Five-Year Outcomes after Randomization to Transcatheter or Surgical Aortic Valve Replacement: Final Results of The PARTNER 1 Trial

Michael J. Mack, MD
on behalf of The PARTNER Trial Investigators

ACC 2015 | San Diego | March 15, 2015

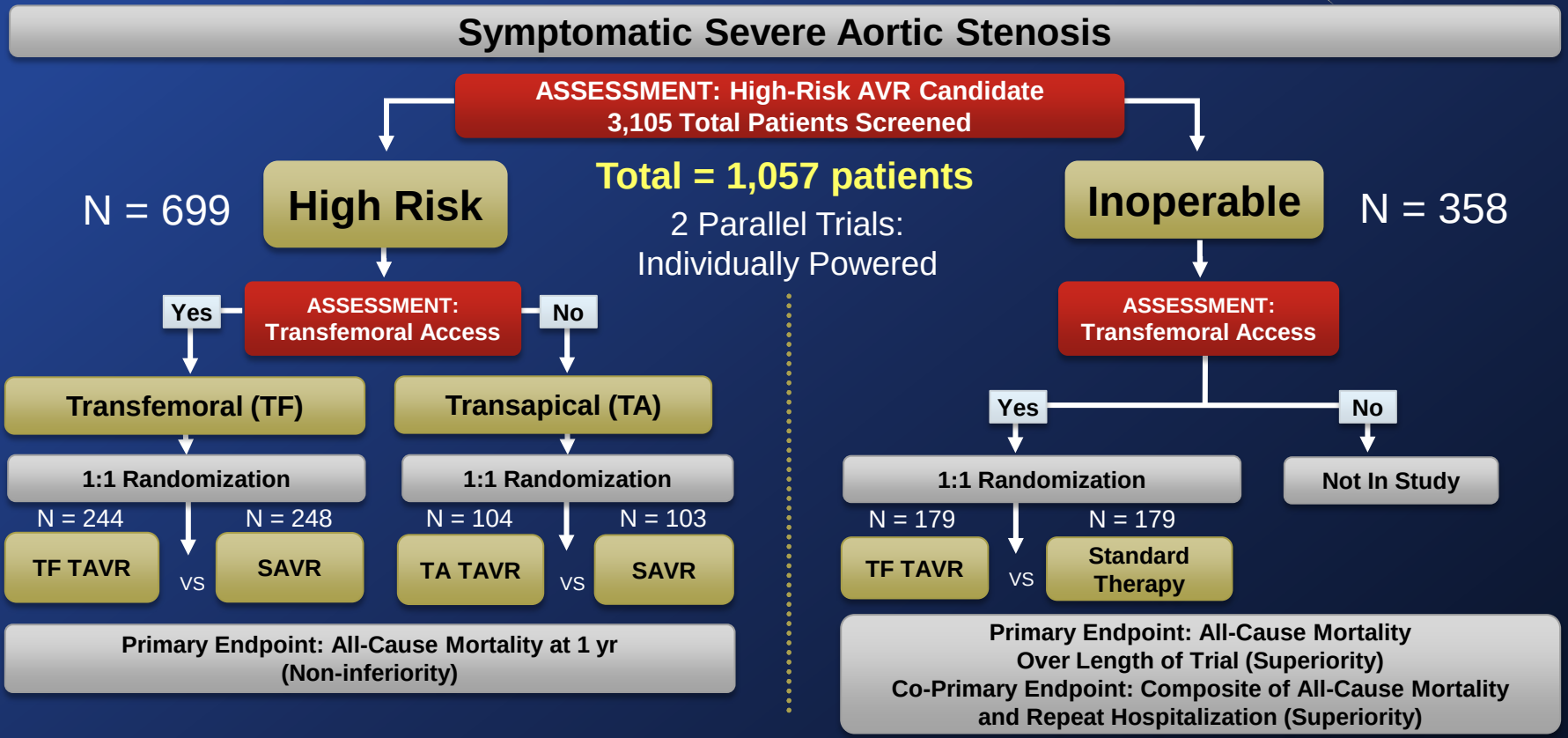
THE PARTNER TRIAL

Conflict of Interest Disclosure

- Member of the Executive Committee of the Trial
- Uncompensated; travel expenses paid for committee meetings

PARTNER 1 Trial
Executive Committee 2007-15

PARTNER Study Design



Study Devices

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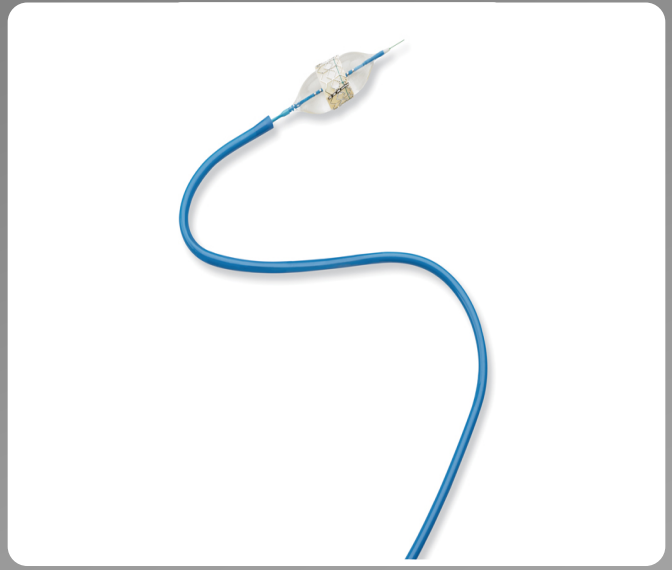
Transfemoral | **Transapical**

Edwards SAPIEN THV
23 and 26 mm valves



RetroFlex 1
22 and 24 F sheaths

Ascendra
24 and 26 F sheaths

Study Devices

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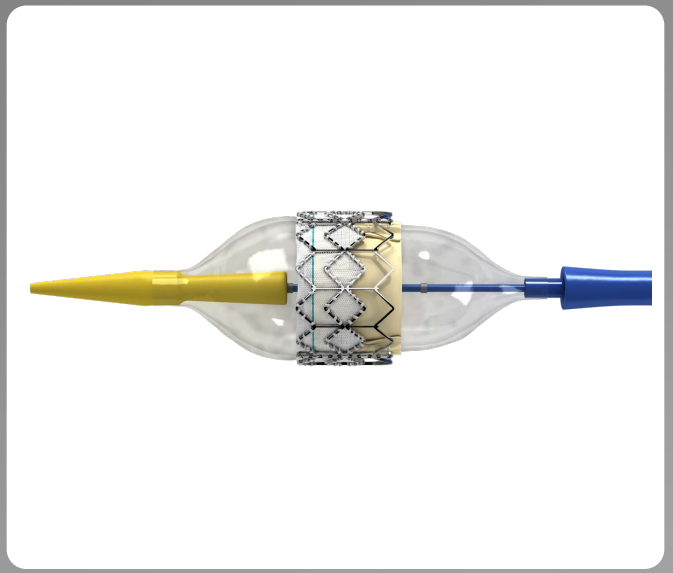
	Transfemoral	Transapical
		
Edwards SAPIEN THV 23 and 26 mm valves	**RetroFlex 1** 22 and 24 F sheaths	**Ascendra** 24 and 26 F sheaths

Key 5-Year Results

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- Mortality Assessments (Primary Endpoint at 1 Year)
- Valve Performance (Echocardiography)
  - Mean Gradient
  - Effective Orifice Area
  - Left Ventricular Mass Index
- Strokes
- Other Clinical Outcomes
  - Rehospitalization
  - NYHA Functional Class
- Paravalvular Leak

Study Methodology

- All patients followed ≥ 5years
- **Primary analysis:** intention-to-treat (ITT)
  - Valve implant analysis for echo data
- **Event rates:** Kaplan-Meier estimates
- **All analyses**: pre-specified
- Effect of baseline variables on five year mortality
  - Cox proportional hazards regression (multivariable analysis with covariates p-value < 0.20)

Baseline Patient Characteristics

Demographics

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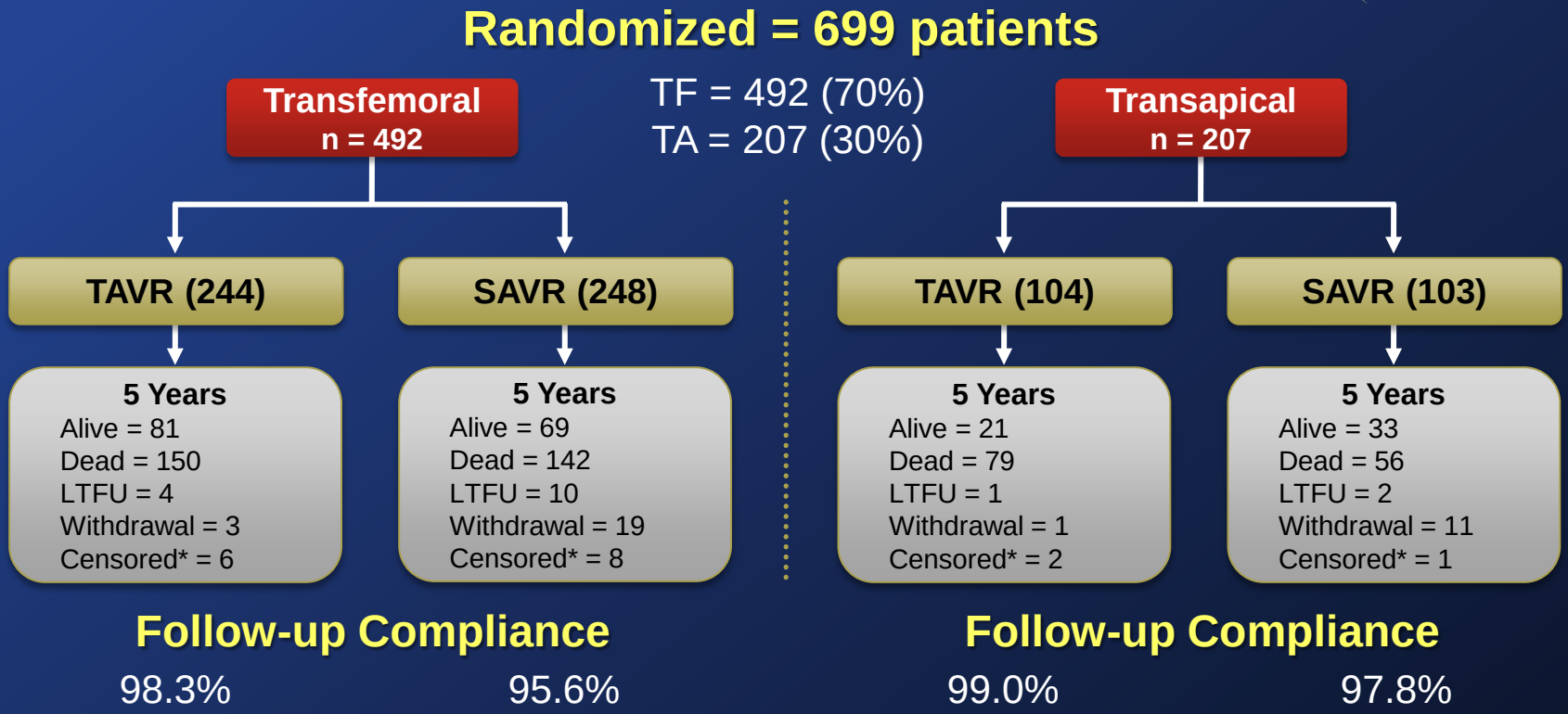
Characteristic	TAVR (n=348) n		SAVR (n=351) n	
Age – years (Mean ± SD)	348	83.6 ± 6.8	349	84.5 ± 6.4
Male	201	57.8%	198	56.7%
NYHA Class III or IV	328	94.3%	328	94.0%
Previous CABG	148	42.5%	152	43.6%
Cerebrovascular disease	96	29.4%	87	26.8%
Peripheral vascular disease	149	43.2%	142	41.6%
STS Score (Mean ± SD)	347	11.8 ± 3.3	349	11.7 ± 3.5

Study Flow



** Censored = Patient alive at last contact but no information available within FU window*

All-Cause Mortality (ITT)

