

# **Expanding Role of TAVI to**

## **Asymptomatic Severe Aortic Stenosis**

**Philippe Génereux, MD, FACC**

Interventional Cardiologist

Director, Structural Heart Program, Gagnon Cardiovascular Institute,  
Morristown Medical Center, NJ

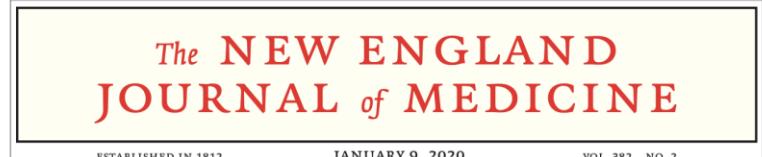
# Disclosure of Relevant Financial Relationships

Antegrade Medical: Equity, consultant; Abbott Vascular: Consultant, advisor, speaker Fees, PI Eclipse Trial; CARANX Medical: Consultant; Edwards LifeSciences: Consultant, advisor, speaker fees, proctor, research grant, PI EARLY-TAVR trial, PI PROGRESS trial; ECHOIQ: Equity, consultant; egnite inc.: Consultant, advisor; Haemonetics: Consultant, advisor, speaker Fees; Medtronic: Consultant, advisor, speaker fees; Pi-Cardia: Equity, consultant; Puzzle Medical: Equity, consultant; Spiralis: Equity, consultant; Teleflex: Consultant; 4C Medical: Consultant, PI Feasibility study



# The Evidences for Treating Asymptomatic Severe AS

## 4 RCTs, 1 Meta-analysis



ESTABLISHED IN 1812

JANUARY 9, 2020

VOL. 382 NO. 2

## Early Surgery or Conservative Care for Asymptomatic Aortic Stenosis

Duk-Hyun Kang, M.D., Ph.D., Sung-Ji Park, M.D., Ph.D., Seung-Ah Lee, M.D., Sahmin Lee, M.D., Ph.D.,  
Dae-Hee Kim, M.D., Ph.D., Hyung-Kwan Kim, M.D., Ph.D., Sung-Cheol Yu, **META-ANALYSIS**  
Jong-Min Song, M.D., Ph.D., Cheol-Hyun Chung, M.D., Ph.D.,  
Iae-Won Lee, M.D., Ph.D., and Seung-Woo Park

META-ANALYSIS

 ESC

ESC European Heart Journal (2024) 45, 4526–4535  
European Society of Cardiology <https://doi.org/10.1093/eurheartj/ehae585>

# **Aortic valve replacement vs. conservative treatment in asymptomatic severe stenosis: long-term follow-up of the AVATAR trial**

Marko Banovic <sup>1,2,\*</sup>, Svetozar Putnik<sup>1,3</sup>, Bruno R. Da Costa<sup>4</sup>, Martin Penicka<sup>5</sup>, Marek A. Deja<sup>6</sup>, Martin Kotrc<sup>7</sup>, Radka Kockova<sup>8</sup>, Sigita Glaveckaite <sup>9</sup>, Hrvoje Gasparovic <sup>10</sup>, Nikola Pavlovic <sup>11</sup>, Lazar Velicki<sup>12,13</sup>, Stefano Salizzoni <sup>14</sup>, Wojciek Wojakowski<sup>15</sup>, Guy Van Camp <sup>4</sup>, Sinisa Gradinac<sup>16</sup>, Michael Laufer<sup>17</sup>, Sara Tomović<sup>1</sup>, Ivan Busic<sup>1</sup>, Milica Bojanic<sup>18</sup>, Arsen Ristic <sup>1,2</sup>, Andrea Klasnja<sup>19</sup>, Milos Matkovic<sup>1,3</sup>, Nikola Boskovic<sup>2</sup>, Katarina Zivic<sup>2</sup>, Miodrag Jovanovic<sup>20</sup>, Serge D. Nikolic<sup>21</sup>, Bernard Iung<sup>22</sup>, and Jozef Bartunek<sup>4\*</sup>

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

# Transcatheter Aortic-Valve Replacement for Asymptomatic Severe Aortic Stenosis

P. Généreux, A. Schwartz, J.B. Oldemeyer, P. Pibarot, D.J. Cohen, P. Blanke, B.R. Lindman, V. Babaliaros, W.F. Fearon, D.V. Daniels, A.K. Chhatriwalla, Isky, H. Gada, P. Shah, M. Szerlip, T. Dahle, K. Goel, W. O'Neill, T. Sheth, vidson, R.R. Makkar, H. Prince, Y. Zhao, R.T. Hahn, J. Leipsic, B. Redfors, ocock, M. Mack, and M.B. Leon, for the EARLY TAVR Trial Investigators\*



## Aortic Valve Replacement vs Clinical Surveillance in Asymptomatic Severe Aortic Stenosis

## A Systematic Review and Meta-Analysis

Philippe Génereux, MD,<sup>a</sup> Marko Banovic, MD, PhD,<sup>b,c</sup> Duk-Hyun Kang, MD, PhD,<sup>d</sup> Gennaro Giustino, MD,<sup>a</sup> Bernard D. Prendergast, MD,<sup>a</sup> Brian R. Lindman, MD,<sup>a</sup> David E. Newby, MD, PhD,<sup>e</sup> Philippe Pibarot, DVM, PhD,<sup>f</sup> Björn Redfors, MD, PhD,<sup>a,g,h,i,j,l</sup> Neil J. Craige, MD,<sup>a</sup> Józef Bartunek, MD,<sup>a</sup> Allan Schwartz, MD,<sup>i</sup> Roxanna Seyedin, PhD,<sup>a</sup> David J. Cohen, MD, MS,<sup>a,k</sup> Bernard Jun, MD,<sup>a</sup> Martin B. Leon, MD,<sup>a,f</sup> Marc R. Dweck, MD, PhD<sup>a</sup>

**JAMA** The Journal of the  
American Medical Association

# **Early Intervention in Patients With Asymptomatic Severe Aortic Stenosis and Myocardial Fibrosis**

## The EVOLVED Randomized Clinical Trial

— Krithika Loganathan, MD<sup>1</sup>; Neil J. Craig, MD<sup>1,2</sup>; Russell J. Everett, PhD<sup>2</sup>; et al



ORIGINAL ARTICLE

# Transcatheter Aortic-Valve Replacement for Asymptomatic Severe Aortic Stenosis

P. Généreux, A. Schwartz, J.B. Oldemeyer, P. Pibarot, D.J. Cohen, P. Blanke,  
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C. Kavinsky, H. Gada, P. Shah, M. Szerlip, T. Dahle, K. Goel, W. O'Neill, T. Sheth,  
C.J. Davidson, R.R. Makkar, H. Prince, Y. Zhao, R.T. Hahn, J. Leipsic, B. Redfors,  
S.J. Pocock, M. Mack, and M.B. Leon, for the EARLY TAVR Trial Investigators\*

# Study Design

Prospective, multicenter RCT evaluating patients with asymptomatic, severe AS aged  $\geq 65$  years w/ an STS score  $\leq 10\%$  and LVEF  $\geq 50\%$

## Asymptomatic Status

Confirmed by negative treadmill stress test\*

## Randomization 1:1

Transfemoral-TAVR  
(SAPIEN 3 or SAPIEN 3 Ultra THV)

Clinical Surveillance

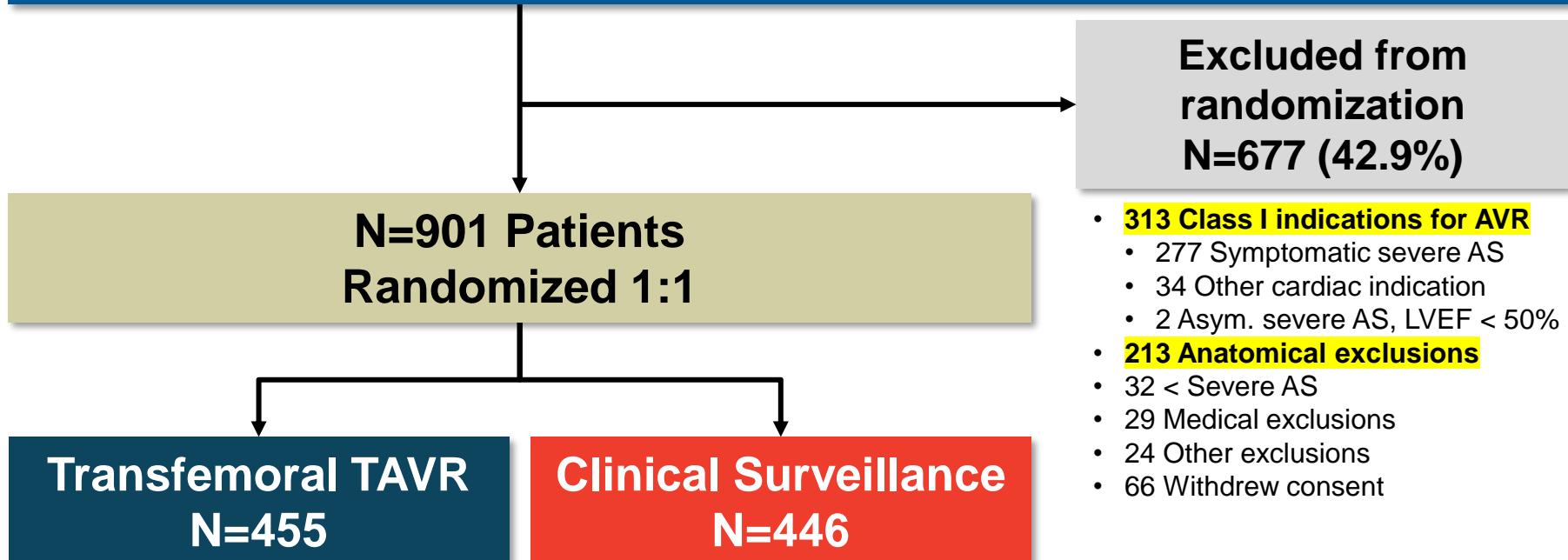
## PRIMARY ENDPOINT (Superiority)

Non-hierarchical composite of all-cause death, any stroke, or unplanned CV hospitalization at a minimum follow-up of 2 years

\*Confirmed by detailed clinical history alone if patient was unable to perform stress test

# Patient Flow

N=1578 Patients consented for screening between  
March 2017 and December 2021



# Patient Flow

N=1578 Patients consented for screening between March 2017 and December 2021

N=901 Patients  
Randomized 1:1

313 (~20%) Class 1 for AVR (Excluded from EARLY TAVR trial)

Transfemoral TAVR  
N=455

265 (~30%) Class 2a/2b for AVR

Clinical Surveillance  
N=446

# Baseline Characteristics

| Characteristic          | TAVR<br>(N=455)   | CS<br>(N=446)     | Characteristic                          | TAVR<br>(N=455) | CS<br>(N=446) |
|-------------------------|-------------------|-------------------|-----------------------------------------|-----------------|---------------|
| Age, y                  | 76.0 ± 6.0        | 75.6 ± 6.0        | Bicuspid valve                          | 8.1%            | 8.8%          |
| Female sex              | 28.8%             | 33.0%             | Hx of afib                              | 15.6%           | 13.2%         |
| BMI, kg/m <sup>2</sup>  | 28.4 ± 4.6        | 28.6 ± 4.8        | Pacemaker <sup>†</sup>                  | 4.6%            | 2.0%          |
| STS score, %            | 1.8 ± 1.0         | 1.7 ± 1.0         | Prior MI                                | 5.1%            | 4.0%          |
| Low-risk per Heart team | 83.5%             | 83.9%             | Prior stroke                            | 4.2%            | 4.5%          |
| Asymptomatic Criteria   |                   |                   | CAD                                     | 29.2%           | 25.3%         |
| Treadmill stress test   | 90.3%             | 90.8%             | PVD                                     | 7.3%            | 4.7%          |
| Clinical history only*  | 9.7%              | 9.2%              | HTN                                     | 81.1%           | 81.8%         |
| KCCQ Score              | 92.7 ± 8.7        | 92.7 ± 9.4        | Diabetes                                | 26.2%           | 25.6%         |
| NT-proBNP, pg/mL        | 276<br>(139, 599) | 297<br>(148, 608) | eGFR <45 mL/min/<br>1.73 m <sup>2</sup> | 6.8%            | 4.5%          |

