

## Supplementary Online Content

Whisenant B, Kapadia SR, Eleid MF, et al. One-year outcomes of mitral valve-in-valve using the SAPIEN 3 transcatheter heart valve. *JAMA Cardiol*. Published online July 29, 2020.  
doi:10.1001/jamacardio.2020.2974

**eTable 1.** Missing baseline characteristic values

**eTable 2.** Predictors of 1-year all-cause mortality

**eTable 3.** Baseline characteristics of patients who received 20mm/23mm valves and 26mm/29mm valves

**eFigure 1.** Study flowchart of patients who underwent SAPIEN 3 TMViV procedures

**eFigure 2.** Patient status

**eFigure 3.** Number of SAPIEN 3 MViV cases and sites by year

**eFigure 4.** Quality of life outcomes

**eFigure 5.** Cumulative event rate of all-cause mortality at 1 year in patients with MViV stratified by STS score

**eFigure 6.** Mitral mean gradient and all-cause mortality by valve size to 1 year

**eFigure 7.** 30-day mortality by year

This supplementary material has been provided by the authors to give readers additional information about their work.

**eTable 1. Missing Baseline Characteristic Values**

<b>Characteristic</b>	<b>Missing Rate % (No./Total)</b>
Age	0% (0/1529)
BMI	0.72% (11/1529)
Male	0% (0/1529)
Prior PCI	0.2% (3/1529)
Prior CABG	0.26% (4/1529)
Prior Stroke	0.13% (2/1529)
Carotid Stenosis	34.53% (528/1529)
Hypertension	0% (0/1529)
Diabetes Mellitus	0.2% (3/1529)
Chronic Lung Disease	0.85% (13/1529)
Immunocompromise Present	0.07% (1/1529)
Porcelain Aorta	0.13% (2/1529)
Atrial Fibrillation/Flutter	0.07% (1/1529)
Hemoglobin	0.26% (4/1529)
Creatinine	0.33% (5/1529)
Prior MI	0.13% (2/1529)
Heart Failure within 2 Weeks	0% (0/1529)
NYHA within 2 Weeks	1.24% (19/1529)
Approach	0% (0/1529)
Average Six Minutes Walk Test Result	58.99% (902/1529)
Mitral Insufficiency(MR)	1.5% (23/1529)
Mitral Mean Gradient	7.52% (115/1529)
LVEF (%)	1.5% (23/1529)
Mitral Stenosis	2.35% (36/1529)
Tricuspid Insufficiency(TI)	0.39% (6/1529)
KCCQ	20.93% (320/1529)