All Patients

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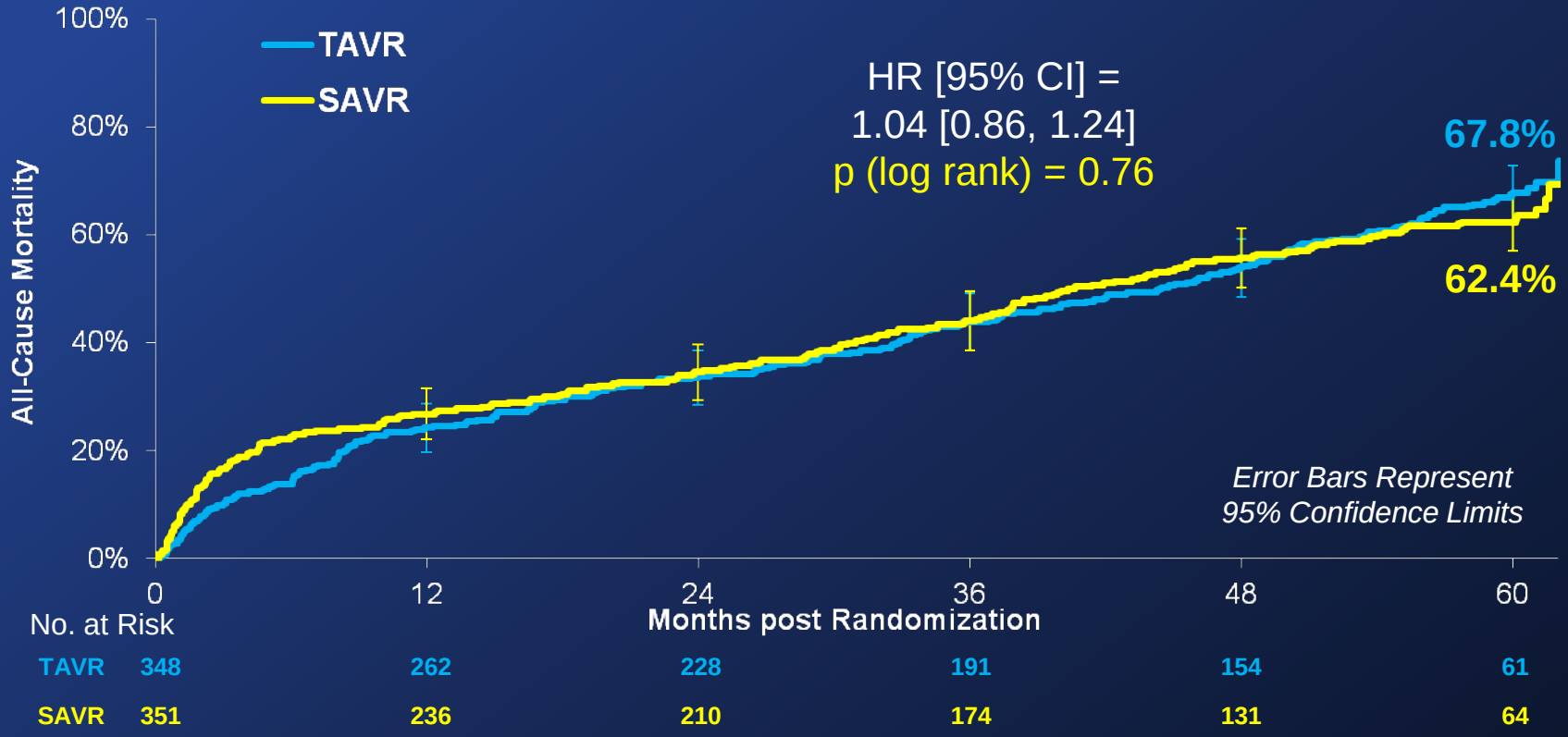
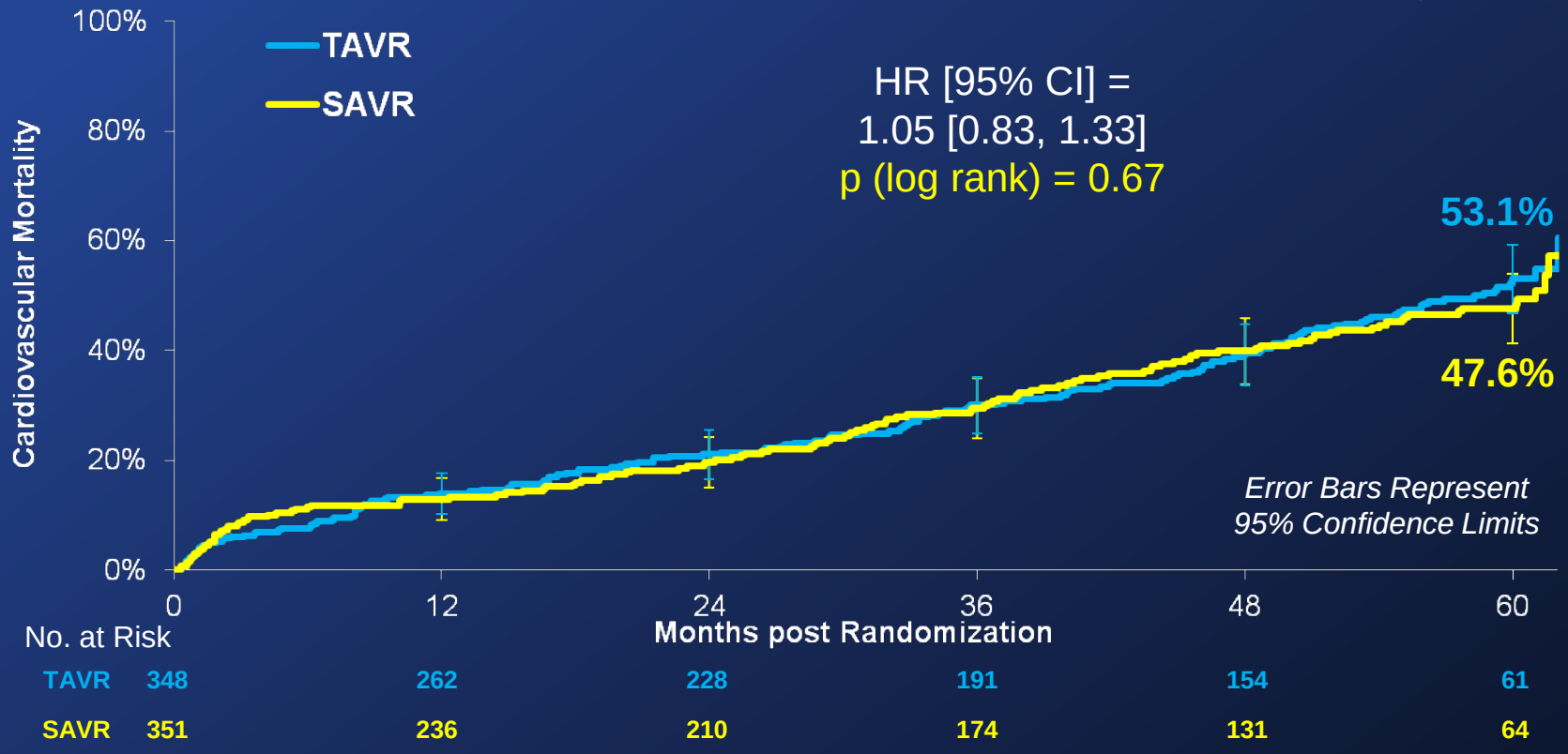


Cardiovascular Mortality (ITT)

All Patients

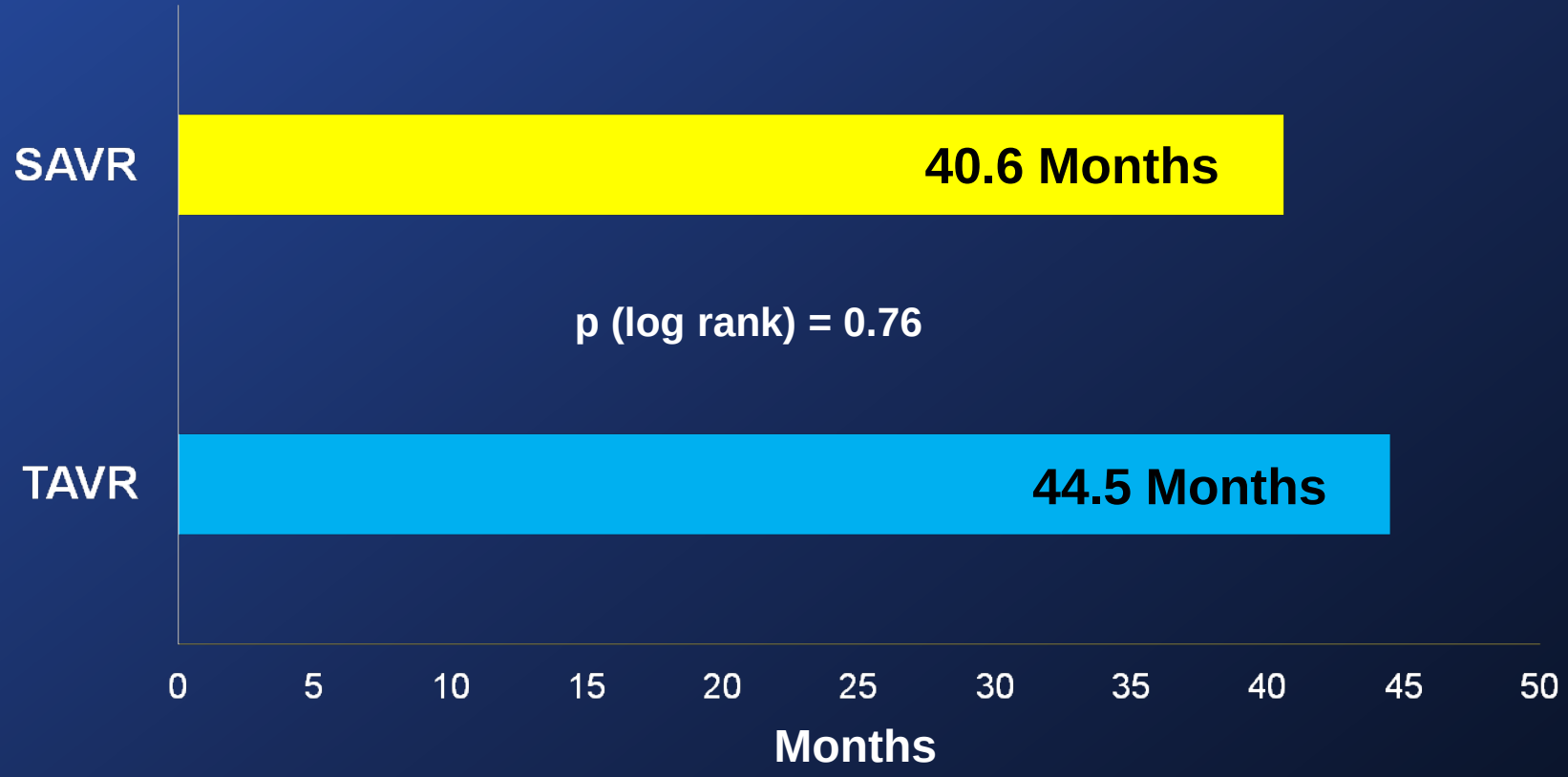


No. at Risk

TAVR	348	262	228	191	154	61
SAVR	351	236	210	174	131	64

Median Survival

All Patients



All-Cause Mortality (ITT)

