2019 euroPCR

# The impact of procedural complications on recovery and quality of life after TAVR or SAVR in patients at low risk of mortality following surgery

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For the Evolut Low Risk Investigators

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❑ I do not have any potential conflict of interest to report:

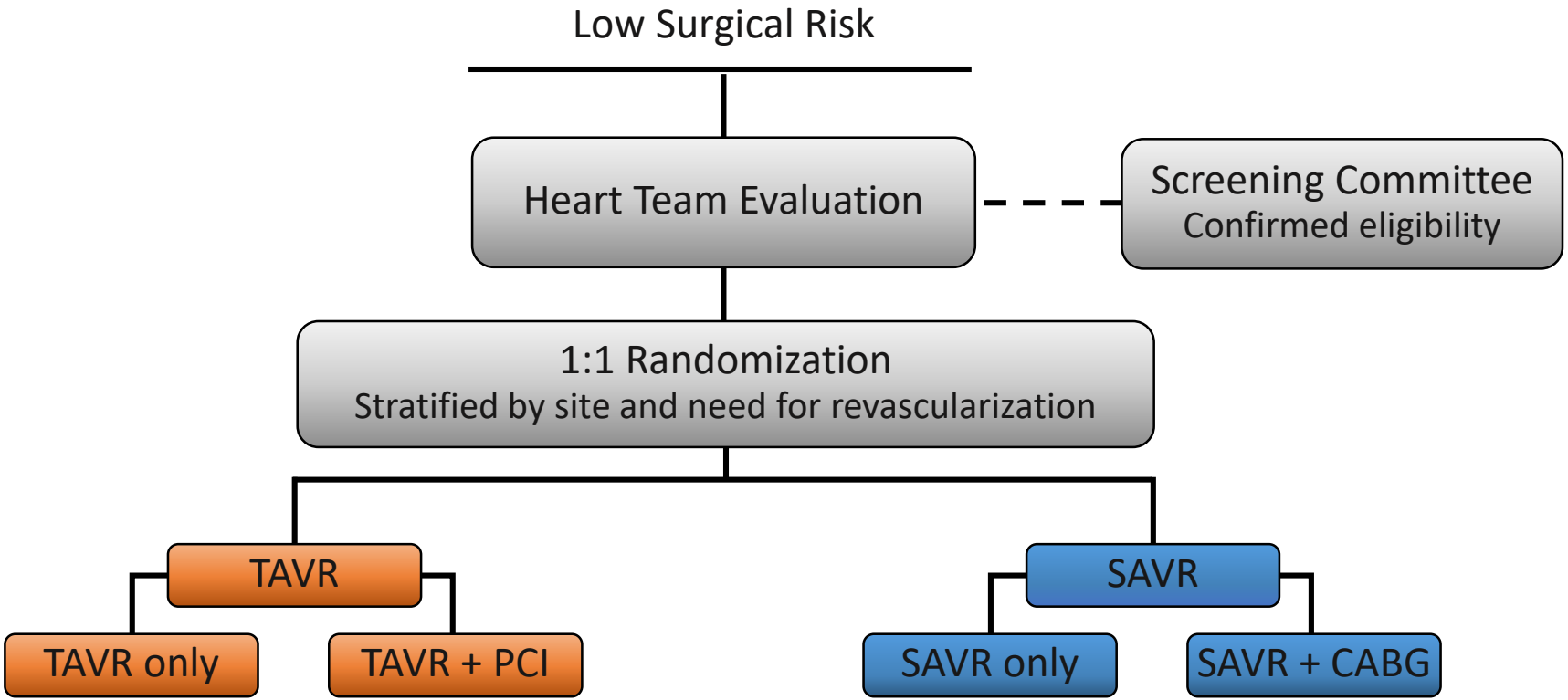
**X I have the following potential conflicts of interest to report:**

- Consultant to Medtronic and member of advisory board for Medtronic

# Background

- The Evolut low risk trial showed that TAVR was noninferior to surgery for the primary endpoint of death or disabling stroke at 2 years.
- Lower risk patients tend to be younger and more active than patients at higher surgical risk.
- This analysis examines periprocedural complications and the potential impact of these events on recovery and quality of life.

