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Target: Aortic Stenosis™

Today's Discussion

MODERATOR



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American Heart Association®

Target: Aortic Stenosis™

Undertreatment of Aortic Stenosis: Where do we stand?

June 21, 2022



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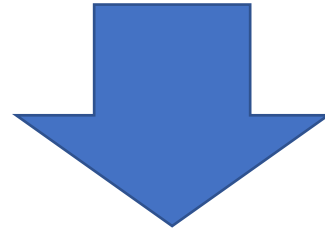
Target: Aortic Stenosis™

Objectives

- Review trends in utilization of AVR for severe symptomatic aortic stenosis (SSAS)
- Discuss drivers of underdiagnosis and undertreatment of SSAS
- Strategize systems of care that would improve recognition and referral for treatment of SSAS

Historic Rates of SSAS Treatment

In 2001, 1/3 of patients with severe AS were not treated



Development and
widespread
adoption of TAVR

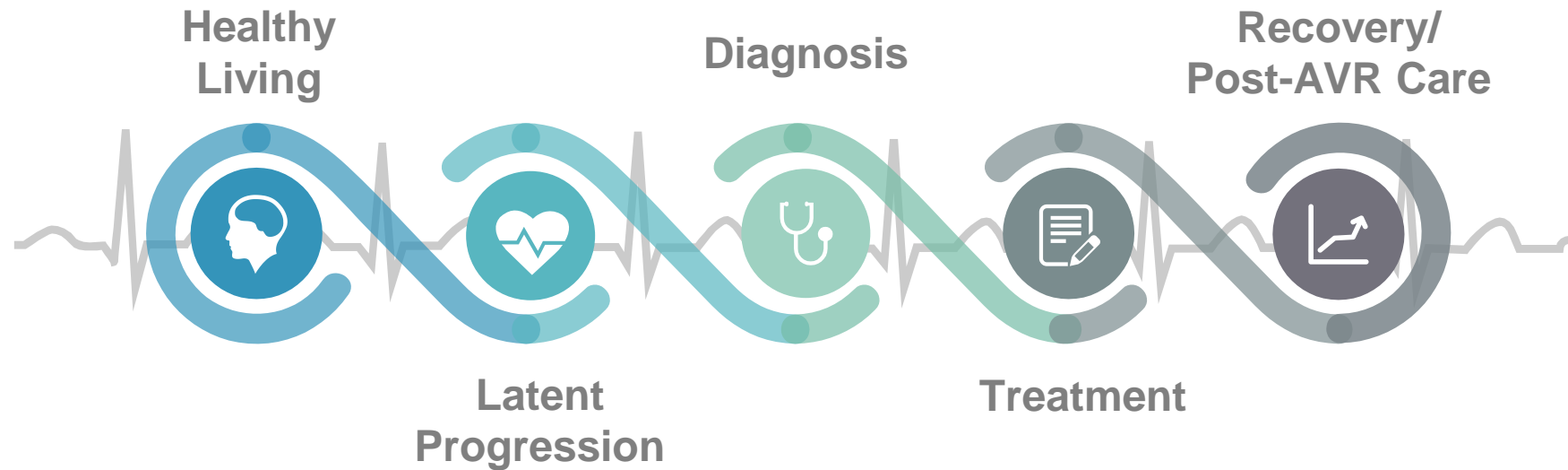


Growing aging
population

Has widespread adoption of TAVR met the demands of
a growing population of patients with AS?