Values presented as %, mean ± SD, or median (IQR)

\*Unable to take the stress test for orthopedic and/or neurologic reasons

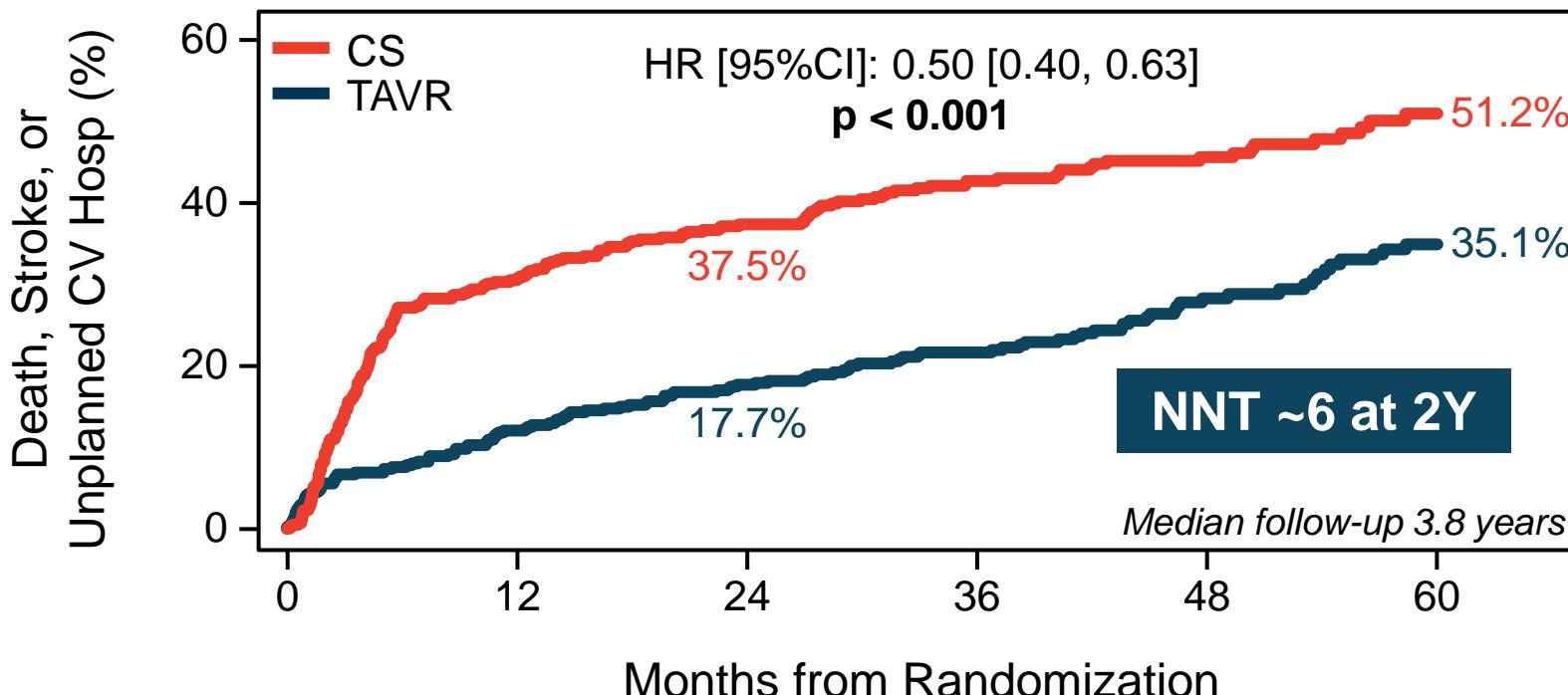
†P<0.05 at baseline

# Baseline Echo Characteristics

| Characteristic                      | TAVR<br>(N=455) | CS<br>(N=446) |
|-------------------------------------|-----------------|---------------|
| AVA, cm <sup>2</sup>                | 0.9 ± 0.2       | 0.8 ± 0.2     |
| Peak velocity, m/s                  | 4.3 ± 0.5       | 4.4 ± 0.4     |
| Mean gradient, mmHg                 | 46.5 ± 10.1     | 47.3 ± 10.6   |
| LVEF, %                             | 67.4 ± 6.5      | 67.4 ± 6.7    |
| LV diastolic dysfunction ≥ Grade II | 42.7%           | 37.3%         |

Values presented as % or mean ± SD

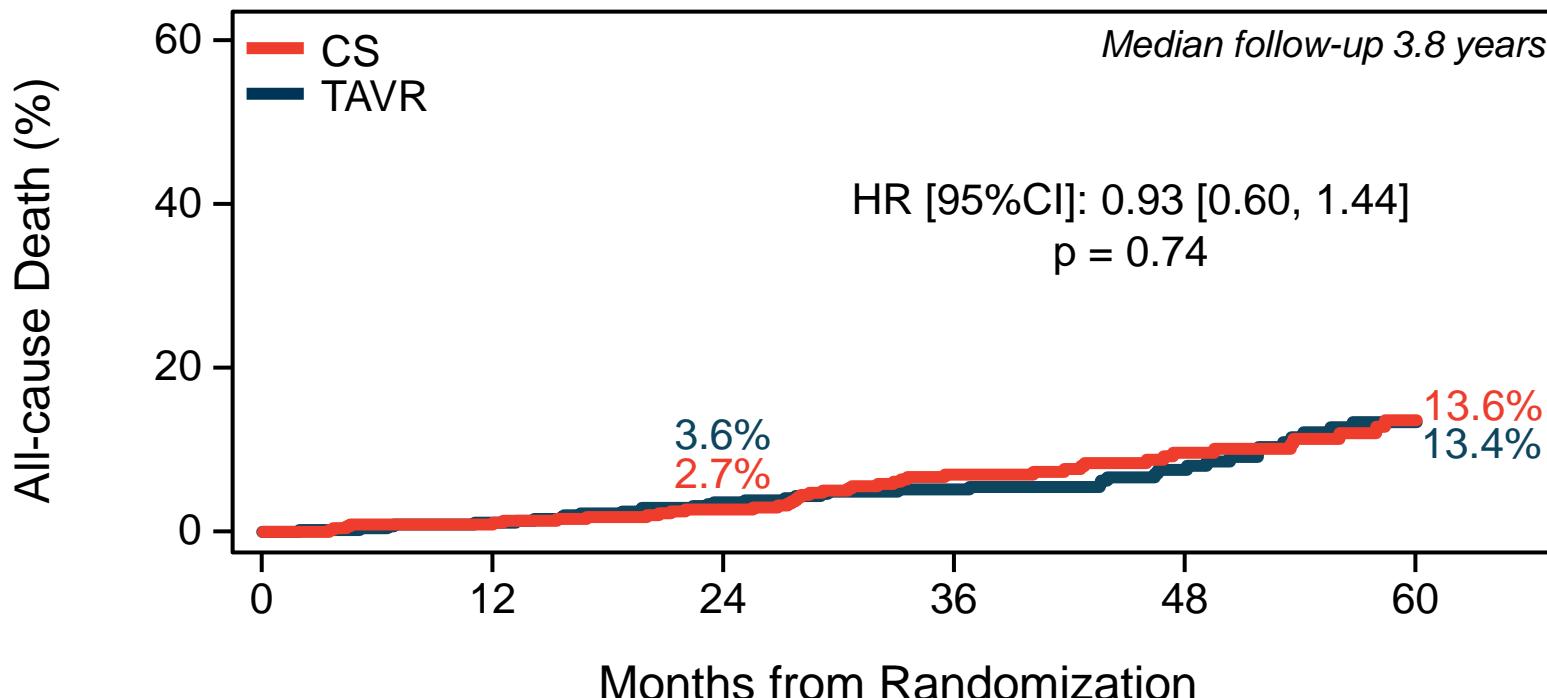
# Primary Endpoint



No. at risk:

|      |     |     |     |     |     |     |
|------|-----|-----|-----|-----|-----|-----|
| TAVR | 455 | 390 | 363 | 285 | 142 | 103 |
| CS   | 446 | 305 | 266 | 187 | 117 | 46  |

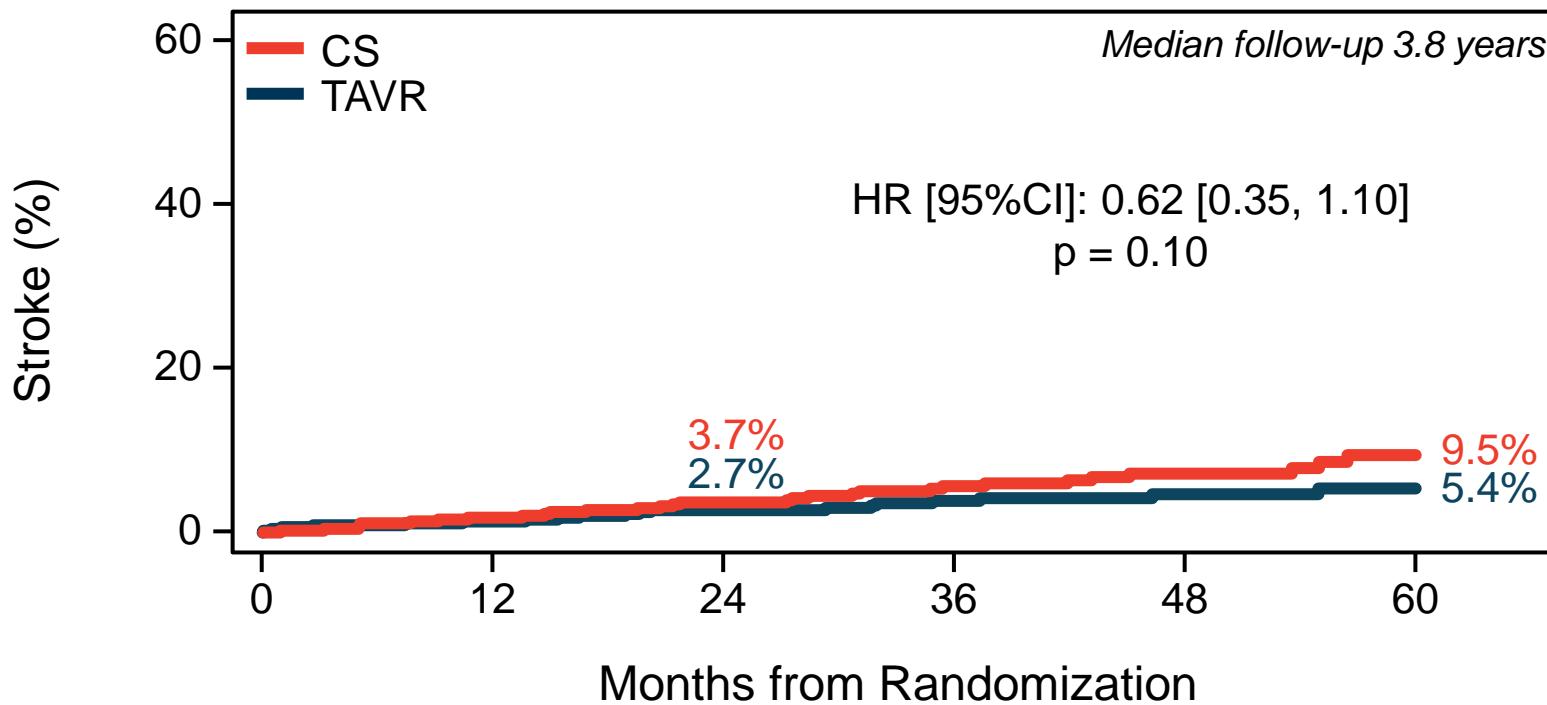
# All-cause Death



No. at risk:

|      |     |     |     |     |     |     |
|------|-----|-----|-----|-----|-----|-----|
| TAVR | 455 | 439 | 425 | 346 | 187 | 136 |
| CS   | 446 | 436 | 418 | 310 | 199 | 95  |

