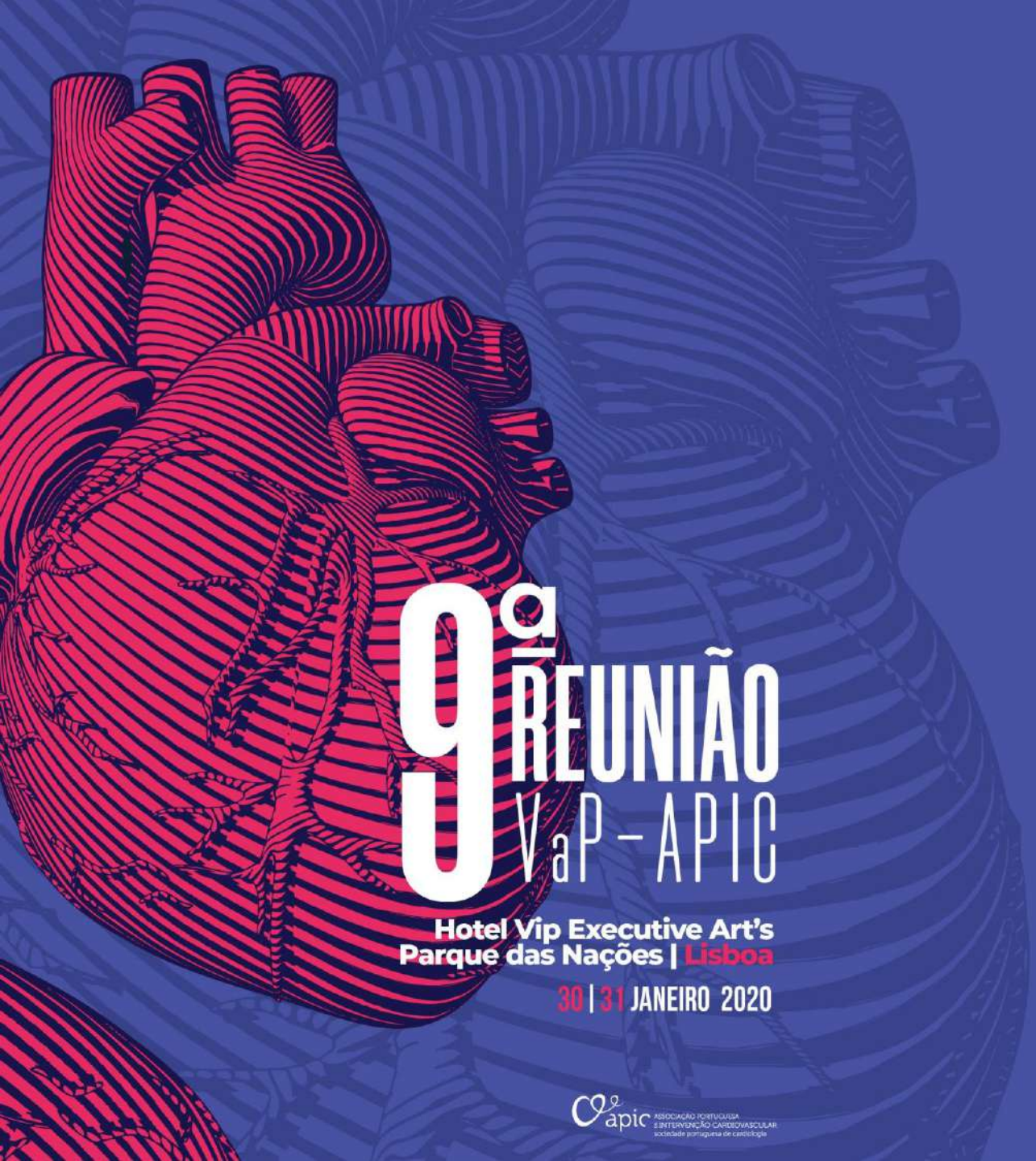

Alta precoce após TAVI

- já é a regra ou ainda a excepção?

TAVI early discharge - rule or exception?

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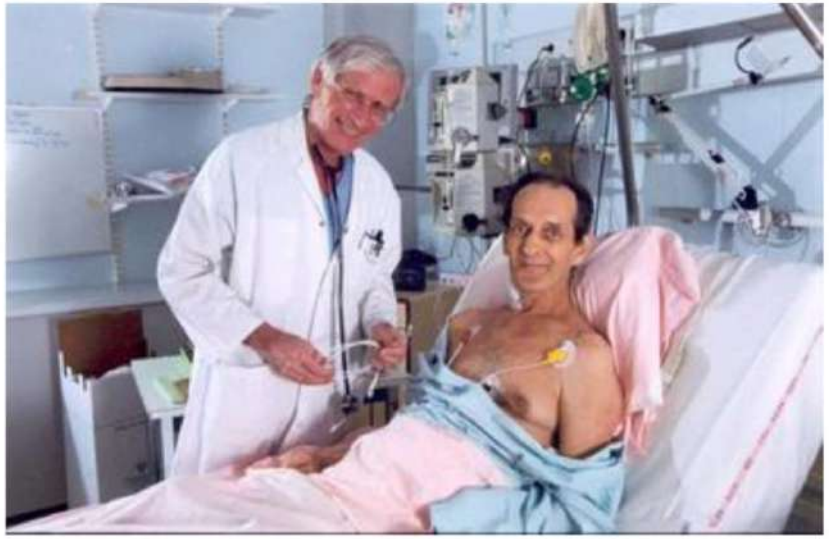
Hospital de Santa Cruz

TAVI Evolution



FIM TAVI in 2002
Prof. Cribrier
Patient Age 57 years

Two weeks after TAVI in 2019
Mick Jagger
Patient Age 76

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TAVI Evolution

2007 — 2019

	Edwards Sapien THV	Edwards Sapien XT	Symentis Acurate TA	Abbott/St Jude Portico	Boston Scientific Lotus	Edwards Sapien 3	New Valve Technology Allegra	Medtronic Evolut R	Edwards Centera
									
Frame/(deployment)	Balloon-expandable stainless Steel	Balloon-expandable cobalt chromium	Self-expanding nitinol	Self-expanding nitinol	Mechanically-expandable Braided Nitinol	Balloon-expandable cobalt chromium alloy	Self-expanding nitinol	Self-expanding nitinol	Self-expanding nitinol
Valve	Bovine pericardium	Bovine pericardium	Porcine pericardium	Bovine pericardium	Bovine pericardium	Bovine pericardium	Bovine pericardium	Porcine pericardium	Bovine pericardium
Seal/skirt/cuff	None	Polyethylene terephtalate (PET) fabric skirt	Polyethylene terephtalate	Porcine	Polycarbonate - based urethane material	Polyethylene terephtalate fabric cuff	None	None	Polyethylene terephtalate
Access	TF, TA	TF, TA	TA	TF, Tsc, TAo	TF	TF, TA, TAo	TF	TF	TF
Anti Calcification Treatment	None	Thermafix process™	None (glutaraldehyde Fixation)	Linx AC technology™	T-Guard™	Thermafix process™	None	Alpha-amino Oleic Acid	Thermafix process™

	Medtronic CoreValve	Jena Valve	Symentis Acurate Neo	Medtronic Evolut Pro	Boston Scientific Lotus Edge
					
Frame	Self-expanding nitinol	Self-expanding nitinol	Self-expanding nitinol	Self-expanding nitinol	Mechanically-expandable braided nitinol
Valve	Porcine pericardium	Porcine pericardium	Porcine pericardium	Porcine pericardium	Bovine pericardium
Seal/skirt/cuff	None	None	Polyethylene terephtalate	Porcine pericardium	Polycarbonate - based urethane material
Access	TF, TA, DA	TA	TF, TA	TF	TF
Anti Calcification Treatment	none (glutaraldehyde Fixation)	none (glutaraldehyde Fixation)	BioFix™	Alpha-amino Oleic Acid	T-Guard™

