

**SUPPLEMENTAL MATERIAL****Supplemental Table 1.** Key Inclusion Criteria for Severe AS from the Evolut Low Risk Trial

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<b>Symptomatic Severe AS</b>
<ul style="list-style-type: none"><li>▪ Aortic valve area <math>\leq 1.0 \text{ cm}^2</math> (or aortic valve area index of <math>\leq 0.6 \text{ cm}^2/\text{m}^2</math>), OR mean gradient <math>\geq 40 \text{ mmHg}</math>, OR aortic valve velocity <math>\geq 4.0 \text{ m/s}</math> by transthoracic echocardiography at rest</li></ul>
<b>Asymptomatic Severe AS</b>
<ul style="list-style-type: none"><li>▪ Very severe aortic stenosis with an aortic valve area of <math>\leq 1.0 \text{ cm}^2</math> (or aortic valve area index of <math>\leq 0.6 \text{ cm}^2/\text{m}^2</math>), AND peak aortic velocity <math>\geq 5.0 \text{ m/s}</math> or mean gradient <math>\geq 60 \text{ mmHg}</math> by transthoracic echocardiography at rest, OR</li><li>▪ Aortic valve area of <math>\leq 1.0 \text{ cm}^2</math> (or aortic valve area index of <math>\leq 0.6 \text{ cm}^2/\text{m}^2</math>), AND a mean gradient <math>\geq 40 \text{ mmHg}</math> or aortic valve velocity <math>\geq 4.0 \text{ m/s}</math> by transthoracic echocardiography at rest, AND an exercise tolerance test that demonstrates a limited exercise capacity, abnormal blood pressure response or arrhythmia, OR</li><li>▪ Aortic valve area <math>\leq 1.0 \text{ cm}^2</math> (or aortic valve area index of <math>\leq 0.6 \text{ cm}^2/\text{m}^2</math>), AND mean gradient <math>\geq 40 \text{ mmHg}</math>, or aortic valve velocity <math>\geq 4.0 \text{ m/s}</math> by transthoracic echocardiography at rest, AND a left ventricular ejection fraction <math>&lt; 50\%</math></li></ul>

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**Supplemental Table 2.** Echocardiography Parameters at Discharge for Patients with Moderately-Severe AS and Severe AS

	Moderately-Severe AS (n=113)			Severe AS (n=1300)		
	TAVR (n=66)	SAVR (n=47)	p Value	TAVR (n=661)	SAVR (n=639)	p Value
Aortic valve area, cm <sup>2</sup>	2.4 ± 0.6 [55]	2.0 ± 0.6 [25]	0.004	2.2 ± 0.6 [522]	2.1 ± 0.7 [381]	0.03
Aortic valve area index, cm <sup>2</sup> /m <sup>2</sup>	1.18 ± 0.27 [55]	0.99 ± 0.28 [25]	0.006	1.09 ± 0.28 [522]	1.04 ± 0.32 [379]	0.05
Peak velocity, m/s	1.9 ± 0.5 [64]	2.3 ± 0.6 [44]	<0.001	2.1 ± 0.4 [641]	2.3 ± 0.5 [590]	<0.001
Mean pressure gradient, mm Hg	8.3 ± 3.9 [64]	12.0 ± 5.9 [44]	<0.001	9.8 ± 3.9 [640]	12.3 ± 5.1 [588]	<0.001
Dimensionless velocity index	0.63 ± 0.13 [57]	0.51 ± 0.12 [40]	<0.001	0.59 ± 0.13 [587]	0.52 ± 0.12 [526]	<0.001
Left ventricular ejection fraction, %	65.3 ± 9.6	64.3 ± 10.0 [43]	0.60	66.6 ± 6.9 [657]	64.7 ± 7.8 [580]	<0.001
Stroke volume, ml	81.2 ± 21.3 [55]	71.8 ± 21.0 [25]	0.07	78.9 ± 20.6 [528]	76.9 ± 22.0 [383]	0.16
Stroke volume index, ml/m <sup>2</sup>	39.4 ± 9.6 [55]	35.4 ± 9.6 [25]	0.09	39.7 ± 9.3 [528]	39.0 ± 11.0 [381]	0.29
Lateral E/e' ratio	15.0 ± 6.8 [46]	13.6 ± 5.5 [27]	0.37	15.9 ± 6.6 [441]	16.2 ± 6.3 [423]	0.54
Total aortic regurgitation (%)			<0.001			<0.001
None	20 (30.8)	34 (81.0)		173 (27.1)	410 (74.3)	
Trace	32 (49.2)	6 (14.3)		275 (43.1)	123 (22.3)	
Mild/Mild to Moderate	13 (20.0)	2 (4.8)		180 (28.2)	18 (3.3)	
Moderate/Moderate to Severe	0 (0.0)	0 (0.0)		8 (1.3)	1 (0.2)	
Severe	0 (0.0)	0 (0.0)		2 (0.3)	0 (0.0)	

Data shown as mean ± standard deviation, mean ± standard deviation [no. of patients], or no. of patients (%).