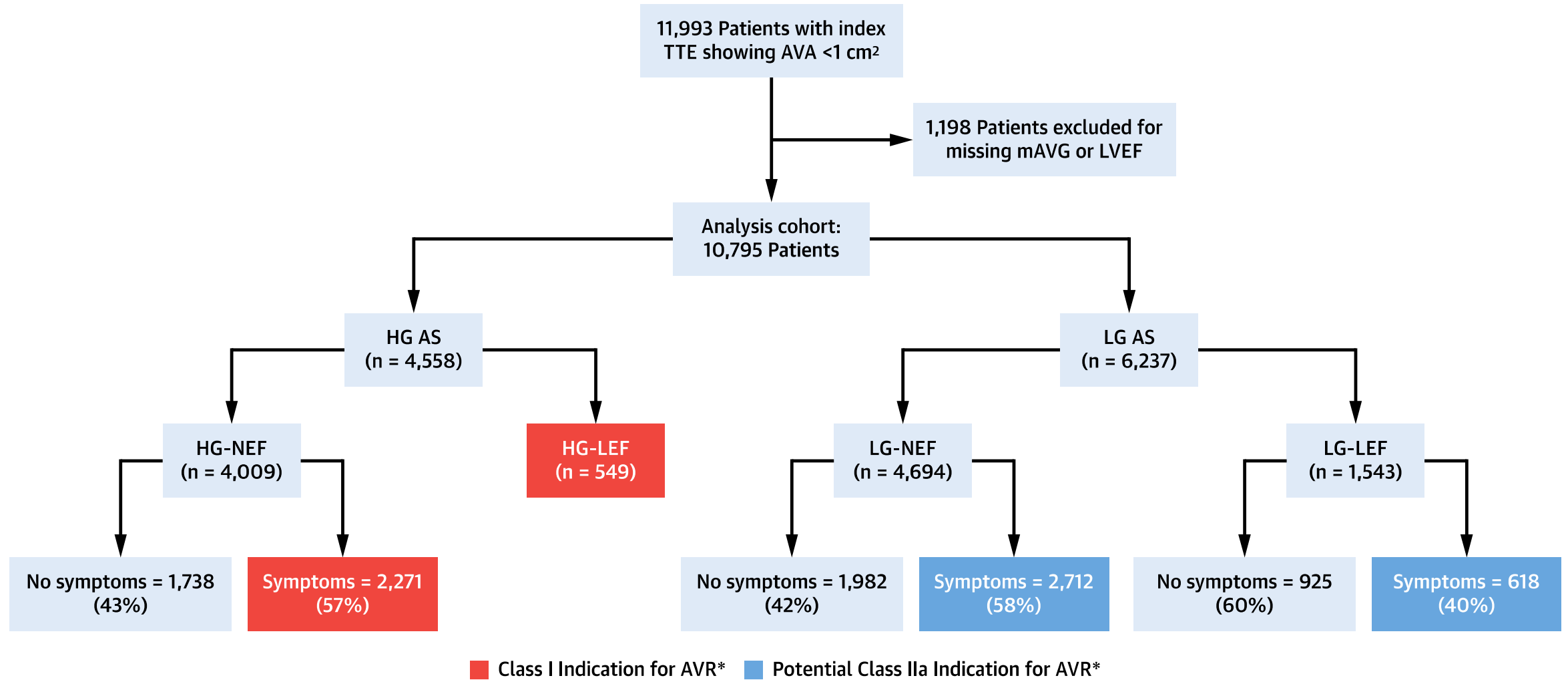
The Aortic Stenosis Patient Journey



Mass General Brigham experience 2000-2017:

- We identified patients with severe AS (aortic valve area $<1\text{cm}^2$) on transthoracic echocardiograms (n=11,993) from 2000-2017 at two large academic medical centers (MGH and BWH).
- AVR utilization investigated among patients with an indication for AVR for severe AS
- Natural language processing (NLP) models were developed and validated to identify symptoms consistent with severe AS and to identify AS-related referral and AVR refusal.

Indication for AVR based on 2014 AHA/ACC VHD Guidelines



*Based on the 2014 American Heart Association (AHA) / American College of Cardiology (ACC) guidelines for the management of VHD

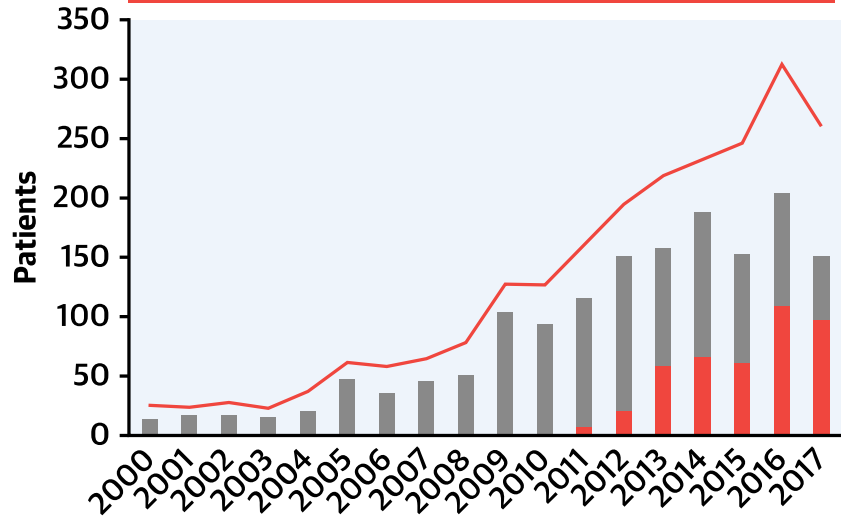


Trends in AVR Utilization

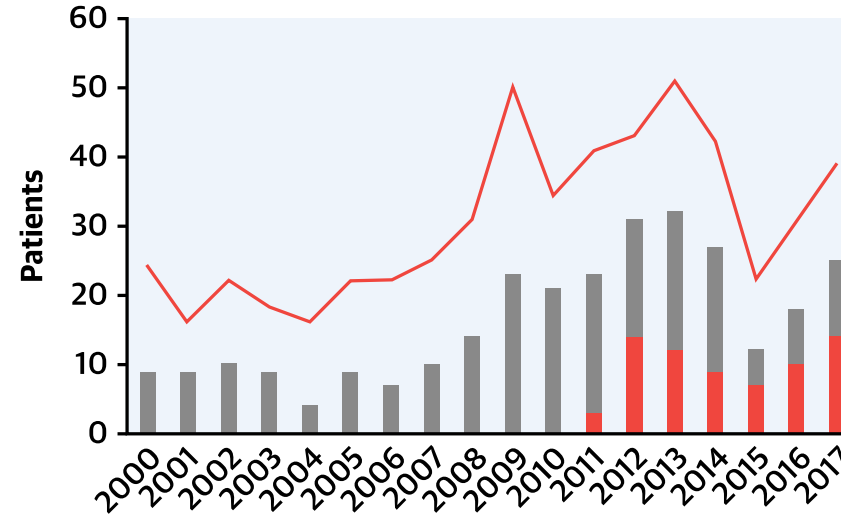
Mass General Brigham experience 2000-2017