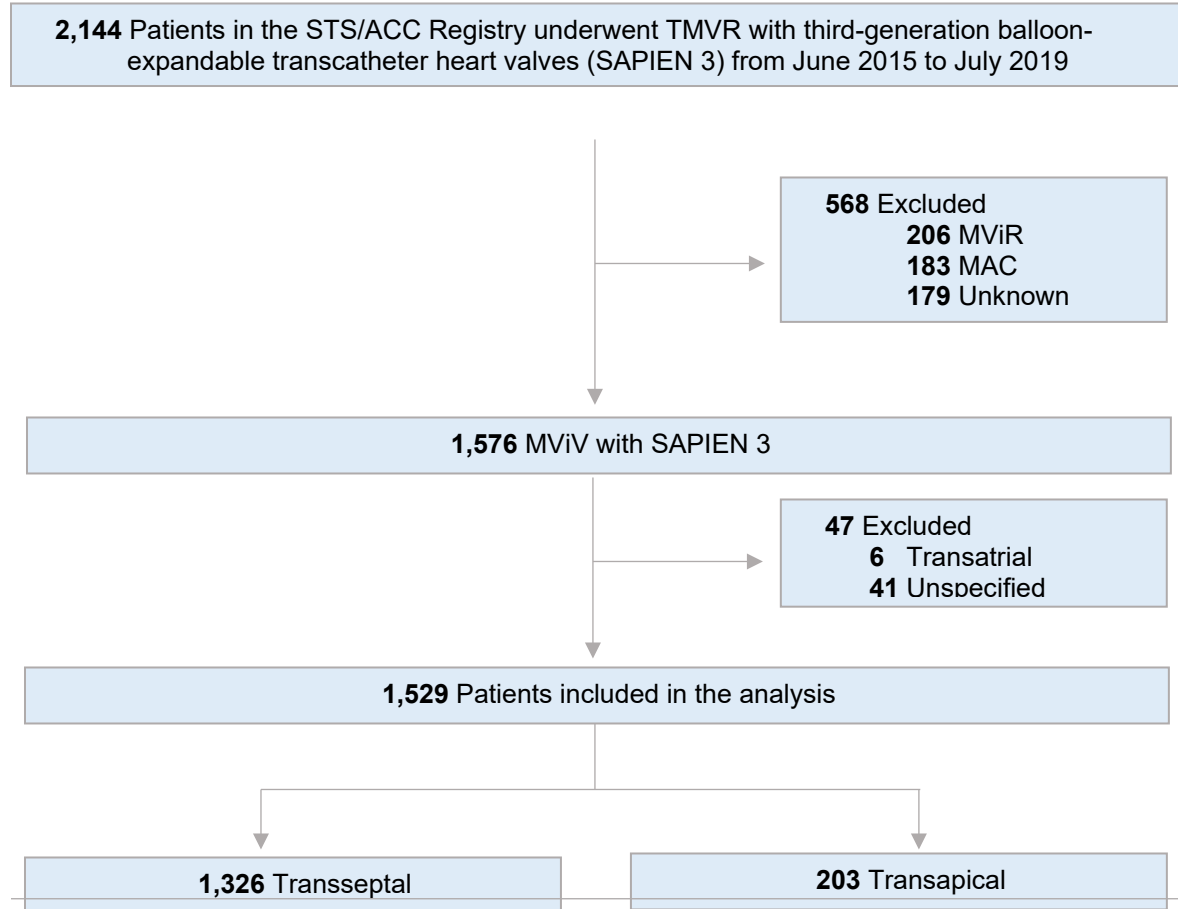
**eTable 2. Predictors of 1-Year All-Cause Mortality**

	Univariate		Multivariate	
	HR 95% CI	P Value	HR 95% CI	P Value
<b>Baseline Covariates</b>				
Transseptal vs Transapical	0.67 [0.47-0.97]	0.0337	0.58 [0.37-0.9]	0.0145
Baseline KCCQ overall score	0.98 [0.97-0.99]	<0.0001	0.98 [0.97-0.99]	0.0021
Baseline GFR (mL/min/1.73 m <sup>2</sup> )	0.98 [0.98-0.99]	<0.0001	0.98 [0.97-0.99]	<0.0001
Cardiogenic shock within 24 hrs	6.13 [4.18-8.98]	<0.0001	2.28 [1.14-4.57]	0.0202
Mod/Sev tricuspid insufficiency	1.54 [1.13-2.1]	0.006	1.81 [1.16-2.84]	0.0096
Mod/Sev mitral insufficiency	0.68 [0.51, 0.92]	0.0122	0.58 [0.40, 0.85]	0.0053
Permanent pacemaker	1.74 [1.29, 2.35]	0.0003	1.76 [1.19, 2.60]	0.0044
Prior PCI	1.51 [1.06, 2.15]	0.0209	1.94 [1.24, 3.03]	0.0038
<b>Procedural Covariates</b>				
Perforation with/without tamponade	21.56 [12.19-38.15]	<0.0001	70.58 [28.51-174.7]	<0.0001
Conversion to Open Heart Surgery	9.01 [4.61-17.62]	<0.0001	3.59 [1.34-9.62]	0.0109
Procedure duration	1.01 [1.00, 1.01]	<0.0001	1.00 [1.00, 1.01]	0.0002