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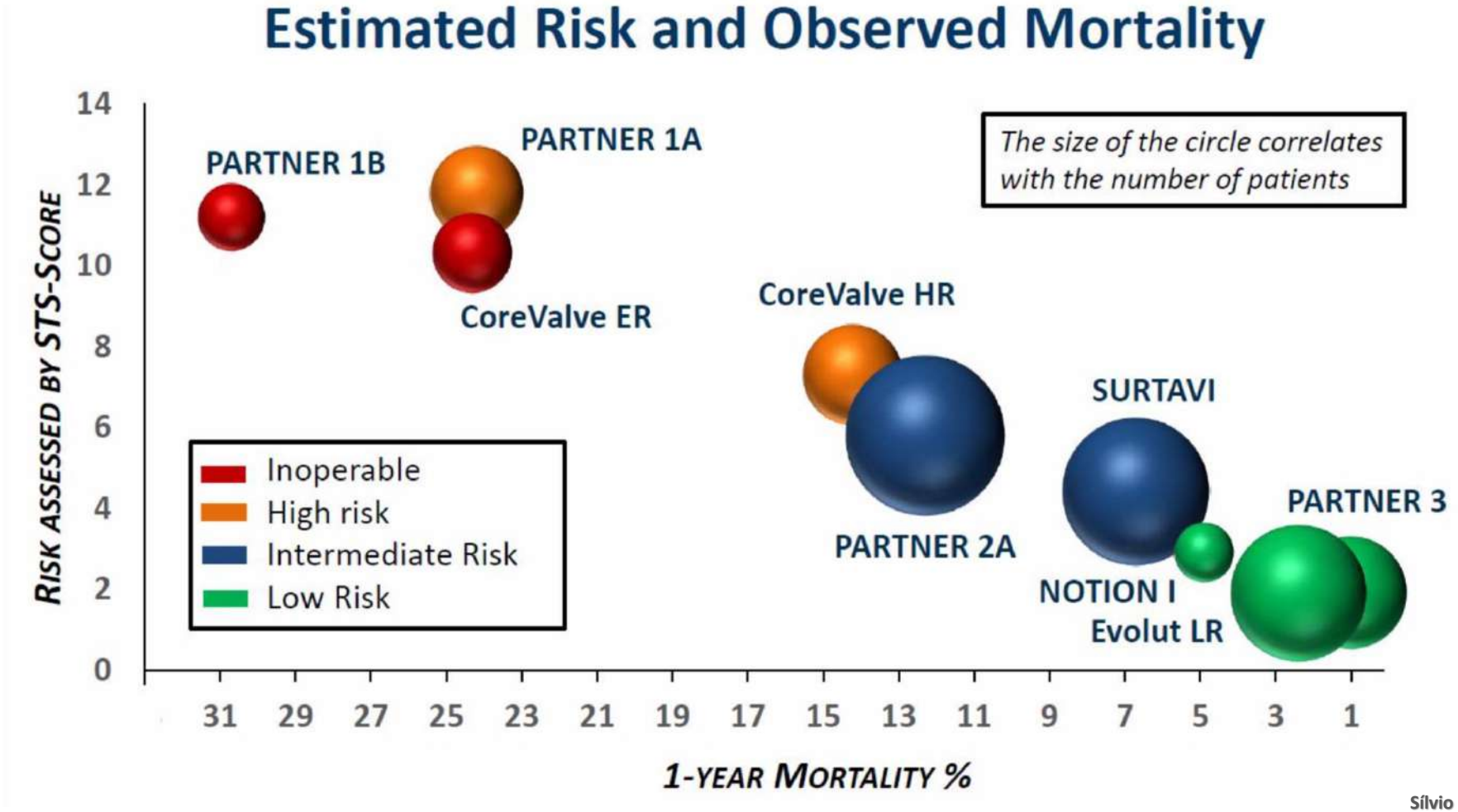
TAVI Evolution



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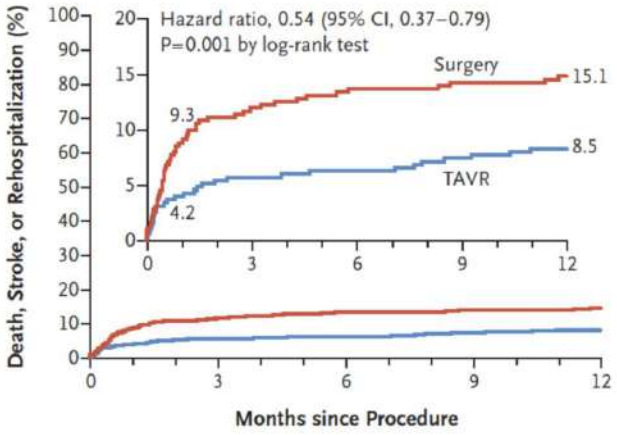
- Low Risk Trials

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Transcatheter Aortic-Valve Replacement with a Balloon-Expandable Valve in Low-Risk Patients

M.J. Mack, M.B. Leon, V.H. Thourani, R. Makkar, S.K. Kodali, M. Russo, S.R. Kapadia, S.C. Malaisrie, D.J. Cohen, P. Pibarot, J. Leipsic, R.T. Hahn, P. Blanke, M.R. Williams, J.M. McCabe, D.L. Brown, V. Babaliaros, S. Goldman, W.Y. Szeto, P. Genereux, A. Pershad, S.J. Pocock, M.C. Alu, J.G. Webb, and C.R. Smith, for the PARTNER 3 Investigators*



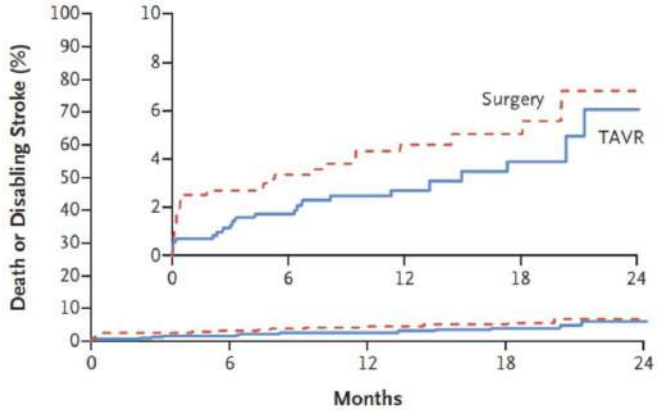
No. at Risk						
Surgery	454	408	390	381	377	374
TAVR	496	475	467	462	456	451

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Transcatheter Aortic-Valve Replacement with a Self-Expanding Valve in Low-Risk Patients

Jeffrey J. Popma, M.D., G. Michael Deeb, M.D., Steven J. Yakubov, M.D., Mubashir Mumtaz, M.D., Hemal Gada, M.D., Daniel O'Hair, M.D., Tanvir Bajwa, M.D., John C. Heiser, M.D., William Merhi, D.O., Neal S. Kleiman, M.D., Judah Askew, M.D., Paul Sorajja, M.D., Joshua Rovin, M.D., Stanley J. Chetcuti, M.D., David H. Adams, M.D., Paul S. Teirstein, M.D., George L. Zorn III, M.D., John K. Forrest, M.D., Didier Tchétché, M.D., Jon Resar, M.D., Antony Walton, M.D., Nicolo Piazza, M.D., Ph.D., Basel Ramlawi, M.D., Newell Robinson, M.D., George Petrossian, M.D., Thomas G. Gleason, M.D., Jae K. Oh, M.D., Michael J. Boulware, Ph.D., Hongyan Qiao, Ph.D., Andrew S. Mugglin, Ph.D., and Michael J. Reardon, M.D., for the Evolut Low Risk Trial Investigators*