Class I Indication for AVR for High Gradient AS

HG-NEF (n=2,271)



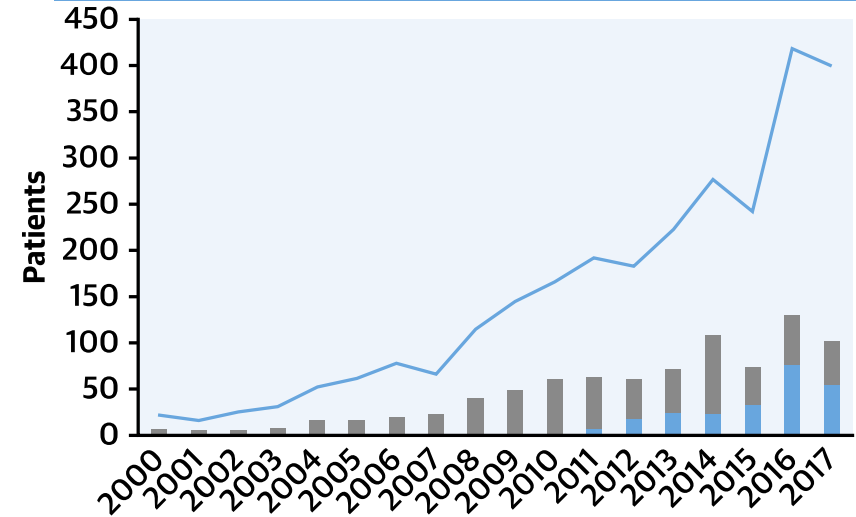
HG-LEF (n=549)



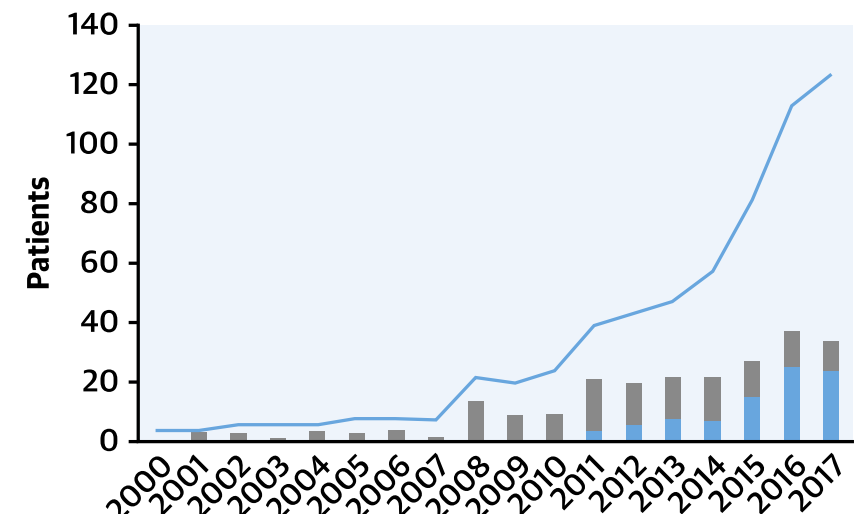
— TAVR — SAVR — Indication

Potential Class IIa Indication for AVR for Low Gradient AS

LG-NEF (n=2,712)



LG-LEF (n=618)



— TAVR — SAVR — Potential Indication



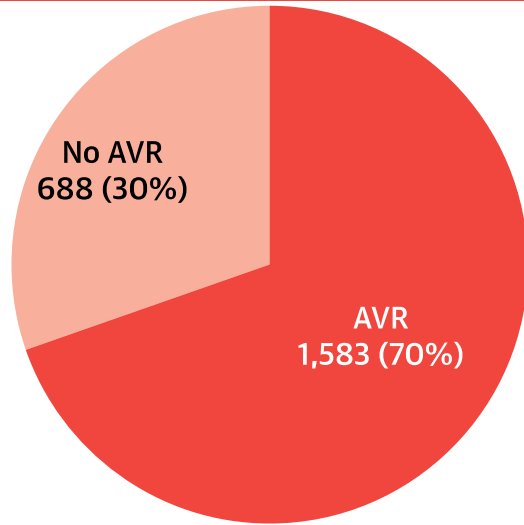


Trends in AVR Utilization

Mass General Brigham experience 2000-2017

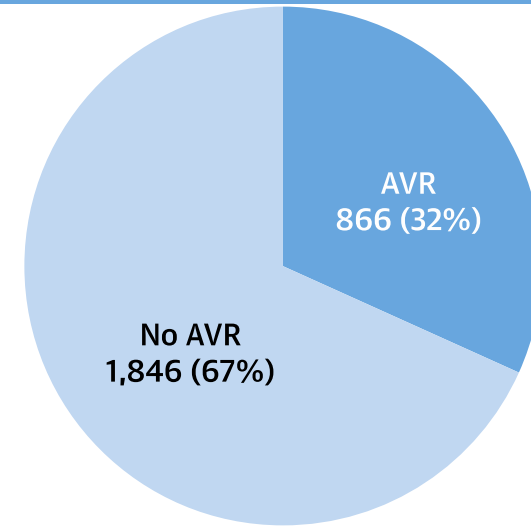
Class I Indication for AVR for High Gradient AS