**eTable 3. Baseline Characteristics of Patients who Received 20mm/23mm Valves and 26mm/29mm Valves.**

Characteristic	No./Total (%) of Patients		
	20 mm + 23 mm Valves (n=122)	26 mm + 29 mm Valves (n=1407)	P Value
Male	21/122 (17.2)	604/1407 (42.9)	<0.0001
BSA, mean (SD)	1.7 (0.35)	1.8 (0.24)	0.01
STS, mean (SD)	13.3 (9.45)	10.9 (8.61)	0.003
Hemoglobin, mean (SD)	11.0 (1.92)	11.4 (2.11)	0.03
MDRD GFR, mean (SD)	50.0 (25.38)	55.5 (25.81)	0.02
Currently on Dialysis	11/122 (9.0)	71/1406 (5.0)	0.06
LVEF, mean (SD)	57.1 (11.43)	54.6 (12.10)	0.03
Cardiogenic shock within 24 hours	10/122 (8.2)	53/1406 (3.8)	0.02
Tricuspid Regurgitation (mod/sev)	79/122 (64.8)	769/1401 (54.9)	0.04
Mitral annular calcification	29/49 (59.2)	240/556 (43.2)	0.03

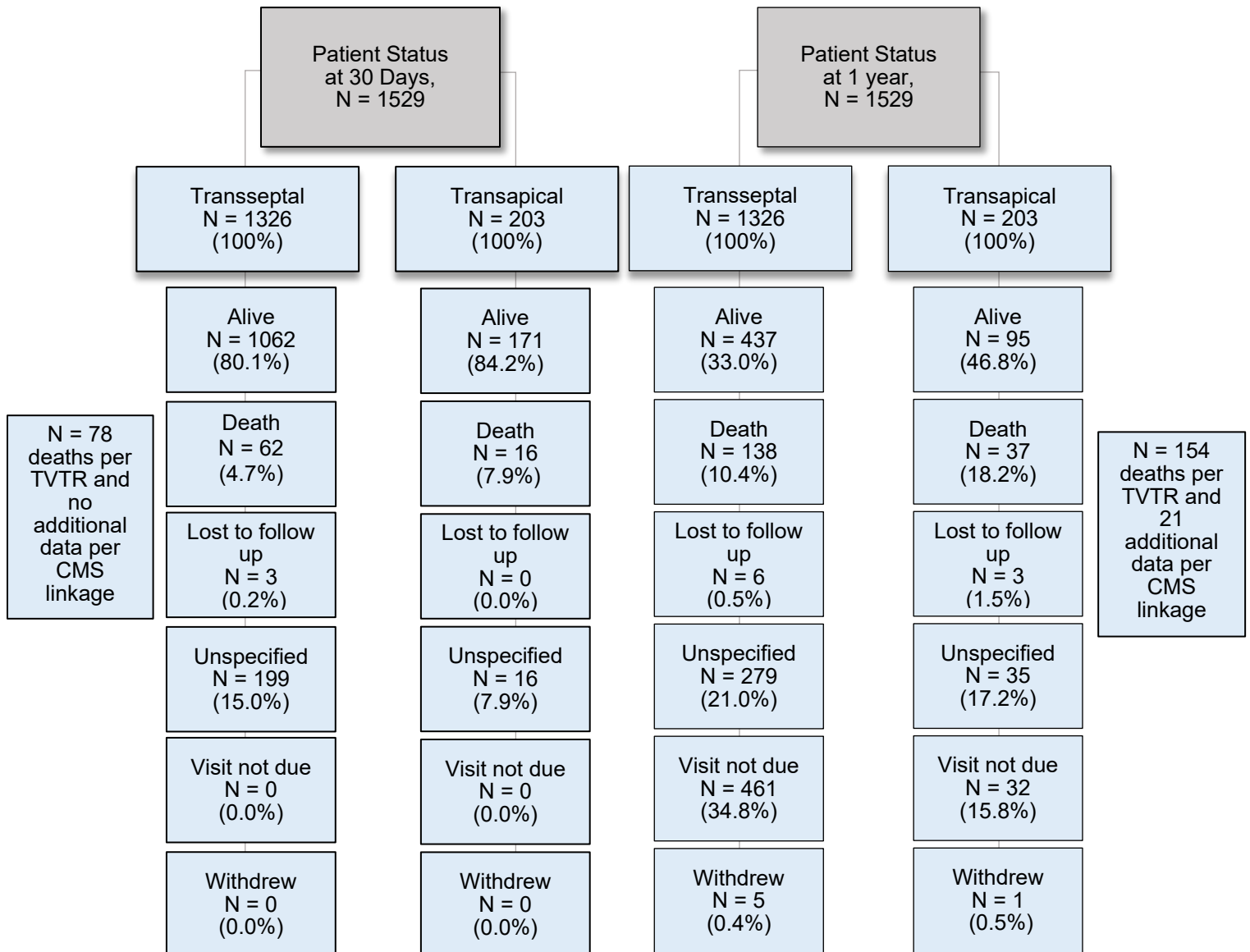
**eFigure 1. Study Flowchart of Patients who Underwent SAPIEN 3 TMViV Procedures**