No. at Risk					
Surgery	678	576	366	195	69
TAVR	725	648	435	233	80

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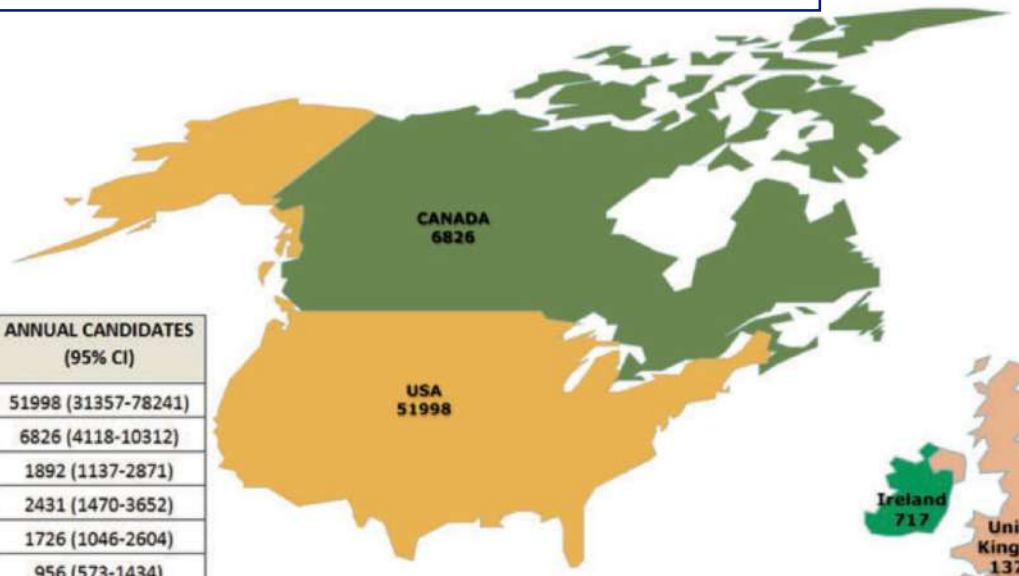
A



COUNTRY	ANNUAL CANDIDATES (95% CI)
USA	51998 (31357-78241)
Canada	6826 (4118-10312)
Austria	1892 (1137-2871)
Belgium	2431 (1470-3652)
Bulgaria	1726 (1046-2604)
Croatia	956 (573-1434)
Czech Republic	2259 (1367-3393)
Denmark	1261 (764-1910)
Estonia	293 (179-441)
Finland	1314 (792-1983)
France	14632 (8886-22012)
Germany	20466 (12237-31180)
Greece	2718 (1656-4089)
Hungary	2108 (1276-3179)
Ireland	717 (435-1073)
Italy	15784 (9538-23700)
Latvia	460 (279-693)
Lithuania	655 (393-992)
Netherlands	3614 (2185-5481)
Norway	998 (597-1503)

COUNTRY	ANNUAL CANDIDATES (95% CI)
Poland	7008 (4195-10581)
Portugal	2516 (1535-3776)
Romania	4035 (2451-6065)
Slovakia	906 (549-1372)
Slovenia	444 (267-664)
Spain	10274 (6153-15470)
Sweden	2279 (1377-3448)
Switzerland	1756 (1059-2650)
United Kingdom	13787 (8293-20807)
European Union	**114757 (69380-172799)**
Northern America	**58556 (35631-87738)**

ESC European Society of Cardiology

European Heart Journal (2018) **0**, 1–8
doi:10.1093/eurheartj/ehy107

Current indications
N = 180.000

Estimated annual numbers of transcatheter aortic valve implantation candidates in different countries.

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B

COUNTRY	ANNUAL CANDIDATES (95% CI)
USA	80076 (50754 - 117242)
Canada	10516 (6597 - 15332)
Austria	2919 (1834 - 4266)
Belgium	3740 (2332 - 5533)
Bulgaria	2642 (1660 - 3903)
Croatia	1468 (926 - 2165)
Czech Republic	3465 (2174 - 5078)
Denmark	1938 (1215 - 2850)
Estonia	456 (286 - 673)
Finland	2006 (1253 - 2953)
France	22607 (14305 - 33372)
Germany	31596 (19915 - 46723)
Greece	4190 (2649 - 6144)
Hungary	3262 (2038 - 4807)
Ireland	1106 (701 - 1610)
Italy	24368 (15255 - 35894)
Latvia	709 (442 - 1040)
Lithuania	1009 (639 - 1494)
Netherlands	5524 (3467 - 8126)
Norway	1537 (957 - 2236)

COUNTRY	ANNUAL CANDIDATES (95% CI)
Poland	10797 (6732 - 15971)
Portugal	3892 (2423 - 5802)
Romania	6224 (3872 - 9189)
Slovakia	1391 (879 - 2050)
Slovenia	681 (428 -1004)
Spain	15783 (9919 - 23317)
Sweden	3526 (2230 - 5166)
Switzerland	2696 (1715 - 3949)
United Kingdom	21133 (13305 - 30852)
European Union	**177462 (110059 - 260576)**
Northern America	**90135 (56740 - 131605)**

ESC European Society of Cardiology
European Heart Journal (2018) **0**, 1–8
doi:10.1093/eurheartj/ehy107

With low-risk AS
N = 270.000

Estimated annual numbers of transcatheter aortic valve implantation candidates in different countries.

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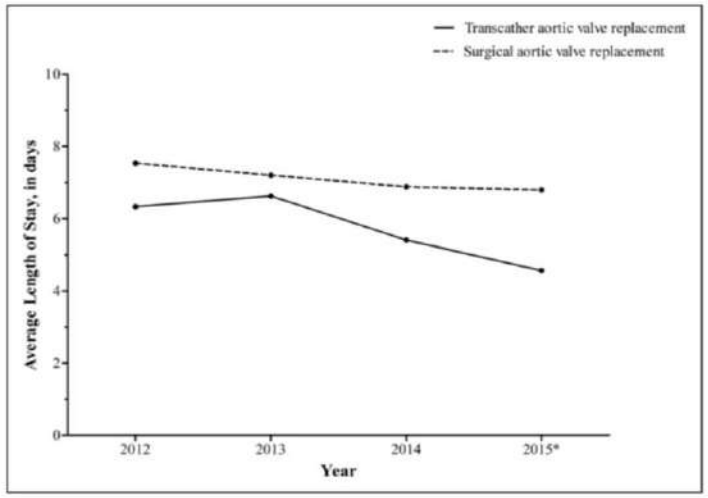
Fast-Track TAVI Programs

- Allows for a simpler and faster procedure on an already frail patient
- Decreases cost
- Improves efficiency
- Increase the number of patients treated with TAVI
- Without compromising safety

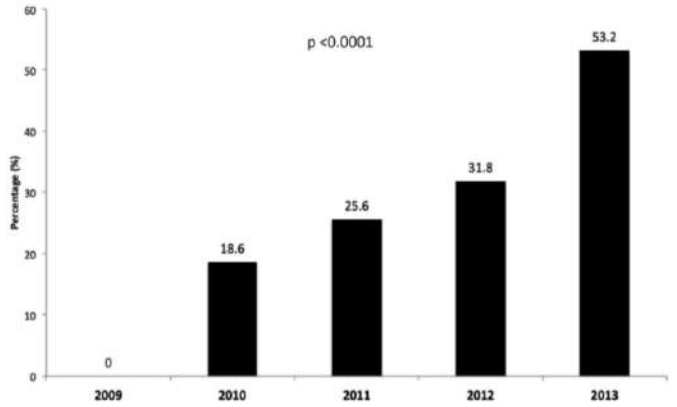
Fast-Track TAVI Programs

- TAVI began with ITU stay and LoS routinely 7+ days
- Change of practice
  - Improved technology (smaller sheath)
  - GA → LA/CS
  - Less transapical (TA) access

- Analysis of patient data identifies ≤3days as 'early' discharge, some suggest ≤2days



Circ Cardiovasc Interv. 2018;11:e006929. DOI: 10.1161/CIRCINTERVENTIONS.118.006929



Bar graph representation of the proportion of early discharge from 2009 to 2013.

