130 (3.2%)
Non-Elective	0 (0%)	536 (26.6%)	536 (13.2%)

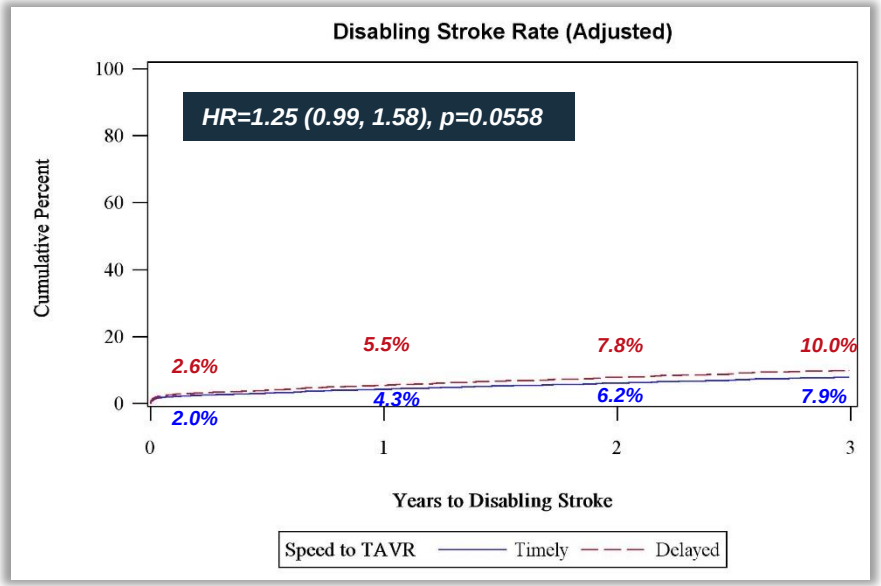
There is a Significantly Higher Risk of Death and HF Hospitalization with Delayed TAVR

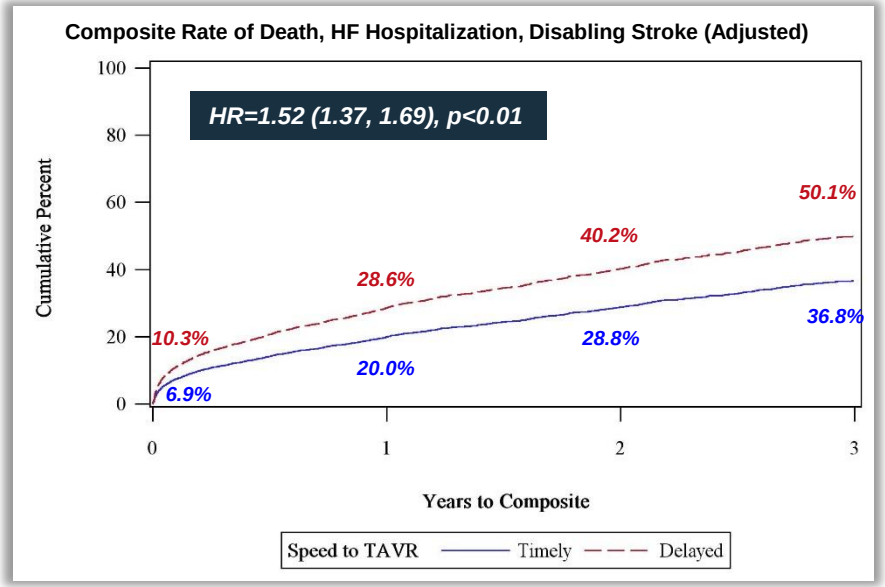




Note: Plot and HR adjusted for age, sex, Caucasian race, region, payor, Elixhauser score, HFRS, bicuspid aortic valve, AVR year

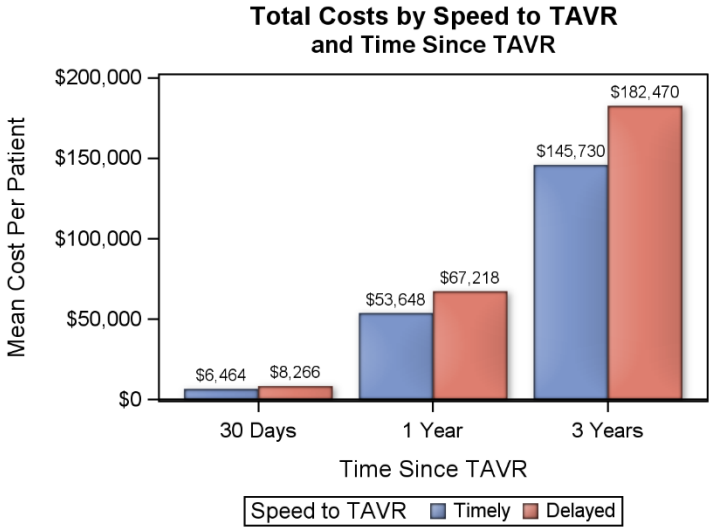
Significantly Higher Risk of the Composite Outcome and a Marginally Higher Risk of Disabling Stroke with Delayed TAVR