Abbreviations: TMVR, transcatheter mitral valve replacement; MViR, mitral valve-in-ring; MAC, mitral annular calcification, MViV, mitral valve-in-valve

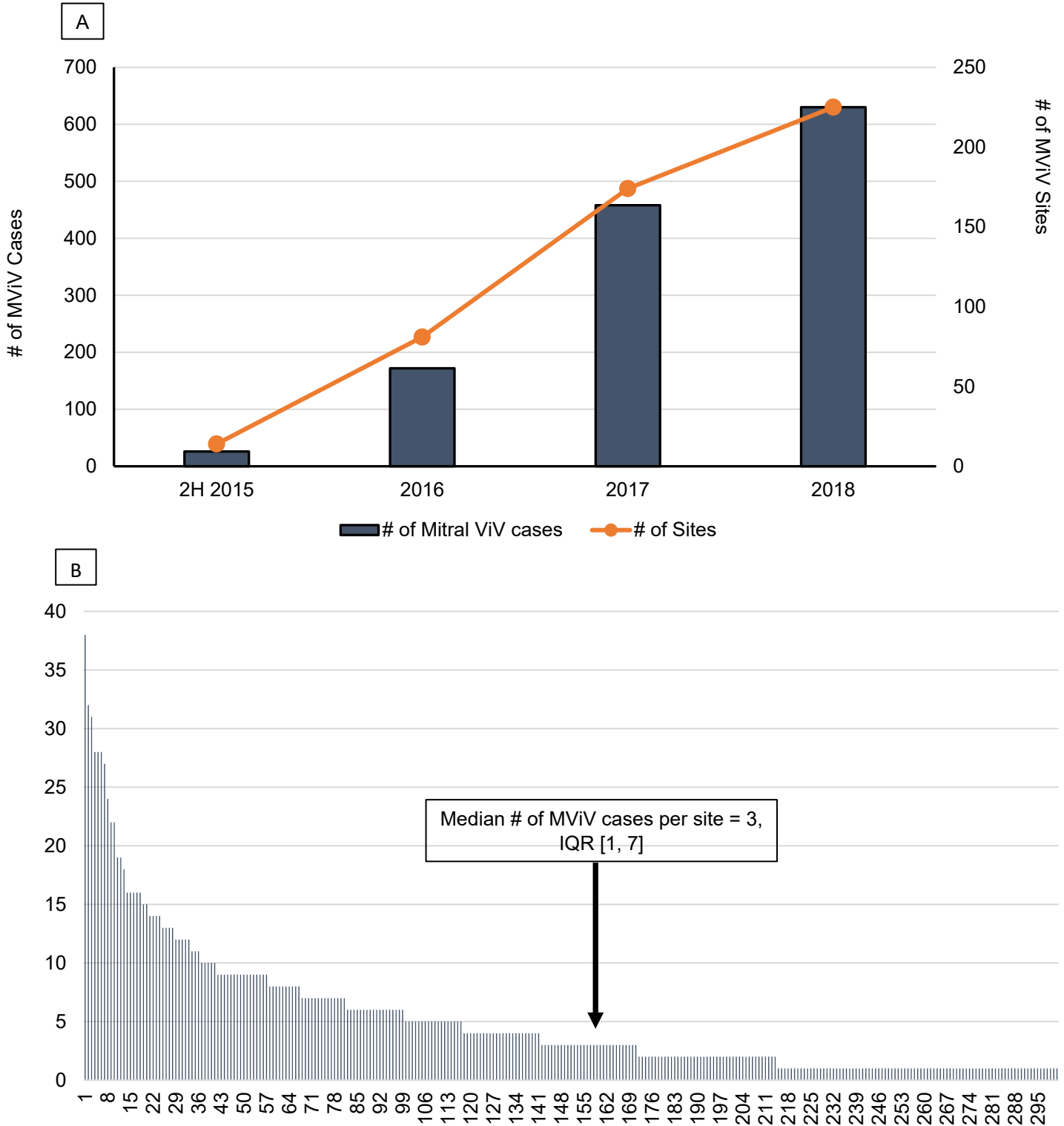
## eFigure 2. Patient Status

The numbers of 1-year follow-up status (visit completed, death, lost to follow-up, unknown, and visit not due) in MVIV patients with transeptal and transapical