Transfemoral Patients

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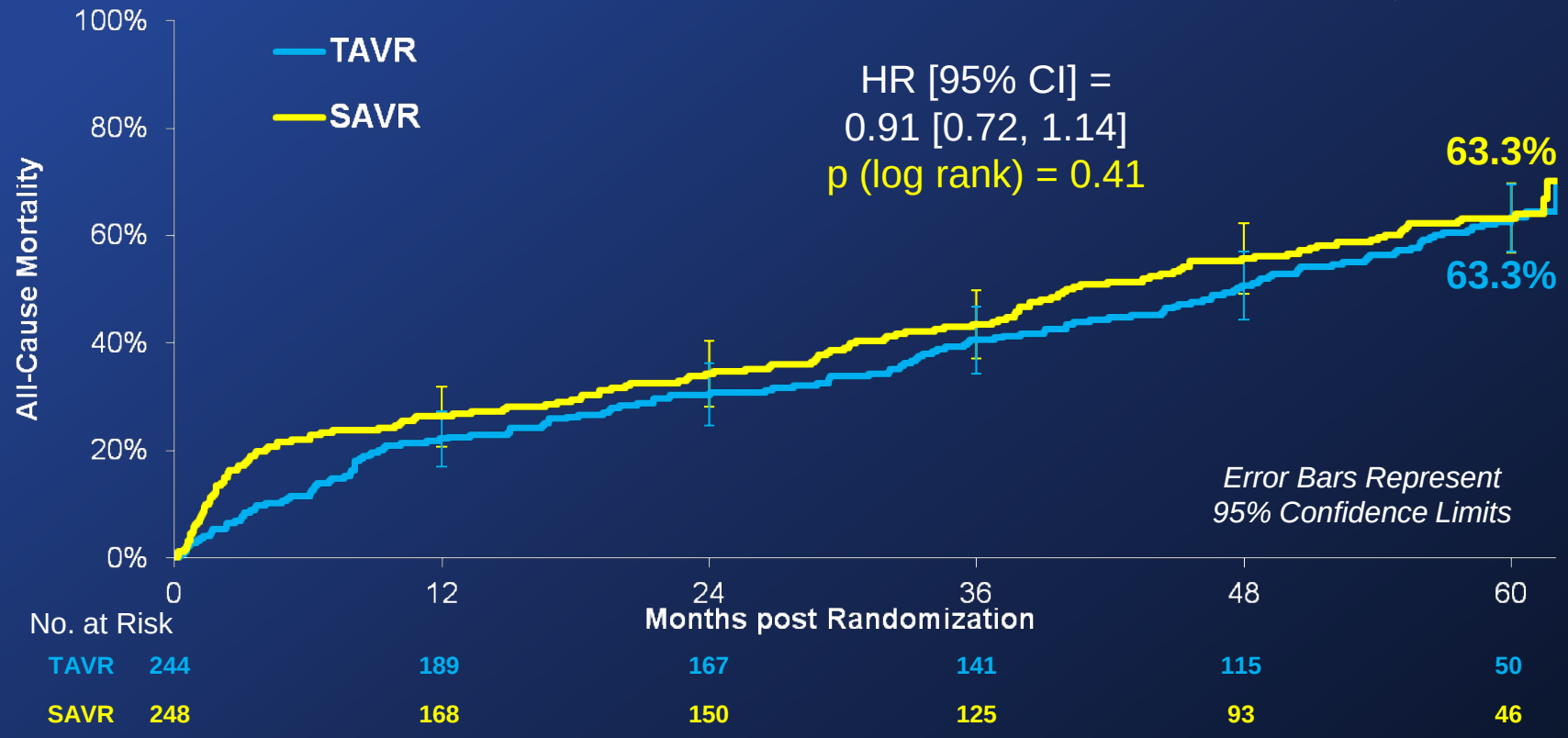

No. at Risk

TAVR	244	189	167	141	115	50
SAVR	248	168	150	125	93	46

Multivariate Baseline Predictors of Mortality (ITT) – *All Patients*

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Predictor	Hazard Ratio [95% CI]	p-value
Assignment to TAVR	1.09 [0.90-1.31]	0.39
Body-Mass Index	0.96 [0.94-0.98]	<0.001
Creatinine Level	1.41 [1.17-1.71]	<0.001
Liver Disease	2.31 [1.41-3.78]	<0.001
Mean Gradient (Per Increase 10 mm Hg)	0.91 [0.85-0.97]	0.004
Atrial Fibrillation	1.37 [1.10-1.69]	0.004

Subgroup Analysis

All-Cause Mortality

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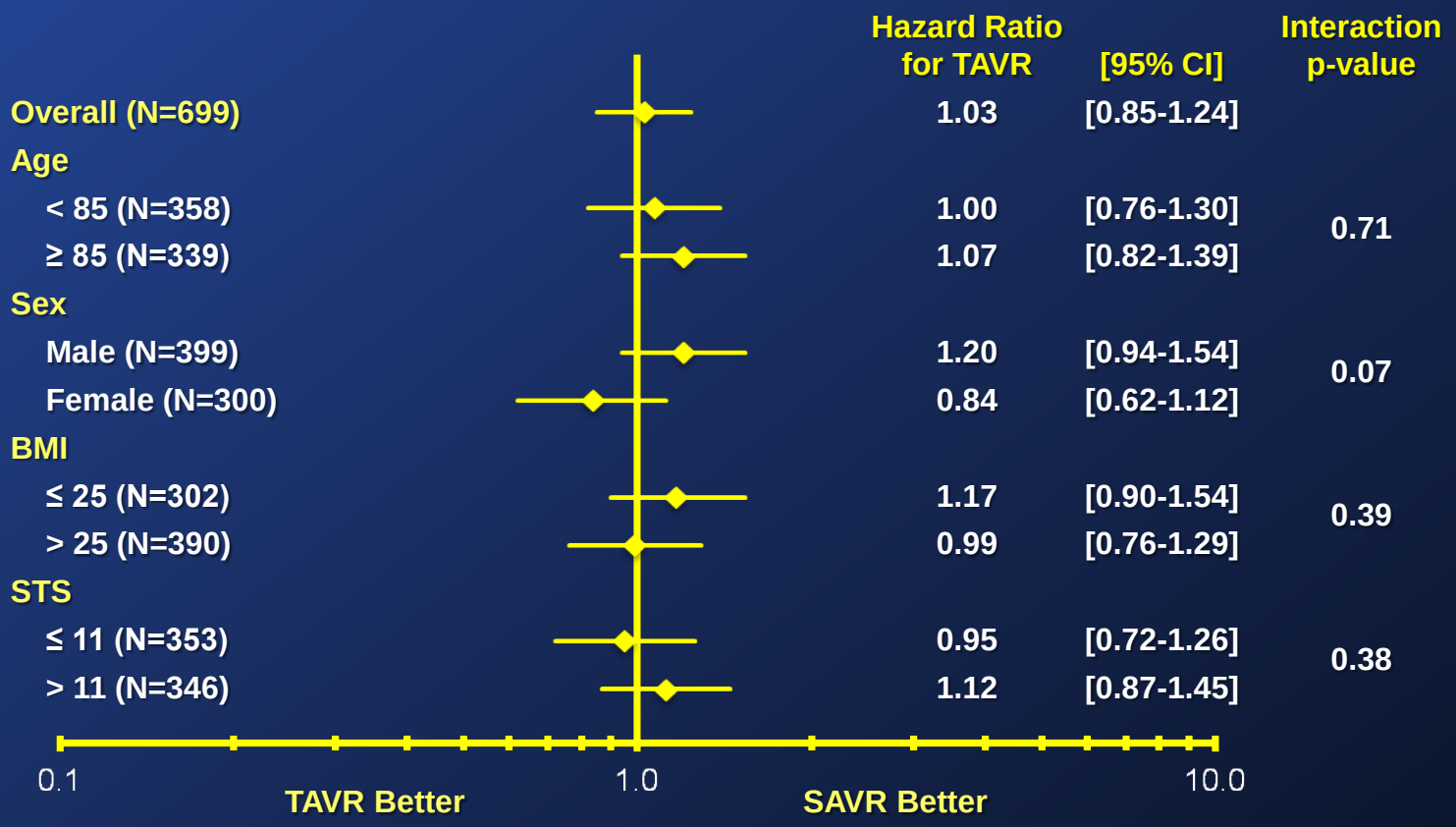
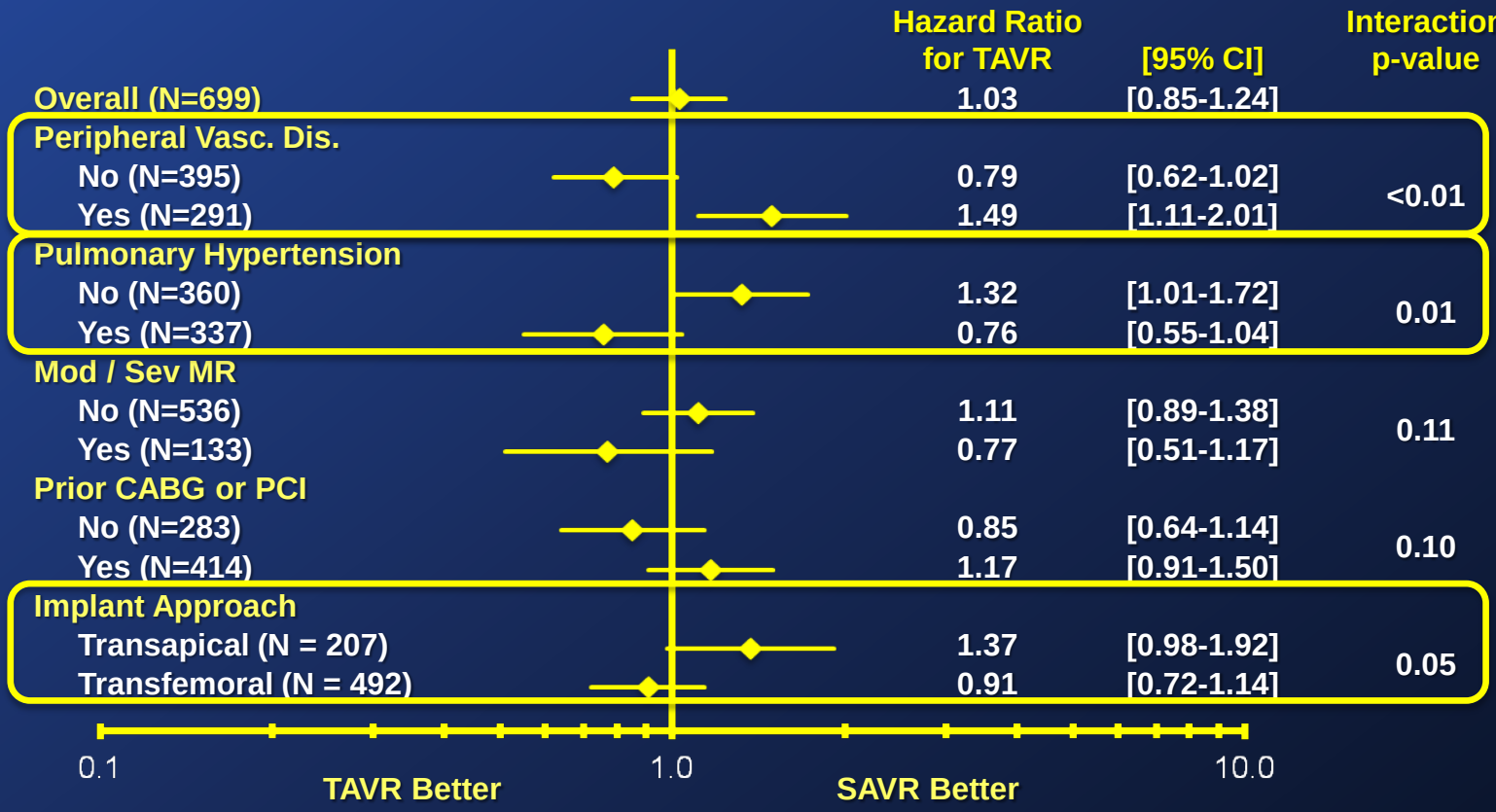