HG-NEF (n=2,271)

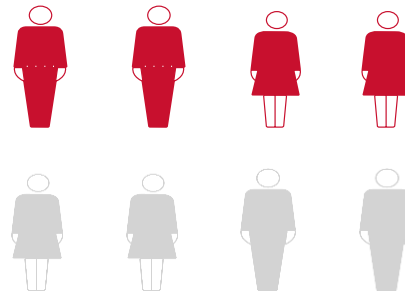


Potential Class IIa Indication for AVR for Low Gradient AS

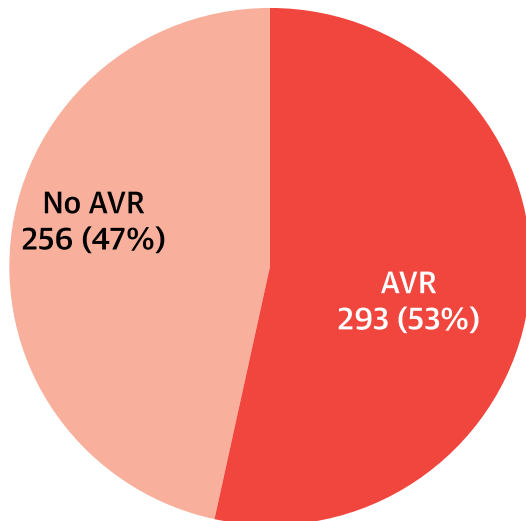
LG-NEF (n=2,712)



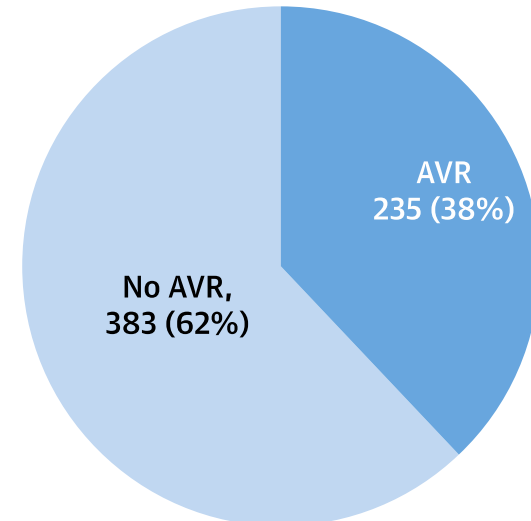
Severe symptomatic AS



HG-LEF (n=549)



LG-LEF (n=618)