approaches at 30-day and 1-year are shown respectively. Additional events of death at 1 year was detected by CMS-linkage.



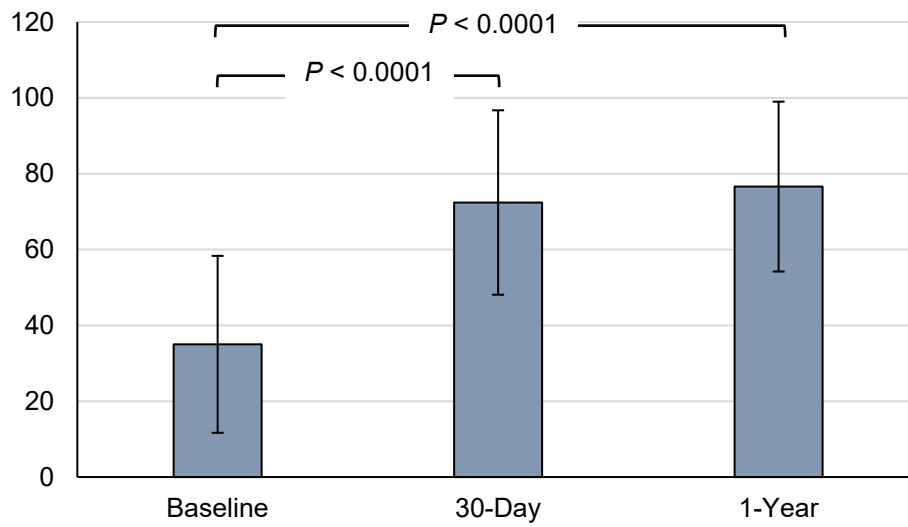
**eFigure 3. Number of SAPIEN 3 MViv Cases and Sites by Year.**

A, Number of mitral ViV cases and number of sites from second half of 2015 to 2018 are presented. B, Number of mitral ViV cases for each site presented.