# Study design



# Study endpoints

**primary safety and effectiveness endpoint**

All-cause mortality or disabling stroke at 2 years

## hierarchical powered secondary endpoints

Noninferiority

- Mean gradient at 1 year
- EOA at 1 year
- Change in NYHA class from baseline to 1 year
- Change in KCCQ score from baseline to 1 year

Superiority

- Mean gradient at 1 year
- EOA at 1 year
- Change in KCCQ score from baseline to 30 days

## other secondary endpoints

- 30-day safety composite of
  - All-cause mortality
  - Disabling stroke
  - Life-threatening bleeding
  - Major vascular complications
  - Stage 2 or 3 acute kidney injury
- New pacemaker implantation at 30 days
- Heart failure rehospitalizations at 1 year
- Aortic-valve reintervention at 1 year
- Moderate/severe AR at 1 year
- All stroke at 1 year
- Life-threatening bleeding at 1 year

# Study timeline and valves studied

| 2016 | 2017 | 2018 |
|---|---|---|

First Patient Randomized
Mar. 28, 2016

*Last Patient Randomized
Nov. 27, 2018

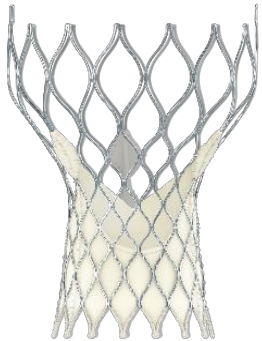
CoreValve 31 mm

Evolut R: 23, 26, 29

Added Evolut R 34 mm

Evolut PRO: 23, 26, 29 mm

Primary Endpoint Assessment
Dec. 27, 2018



| CoreValve 31 = 3.6% | Evolut R = 74.1% | Evolut PRO = 22.3% |
|---|---|---|

Vascular access
- 99% transfemoral
- 0.6% subclavian
- 0.4% direct aortic

*For this analysis

# Baseline characteristics

| Mean ± SD or | TAVR (N=725) | SAVR (N=678) |
|---|---|---|
| Age, years | 74.1 ± 5.8 | 73.6 ± 5.9 |
| Female sex | 36.0 | 33.8 |
| Body surface area, $m^2$ | 2.0 ± 0.2 | 2.0 ± 0.2 |
| STS PROM, % | 1.9 ± 0.7 | 1.9 ± 0.7 |
| NYHA Class III or IV | 25.1 | 28.5 |
| Hypertension | 84.8 | 82.6 |
| Chronic lung disease (COPD) | 15.0 | 18.0 |
| Cerebrovascular disease | 10.2 | 11.8 |
| Peripheral arterial disease | 7.5 | 8.3 |

# Baseline cardiac risk factors

| Mean ± SD or | TAVR (N=725) | SAVR (N=678) |
|---|---|---|
| SYNTAX Score | 1.9 ± 3.7 | 2.1 ± 3.9 |
| Permanent pacemaker, CRT or ICD | 3.2 | 3.8 |
| Prior CABG | 2.5 | 2.1 |
| Previous PCI | 14.2 | 12.8 |
| Previous myocardial infarction | 6.6 | 4.9 |
| Atrial fibrillation/flutter | 15.4 | 14.5 |
| Aortic valve gradient, mm Hg | 47.0 ± 12.1 | 46.6 ± 12.2 |
| Aortic Valve area, $cm^2$ | 0.8 ± 0.2 | 0.8 ± 0.2 |
| Left ventricular ejection fraction, % | 61.7 ± 7.9 | 61.9 ± 7.7 |