Durand, E. et al., American Journal of Cardiology 2015

Fast-Track TAVI Programs

Benefits for Patients

- Reduce infection
- Reduce deconditioning – get patients mobilising early, reduce falls
- Positive psychological impact on patient

Benefits for Centers / Economical

- Increase capacity for procedures
- Financial implications
  - Shorter LoS = lower financial burden on trust/NHS
  - Reduced cost of procedure – attractive option for lower risk patients over sAVR?

"Economical target could be an objective but has to be only reached without compromising the patient's or procedure's safety"
(Owais et al., J Cardiovasc Dis Diagn 2018)

Fast-Track TAVI Programs

"never insist on continuing on fast track at the expense of patient safety"

(*Owais et al., J Cardiovasc Dis Diagn 2018*)

safe discharge

- Medically fit for discharge
- Socially fit for discharge

- Avoiding the risk of a discharged patient experiencing an adverse event
  - Re-admission
  - Death

- Need for PPM implantation

Evidence for safe early discharge in TAVI Patients

Retrospective

- Factors associated with safe early discharge after transcatheter aortic valve implantation *Aldalati, O. et al.,Cardiology Journal,* **2018**
- Early discharge after transfemoral transcatheter aortic valve implantation *Barbanti, M. et al., Heart, 2016*
- Feasibility and safelty of early discharge after transfemoral transcatheter aortic valve implantation with Edwards SAPIEN-XT Prosthesis *Durand, E. et al., American Journal of Cardiology 2015*
- Predictors of Successful Fast Track Protocol in Transfemoral Transcatheter Aortic Valve Implantation Under General Anasthesia *Owais et al., J Cardiovasc Dis Diagn 2018*

Prospective

- **3M TAVR**
- **FAST-TAVI**

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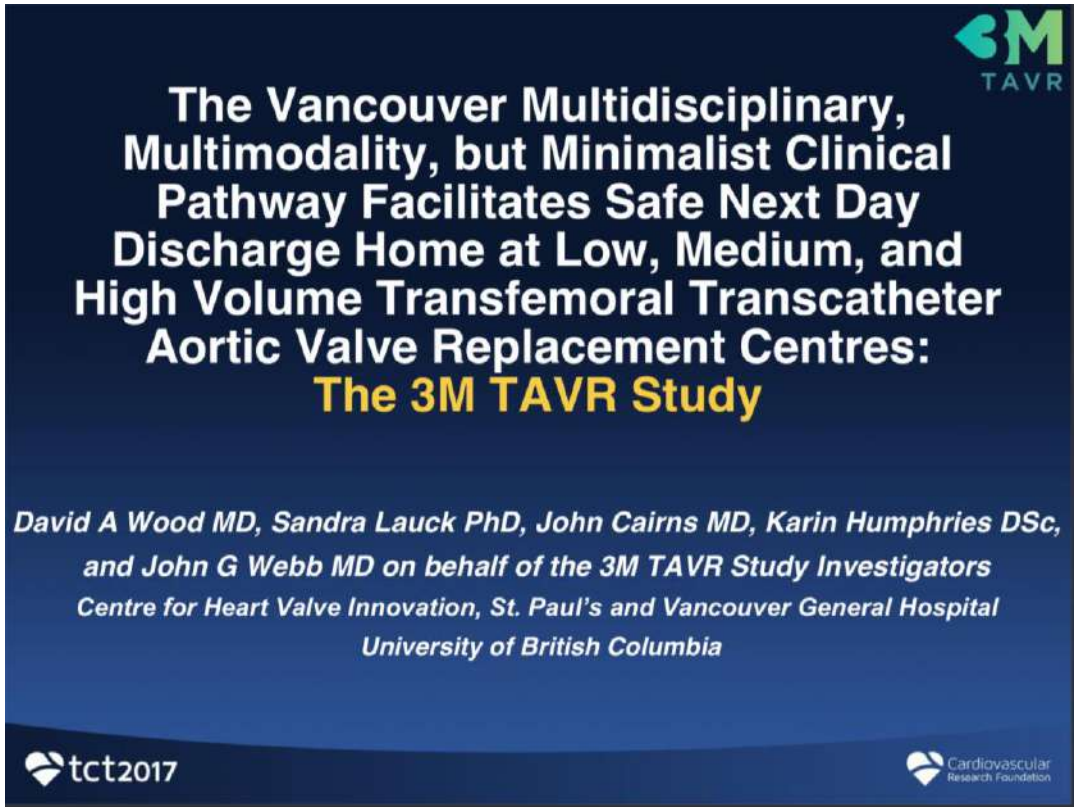

JACC: CARDIOVASCULAR INTERVENTIONS VOL. 12, NO. 5, 2019

What if…

- A clinical pathway could help you safely perform TAVR on the majority of your fully awake outpatients, in the cath lab, in less than 45 mins?
  - Implications?
    - Patients
    - Health Authorities
    - Society

What if…

The majority of those patients could be safely discharged home the next day?

- 30-day Death or Stroke < 3%?
- 30-day Readmission Rate < 10%?
- 30-day New Permanent PM rate < 10%?
- Greater than Mild PAR < 4%?

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3M TAVR Study Design

To evaluate the efficacy, feasibility, and safety of next day discharge home in patients undergoing balloon-expandable transfemoral TAVR utilizing the Vancouver 3M Clinical Pathway

Patients undergoing elective Transfemoral TAVR

↓

Considered at *increased surgical risk* by the Heart Team

↓

Vancouver 3M Clinical Pathway (n = 411)
Meet all anatomical, functional, and peri-procedural exclusion criteria

↓

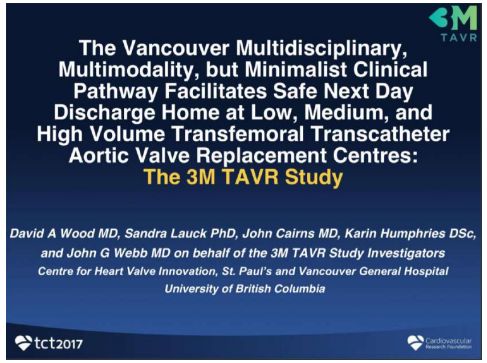
Primary Outcomes: 1) All cause mortality or stroke at 30 days
2) The proportion of patients discharged the next day