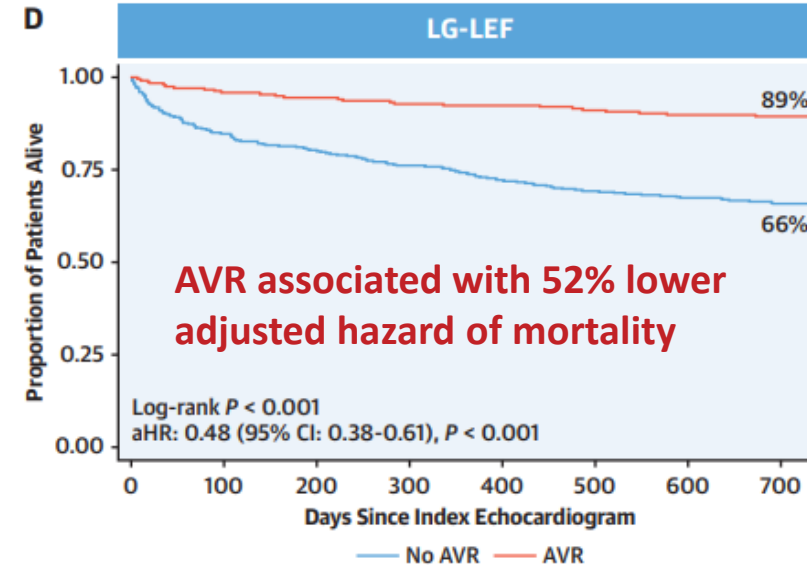
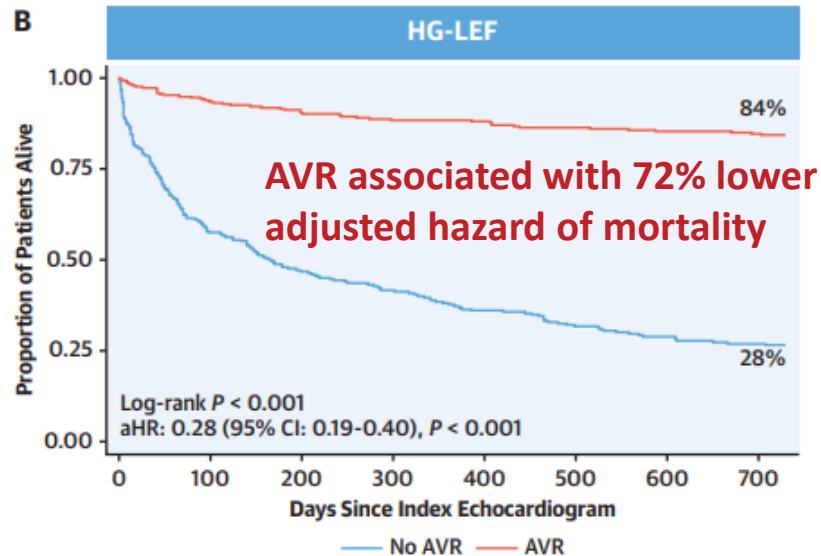
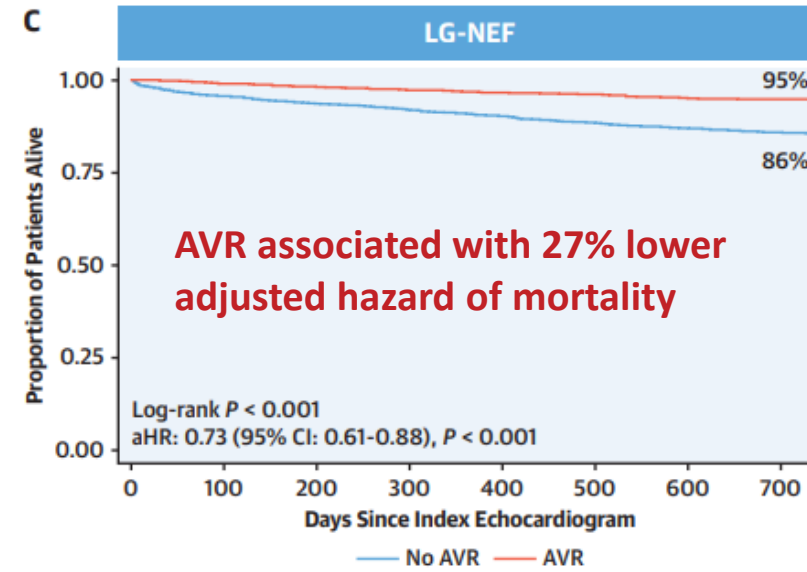
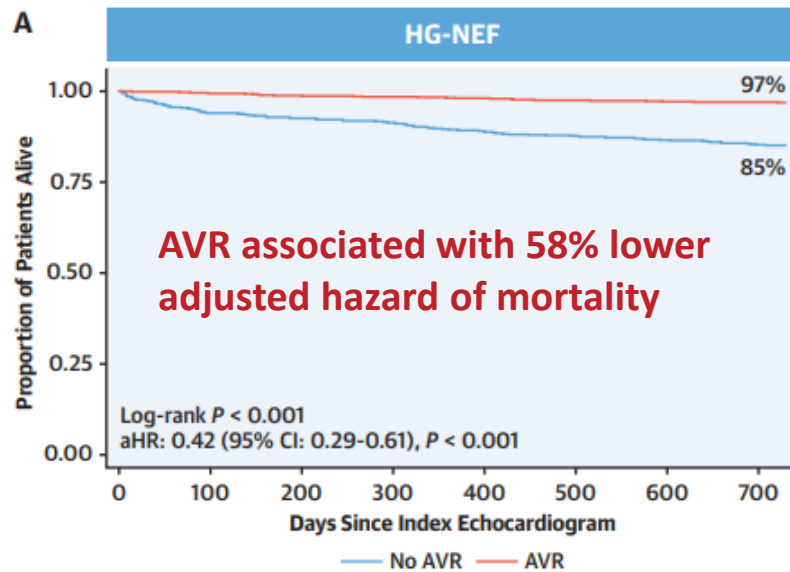
Treatment Rate

<50%





AVR Associates with Improved Survival Across Spectrum of SSAS



Contributors to AVR Underutilization

TABLE 3 OR of Baseline and Echocardiographic Characteristics Associated With Performance of AVR