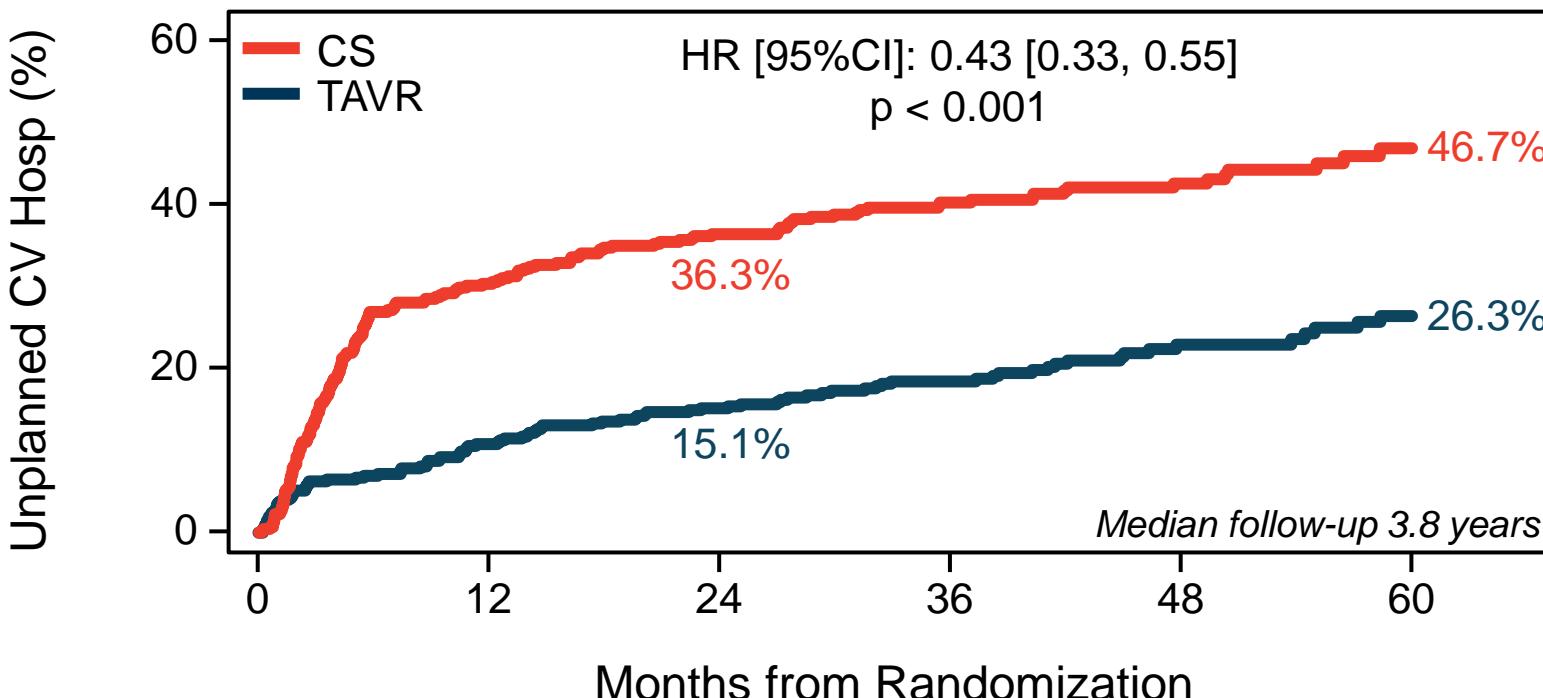
# Stroke



No. at risk:

|      |     |     |     |     |     |     |
|------|-----|-----|-----|-----|-----|-----|
| TAVR | 455 | 433 | 415 | 335 | 180 | 130 |
| CS   | 446 | 429 | 406 | 295 | 185 | 87  |

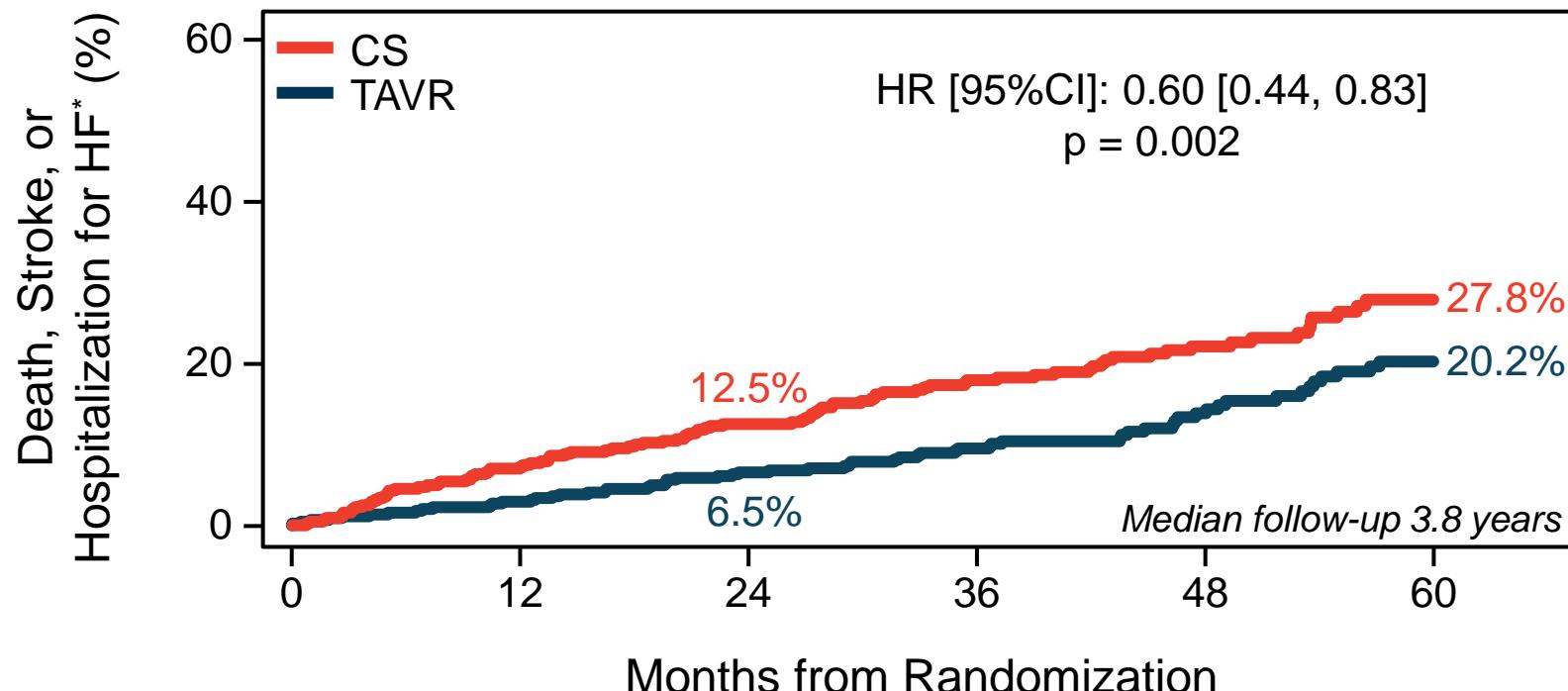
# Unplanned CV Hospitalization



No. at risk:

|      |     |     |     |     |     |     |
|------|-----|-----|-----|-----|-----|-----|
| TAVR | 455 | 392 | 365 | 287 | 142 | 103 |
| CS   | 446 | 306 | 267 | 189 | 118 | 46  |

# Death, Stroke, or Hosp. for HF\*

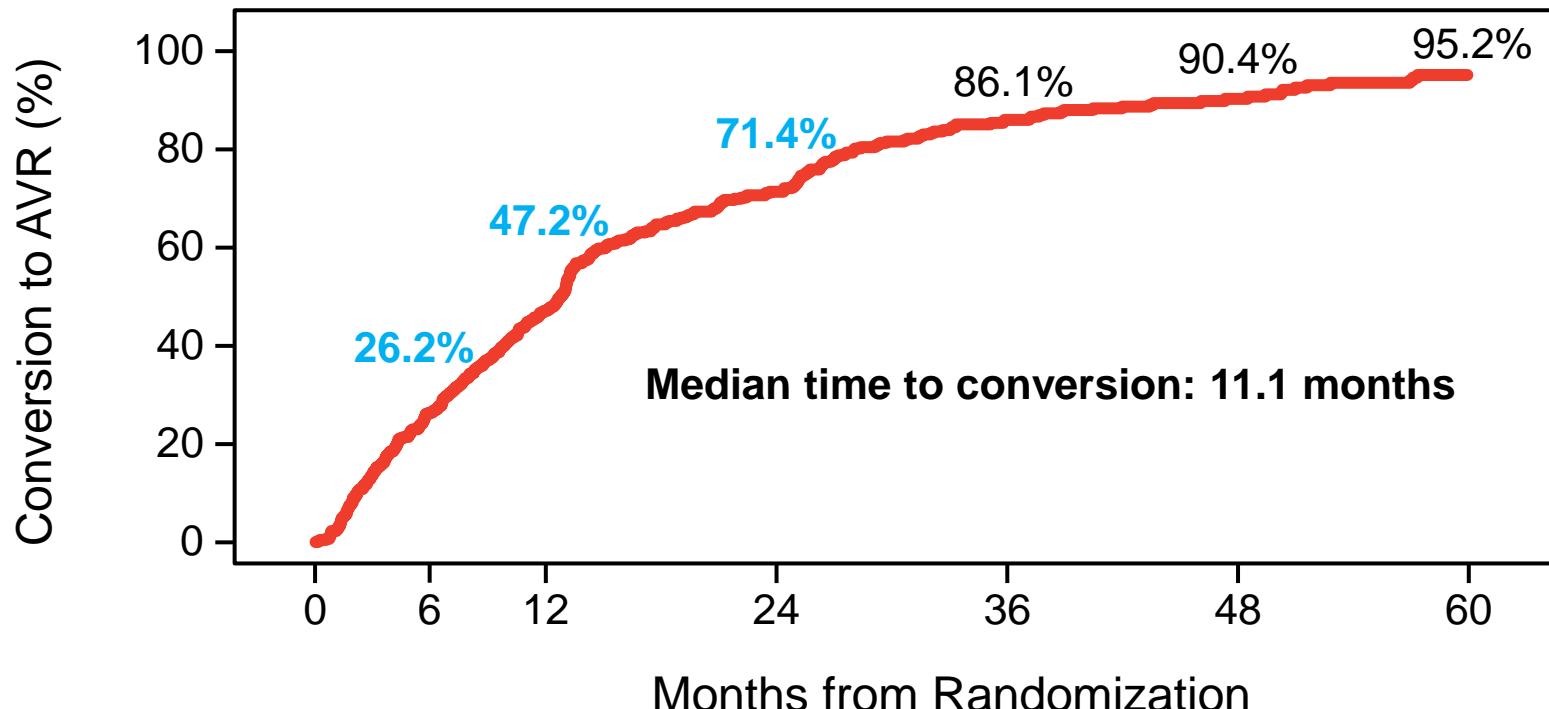


No. at risk:

|      |     |     |     |     |     |     |
|------|-----|-----|-----|-----|-----|-----|
| TAVR | 455 | 431 | 412 | 331 | 175 | 128 |
| CS   | 446 | 410 | 376 | 268 | 163 | 77  |