Subgroup Analysis

All-Cause Mortality

THE PARTNER TRIAL



Aortic Valve Mean Gradient

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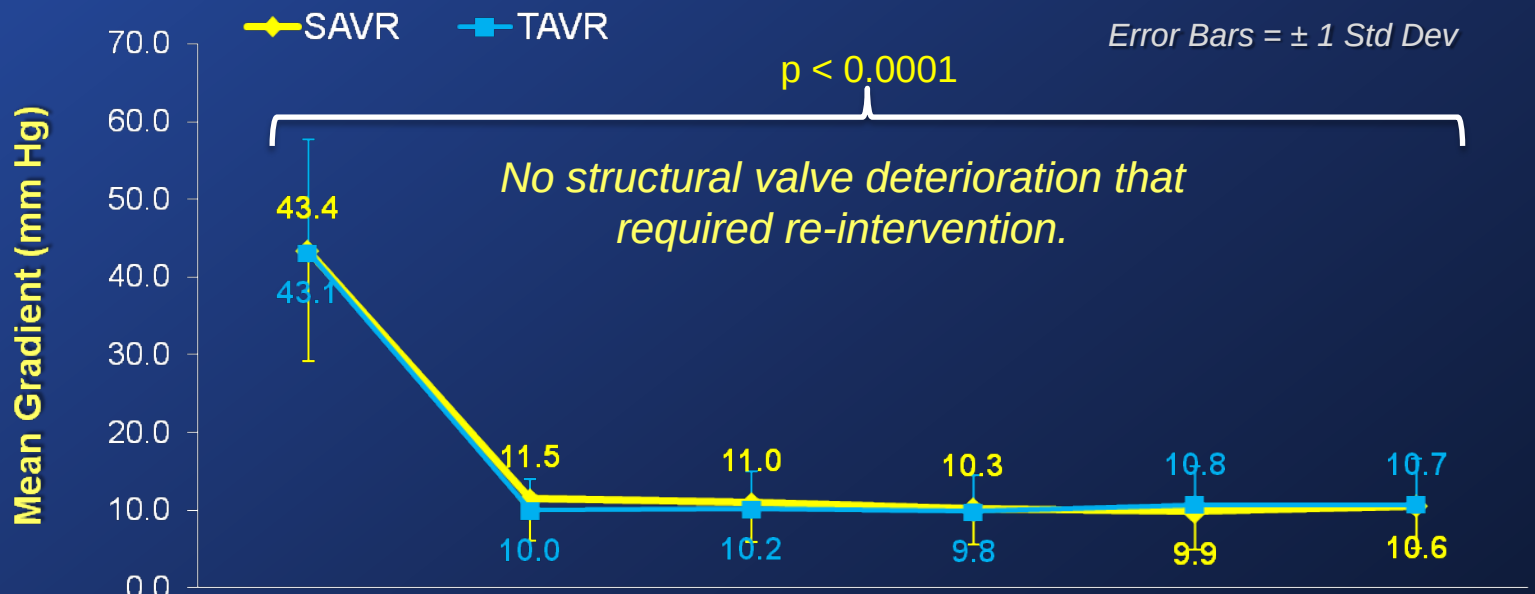
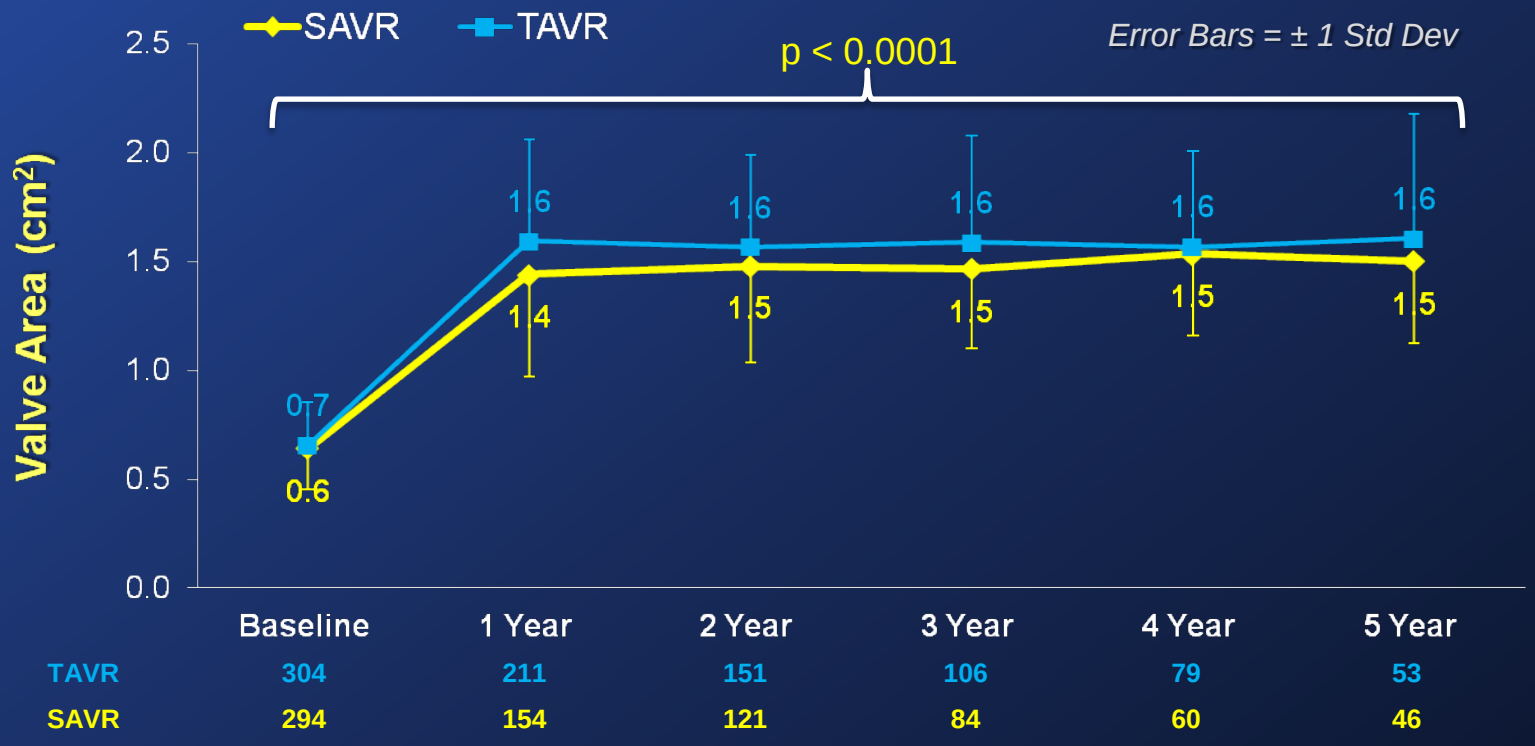


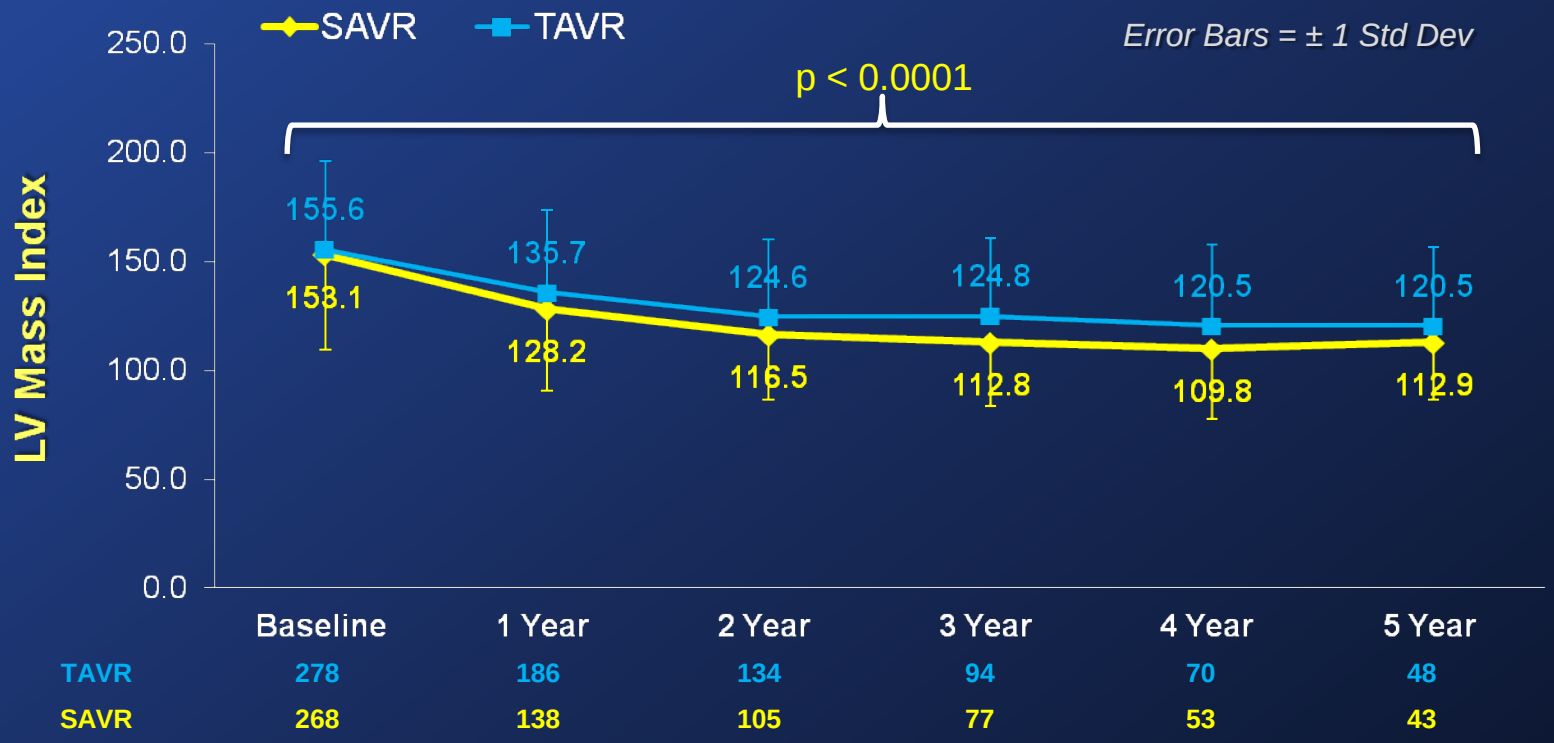
	Baseline	1 Year	2 Year	3 Year	4 Year	5 Year
TAVR	310	219	156	106	79	56
SAVR	299	158	123	86	61	48

Aortic Valve Area



	Baseline	1 Year	2 Year	3 Year	4 Year	5 Year
TAVR	304	211	151	106	79	53
SAVR	294	154	121	84	60	46

LV Mass Index



All Stroke (ITT)

All Patients

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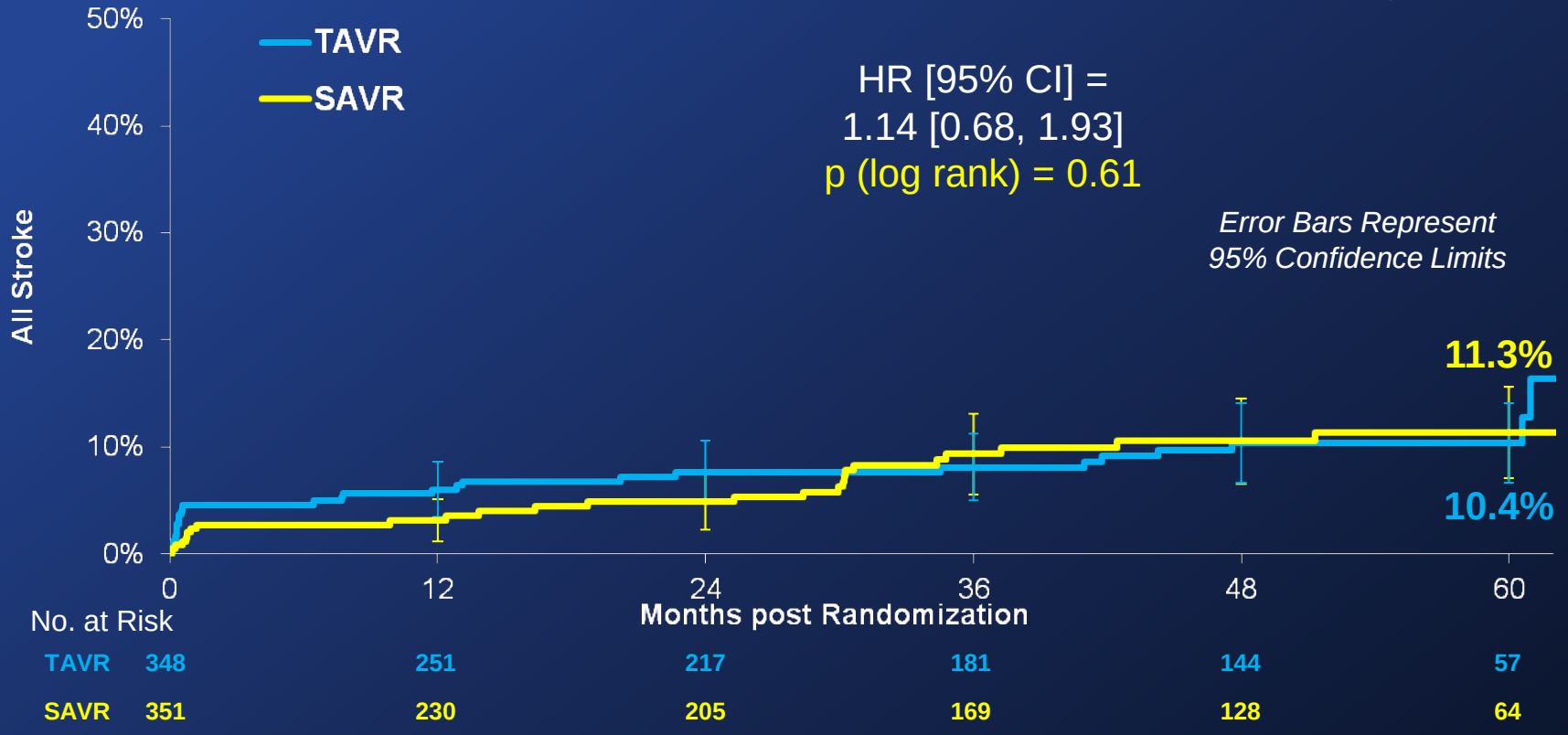
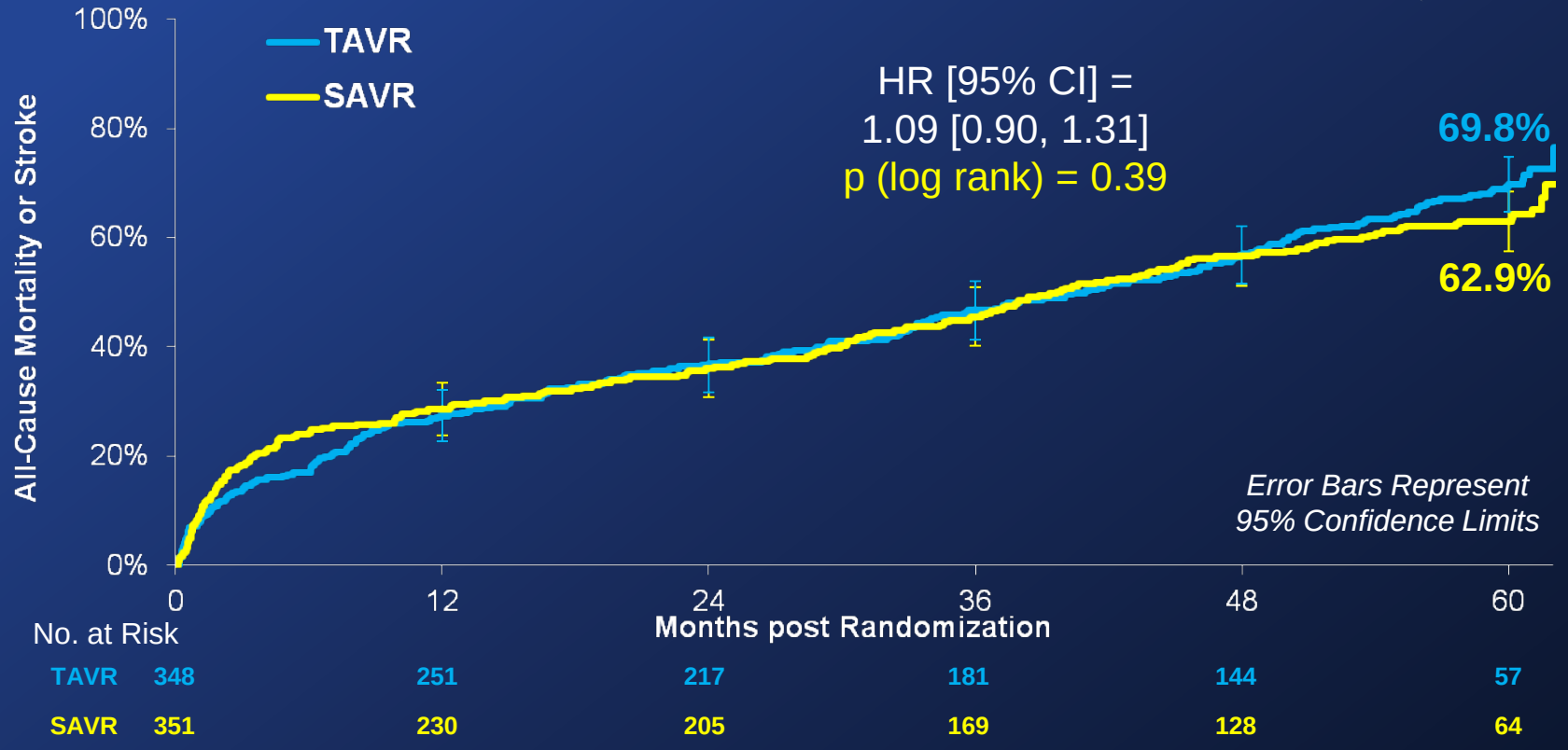