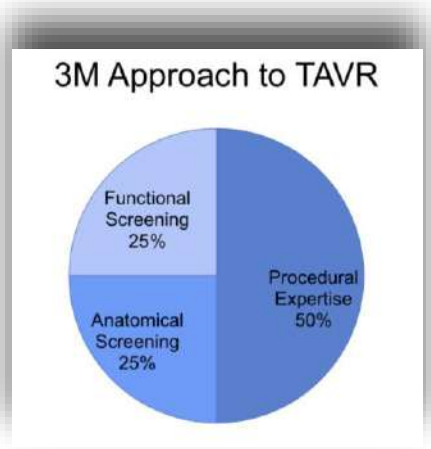
↓

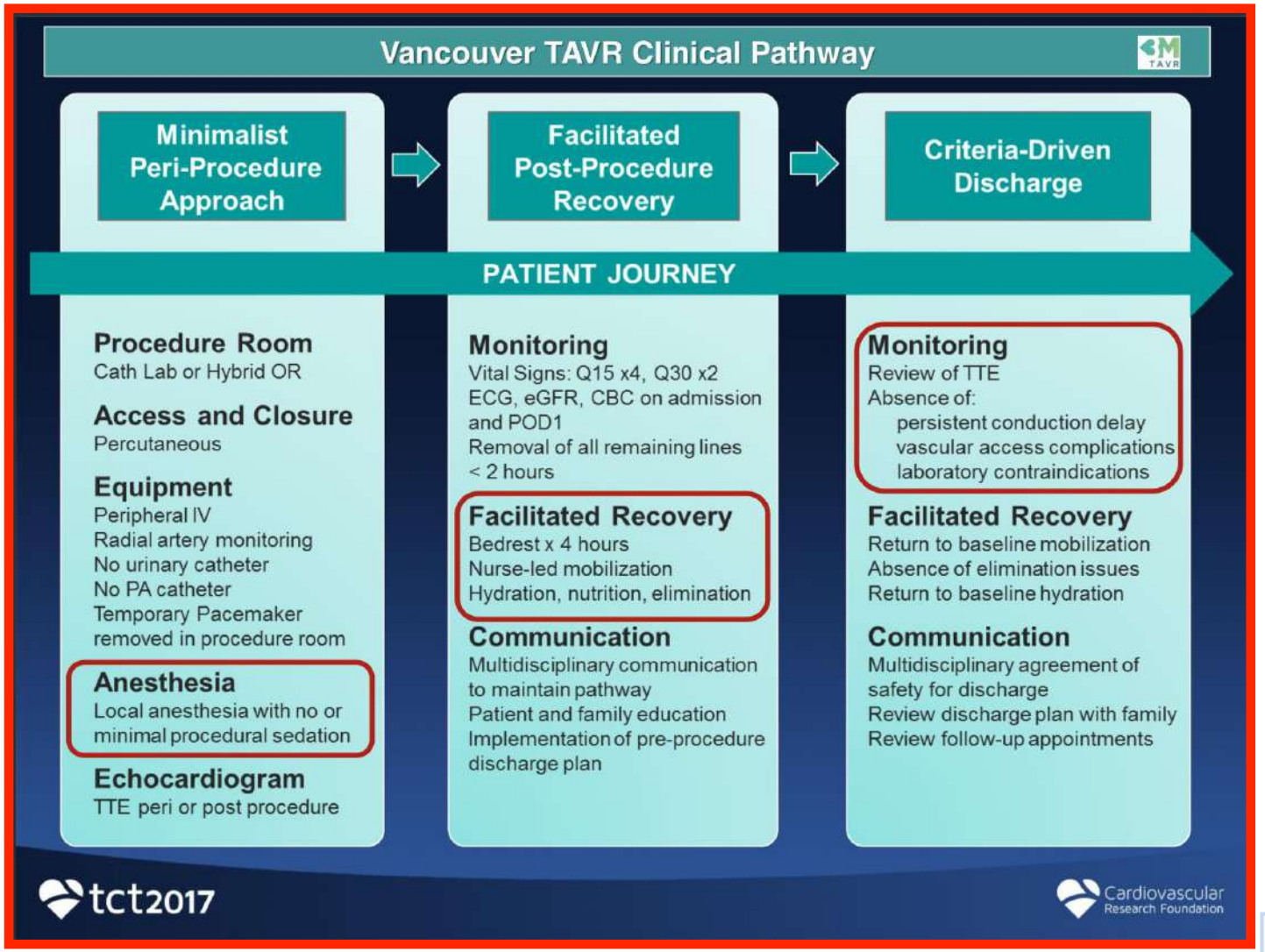
Secondary Outcomes: 1) Readmission within 30 days
2) Greater than mild PAR at 30 days
3) New permanent pacemaker at 30 days
4) Major vascular complications, bleed, or repeat valve procedure at 30 days
5) Conversion to GA/Intubation
6) KCCQ and SF 12 at 2 weeks, 30 days, and 1 year
7) All cause mortality and stroke at 1 year

TABLE 1 3M TAVR Study Inclusion and Exclusion Criteria

Inclusion criteria	
Considered at increased surgical risk by the Heart Team	
Exclusion criteria	
Life expectancy	<3 yrs
CT quality	Inadequate to perform area-based annular sizing, exclude adverse root features, and determine a coaxial valve deployment angle (not required for VIV)
Vascular access	Not suitable for percutaneous vascular access
Iliofemoral size	<6 mm (XT) or <5.5 mm (S3)
In-patient	Unless clinically stable and mobilizing at baseline
Language barriers	Inability to understand instructions
Social supports	Insufficient to allow discharge home
MMSE <24/30	5-m gait >7 s, ADL <6/6
Airway	Unfavorable for emergent intubation
Positioning	Inability to lie supine


The Vancouver Multidisciplinary, Multimodality, but Minimalist Clinical Pathway Facilitates Safe Next Day Discharge Home at Low, Medium, and High Volume Transfemoral Transcatheter Aortic Valve Replacement Centres:
The 3M TAVR Study
David A Wood MD, Sandra Lauck PhD, John Cairns MD, Karin Humphries DSc, and John G Webb MD on behalf of the 3M TAVR Study Investigators
Centre for Heart Valve Innovation, St. Paul's and Vancouver General Hospital
University of British Columbia
tct2017


3M Approach to TAVR
Functional Screening 25%
Procedural Expertise 50%
Anatomical Screening 25%


Vancouver TAVR Clinical Pathway
Minimalist Peri-Procedure Approach
Facilitated Post-Procedure Recovery
Criteria-Driven Discharge
PATIENT JOURNEY
Procedure Room
Cath Lab or Hybrid OR
Access and Closure
Percutaneous
Equipment
Peripheral IV
Radial artery monitoring
No urinary catheter
No PA catheter
Temporary Pacemaker removed in procedure room
Anesthesia
Local anesthesia with no or minimal procedural sedation
Echocardiogram
TTE peri or post procedure
Monitoring
Vital Signs: Q15 x4, Q30 x2
ECG, eGFR, CBC on admission and POD1
Removal of all remaining lines < 2 hours
Facilitated Recovery
Bedrest x 4 hours
Nurse-led mobilization
Hydration, nutrition, elimination
Communication
Multidisciplinary communication to maintain pathway
Patient and family education
Implementation of pre-procedure discharge plan
Monitoring
Review of TTE
Absence of:
persistent conduction delay
vascular access complications
laboratory contraindications
Facilitated Recovery
Return to baseline mobilization
Absence of elimination issues
Return to baseline hydration
Communication
Multidisciplinary agreement of safety for discharge
Review discharge plan with family
Review follow-up appointments
tct2017
Cardiovascular Research Foundation