**Supplemental Table 3.** Clinical Outcomes at 30 Days for Patients with Moderately-Severe AS and Severe AS

	Moderately-Severe AS (n=113)			Severe AS (n=1301)		
	TAVR (n=66)	SAVR (n=47)	p Value	TAVR (n=664)	SAVR (n=637)	p Value
All-Cause Mortality or Disabling Stroke	2 (3.0)	2 (4.3)	0.75	3 (0.5)	15 (2.4)	0.003
All-Cause Mortality	1 (1.5)	1 (2.1)	0.81	2 (0.3)	7 (1.1)	0.08
Reintervention	1 (1.5)	0 (0.0)	0.40	1 (0.2)	2 (0.3)	0.53
All Stroke and TIA	4 (6.1)	1 (2.1)	0.31	25 (3.8)	27 (4.3)	0.68
Bleed	3 (4.5)	3 (6.4)	0.67	45 (6.8)	68 (10.7)	0.01
Life Threatening or Disabling	1 (1.5)	2 (4.3)	0.37	17 (2.6)	49 (7.7)	<0.001
Major Bleed	2 (3.0)	1 (2.1)	0.77	28 (4.2)	20 (3.2)	0.30
Major Vascular Complication	2 (3.0)	1 (2.1)	0.77	25 (3.8)	20 (3.2)	0.54
Acute Kidney Injury	2 (3.0)	5 (10.6)	0.10	13 (2.0)	64 (10.1)	<0.001
Myocardial Infarction	0 (0.0)	2 (4.3)	0.09	6 (0.9)	7 (1.1)	0.72
Valve Endocarditis	0 (0.0)	0 (0.0)	NA	0 (0.0)	1 (0.2)	0.30
Valve Thrombosis	1 (1.5)	0 (0)	0.40	0 (0.0)	0 (0)	NA
Valve Thrombosis (subclinical)	0 (0.0)	0 (0.0)	NA	1 (0.2)	0 (0.0)	0.33
Permanent Pacemaker Implant *	13 (19.7)	1 (2.1)	0.006	112 (16.9)	40 (6.3)	<0.001
Permanent Pacemaker Implant †	13 (20.0)	1 (2.3)	0.008	112 (17.5)	40 (6.5)	<0.001
Atrial Fibrillation	3 (4.5)	12 (25.5)	0.001	52 (7.8)	230 (36.2)	<0.001
Coronary Artery Obstruction	1 (1.5)	0 (0.0)	0.40	5 (0.8)	2 (0.3)	0.28
Composite Event §	5 (7.6)	3 (6.4)	0.81	34 (5.1)	71 (11.2)	<0.001

Data shown as no. of patients with an event (%), where Kaplan-Meier estimates are provided as percentages. The corresponding p values were calculated by the log-rank test for all data through 30-days. \* Subjects with pacemaker or implantable cardioverter

defibrillator (ICD) at baseline are included. † Subjects with pacemaker or ICD at baseline are excluded. § Composite event includes all-cause mortality, disabling stroke, life threatening or disabling bleeding, major vascular complication, acute kidney injury stage 2 or 3. TIA= transient ischemic attack

**Supplemental Table 4.** Univariate Cox Proportional Hazards Model for All-Cause Mortality at 24-Months for Pooled Moderately-Severe AS and Severe AS Patients

	Hazard Ratio (95% CI)	p Value
<b>Baseline Clinical Characteristics</b>		
Moderately-Severe vs Severe AS	1.20 (0.48, 3.02)	0.69
TAVR vs SAVR	0.78 (0.46, 1.33)	0.37
Age, years	0.99 (0.95, 1.04)	0.82
Female, %	0.77 (0.43, 1.38)	0.38
STS-PROM, %	1.36 (0.93, 2.01)	0.12
COPD	1.16 (0.58, 2.3)	0.67
Hypertension	1.94 (0.77, 4.87)	0.16
Peripheral Arterial Disease	0.71 (0.22, 2.27)	0.56
Cerebrovascular Disease	1.01 (0.43, 2.35)	0.99
NYHA Class III/IV	1.28 (0.72, 2.28)	0.40
Diabetes Mellitus	1.21 (0.69, 2.12)	0.50
Previous Myocardial Infarction	2.07 (0.88, 4.83)	0.09
Previous CABG	1.68 (0.41, 6.89)	0.47
Previous PCI	1.27 (0.62, 2.60)	0.51
Pre-Existing Permanent Pacemaker Implant	1.64 (0.51, 5.26)	0.40
Atrial Fibrillation/ Atrial Flutter	1.56 (0.80, 3.04)	0.19
SYNTAX Score I	1.04 (0.98, 1.11)	0.17
Vascular Disease (Peripheral Arterial Disease + Cerebrovascular Disease)	0.97 (0.48, 1.99)	0.94
CAD (CABG + PCI + Myocardial Infarction)	1.42 (0.75, 2.70)	0.28
Aortic Valve Calcium Volume, mm <sup>3</sup>	1.00 (0.99, 1.00)	0.98

<b>Baseline Echocardiography</b>		
Left ventricular ejection fraction, % (continuous)	0.98 (0.95, 1.00)	0.10
Left ventricular ejection fraction <50% (vs ≥50%)	1.81 (0.65, 5.01)	0.25
Aortic valve area index ≤ 0.6 cm <sup>2</sup> /m <sup>2</sup> (vs > 0.6 cm <sup>2</sup> /m <sup>2</sup> )	0.66 (0.23, 1.83)	0.42
Stroke volume, ml	1.01 (0.99, 1.02)	0.23
Lateral E/e' ratio	1.04 (0.99, 1.08)	0.06
Mitral regurgitation ≥ Moderate	1.90 (0.46, 7.78)	0.38
Aortic regurgitation ≥ Moderate	0.46 (0.06, 3.33)	0.44

AS=aortic stenosis, CABG=coronary artery bypass grafting, COPD=chronic obstructive pulmonary disease, MI=myocardial infarction, PCI=percutaneous coronary intervention, SAVR=surgical aortic valve replacement, STS-PROM= The Society of Thoracic Surgeons Predicted Risk of Mortality, TAVR=transcatheter aortic valve replacement