\*Hosp for symptomatic CHF treated with IV diuresis, inotropic therapy, IABP, ventilation for pulmonary edema, or hemodialysis for vol. overload

# Conversion to AVR in CS

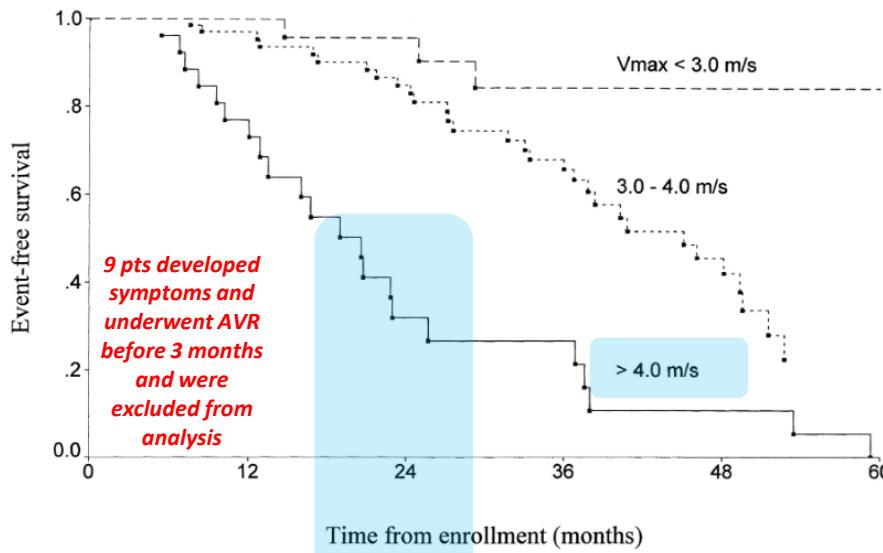


No. at risk:

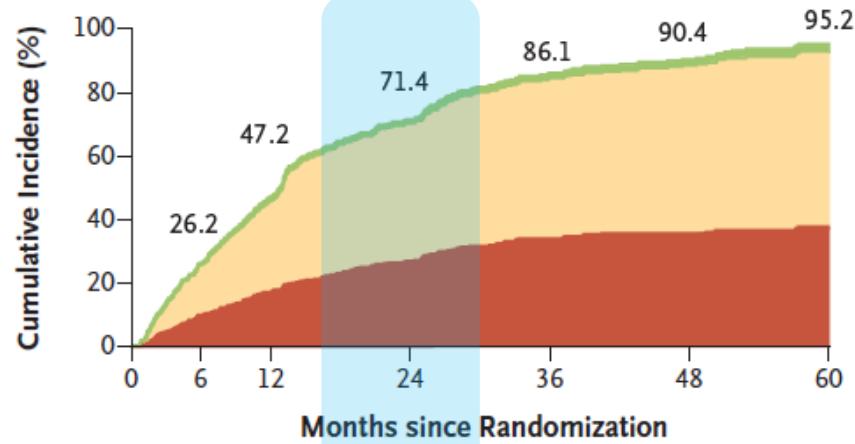
|                       |     |     |     |     |    |    |   |
|-----------------------|-----|-----|-----|-----|----|----|---|
| Clinical Surveillance | 446 | 326 | 231 | 119 | 45 | 22 | 9 |
|-----------------------|-----|-----|-----|-----|----|----|---|



1997; Otto et al.  
Prospective Study of Asymptomatic Valvular AS  
N=123 pts  
AVR or Death



2025; Génereux et al.  
TAVR for Asymptomatic Severe AS  
N=901 pts  
Conversion to AVR



Asymptomatic Severe AS      1 year ~30%      2 years ~70%      3 years 75%      4 years 90%      5 years 95%

Asymptomatic Severe AS      1 year 47.2%      2 years 71.4%      3 years 86.1%      4 years 90.4%      5 years 95.2%

Natural History of Asymptomatic Severe AS: Otto et al. 1997 almost identical to Génereux et al. 2025 EARLY TAVR

# *Conversion to AVR due to Anxiety?*



# Symptoms at Time of Conversion to AVR

| CS Patients who Converted to AVR with Symptoms | Total<br>(N=377) |
|------------------------------------------------|------------------|
| <b>Most Common Symptoms*</b>                   |                  |
| Dyspnea                                        | 83.0%            |
| Angina                                         | 24.9%            |
| Dizziness                                      | 24.7%            |
| Fatigue                                        | 22.0%            |
| Syncope                                        | 7.2%             |
| <b>Multiple Symptoms</b>                       |                  |
| Experienced 2 symptoms                         | 34.5%            |
| Experienced ≥ 3 symptoms                       | 13.3%            |
| <b>Symptom/HF Severity</b>                     |                  |
| NYHA II                                        | 70.0%            |
| <b>NYHA III/IV</b>                             | <b>30.0%</b>     |
| <b>Accompanying Signs of Worsening AS*</b>     |                  |
| Peak velocity > 5 m/s                          | 22.3%            |
| LVEF drops to < 50%                            | 4.8%             |
| ≥ 3-fold increase in NT-proBNP                 | 6.7%             |

\*Categories are not mutually exclusive

**ON MY MIND**

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# New Classification to Describe Clinical Presentation in Aortic Stenosis: Stable, Progressive, and Acute Valve Syndrome

Philippe Génereux , MD; Brian R. Lindman , MD, MSc; Philippe Pibarot , DVM, PhD

# Clinical Presentation at Time of AVR Conversion

**Patients classified based on acuity and severity of signs/symptoms**

## Asymptomatic

Includes pts who may have converted to AVR b/c they required additional medical procedures

## Advanced Signs or Symptoms / Acute Decompensation

NYHA III/IV

Syncope

Atrial fibrillation

Ventricular arrhythmia

Resuscitated sudden death/cardiac arrest

Hospitalization for HF and/or pulmonary edema

LVEF drops to < 50%

≥ 3-fold increase in NT-proBNP from baseline and age-specific threshold\*

## Progressive Signs or Symptoms

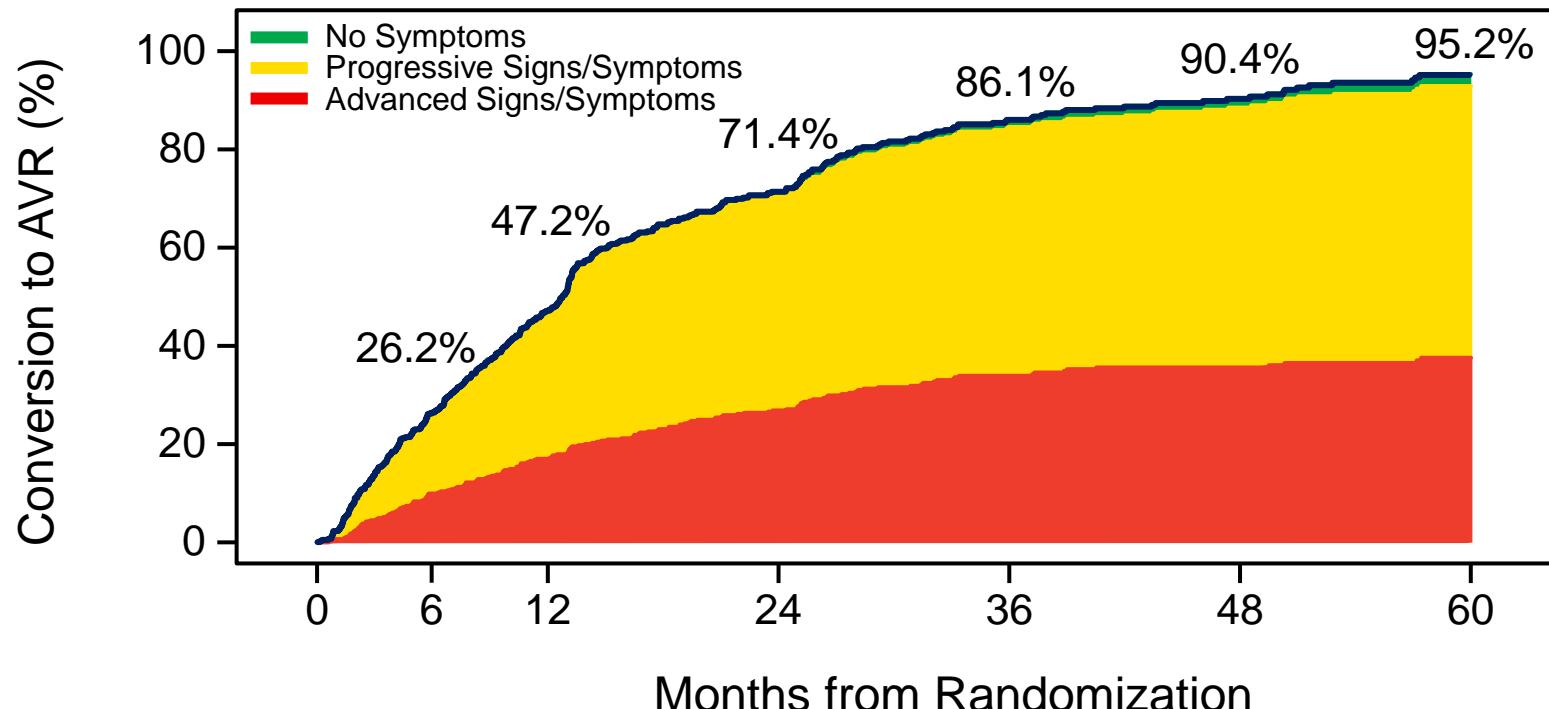
NYHA II

Increase in HF rx from baseline

≥1.5- to < 3-fold increase in NT-proBNP from baseline and age-specific threshold\*

\*125 pg/mL for patients ≤ 75 years and 450 pg/mL for > 75 years

# Signs & Symptoms at Time of Conversion to AVR



No. at risk:

CS

446

326

231

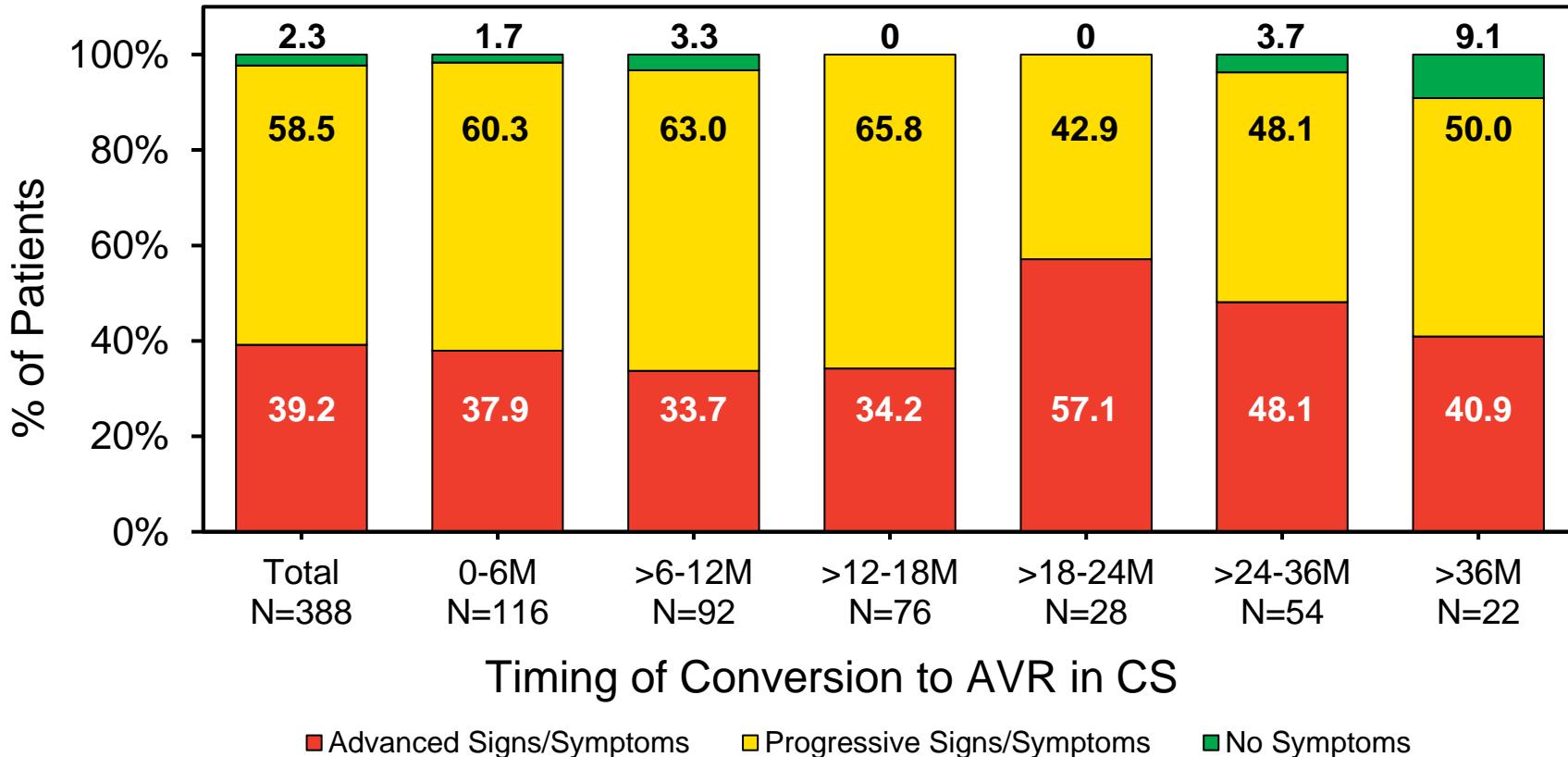
119

45

22

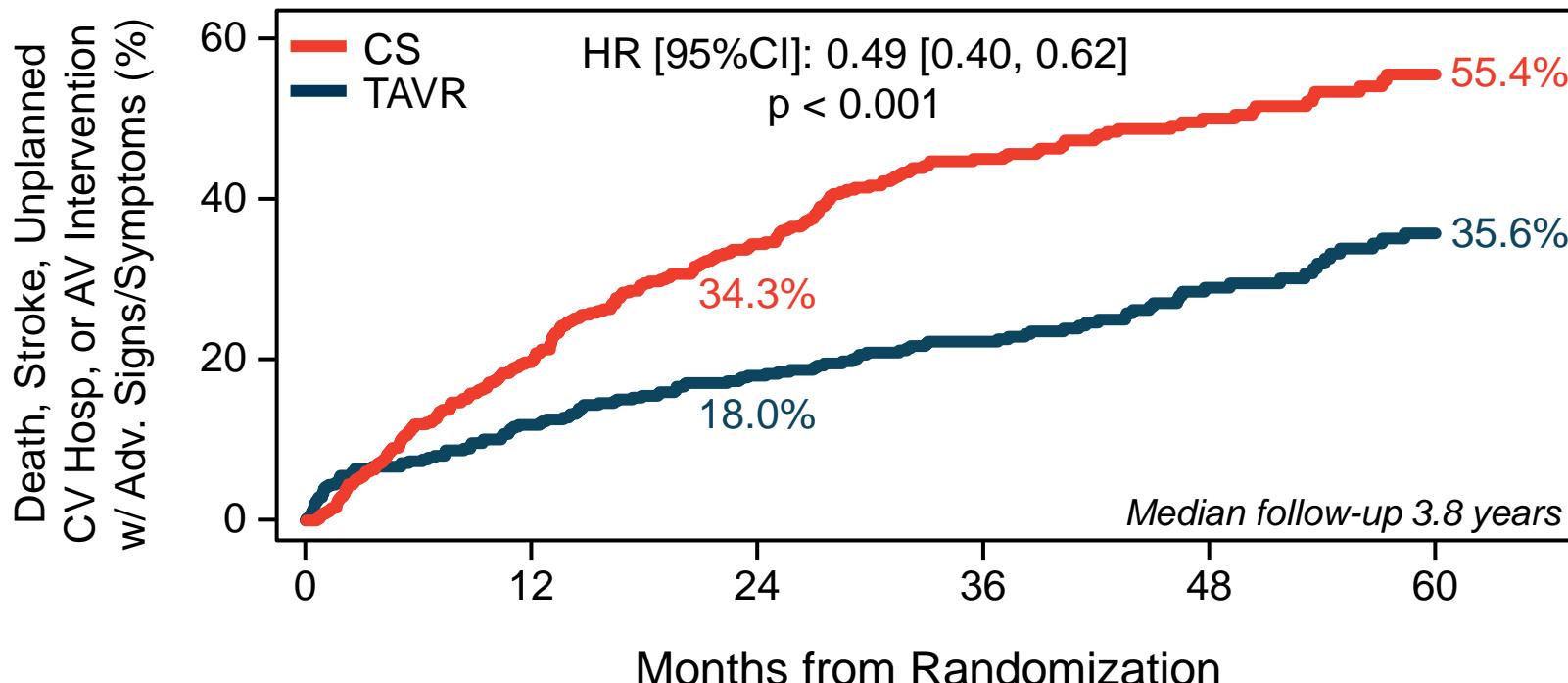
9

# Proportion of Patients Presenting with Advanced Signs/Symptoms was Consistent Through Time



At the time of analysis, 30 patients were still on study but hadn't converted to AVR

# Exploratory Analysis of the PE



No. at risk:

|      |     |     |     |     |     |     |
|------|-----|-----|-----|-----|-----|-----|
| TAVR | 455 | 391 | 362 | 284 | 140 | 101 |
| CS   | 446 | 354 | 281 | 186 | 108 | 52  |

Patients had a minimum follow-up of 2 years

# Promptness of Treatment

| Median (IQR) timing from:     | Early TAVR<br>(N=444) | CS with AVR<br>(N=388) |
|-------------------------------|-----------------------|------------------------|
| Randomization to early TAVR   | 14 (9, 24) days       | -                      |
| AVR indication to conversion* | -                     | 32 (18, 58) days       |

\*N=381 (98.2%) underwent TAVR; N=7 (1.8%) underwent SAVR

**87.9% of clinical surveillance patients who converted to AVR were treated within 3 months of indication for AVR**

# Periprocedural\* Outcomes

| Outcome – Kaplan-Meier Estimates             | TAVR<br>(N=444) | CS with AVR<br>(N=388) |
|----------------------------------------------|-----------------|------------------------|
| All-cause death                              | 0.2%            | 0%                     |
| CV death                                     | 0%              | 0%                     |
| Non-CV death                                 | 0.2%            | 0%                     |
| Stroke                                       | 0.9%            | 1.8%                   |
| Disabling stroke                             | 0%              | 1.0%                   |
| Non-disabling stroke                         | 0.9%            | 0.8%                   |
| New onset atrial fibrillation                | 4.5%            | 3.1%                   |
| New permanent pacemaker                      | 5.7%            | 8.4%                   |
| Life-threatening/disabling or major bleeding | 2.5%            | 3.6%                   |
| Acute kidney injury (site-reported)          | 2.5%            | 3.4%                   |
| Major vascular complications                 | 1.4%            | 1.0%                   |
| Myocardial infarction                        | 0.5%            | 0.5%                   |
| Coronary obstruction requiring intervention  | 0%              | 0%                     |

\*Periprocedural defined as ≤ 30 days from index procedure in the TAVR arm or date of conversion to AVR in the CS arm

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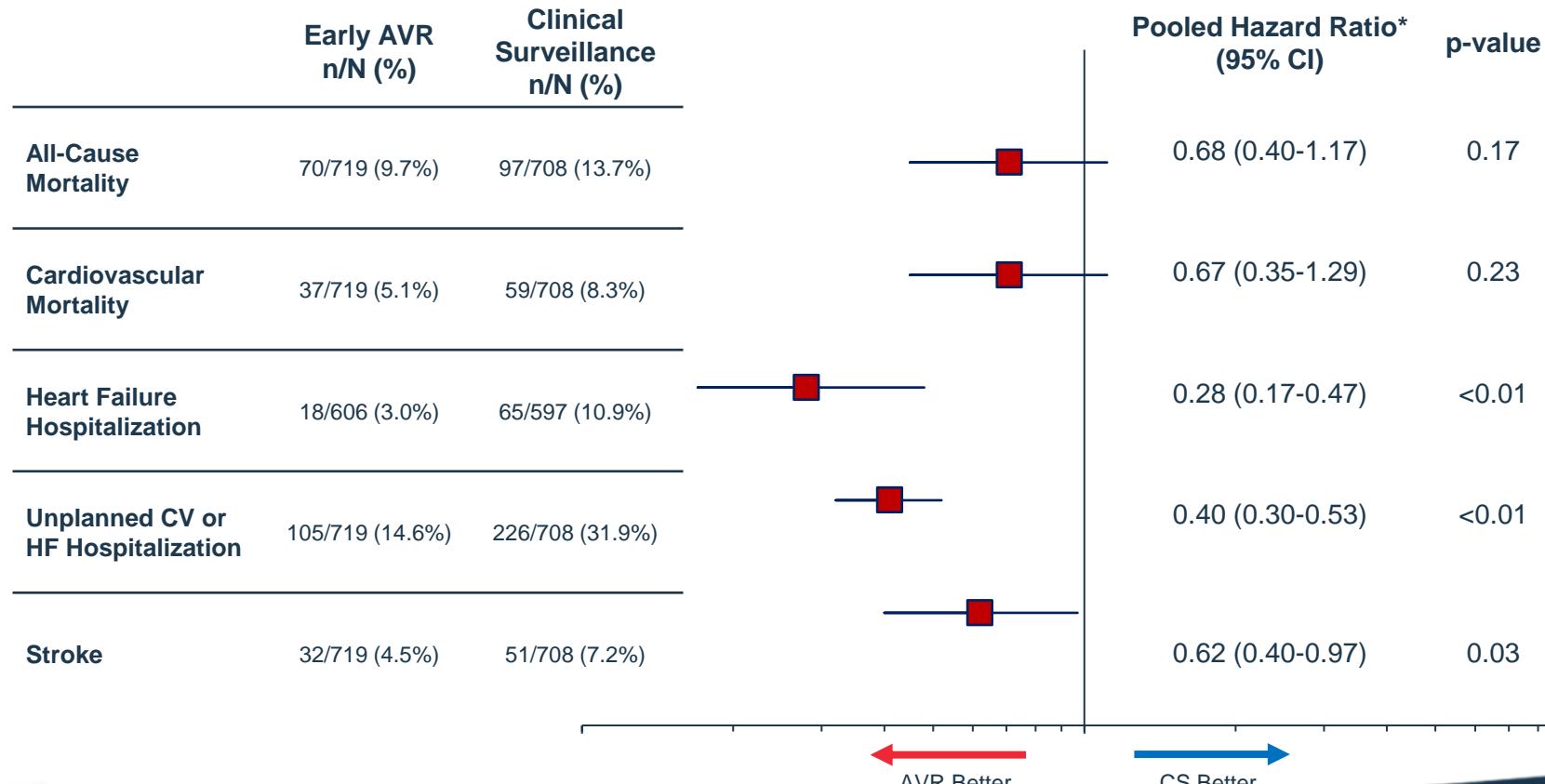
# Aortic Valve Replacement vs Clinical Surveillance in Asymptomatic Severe Aortic Stenosis