	Univariate OR	95% CI	P Value	Multivariate OR	95% CI	P Value
High-gradient AS with Class I indication for AVR						
Age	0.972	0.965-0.979	<0.001	0.978	0.971-0.986	<0.001
Male	1.283	1.097-1.501	0.002	-	-	-
White	1.34	1.007-1.783	0.045	-	-	-
CAD	1.242	1.057-1.460	0.009	1.759	1.455-2.126	<0.001
DM	1.04	0.840-1.287	0.72	-	-	-
Smoker	1.816	1.538-2.145	<0.001	1.457	1.209-1.756	<0.001
Hct	1.069	1.053-1.085	<0.001	1.053	1.035-1.071	<0.001
eGFR	1.012	1.009-1.016	<0.001	-	-	-
IP TTE	0.583	0.496-0.686	<0.001	0.773	0.631-0.948	0.014
LVEF \geq 0.5	2.01	1.662-2.431	<0.001	1.713	1.369-2.143	<0.001
Low-gradient AS with potential Class IIa indication for AVR in contemporary era (2014-2017)						
Age	0.975	0.966-0.984	<0.001	0.976	0.966-0.986	<0.001
Male	1.813	1.471-2.235	<0.001	1.683	1.336-2.119	<0.001
White	1.533	1.045-2.249	0.029	-	-	-
CAD	1.211	0.068-1.487	0.068	1.369	1.084-1.727	0.008
DM	1.052	0.838-1.321	0.662	-	-	-
Smoker	1.364	1.111-1.674	0.003	-	-	-
Hct	1.061	1.041-1.082	<0.001	1.041	1.019-1.063	<0.001
eGFR	1.010	1.005-1.014	<0.001	-	-	-
IP TTE	0.600	0.486-0.741	<0.001	0.687	0.539-0.875	0.002
LVEF \geq 0.5	0.945	0.739-1.209	0.653	-	-	-

AS = aortic stenosis; AVR = aortic valve replacement; CAD = coronary artery disease; DM = diabetes mellitus; eGFR = estimated glomerular filtrate rate (mL/min/1.73 m²); IP TTE = inpatient transthoracic echocardiogram; LVEF = left ventricular ejection fraction; mAVG = mean aortic valve gradient.