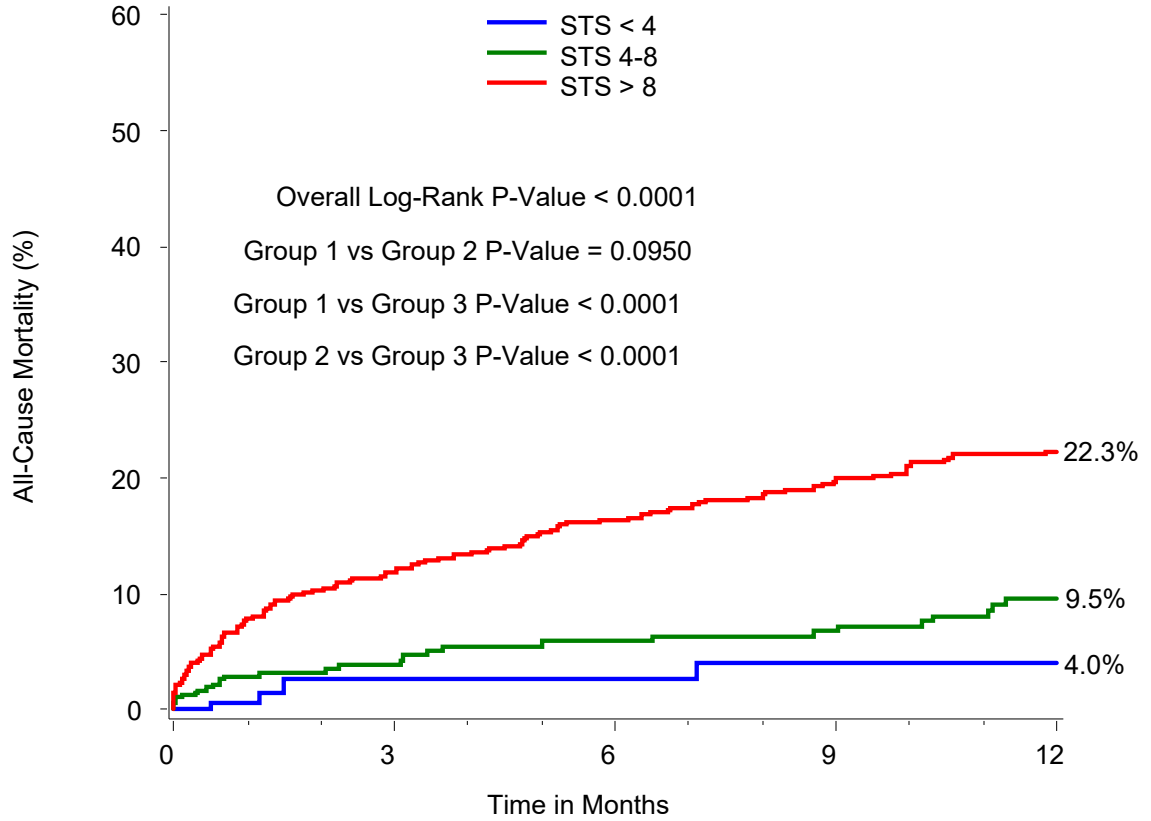
**eFigure 4. Quality of Life Outcomes.**

Quality of life scores, as measured by KCCQ-12, are shown below at baseline, 30-day and 1-year with significant improvements from baseline to 30-day and baseline to 1-year.