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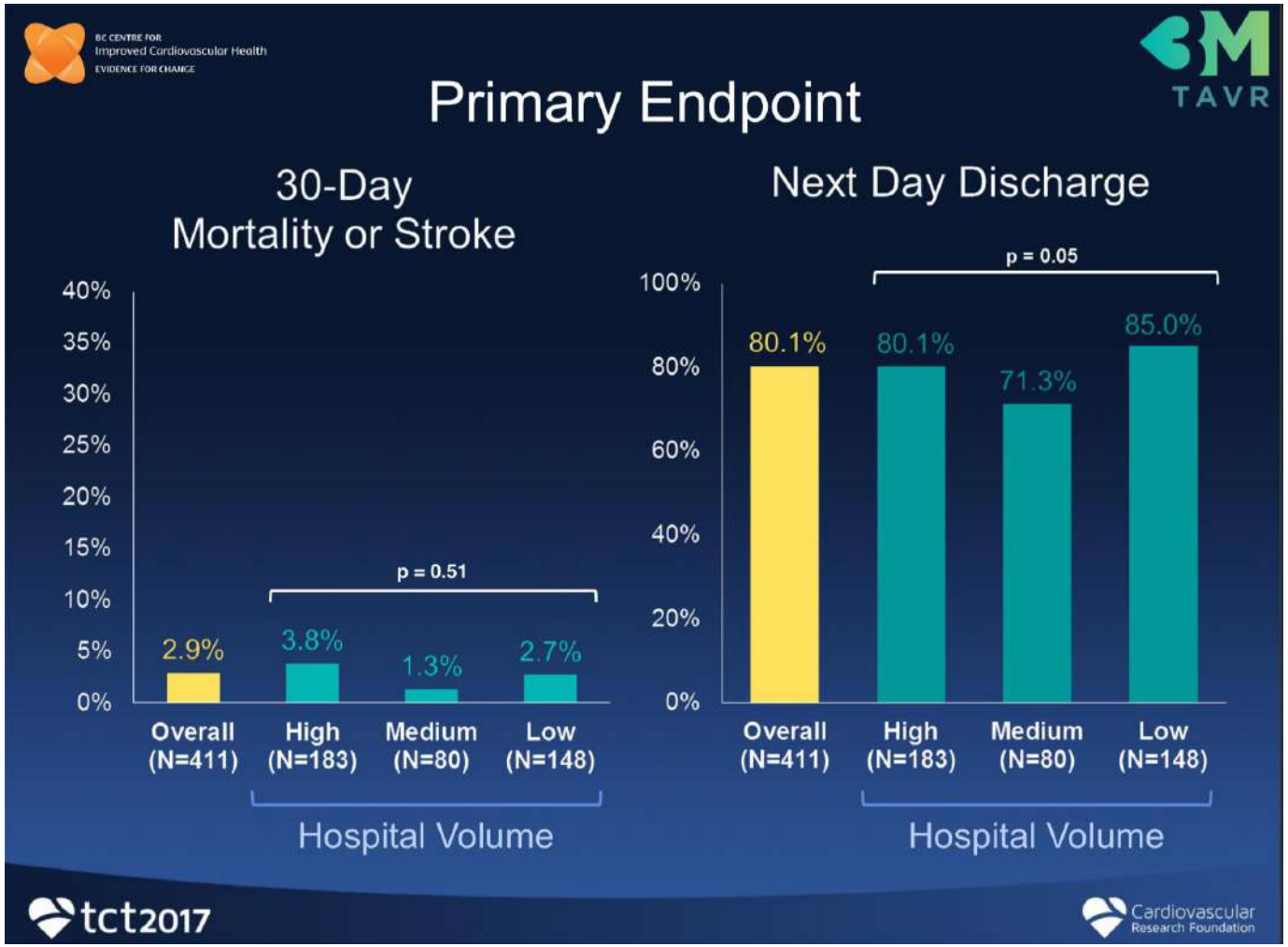
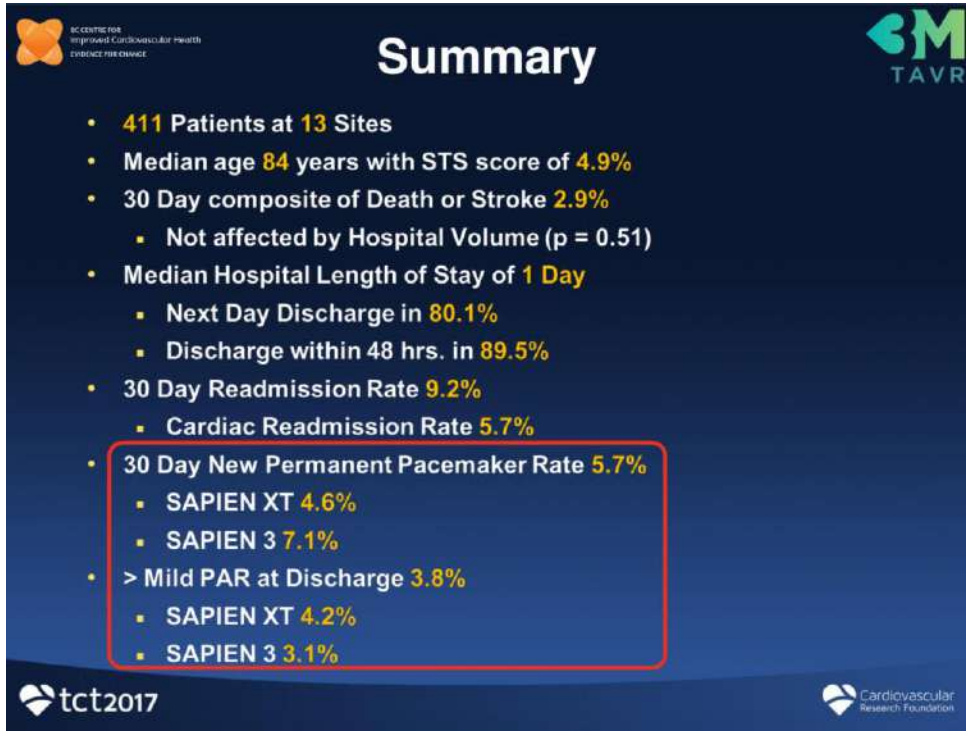

BC CENTRE FOR
Improved Cardiovascular Health
EVIDENCE FOR CHANGE
3M TAVR
Primary Endpoint
30-Day
Mortality or Stroke
40%
35%
30%
25%
20%
15%
10%
5%
0%
p = 0.51
2.9%
3.8%
1.3%
2.7%
Overall (N=411)
High (N=183)
Medium (N=80)
Low (N=148)
Hospital Volume
Next Day Discharge
100%
80%
60%
40%
20%
0%
p = 0.05
80.1%
80.1%
71.3%
85.0%
Overall (N=411)
High (N=183)
Medium (N=80)
Low (N=148)
Hospital Volume
tct2017
Cardiovascular Research Foundation


BC CENTRE FOR
Improved Cardiovascular Health
EVIDENCE FOR CHANGE
3M TAVR
Summary
411 Patients at 13 Sites
Median age 84 years with STS score of 4.9%
30 Day composite of Death or Stroke 2.9%
Not affected by Hospital Volume (p = 0.51)
Median Hospital Length of Stay of 1 Day
Next Day Discharge in 80.1%
Discharge within 48 hrs. in 89.5%
30 Day Readmission Rate 9.2%
Cardiac Readmission Rate 5.7%
30 Day New Permanent Pacemaker Rate 5.7%
SAPIEN XT 4.6%
SAPIEN 3 7.1%
> Mild PAR at Discharge 3.8%
SAPIEN XT 4.2%
SAPIEN 3 3.1%
tct2017
Cardiovascular Research Foundation

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3M TAVR Outcomes in Perspective

	3M TAVR (2017) N = 411	GARY TF (2014) N = 2695	STS/TVT Registry (2014) N = 12785	STS/TVT Registry (2015) Conscious Cohort N=1737	PARTNER 2A TAVR (2016) N = 1011	SAPIEN 3i (2016) N = 1077	AQUA (2017) N = 3618 (>200/yr)	Choice (2014) N=241
STS (%)	**4.9**		6.7		5.8	5.2		5.9
Age (yrs)	**84**	81	83	82	82	82	81	81
Median LOS (days)	**1.0**		6.2	6.0	6.0	4.0	14.0	
30-Day Mortality (%)	**1.5**	5.1	4.4	2.9	3.9	1.1	2.4	4.6
30-Day Stroke (%)	**1.5**	1.7	2.2	2.1	6.4	2.7	2.1	4.2
30-Day Cardiac Readmission (%)	**5.7**				6.5	4.6		4.3
30-Day New PPM (%)	**5.7**	25	10.5	15	8.5	10.2		27
> Mild PAR at Discharge (%)	**3.8**	7.3	4.8		3.7	3.8		11.2

Conclusions

- In patients undergoing contemporary balloon expandable transfemoral TAVR, adherence to the *Vancouver 3M Clinical Pathway* allows next day discharge home with excellent safety and efficacy outcomes regardless of site volume.
- Longer term follow-up with comparison to contemporary trials is needed to determine the potential cost savings and improvements in quality of life to be derived from adoption of this approach.

tct2017 Cardiovascular Research Foundation

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Evidence for safe early discharge in TAVI Patients

EuroIntervention 2019;15:147-154

- FAST-TAVI validated a set of pre-specified discharge risk criteria allowing appropriate discharge timing of severe symptomatic AS patients after TAVI based on the rate of 30 day complications

- Aim: The 1-year follow-up data were analysed to re-evaluate these **discharge risk criteria** based on the rate of events up to 1 year following hospital discharge

- 502 consecutive patients with AS undergoing TF-TAVI with balloon expandable valves (Italy, NL, UK).