## A Systematic Review and Meta-Analysis

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Björn Redfors, MD, PhD,<sup>j,k,l</sup> Neil J. Craig, MD,<sup>m</sup> Jozef Bartunek, MD, PhD,<sup>n</sup> Allan Schwartz, MD,<sup>o</sup>  
Roxanna Seyedin, PhD, MPH,<sup>p</sup> David J. Cohen, MD, MSc,<sup>q,r</sup> Bernard Jung, MD,<sup>s</sup> Martin B. Leon, MD,<sup>o,r</sup>  
Marc R. Dweck, MD, PhD<sup>h</sup>

**EARLY TAVR, EVOLVED, AVATAR, RECOVERY**

# Meta-Analysis 4 RCTs Asymptomatic Severe AS



# 2025 ESC/EACTS Guidelines for the management of valvular heart disease

**Developed by the task force for the management of valvular heart disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)**

**Authors/Task Force Members:** Fabien Praz  \*<sup>†</sup>, (ESC Chairperson) (Switzerland), Michael A. Borger  \*<sup>†</sup>, (EACTS Chairperson) (Germany), Jonas Lanz  <sup>‡</sup>, (ESC Task Force Co-ordinator) (Switzerland), Mateo Marin-Cuertas  <sup>‡</sup>, (EACTS Task Force Co-ordinator) (Germany), Ana Abreu  (Portugal), Marianna Adamo (Italy), Nina Ajmone Marsan (Netherlands), Fabio Barili  (Italy), Nikolaos Bonaros  (Austria), Bernard Cosyns  (Belgium), Ruggero De Paulis  (Italy), Habib Gamra  (Tunisia), Marjan Jahangiri (United Kingdom), Anders Jeppsson  (Sweden), Robert J.M. Klautz  (Netherlands), Benoit Mores  (Belgium), Esther Pérez-David  (Spain), Janine Pöss (Germany), Bernard D. Prendergast (United Kingdom), Bianca Rocca  (Italy), Xavier Rossello  (Spain), Mikio Suzuki (Serbia), Holger Thiele  (Germany), Christophe Michel Tribouilloy  (France), Wojtek Wojakowski  (Poland), and ESC/EACTS Scientific Document Group



### Asymptomatic patients with severe aortic stenosis

Intervention is recommended in asymptomatic patients with severe AS and LVEF <50% without another cause.<sup>14,354–359</sup>

Intervention should be considered in asymptomatic patients (confirmed by a normal exercise test, if feasible) with severe, high-gradient AS and LVEF ≥50% as an alternative to close active surveillance, if the procedural risk is low.<sup>360–363,367,368</sup>

Intervention should be considered in asymptomatic patients with severe AS and LVEF ≥50% if the procedural risk is low and one of the following parameters is present:

- Very severe AS (mean gradient ≥60 mmHg or  $V_{max} >5.0$  m/s).<sup>14,362,363,482–484</sup>
- Severe valve calcification (ideally assessed by CCT) and  $V_{max}$  progression ≥0.3 m/s/year.<sup>303,353,364</sup>
- Markedly elevated BNP/NT-proBNP levels (more than three times age- and sex-corrected normal range, confirmed on repeated measurement without other explanation).<sup>97,365</sup>
- LVEF <55% without another cause.<sup>14,354,356–359</sup>

Intervention should be considered in asymptomatic patients with severe AS and a sustained fall in BP (>20 mmHg) during exercise testing.

| I   | B |
|-----|---|
| IIa | A |
| IIa | B |
| IIa | C |

360. Génereux P, Schwartz A, Oldemeyer JB, Pibarot P, Cohen DJ, Blanke P, et al. Transcatheter aortic-valve replacement for asymptomatic severe aortic stenosis. *N Engl J Med* 2024;**392**:217–27. <https://doi.org/10.1056/NEJMoa2405880>

368. Génereux P, Banovic M, Kang DH, Giustino G, Prendergast BD, Lindman BR, et al. Aortic valve replacement vs clinical surveillance in asymptomatic severe aortic stenosis: a systematic review and meta-analysis. *J Am Coll Cardiol* 2024;**85**:912–22. <https://doi.org/10.1016/j.jacc.2024.11.006>

# Just Published on-line



The journal cover features a white wireframe illustration of a human heart on a red background. To the right of the heart, the journal title "Structural Heart" is written in large white letters, with "The Journal of the Heart Team" in smaller letters below it. The CRF logo is located above the title. Below the title, the words "Open Access" are written in white.

## Acute Valve Syndrome in Aortic Stenosis

Philippe Génereux, MD Patricia A. Pellikka, MD, Brian R. Lindman, MD, MSCI, Philippe Pibarot, DVM, PhD, Santiago Garcia, MD, Konstantinos P. Koulogiannis, MD, Evelio Rodriguez, MD, Vinod H. Thourani, MD, Michael Dobbles, MS, Gennaro Giustino, MD, Rahul P. Sharma, MBBS, David J. Cohen, MD, MSc, Allan Schwartz, MD, Martin B. Leon, MD, Linda D. Gillam, MD, MPH

# Study Flow Chart

2,009,607 patients  $\geq$  18 years old with at least 1 echocardiographic report in the egnite Database (engnite, Aliso Viejo, CA, USA)

79,617 patients  $\geq$  moderate aortic stenosis

17,838 patients undergoing aortic valve replacement for  $\geq$  moderate aortic stenosis

1,929,900 patients excluded with < moderate AS

61,779 patients excluded

- 10,210 with  $\geq$  moderate AR
- 50,527 without AVR
- 1,042 data quality or zero day censoring

Clinical Presentation before AVR

Asymptomatic  
2,504 (14.0%)

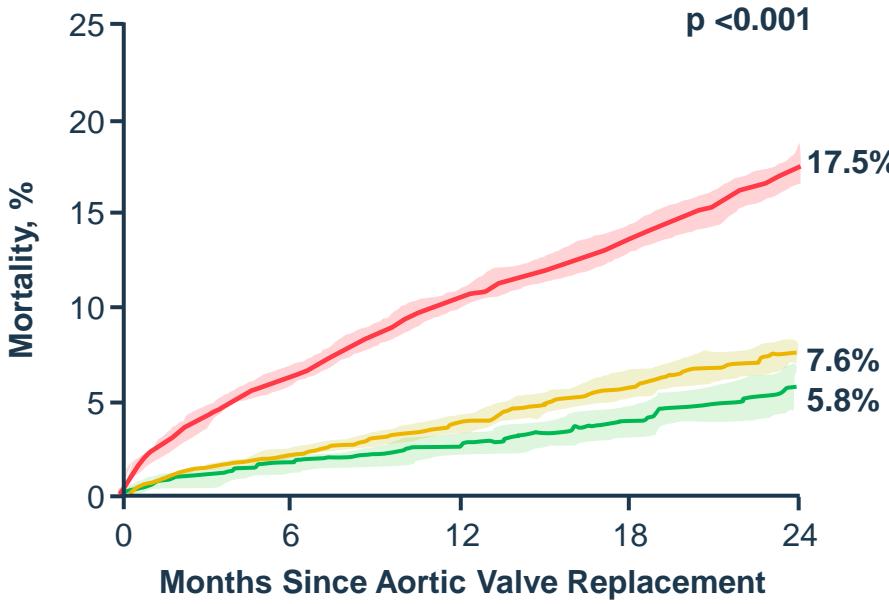
Progressive Valve Syndrome  
6,116 (34.3%)

Acute Valve Syndrome  
9,218 (51.7%)

TAVR: 78.6%, SAVR: 21.4%

Mean age: 76.5 $\pm$ 9.7 years, 40.2% were female

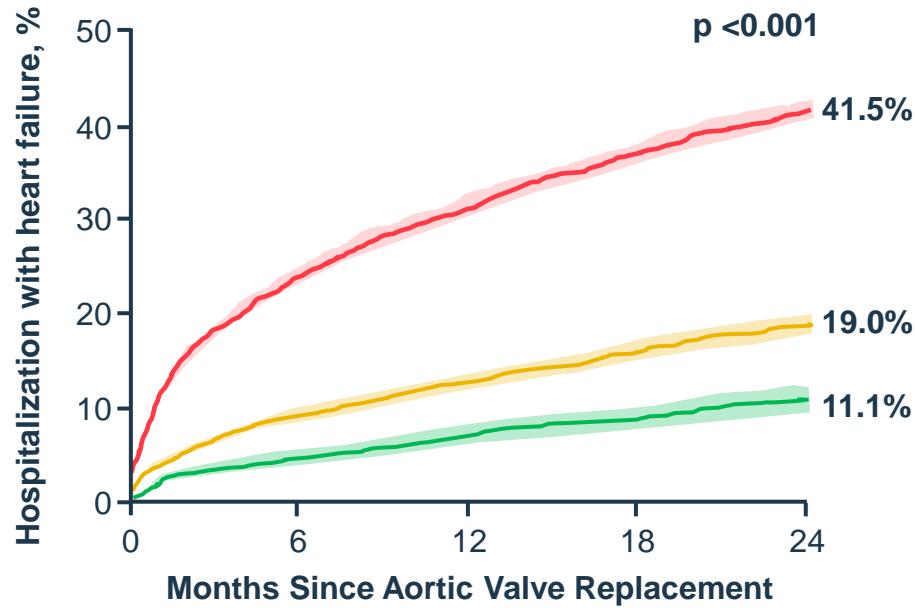
# 2-Year Mortality After AVR Per Clinical Presentation ASx vs. Progressive vs. Acute Valve Syndrome



## No. at Risk

|              |      |      |      |      |      |
|--------------|------|------|------|------|------|
| Asymptomatic | 2504 | 1859 | 1540 | 1176 | 934  |
| Progressive  | 6116 | 4710 | 3867 | 2871 | 2147 |
| Acute        | 9218 | 6667 | 5243 | 3702 | 2700 |