**eFigure 5. Cumulative Event Rate of All-Cause Mortality at 1-Year in Patients with MViv Stratified by STS score.**



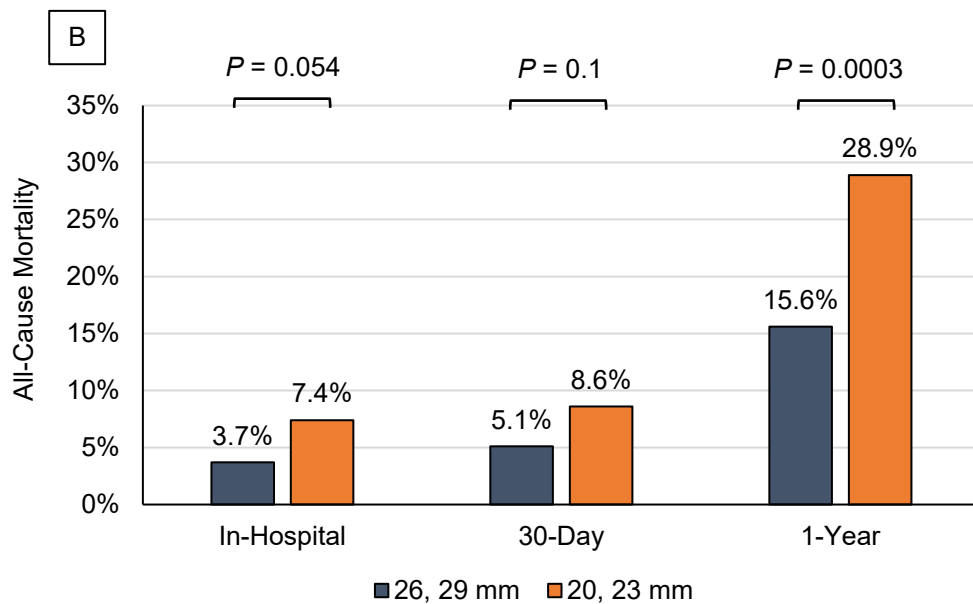
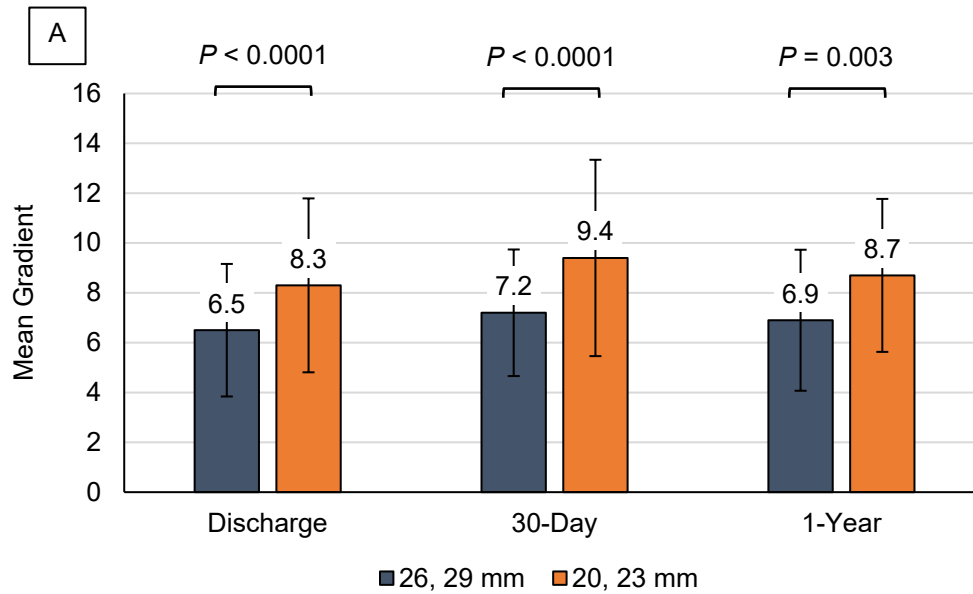
Number at risk:

STS < 4	166	73	70	63	48
STS 4-8	477	243	227	212	168
STS > 8	805	436	396	352	288

### eFigure 6. Mitral Mean Gradient and All-Cause Mortality by Valve Size to 1-Year

A, Mitral mean gradients are presented over time to 1-year in patients who received larger valves (26, 29 mm) compared to smaller valves (20, 23 mm).

B, All-cause mortality are presented over time to 1-year in patients who received larger valves (26, 29 mm) compared to smaller valves (20, 23 mm).



### eFigure 7. 30-Day Mortality by Year

A longitudinal analysis has demonstrated diminished 30-Day mortality in mitral valve-in-valve procedures with each successive year since 2015. A major inflection point roughly coincides with FDA approval of the SAPIEN 3 valve and a transition from TA to TS procedures.