# Procedural characteristics

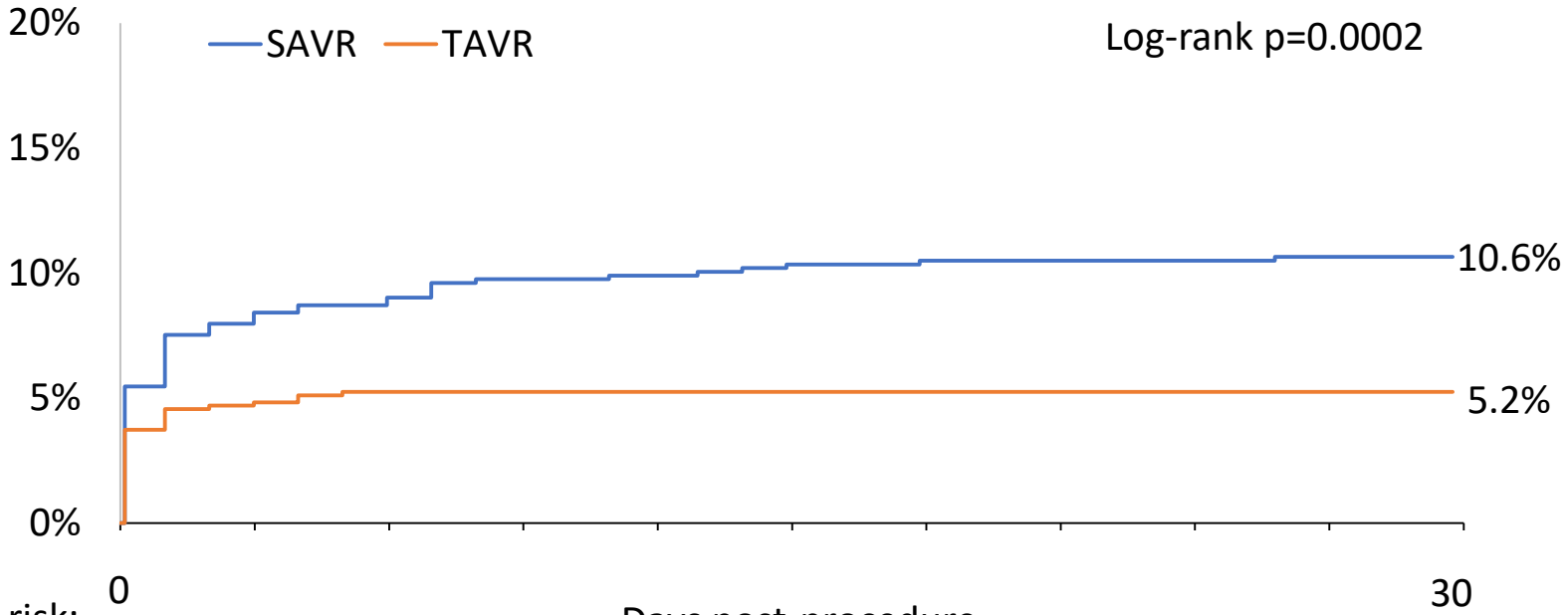
## TAVR

| Mean ± SD or % | N=724 |
|---|---|
| General anesthesia | 56.9 |
| Iliofemoral access | 99.0 |
| Embolic protection device used | 1.2 |
| Pre-TAVR balloon dilation | 34.9 |
| Post-TAVR balloon dilation | 31.3 |
| More than 1 valve used | 1.2 |
| Repositioned (Evolut/PRO only) | 37.3 |
| Staged/concomitant PCI | 6.9 |

## SAVR

| Mean ± SD or % | N=678 |
|---|---|
| Minimally invasive approach | 33.8% |
| Total cross clamp time, min | 68.7±29.0 |
| Valve size implanted | |
| 19 or 21 mm | 21.9 |
| 23 mm | 31.3 |
| 25 mm | 28.0 |
| 27 or 29 mm | 7.7 |
| Other | 11.1 |
| Concomitant CABG | 13.6 |

# 30-day composite safety endpoint




Number at risk:

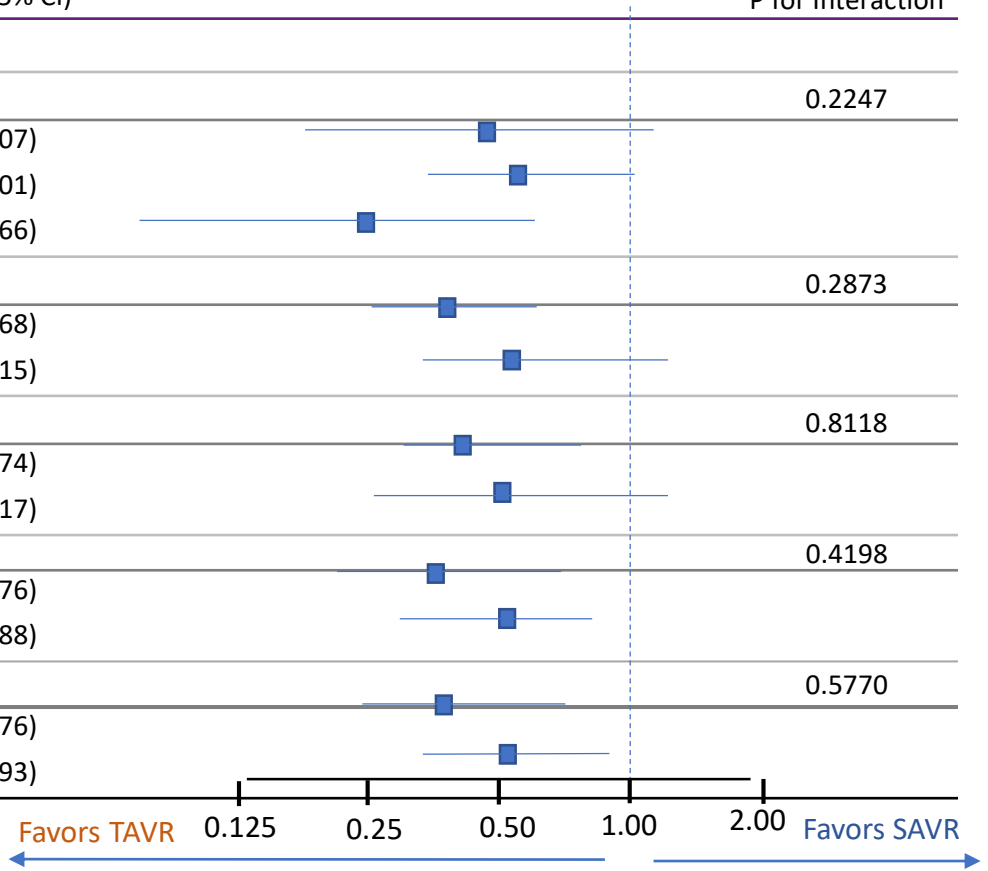
| | | | |
|---|---|---|---|
| TAVR | 725 | | 685 |
| SAVR | 678 | | 601 |

# 30-day clinical event rates

| Kaplan-Meier rates n events (%) | TAVR (*N* = 725) | SAVR (*N* = 678) | *P*-value |
|---|---|---|---|
| Secondary composite endpoint | 38 (5.2) | 72 (10.6) | <0.001 |
| All-cause mortality | 3 (0.4) | 8 (1.2) | 0.12 |
| Life threatening or disabling bleeding | 17 (2.3) | 50 (7.4) | <.0001 |
| Disabling stroke | 3 (0.4) | 11 (1.6) | 0.04 |
| Major vascular complication | 27 (3.7) | 21 (3.1) | 0.52 |
| Acute kidney injury: stage 2 or 3 | 6 (0.8) | 18 (2.7) | 0.01 |
| Coronary artery obstruction | 6 (0.8) | 2 (0.3) | 0.21 |
| Reintervention | 2 (0.3) | 2 (0.3) | 0.94 |
| All stroke | 24 (3.3) | 22 (3.3) | 0.94 |
| New permanent pacemaker | 125 (17.8) | 40 (6.2) | <.0001 |
| Valve embolization | 2 (0.3) | 0 (0.0) | 0.42 |
| Procedural conversion | 8 (1.1) | 3 (0.4) | 0.18 |
| VARC-2 safety composite | 61 (8.4) | 85 (12.6) | 0.01 |