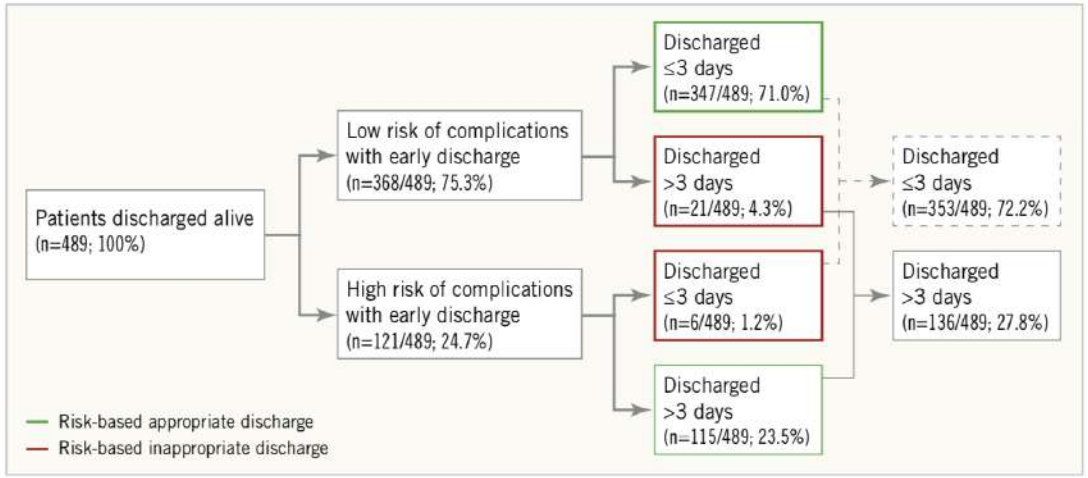
Discharge risk evaluation criteria

Baseline, prior-to-TAVI

- Independent mobilization and self-caring
- No chest pain attributable to cardiac ischemia
- No untreated major arrhythmias
- New York Heart Association (NYHA) class

Status post-TAVI

- New York Heart Association (NYHA) class ≤ II
- no PVL -AR≥++; stroke / TIA; hemodynamic instability
- Patients with complications on day 0 to 1, but free of adverse effects on day 3
- No RBC transfusion during the last 72 hours
- Stable hemoglobin in 2 consecutive samples (defined as a decrease no more than 2 mg/dl)
- Maintained diuresis (>40 ml/hr in the last 24 hours) and no unresolved acute kidney injury type 3 (VARC-2)
- No fever during the last 24 hours and no signs of an infectious cause (clinic and laboratory)



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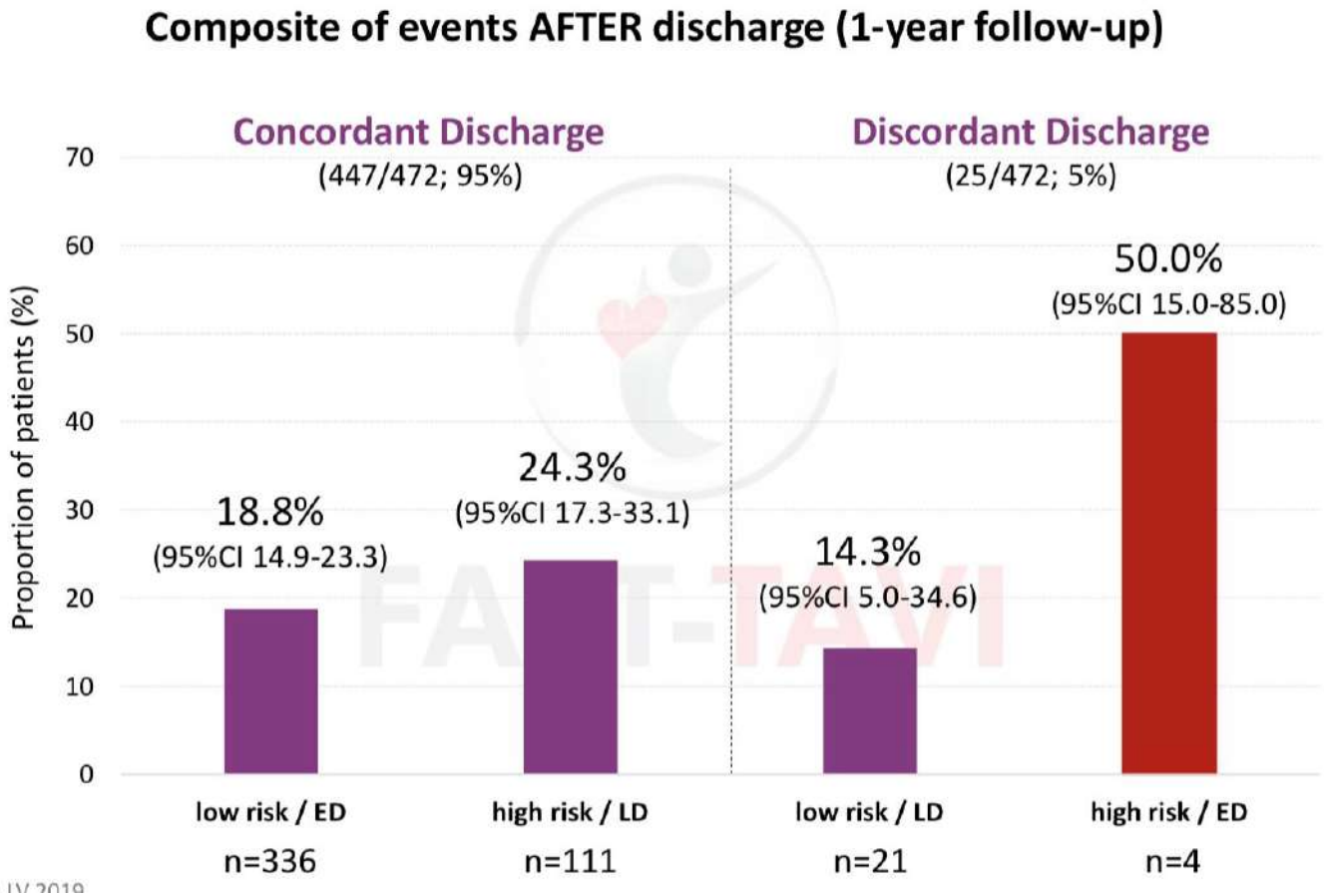
	CONCORDANT DISCHARGE				DISCORDANT DISCHARGE			
	Low risk for ED & Discharged ≤3 days		High risk for ED & Discharged >3 days		Low risk for ED & Discharged >3 days		High risk for ED & Discharged ≤3 days	
	n/N	(%)	n/N	(%)	n/N	(%)	n/N	(%)
Primary endpoint	63/336	(18.8)	27/111	(24.3)	3/21	(14.3)	2/4	(50.0)
Overall mortality	23/337	(6.8)	11/110	(10.0)	0/21	(0)	1/4	(25.0)
Stroke/TIA	3/318	(0.9)	4/103	(3.9)	1/21	(4.8)	0/3	(0)
PPI	12/316	(3.8)	4/103	(3.9)	1/21	(4.8)	1/3	(33.3)
Kidney failure	1/316	(0.3)	1/100	(1.0)	0/21	(0)	0/3	(0)
Major vascular complic.	2/317	(0.6)	1/100	(1.0)	0/21	(0)	0/3	(0)
Life-threatening bleeding	2/317	(0.6)	1/100	(1.0)	0/21	(0)	0/3	(0)
Rehospitalisation	84/329	(25.5)	33/105	(31.4)	4/21	(19.0)	2/4	(50.0)
Cardiac reasons	40/328	(12.2)	16/105	(15.2)	2/21	(9.5)	2/4	(50.0)

*3 patients were not discharged within 30 days; **The primary endpoint and objective of the study was to determine the incidence of a composite of all-cause mortality, vascular-access-related complications, PPI, stroke, re-hospitalisation due to cardiac reasons, kidney failure and major bleeding



ED: Early discharge
LD: Late discharge

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- FAST-TAVI risk assessment provides a **tool for an appropriate, risk-based discharge scheme** which was revalidated based on the 1-year rate of adverse events after balloon expandable TF TAVI.
- By applying the predefined discharge criteria, the **timing of discharge can be optimised**.