All-Cause Mortality or Stroke (ITT)

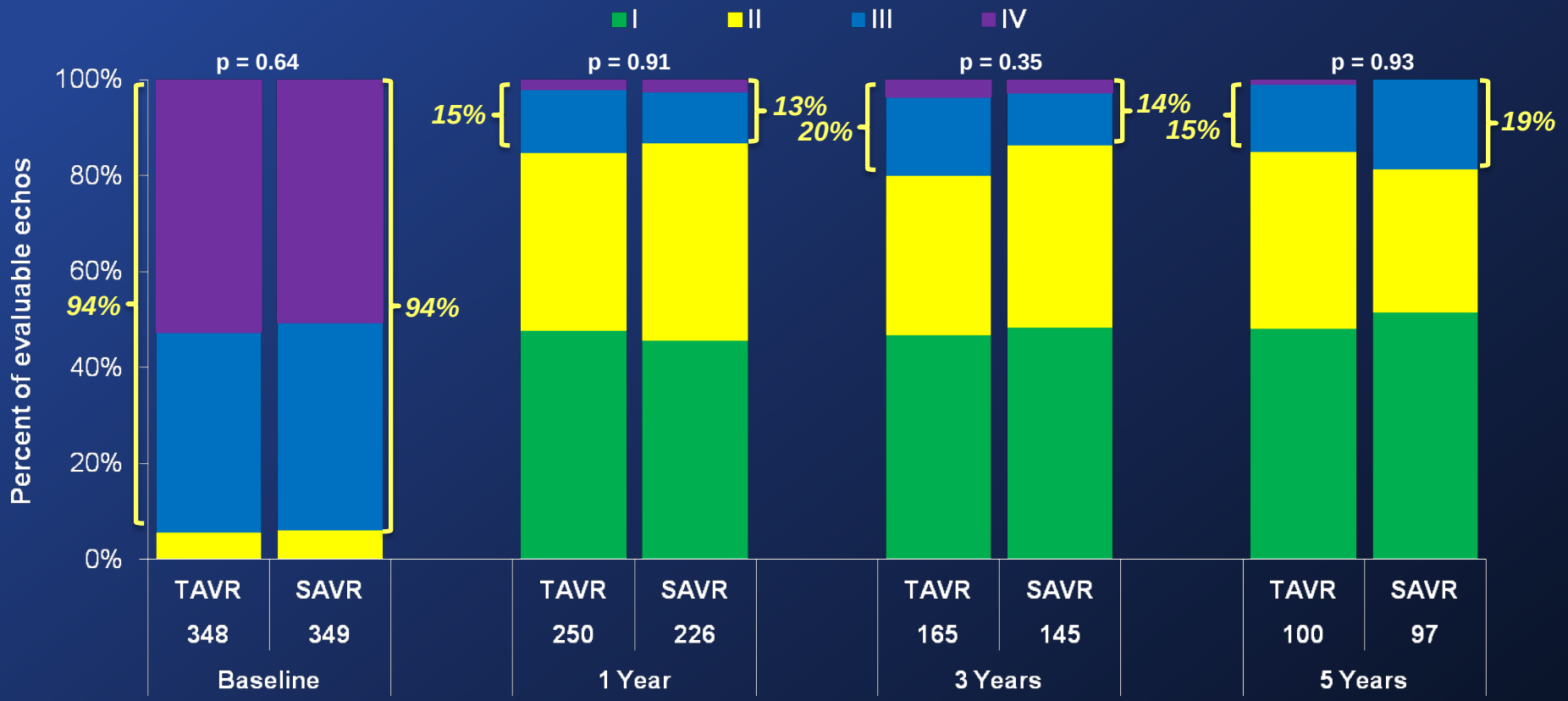
All Patients

THE PARTNER TRIAL



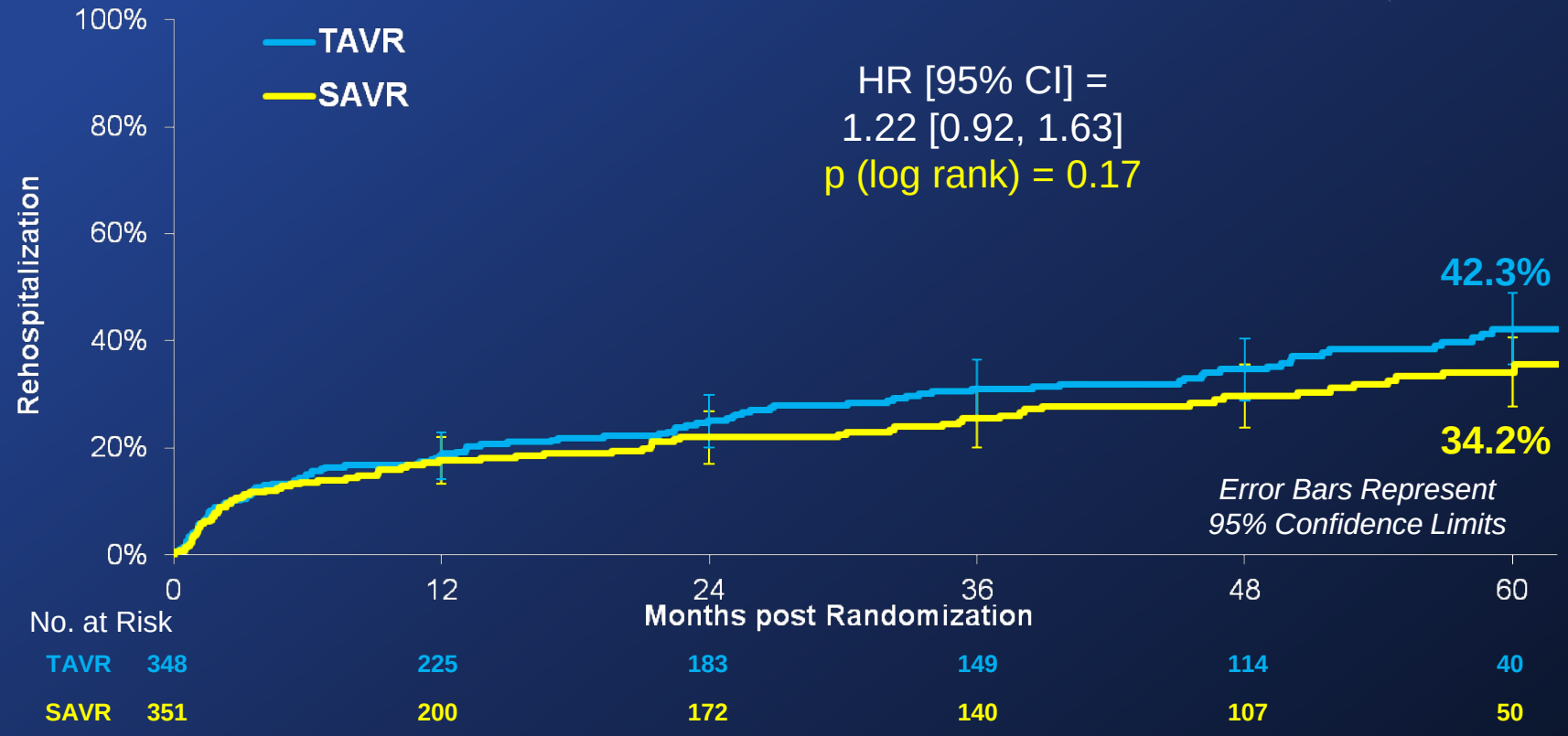
NYHA Over Time (ITT)