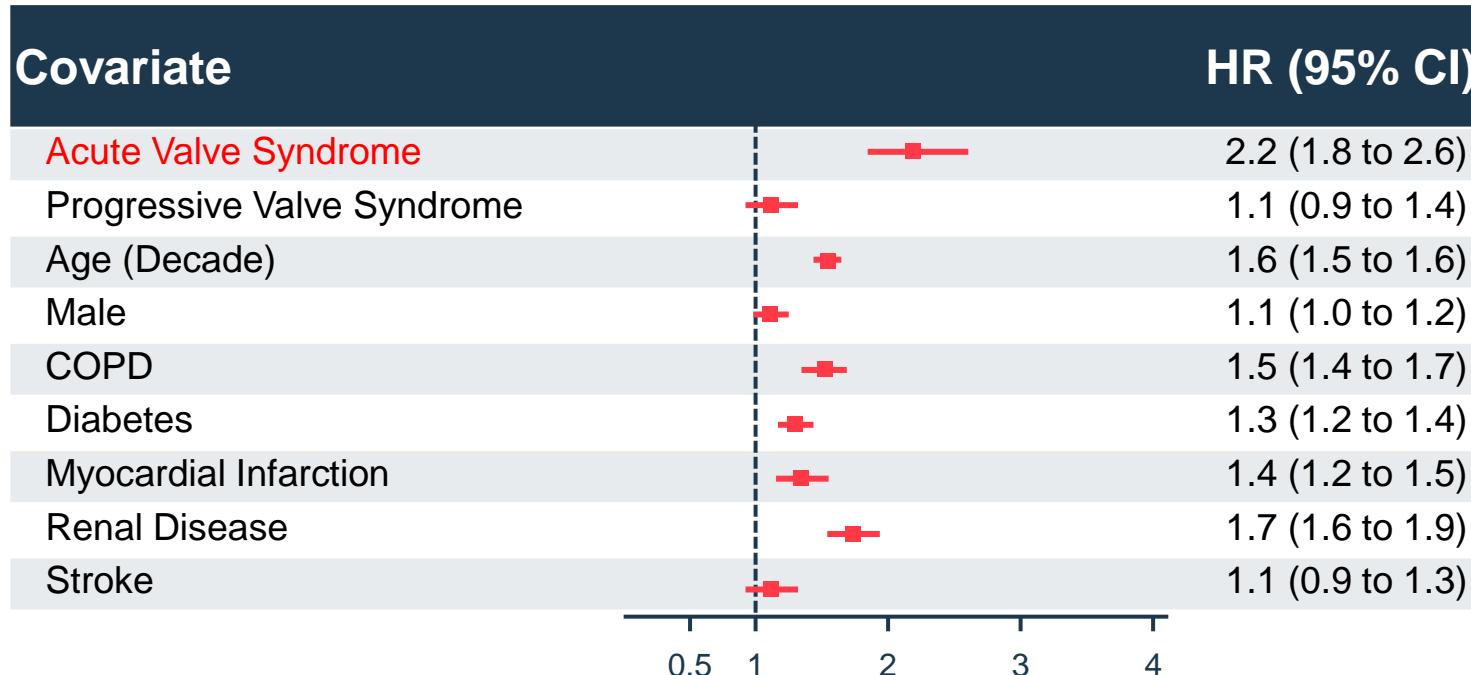
# 2-Year HF Hospitalization After AVR Per Clinical Presentation ASx vs. Progressive vs. Acute Valve Syndrome



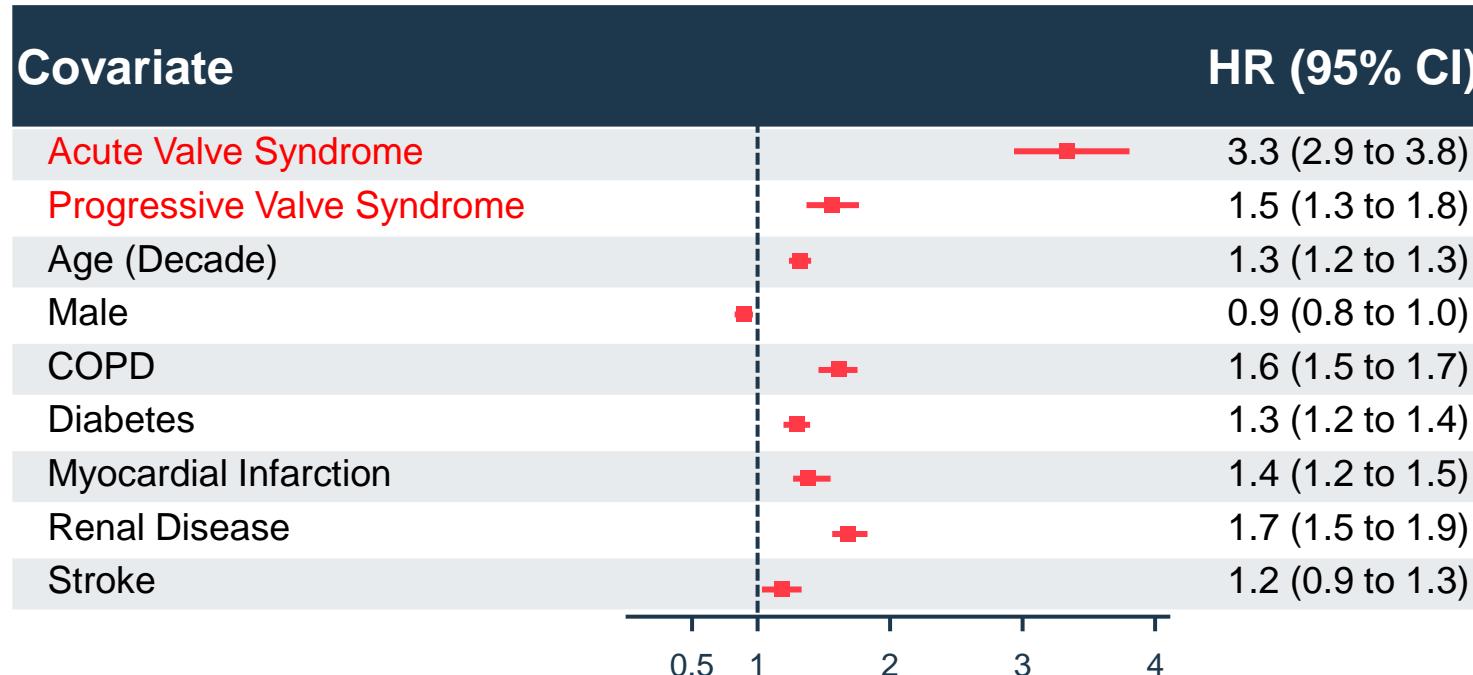
## No. at Risk

|              |      |      |      |      |      |
|--------------|------|------|------|------|------|
| Asymptomatic | 2504 | 1774 | 1449 | 1094 | 855  |
| Progressive  | 6116 | 4311 | 3426 | 2471 | 1792 |
| Acute        | 9218 | 5210 | 3801 | 2514 | 1750 |

# Predictor of 2-Year Mortality after AVR



# 2-Year Hospitalization with Heart Failure after AVR



## ORIGINAL RESEARCH

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# Acute Valve Syndrome Before Aortic Valve Replacement: Impact on Clinical Outcomes, Health Care Costs, and Resource Use

Philippe Génereux , MD; Gennaro Giustino, MD; Brian R. Lindman , MD; Philippe Pibarot , DVM, PhD; Suzanne J. Baron , MD, MSc; Chantal Asselin , MD; Alissa Dratch , MPH; Shannon M. E. Murphy , MA; Soumya Chikermane , PhD; Vinod H. Thourani, MD; Kostantinos P. Kouogiannis , MD; Allan Schwartz , MD; Martin B. Leon , MD; Patricia P. Pellikka , MD; Linda D. Gillam , MD, MPH

# Study Cohort: Clinical Presentation Before AVR

24,075 patients undergoing AVR for Aortic Stenosis in the United States

**SVS**

N=270 (1.1%)

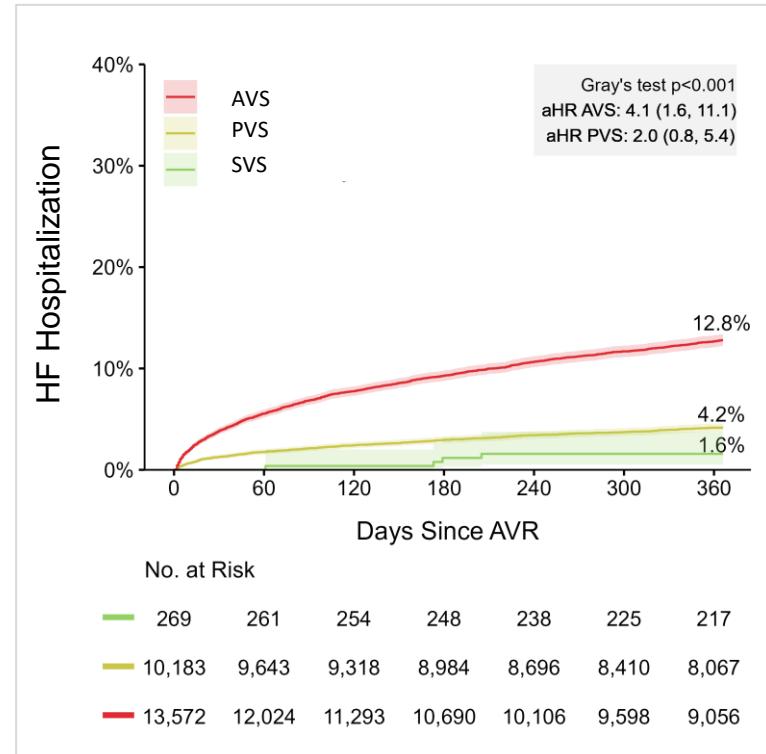
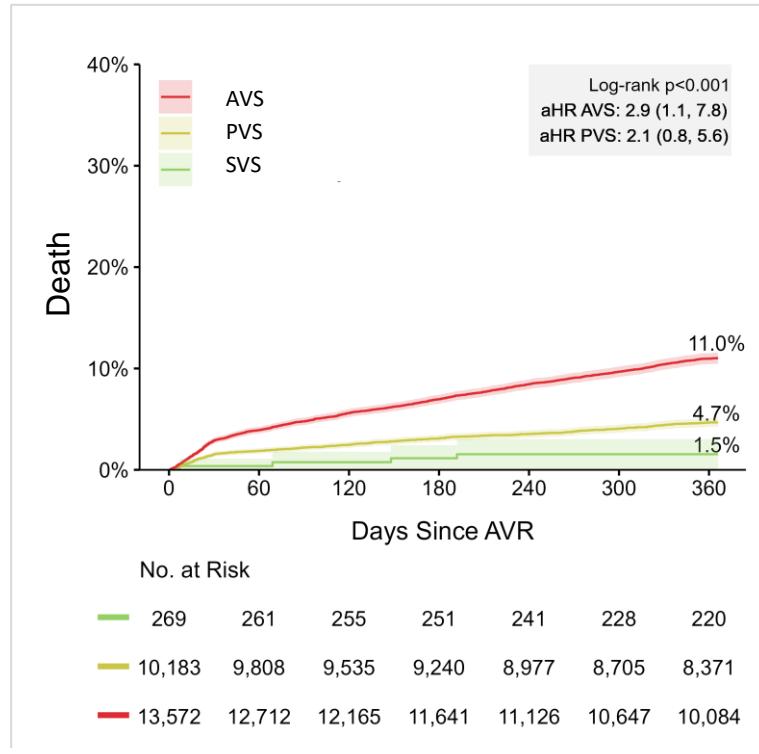
**PVS**

N=10,195 (42.3%)