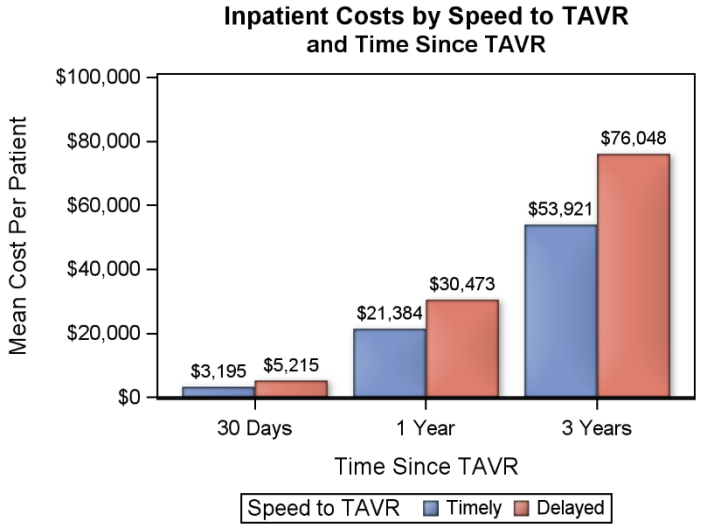
Note: Plot and HR adjusted for age, sex, Caucasian race, region, payor, Elixhauser score, HFRS, bicuspid aortic valve, prior stroke, AVR year

$10k+ Higher Costs Per Year for Delayed TAVR Largely Comprised of Higher Inpatient Costs



Difference (Delayed vs Timely)