Survivors



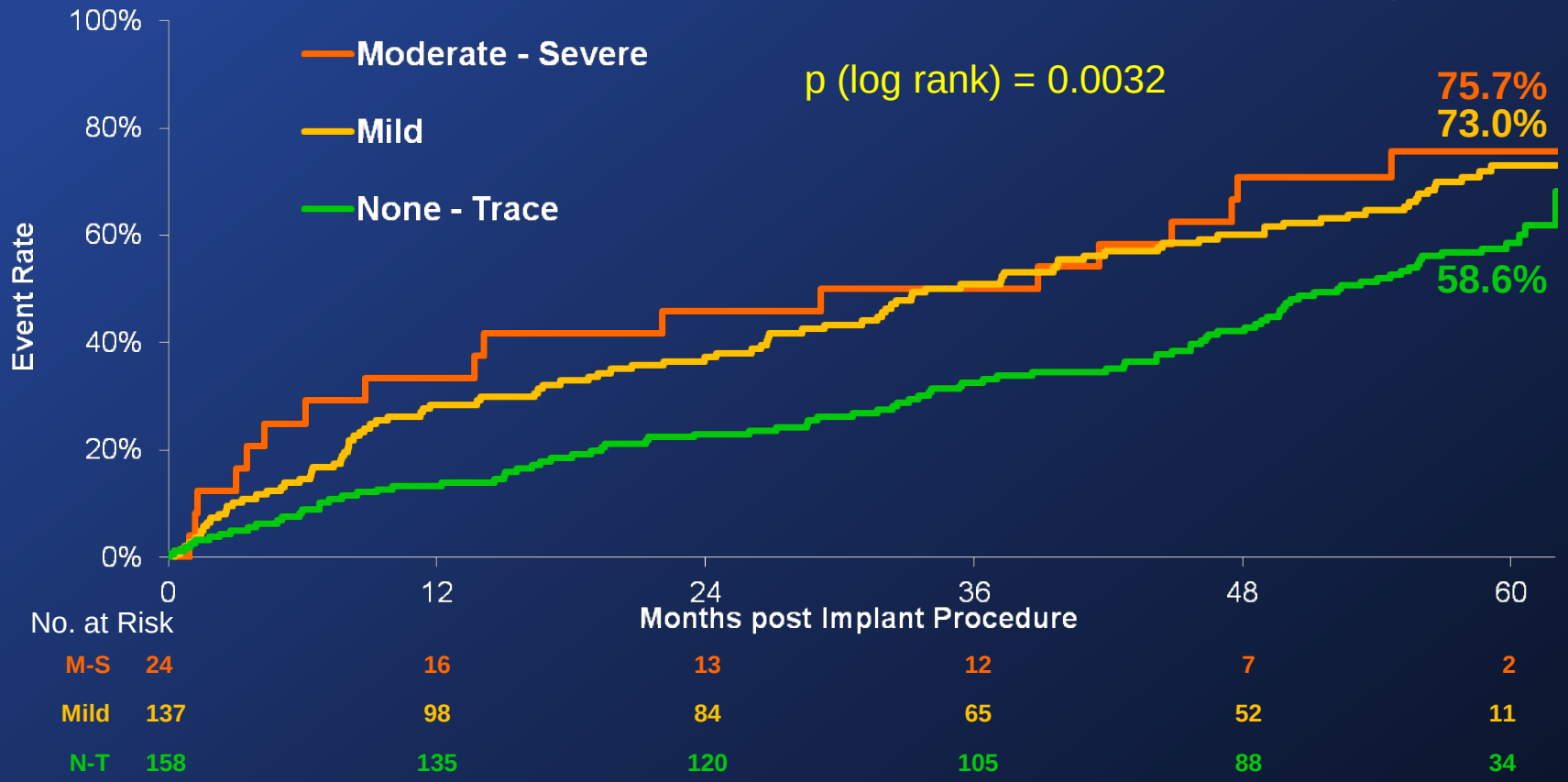
Rehospitalization (ITT)

All Patients



Mortality and Post Procedural PVL

TAVR Patients



Mortality and None-Trace Total AR

Transfemoral Patients

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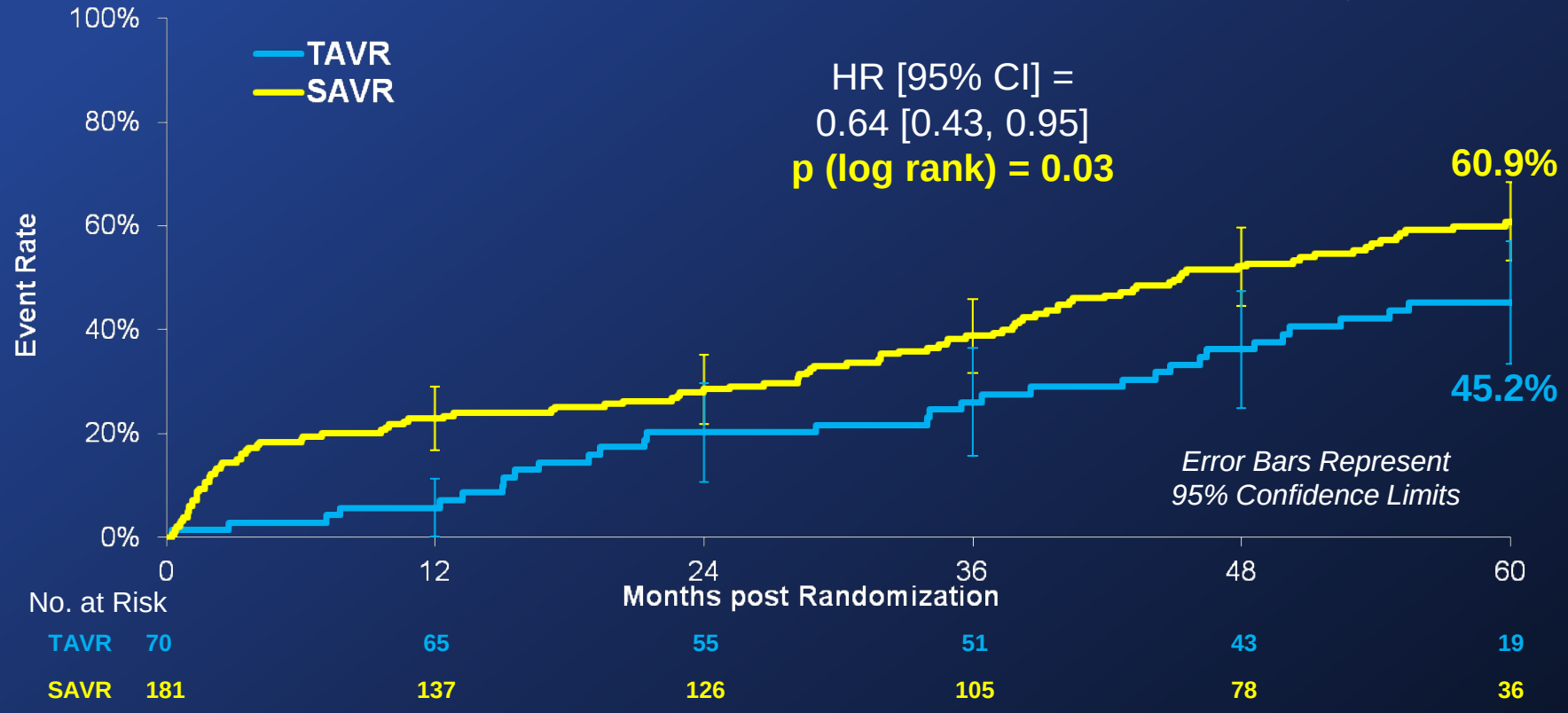

Summary

- At five years in The PARTNER 1A Trial of high surgical risk patients with severe aortic stenosis randomized to TAVR or SAVR there was no significant difference in:
  - All-Cause and Cardiovascular Mortality
  - Strokes
  - NYHA Class
  - Rehospitalization
  - Valve Hemodynamics
- No structural valve deterioration requiring re-intervention in TAVR patients.
- The presence of ≥ mild paravalvular leak is associated with decreased survival.

Conclusions

- Five year follow-up of patients in The PARTNER Trial supports TAVR as an alternative to surgery in high surgical risk patients with similar mortality and other major clinical outcomes including stroke.
- Improvements in valve function were maintained for five years in both groups.

THELANCET-D-15-00795

S0140-6736(15)60308-7

Embargo: [add date when known]

5-year outcomes of transcatheter aortic valve replacement or surgical aortic valve replacement for high surgical risk patients with aortic stenosis (PARTNER 1): a randomised controlled trial

Michael J Mack, Martin B Leon, Craig R Smith, D Craig Miller, Jeffrey W Moses, E Murat Tuzcu, John G Webb, Pamela S Douglas, William N Anderson, Eugene H Blackstone, Susheel K Kodali, Raj R Makkar, Gregory P Fontana, Samir Kapadia, Joseph Bavaria, Rebecca T Hahn, Vinod H Thourani, Vasilis Babaliaros, Augusto Pichard, Howard C Herrmann, David L Brown, Mathew Williams, Jodi Akin*, Michael J Davidson†, Lars G Svensson, for the PARTNER 1 trial investigators*

Dedicated to Mike Davidson

THE PARTNER TRIAL

Dedicated to the Memory of Mike Davidson, a Cherished Member of Our PARTNER Team

Backup Slides

All-Cause Mortality (ITT)

Landmark Analysis

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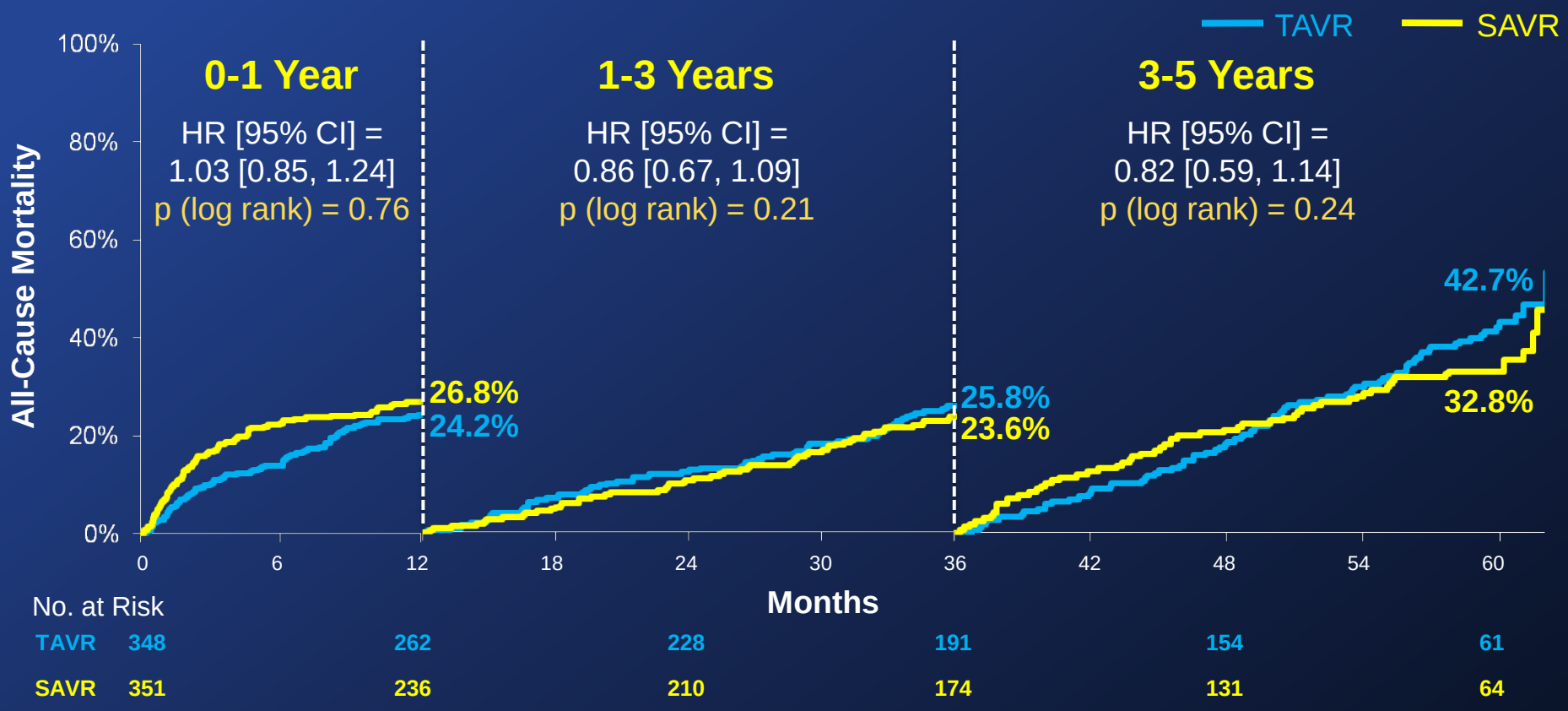

All-Cause Mortality (ITT)