Less likely to get AVR

- Low mean AVG
- Older age
- Women
- Inpatient TTE
- Low LVEF
- Low hematocrit

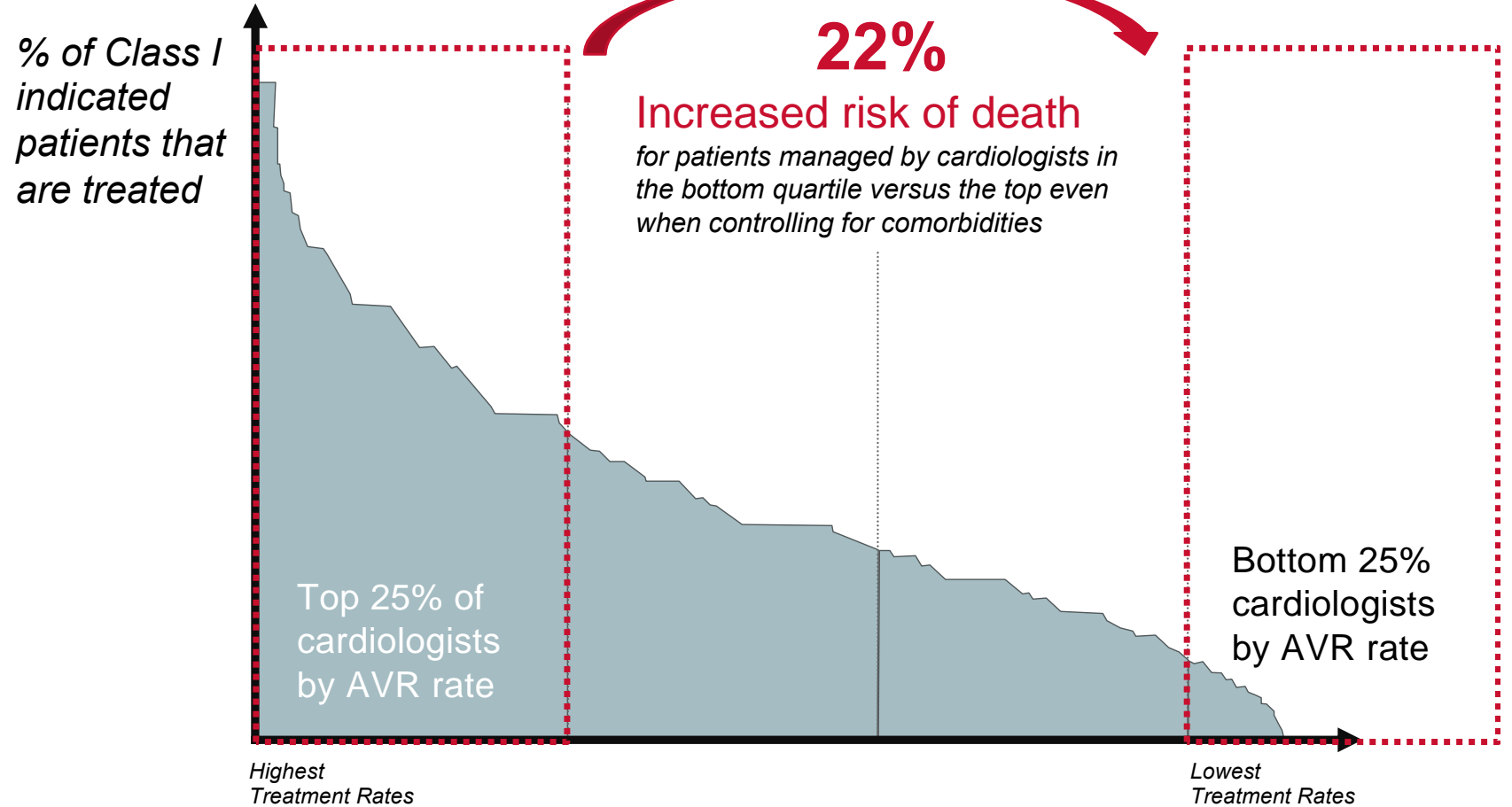
More likely to get AVR

- CAD
- Smoker



Variation in Physician Referral Patterns

< 1 in 3 referred to a
HVT member or
cardiac surgeon

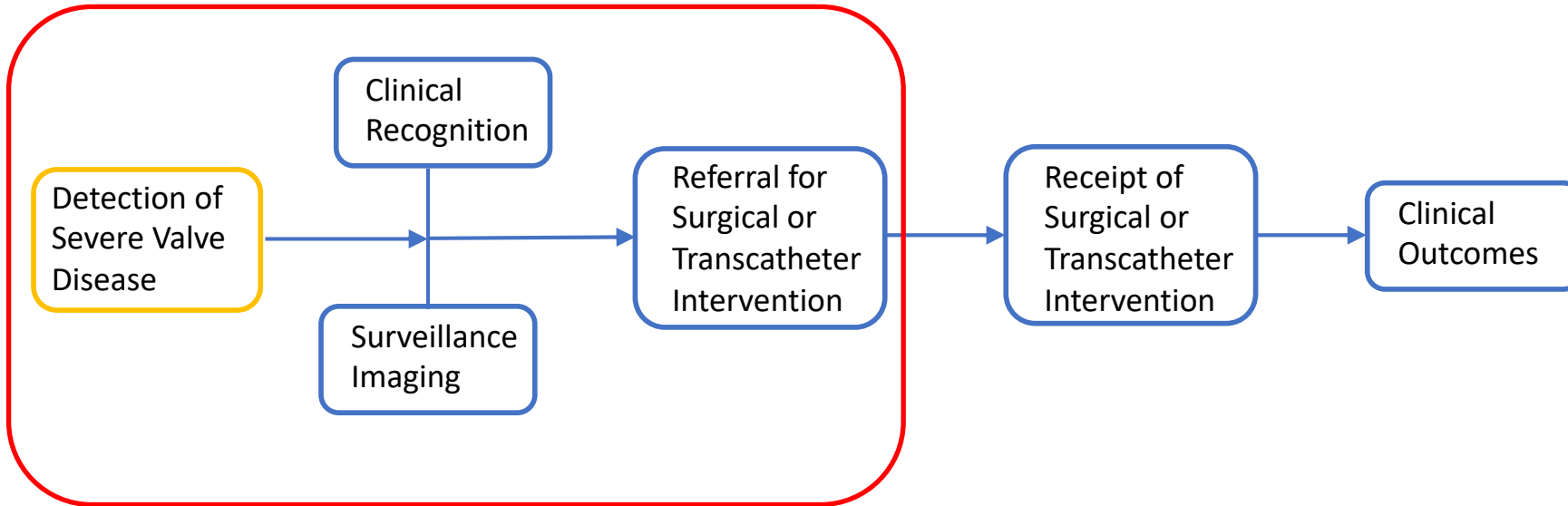


Cardiologists ranked by treatment rates of AVR patients





Clinical Implications



Efforts are needed to:

- Encourage screening of patients at risk of AS (PE and TTE)
- Increase awareness of low-gradient AS
- Clarify echocardiogram reporting of AS
- Bolster transitions of care
- Facilitate referral of patients with AS to Heart Valve Teams