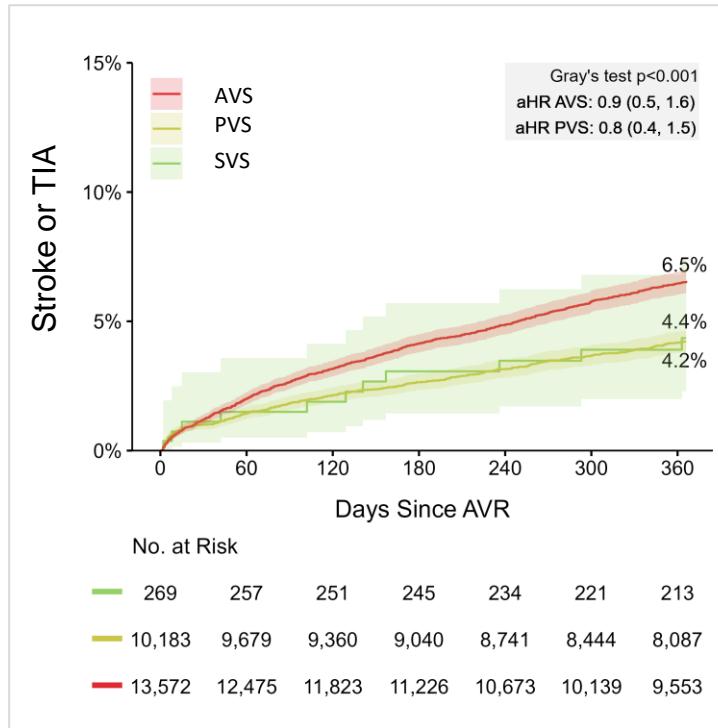
**AVS**

N=13,610 (56.5%)

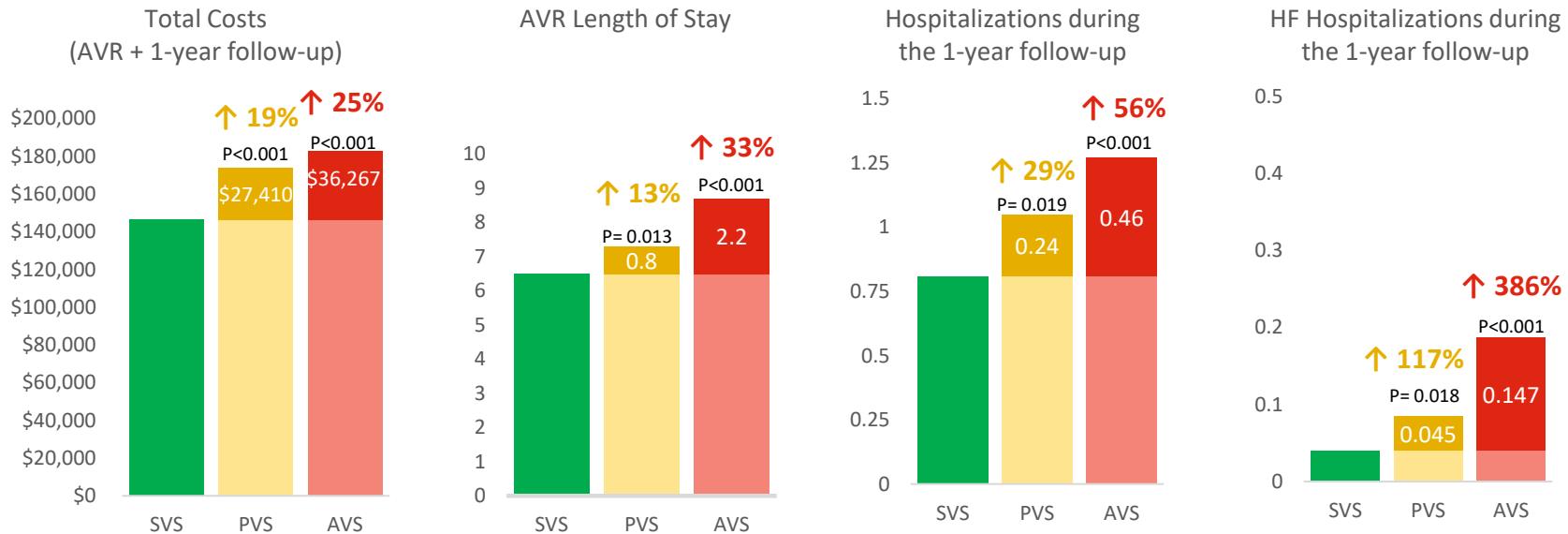
# Acute Valve Syndrome is Associated with Increased Risk of Death and HF Hospitalization Post-AVR



# Acute Valve Syndrome is Associated with Increased Risk of Stroke Post-AVR

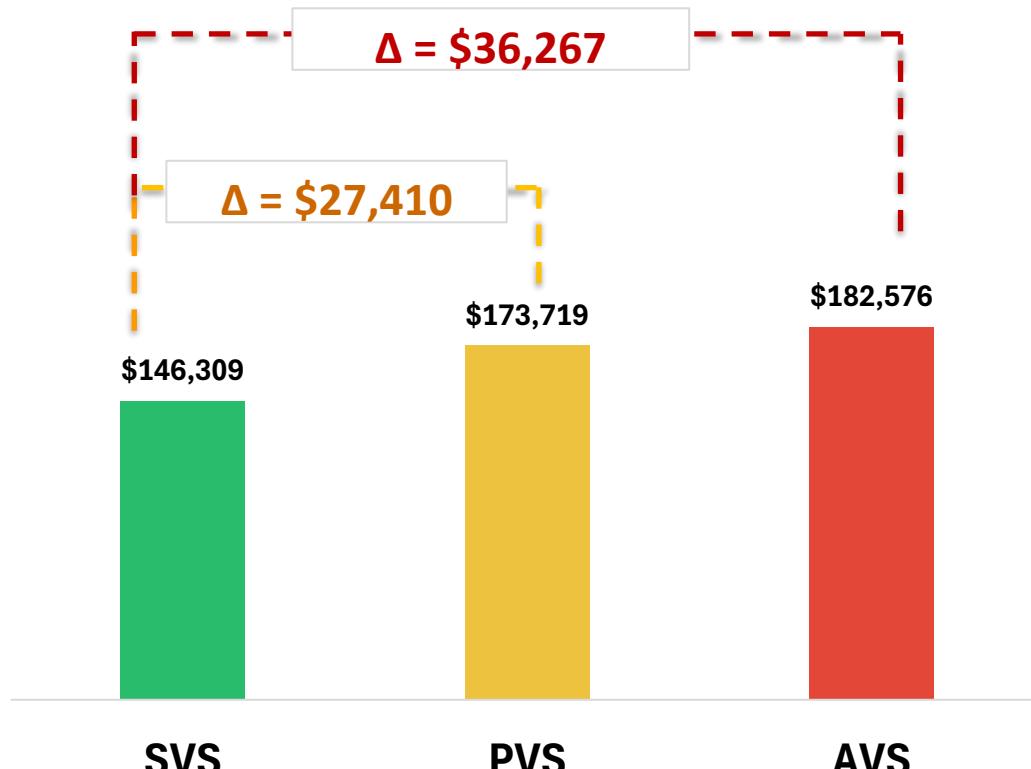


# Healthcare Cost and Utilization by Clinical Presentation before AVR



**AVS and PVS before AVR are associated with higher total costs, increased LOS, higher all-cause and HF hospitalizations post AVR.**

# Total Healthcare Cost Up to 1 year after AVR Across Clinical Presentation

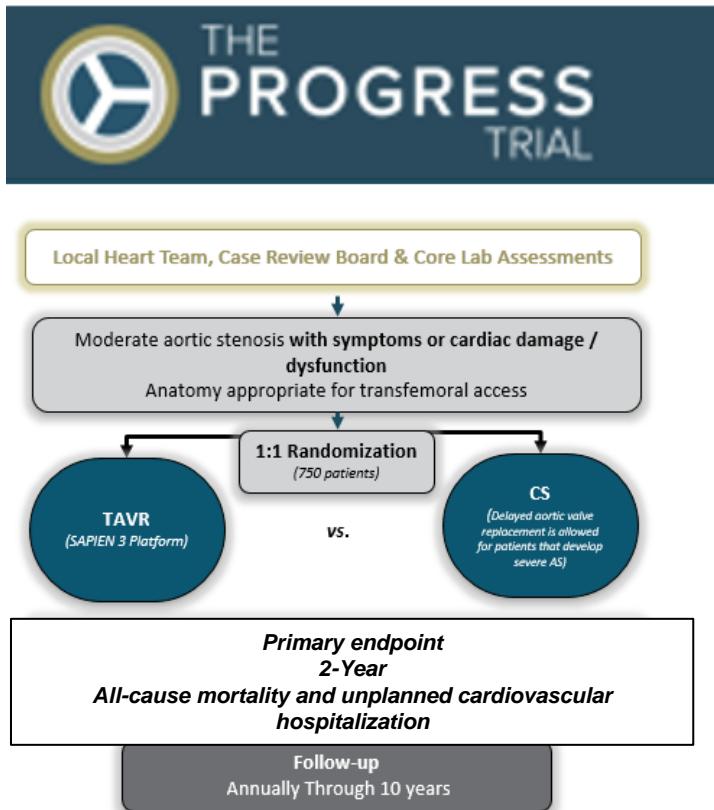
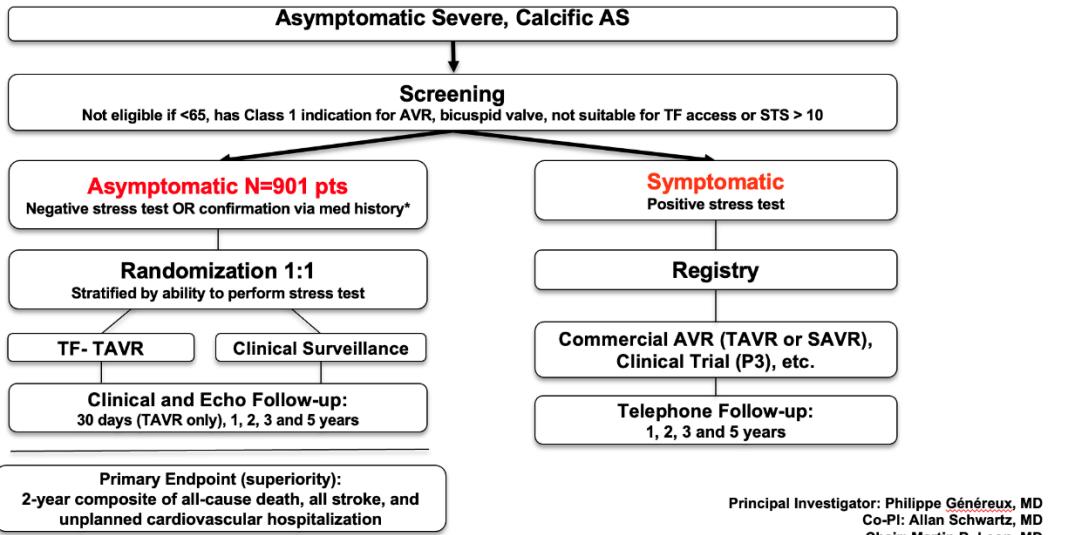


# Post EARLY TAVR:

## *What do I say to My Patients? To Referring Physicians?*

- **Refer early** (Severe AS no symptoms or Moderate AS)
- **Complete workup for AS treatment**
  - CT-Scan for procedural planning
  - Dental work
  - Plan your AVR date ahead of time **to avoid AVS**
  - If you wait for symptoms, **treat within 3 months of symptoms onset** to mitigate mortality risk of longer waiting period
- **There was no penalty to early intervention**
  - Prompt Treatment will save heart failure hospitalization, stroke, and AVS
  - Prompt Treatment will save cardiac damage and \$\$\$ to the Health Care System

# The Future of TAVR? Prevention of Cardiac Damage



# Conclusion

## Future of Aortic Stenosis Management

- Screening will become key to detect significant (moderate, severe) AS
- Early Referral to ensure adequate and preemptive procedural planning
- Timely and prompt AVR is key; don't wait for symptoms >3 months
- Lifetime management is important while planning the first intervention