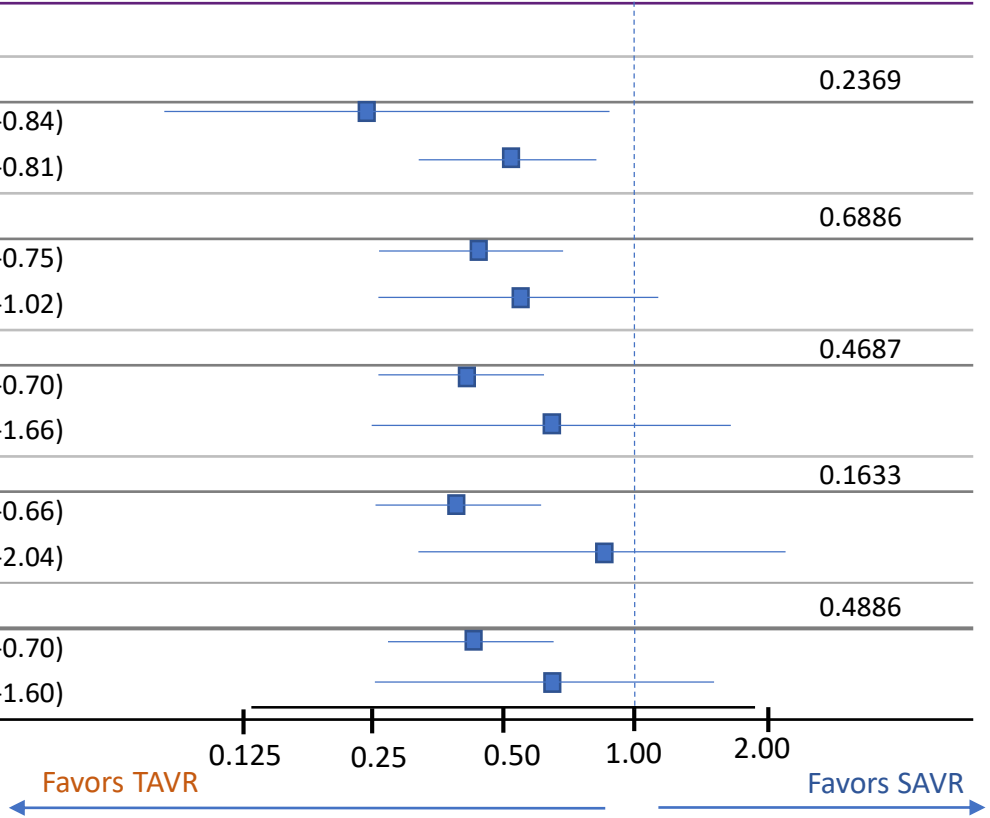
# Subgroup analysis for 30-day composite safety endpoint

| Subgroup | TAVR | SAVR | Hazard Ratio (95% CI) | P for Interaction |
|---|---|---|---|---|
| | *n/N (% KM rate at 1 Year)* | | | |
| Age, years | | | | 0.2247 |
| ≤ 69 | 8/156 (5.1%) | 18/164 (11.0%) | 0.46 (0.20-1.07) | |
| 70-79 | 26/442 (5.9%) | 38/399 (9.5%) | 0.61 (0.37-1.01) | |
| ≥80 | 4/127 (3.1%) | 16/115 (13.9%) | 0.22 (0.07-0.66) | |
| Sex | | | | 0.2873 |
| Male | 20/464 (4.3%) | 47/449 (10.5%) | 0.41 (0.24-0.68) | |
| Female | 18/261 (6.9%) | 25/229 (10.9%) | 0.63 (0.34-1.15) | |
| NYHA Class | | | | 0.8118 |
| I/II | 29/543 (5.3%) | 54/485 (11.1%) | 0.47 (0.30-0.74) | |
| III/IV | 9/182 (4.9%) | 18/193 (9.4%) | 0.53 (0.24-1.17) | |
| LVEF, % | | | | 0.4198 |
| < 60 | 12/183 (6.6%) | 27/164 (16.5%) | 0.39 (0.20-0.76) | |
| ≥ 60 | 26/542 (4.8%) | 45/513 (8.8%) | 0.54 (0.33-0.88) | |
| STS score | | | | 0.5770 |
| ≤ 2.0 | 17/409 (4.2%) | 37/389 (9.5%) | 0.43 (0.24-0.76) | |
| > 2.0 | 21/316 (6.6%) | 35/289 (12.1%) | 0.54 (0.32-0.93) | |