30 Days	+$1,802 (p<0.01)
1 Year	+$13,570 (p<0.01)
3 Years	+$36,740 (p<0.01)

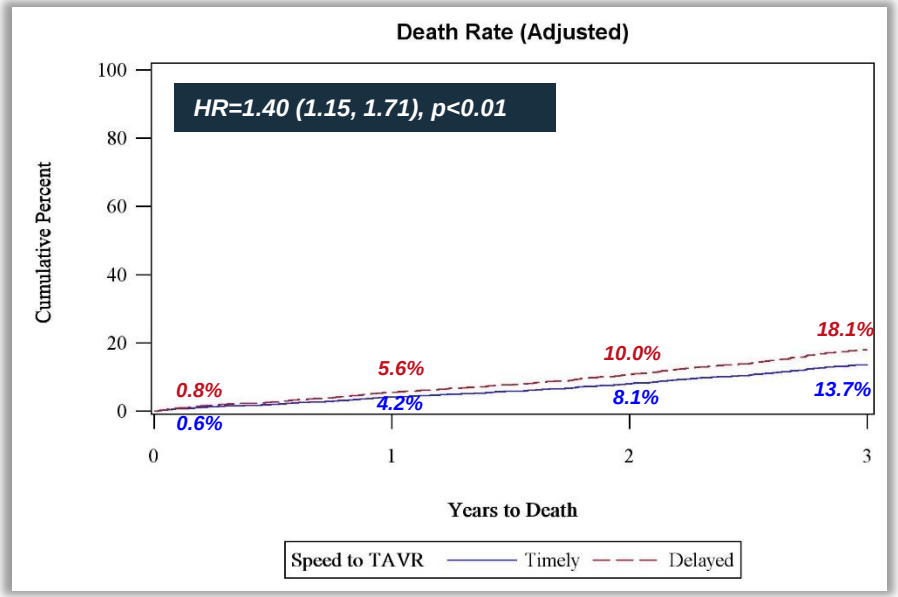


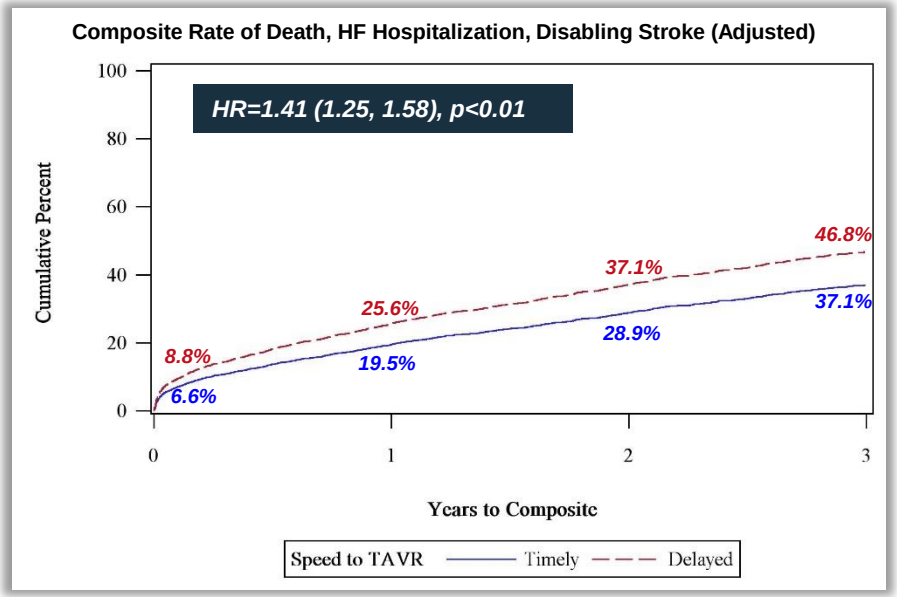
Difference (Delayed vs Timely)

30 Days	+$2,020 (p<0.01)
1 Year	+$9,089 (p<0.01)
3 Years	+$22,127 (p<0.01)

Sensitivity Analysis [Elective Only]:

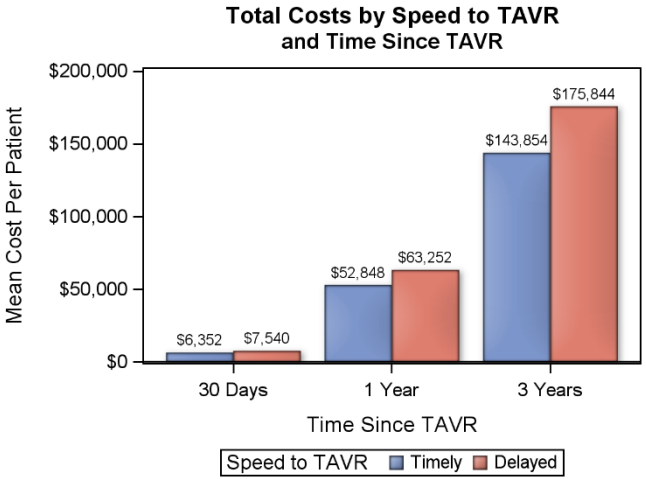
Delayed TAVR is Associated with Worse Clinical Outcomes





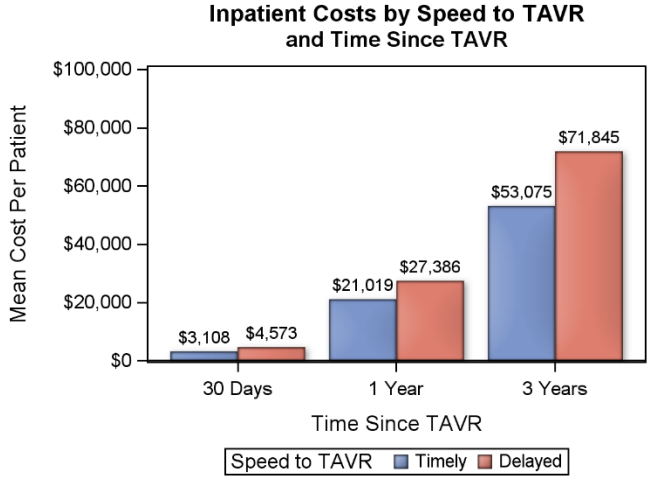
Sensitivity Analysis [Elective Only]:

Delayed TAVR is Associated with Higher Economic Burden



Difference (Delayed vs Timely)

30 Days	+$1,188 (p<0.01)
1 Year	+$10,404 (p<0.01)
3 Years	+$31,990 (p<0.01)



Difference (Delayed vs Timely)

30 Days	+$1,465 (p<0.01)
1 Year	+$6,367 (p<0.01)
3 Years	+$18,770 (p<0.01)

Conclusions

- **Delayed TAVR** (i.e., urgent TAVR or TAVR > 90 days after clinically significant AS diagnosis) is associated with **higher 3-year mortality and healthcare utilization** than timely TAVR

- **Consequences of delayed TAVR** (>90 days) are still observed when limited to **elective TAVR**

Timely access to TAVR must be prioritized.
Delays are not benign—they are detrimental to patient survival and healthcare efficiency.

Simultaneous Publication in Structural Heart