Transapical Patients

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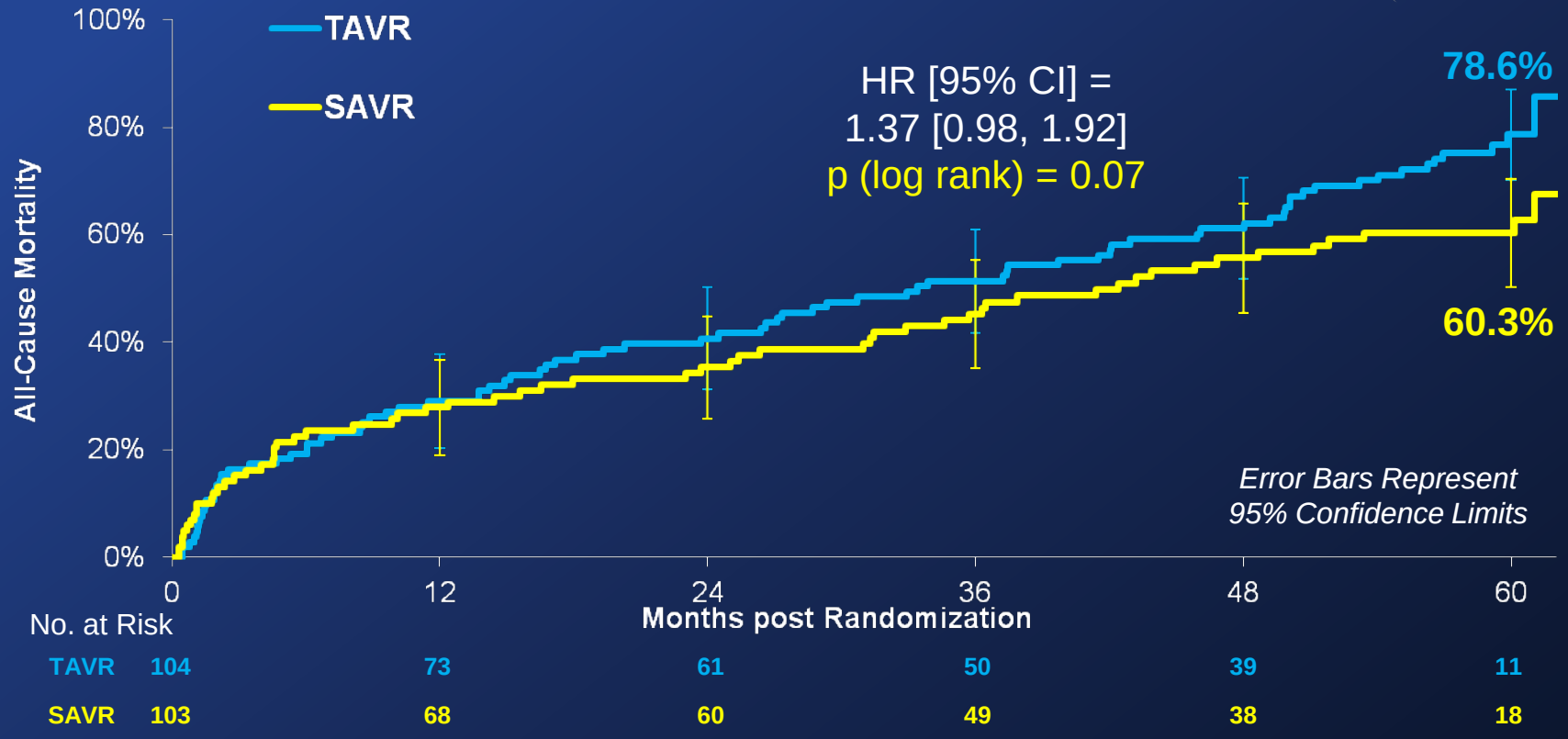
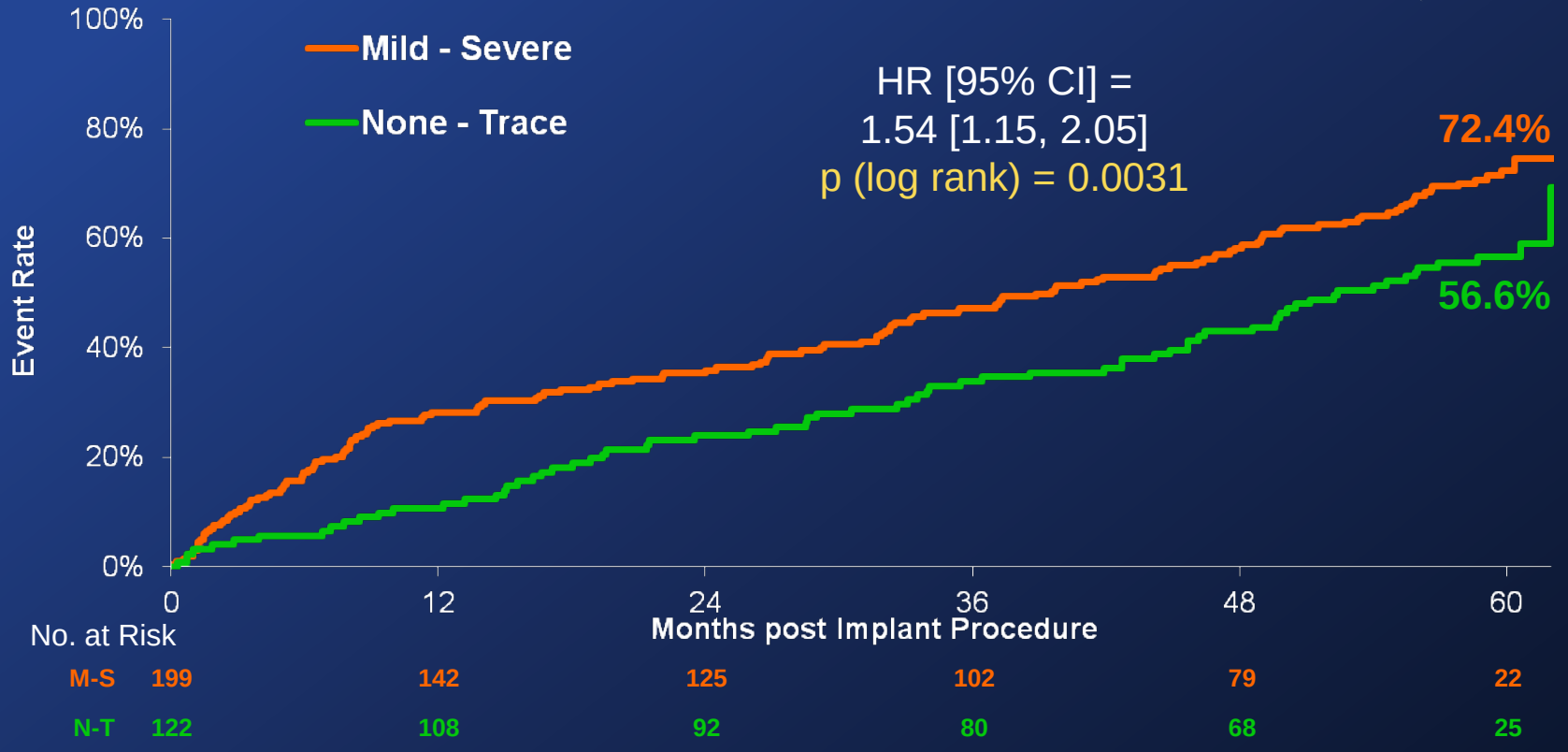


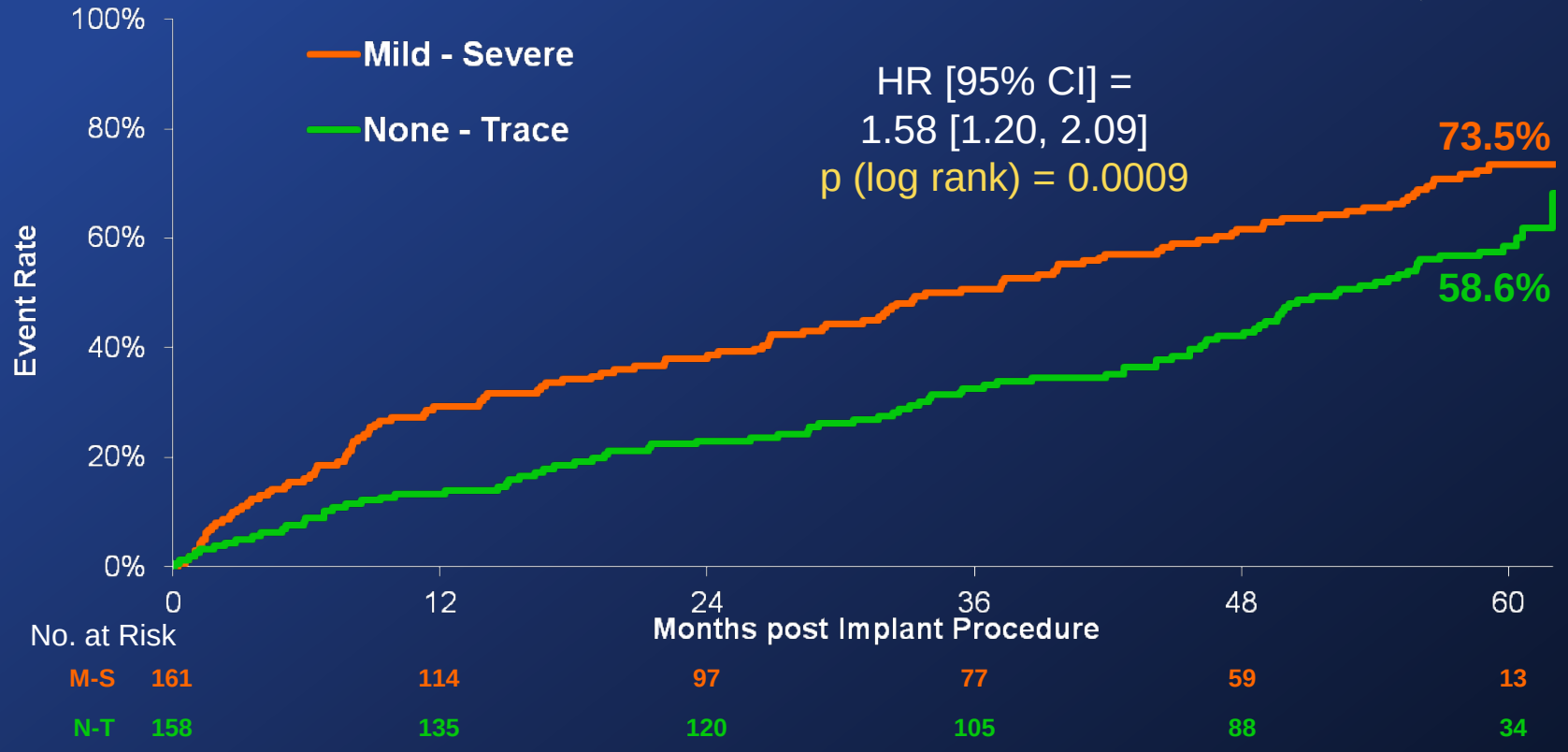
Death and Post Procedural Total AR

TAVR Valve Implant Patients



Death and Post Procedural PVL

TAVR Valve Implant Patients



All-Cause Mortality: Patients with First PV Leak in None-Trace *(Valve Implant Patients)*