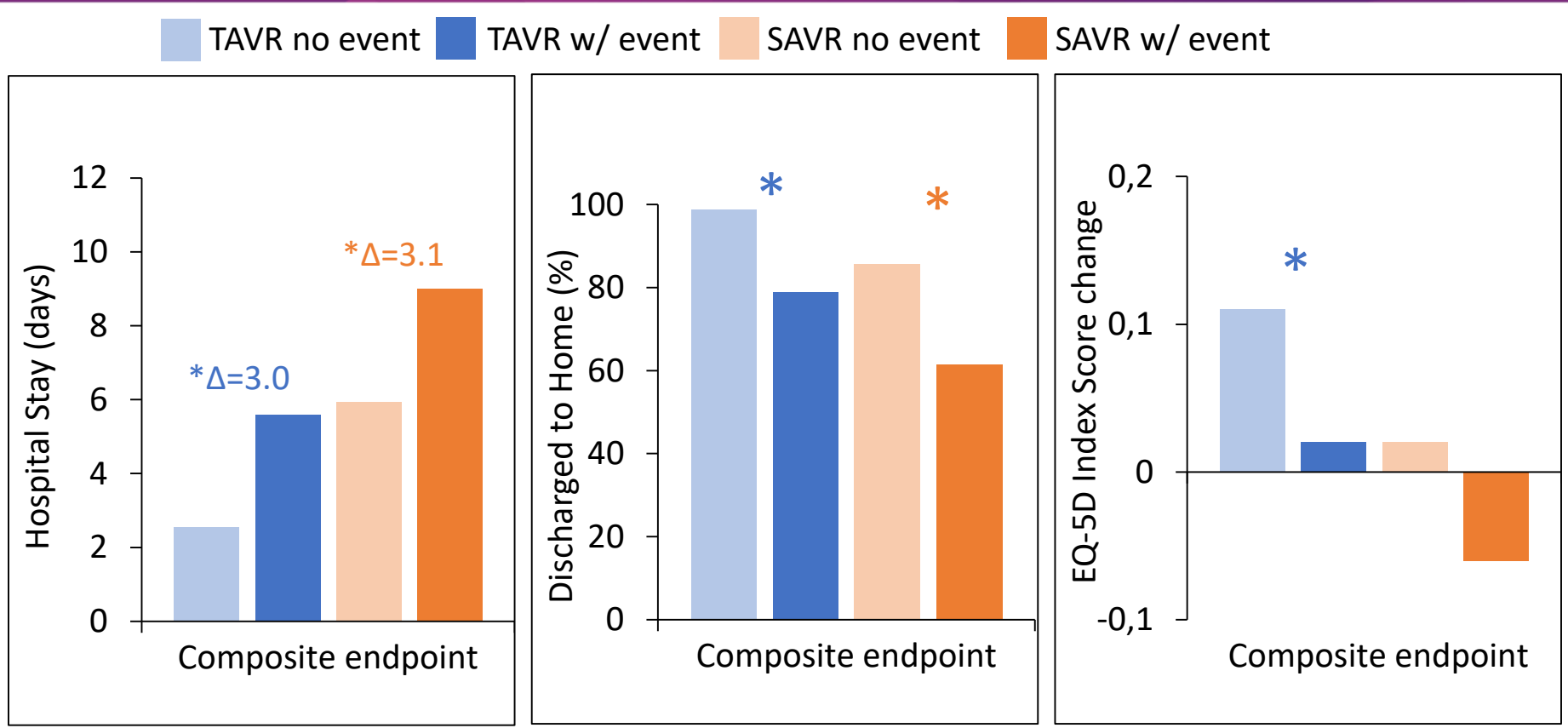


# Subgroup analysis for 30-day composite safety endpoint

| Subgroup | TAVR | SAVR | Hazard Ratio (95% CI) | P for Interaction |
|---|---|---|---|---|
| | *n/N (% KM rate at 1 Year)* | | | |
| Hypertension | | | | 0.2369 |
| No | 3/110 (2.7%) | 13/118 (11.1%) | 0.24 (0.07-0.84) | |
| Yes | 35/614 (5.7%) | 59/559 (10.6%) | 0.53 (0.35-0.81) | |
| Diabetes | | | | 0.6886 |
| No | 23/497 (4.6%) | 47/471 (10.0%) | 0.46 (0.28-0.75) | |
| Yes | 15/228 (6.6%) | 25/207 (12.1%) | 0.54 (0.28-1.02) | |
| COPD | | | | 0.4687 |
| No | 28/591 (4.7%) | 56/532 (10.6%) | 0.44 (0.28-0.70) | |
| Yes | 7/104 (6.7%) | 12/117 (10.3%) | 0.65 (0.26-1.66) | |
| Prior PCI | | | | 0.1633 |
| No | 28/622 (4.5%) | 62/591 (10.5%) | 0.42 (0.27-0.66) | |
| Yes | 10/103 (9.7%) | 10/87 (11.5%) | 0.85 (0.35-2.04) | |
| Prior A Fib/flutter | | | | 0.4886 |
| No | 29/611 (4.7%) | 60/578 (10.4%) | 0.45 (0.29-0.70) | |
| Yes | 8/111 (7.2%) | 11/98 (11.2%) | 0.64 (0.26-1.60) | |