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Panel Discussion



Today's Panel Discussion

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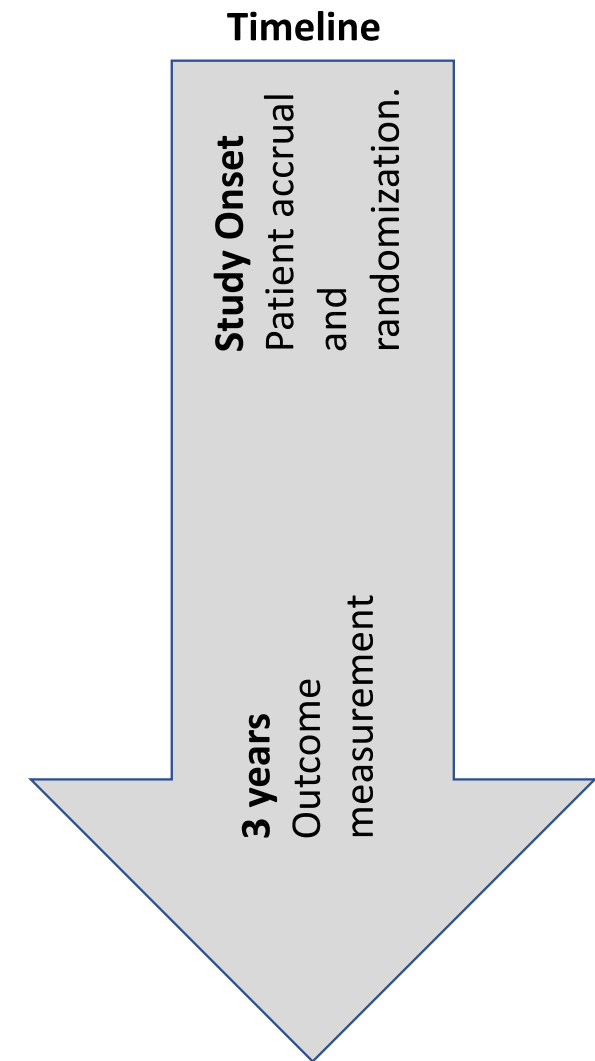
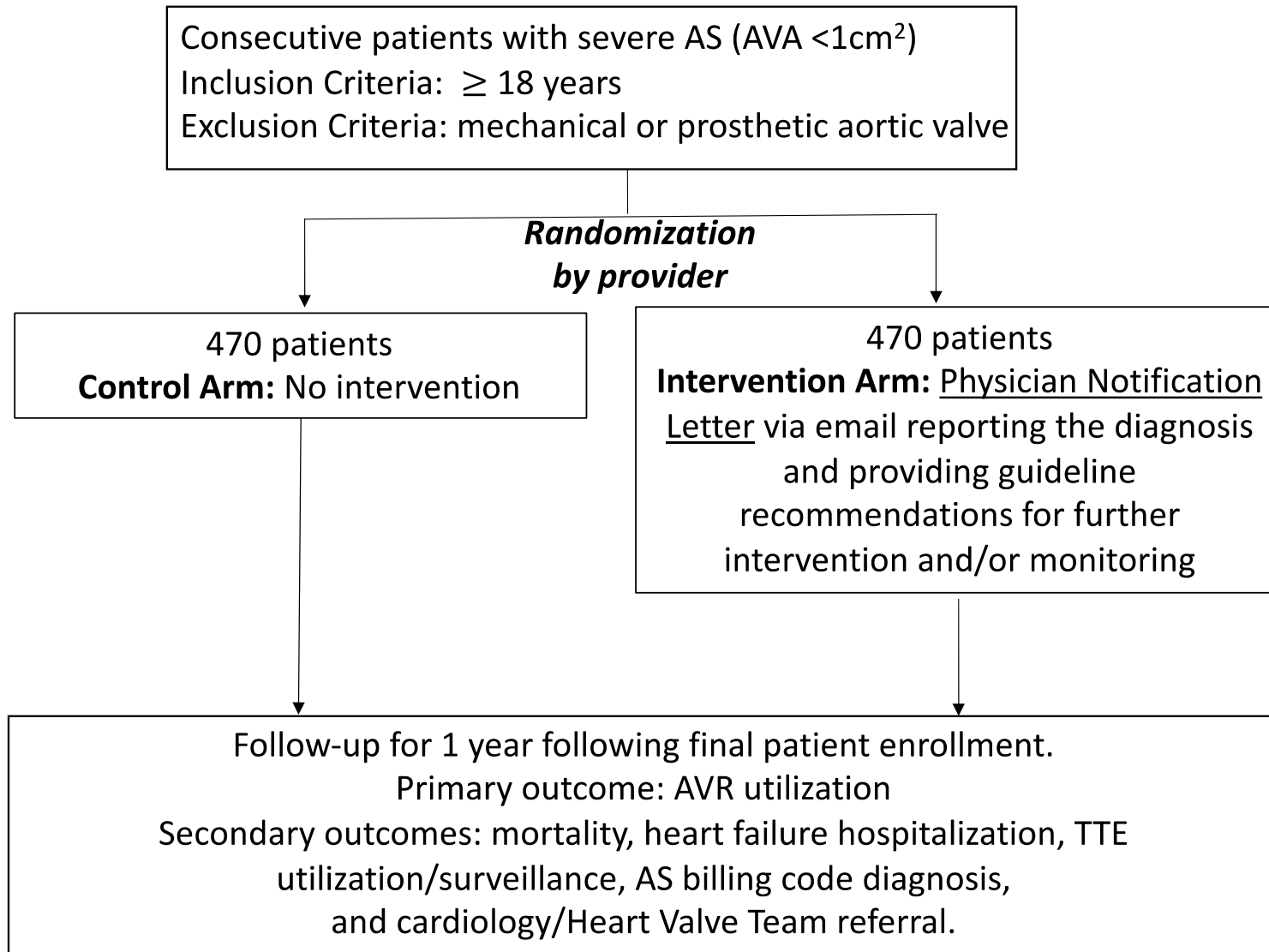


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DETECT AS Study: Electronic Physician Notification to Facilitate the Recognition and Management of Severe Aortic Stenosis:



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