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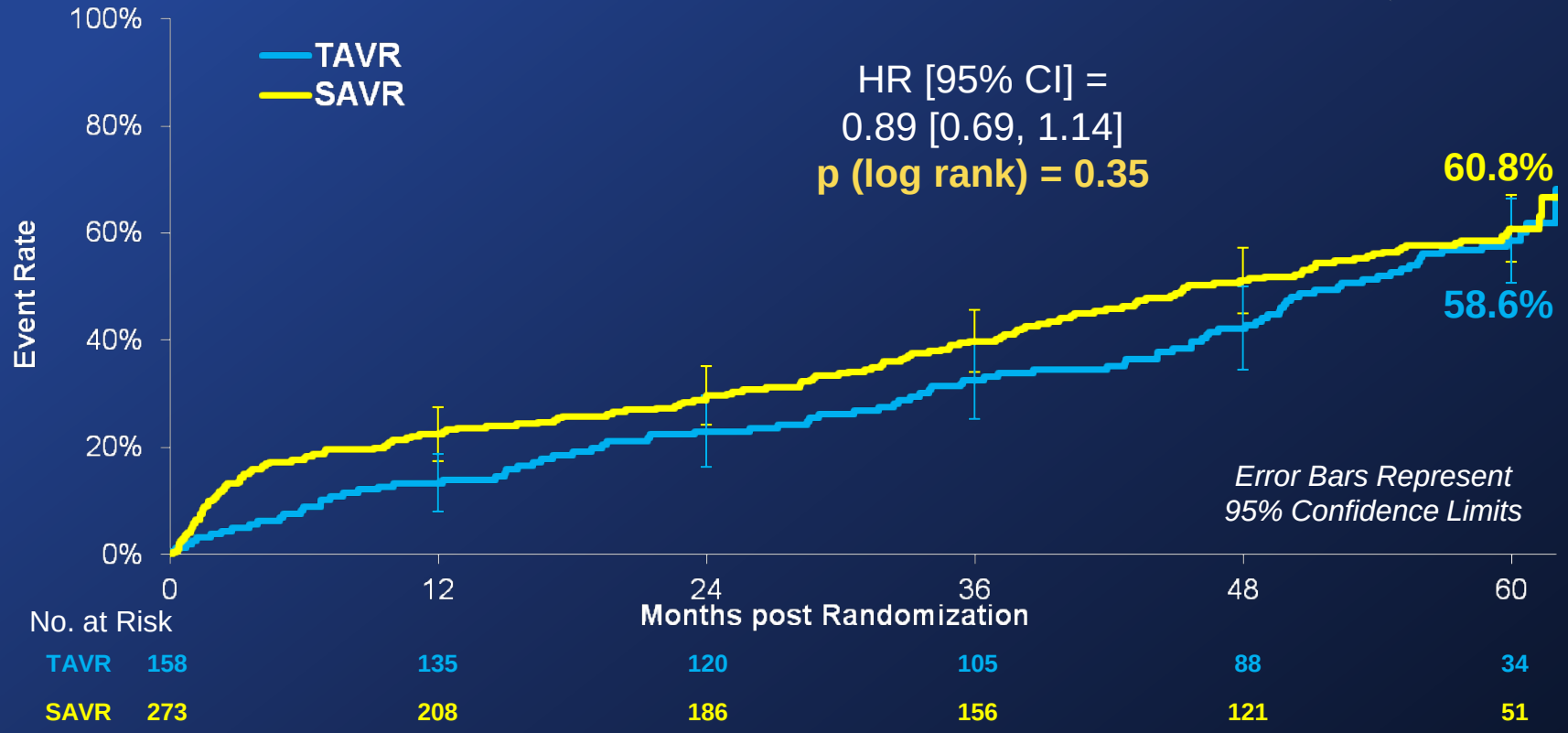
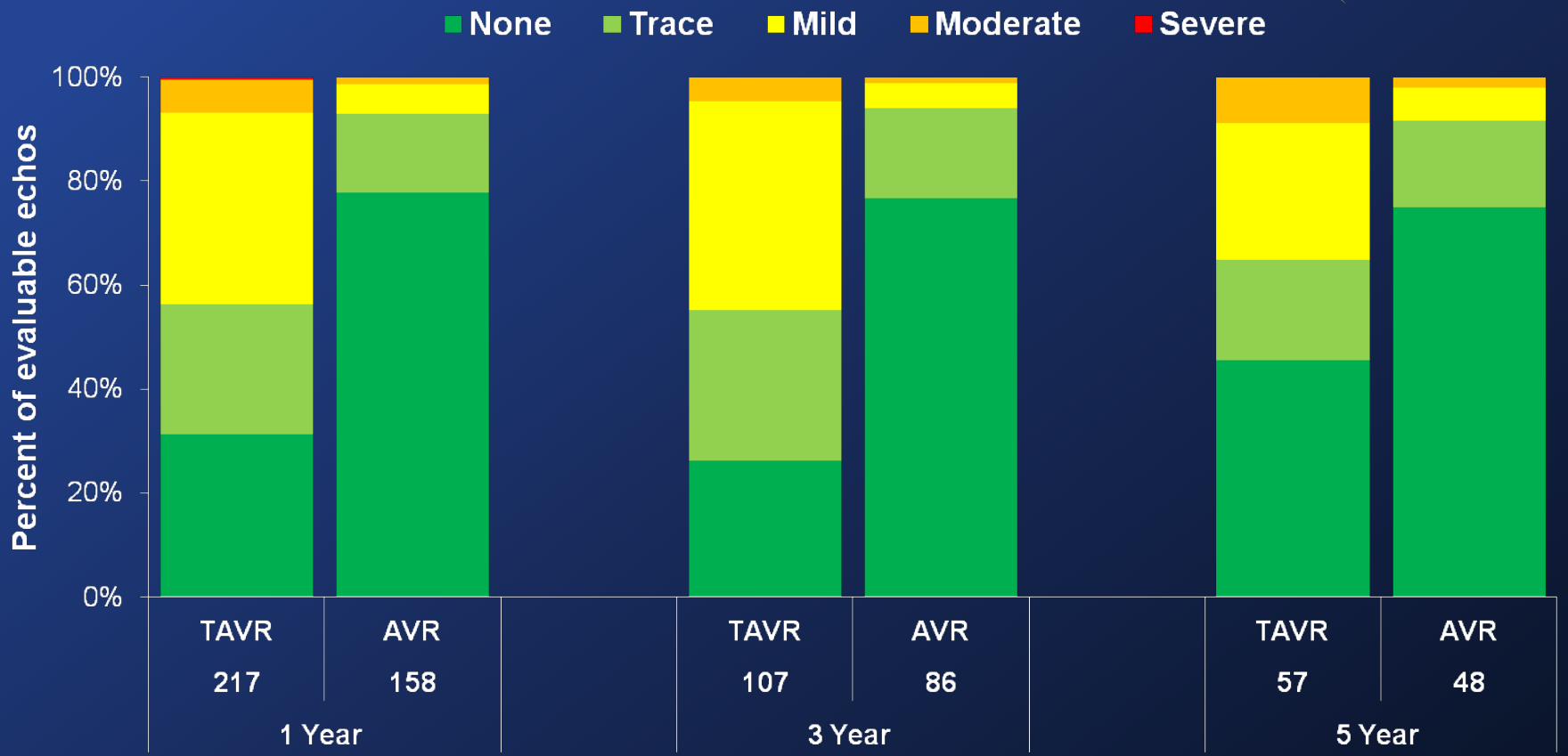


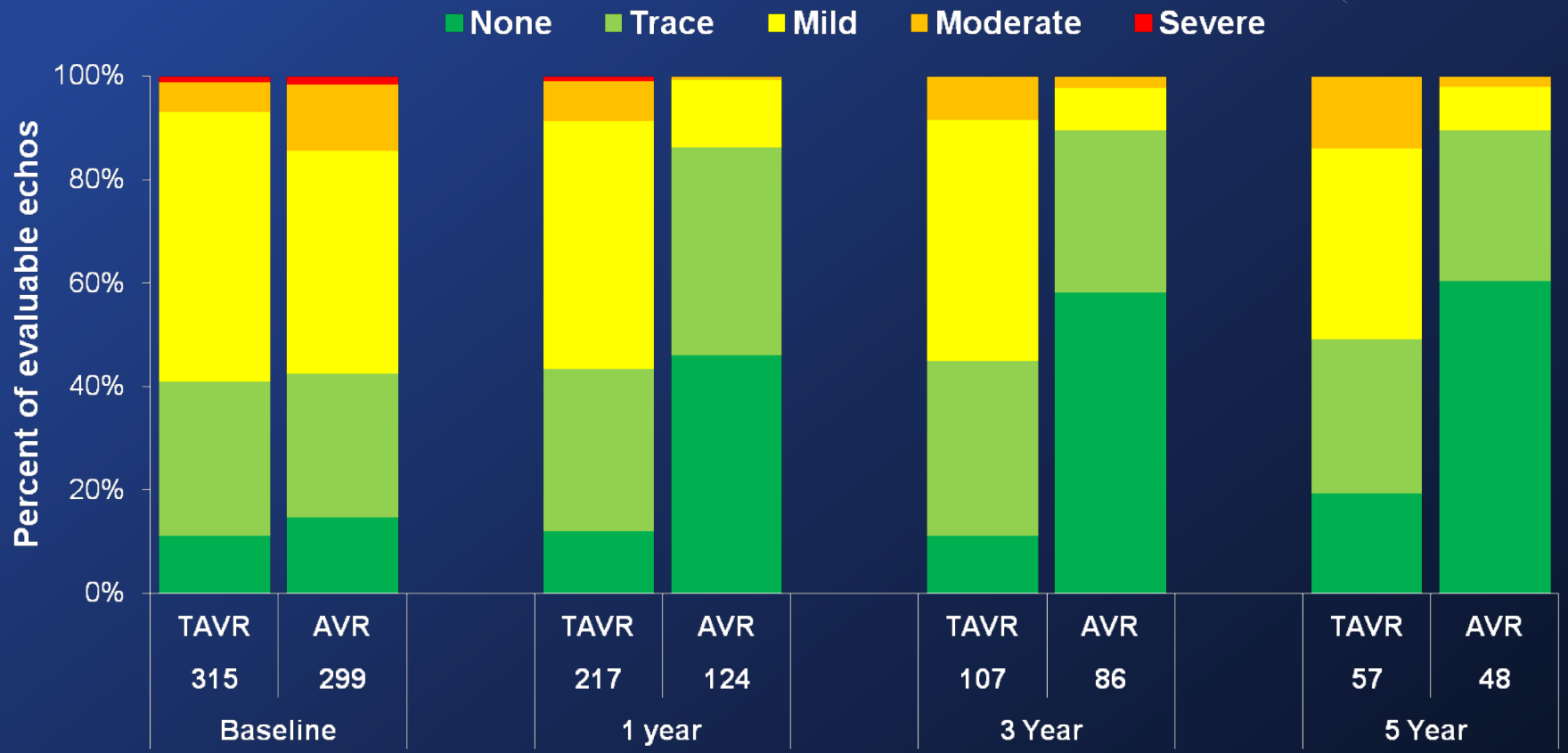
Paravalvular Aortic Regurgitation

Valve Implant Patients



Total Aortic Regurgitation

Valve Implant Patients



Multivariate Baseline Predictors of Mortality (ITT) – *TAVR Patients*

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Predictor	Hazard Ratio [95% CI]	p-value
Body Mass Index (kg/m^2)	0.95 [0.93-0.98]	< 0.001
Mean Gradient (mm Hg/10)	0.84 [0.77-0.92]	< 0.001
Creatinine (mg/dL)	1.61 [1.24-2.09]	< 0.001
Liver Disease	2.68 [1.31-5.49]	0.007
Peripheral Vascular Disease	1.36 [1.05-1.77]	0.02
Atrial Fibrillation	1.40 [1.04-1.88]	0.03

Multivariate Baseline Predictors of Mortality (ITT) – *SAVR Patients*

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Predictor	Hazard Ratio [95% CI]	p-value
Liver Disease	2.24 [1.14-4.40]	0.02
STS Risk Score	1.05 [1.01-1.09]	0.02
Peripheral Vascular Disease	0.73 [0.55-0.98]	0.03
Moderate/Severe MR	1.46 [1.03-2.07]	0.04
Body Mass Index (kg/m^2)	0.97 [0.95-1.00]	0.04

Predictors of Mortality – Time Dependent Covariates (ITT): *All Patients*

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Time Dependent Covariate	Group	Patients	Patients with covariate event	Hazard Ratio	95% CI		p
Stroke	AVR	351	26	5.613	3.658	8.613	<.0001
Stroke	TAVR	348	31	2.090	1.367	3.196	0.0007
Major Bleed	AVR	351	103	2.331	1.748	3.107	<.0001
Major Bleed	TAVR	348	75	1.910	1.404	2.597	<.0001
Major Vascular	AVR	351	14	1.566	0.802	3.056	0.1890
Major Vascular	TAVR	348	41	1.216	0.808	1.828	0.3484
New Permanent Pacemaker	AVR	351	23	0.737	0.390	1.394	0.3477
New Permanent Pacemaker	TAVR	348	28	1.087	0.653	1.811	0.7485

Note: The TAVR patients with stroke count is 2 higher than the 5 year number, because of 2 strokes in the 61st month.

	At 1 year		At 5 years		
	TAVR group (n=348)	SAVR group (n=351)	TAVR group (n=348)	SVVR group (n=351)	Log-rank p value
Death					
From any cause	84 (24·2%)	89 (26·8%)	229 (67·8%)	198 (62·4%)	0·76
From cardiovascular causes	46 (14·0%)	40 (13·0%)	147 (53·1%)	123 (47·6%)	0·67
Repeat hospital admission	59 (18·5%)	51 (17·7%)	108 (42·3%)	81 (34·2%)	0·17
Death from any cause or repeat hospital admission	121 (34·9%)	125 (37·7%)	265 (77·8%)	228 (71·3%)	0·49
Stroke or transient ischaemic attack					
All	28 (8·6%)	13 (4·3%)	42 (15·9%)	33 (14·7%)	0·35
Stroke	20 (6·0%)	10 (3·2%)	29 (10·4%)	26 (11·3%)	0·61
Transient ischaemic attack	8 (2·6%)	4 (1·5%)	14 (6·3%)	8 (3·8%)	0·30
Stroke or death from any cause	95 (27·4%)	95 (28·6%)	236 (69·8%)	200 (62·9%)	0·39
Stroke or transient ischaemic attack, or death from any cause	102 (29·4%)	98 (29·5%)	242 (71·6%)	205 (64·4%)	0·35
Myocardial infarction	0 (0·0%)	2 (0·6%)	5 (2·9%)	11 (5·9%)	0·15
Major vascular complication	40 (11·6%)	13 (3·8%)	41 (11·9%)	14 (4·7%)	<0·001
Major bleeding	52 (15·7%)	88 (26·7%)	75 (26·6%)	103 (34·4%)	0·003
Endocarditis	2 (0·6%)	3 (1·0%)	5 (2·0%)	6 (2·5%)	0·65
Renal failure	18 (5·4%)	20 (6·5%)	24 (8·6%)	24 (8·5%)	0·69
New pacemaker	21 (6·4%)	17 (5·3%)	28 (9·7%)	23 (9·1%)	0·64

Data are number of patients (Kaplan-Meier probability [%]). TAVR=transcatheter aortic valve replacement. SAVR=surgical aortic valve replacement.