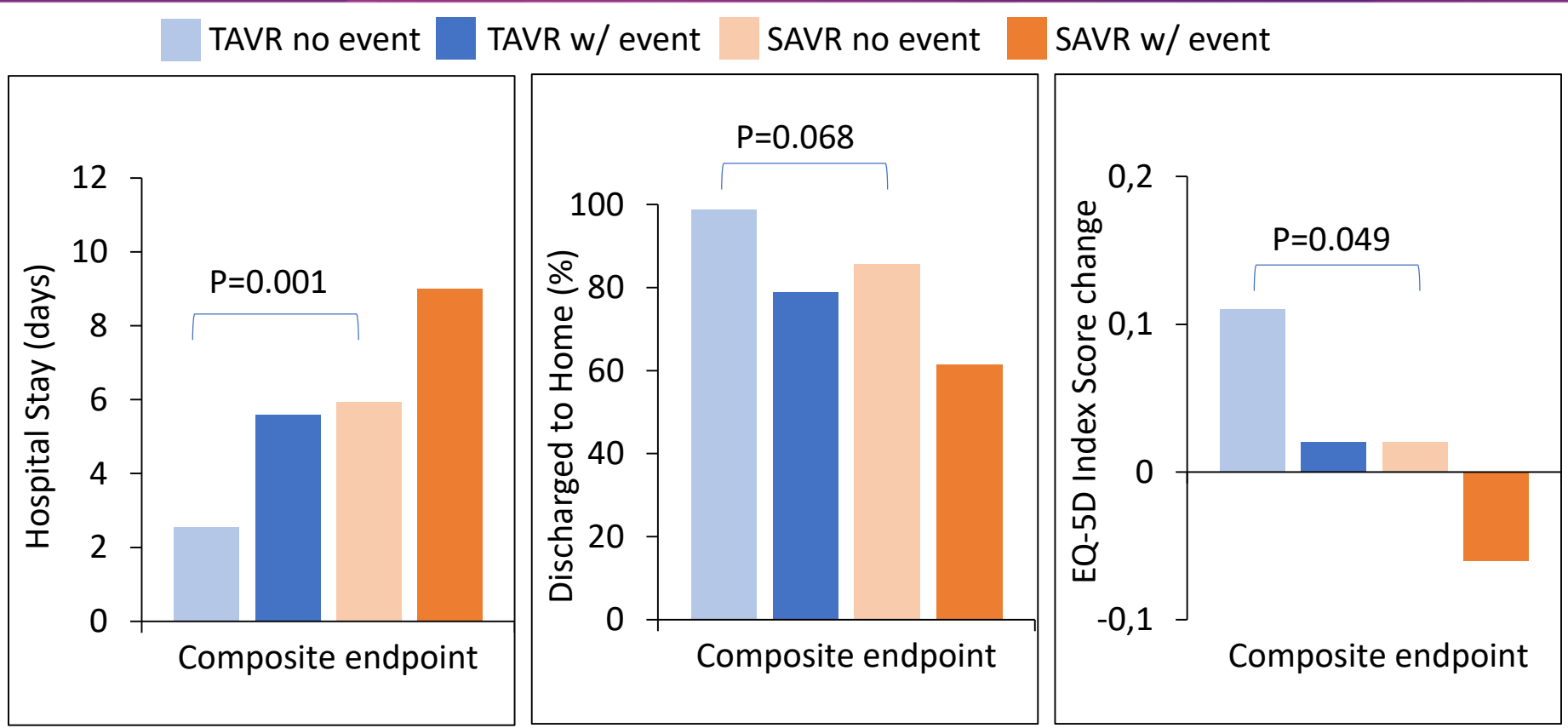


# Impact of early events on duration in hospital discharge to home and QoL




* p-value < 0.05

# Impact of early events on duration in hospital discharge to home and QoL



# Summary

- In the Evolut Low Risk trial, TAVR versus SAVR resulted in
  - Significantly lower rate of the composite safety endpoint at 30 days
  - Driven by lower rates of life-threatening or disabling bleeding, AKI stage 2-3, and disabling stroke
- Patients with a procedural complication had
  - Significantly longer length of hospitalization
  - Significantly less often discharged home
  - Less improvement in quality of life
- In comparing TAVR vs SAVR patients with no procedural complication the hospital LOS remained less and the proportion discharged home was greater for TAVR than SAVR