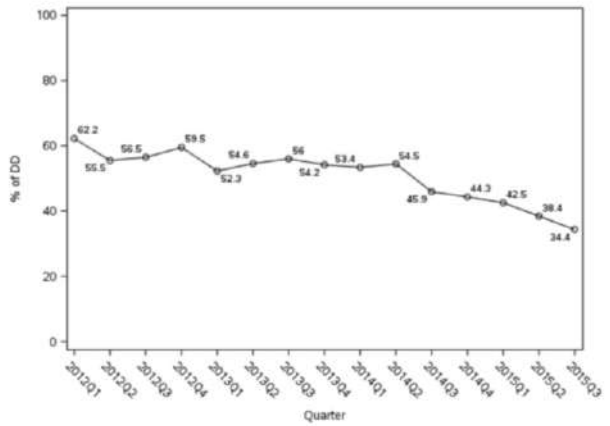
JACC: CARDIOVASCULAR INTERVENTIONS VOL. 12, NO. 5, 2019
MARCH 11, 2019:422–30

Length of Stay After Transfemoral Transcatheter Aortic Valve Replacement

An Analysis of the Society of Thoracic Surgeons/ American College of Cardiology Transcatheter Valve Therapy Registry

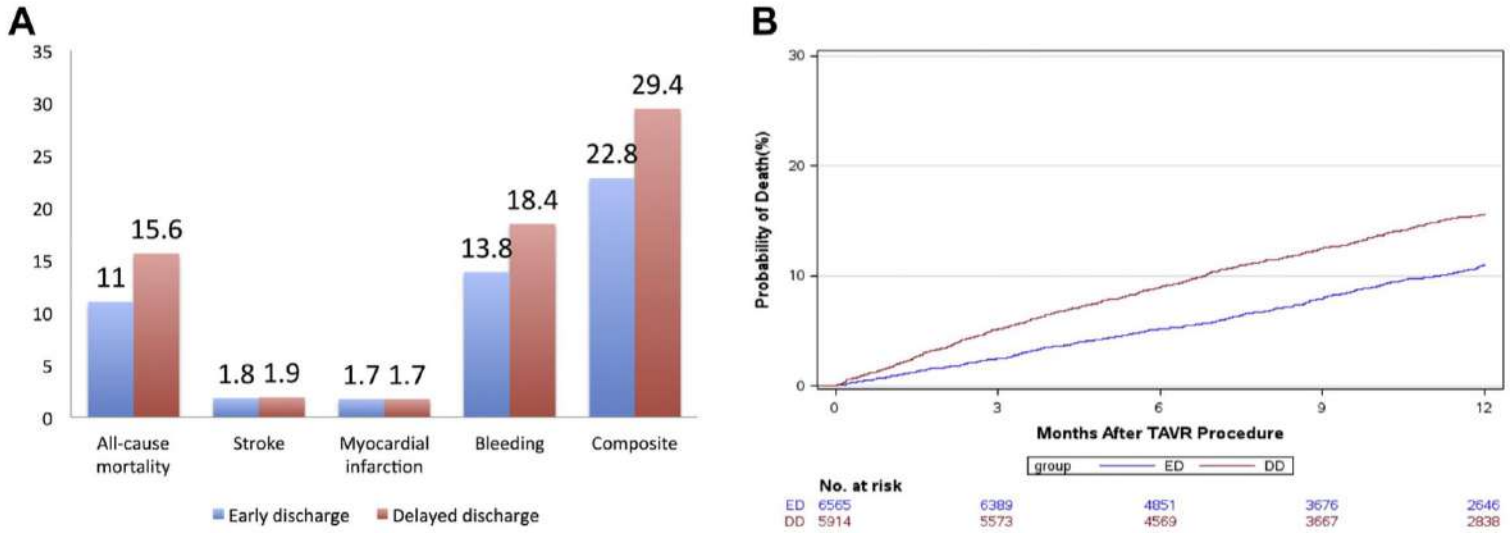
Siddharth A. Wayangankar, MD,[a] Islam Y. Elgendy, MD,[a] Qun Xiang, MS,[b] Hani Jneid, MD,[c] Sreekanth Vemulapalli, MD,[b] Tigran Khachatryan, MD,[d] Don Pham, MD,[e] Anthony A. Hilliard, MD,[d] Samir R. Kapadia, MD[f]

FIGURE 1 Series Plot of DD Over Time



Rate of DD by quarter. Patients discharged to home. DD = delayed discharge.

FIGURE 3 Outcomes Based on Length of Stay



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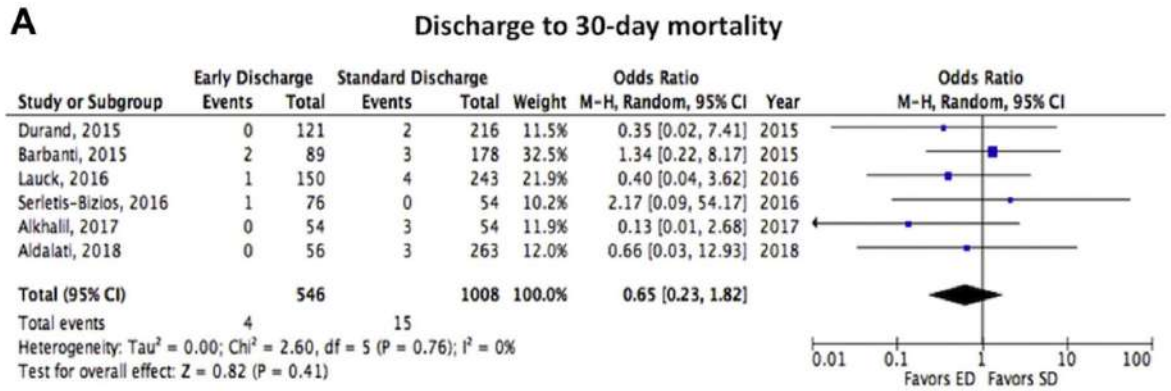
Early Versus Standard Discharge After Transcatheter Aortic Valve Replacement

A Systematic Review and Meta-Analysis

Rafail A. Kotronias, MBCHB, MSc,[a,b] Michael Teitelbaum, MD,[c] John G. Webb, MD,[d] Darren Mylotte, MBBCH, MD,[e] Marco Barbanti, MD, PHD,[f] David A. Wood, MD,[d] Brennan Ballantyne, MD,[c] Alyson Osborne, MD,[c] Karla Solo, MSc,[g] Chun Shing Kwok, MBBS, MSc,[a,b] Mamas A. Mamas, BMBCH, DPHIL,[a,b] Rodrigo Bagur, MD, PHD[a,c,d]

First Author, Year (Ref. #)	Strategy	Discharge From ICU (Days ± Days)	Discharge From Hospital (Days ± Days)	Early Discharge Cutoff	Discharge Home, %	Discharge to Supported Facility, %
Aldalati, 2018 (19)	ED	0.9 ± 1.6	3 ± 0.0	≤3 days	NA	NA
	SD	1.4 ± 1.8	8.3 ± 6.0			
Alkhalil, 2018 (20)	ED	NA	2.3 ± 0.8	≤3 days	44/54 (81)*	42/54 (78)*
	SD		5.5 ± 2.3		10/54 (19)*	12/54 (22)*
Rathore, 2017 (22)	ED	22.1 ± 2.2 h	1	<1 day	NA	NA
	SD	48.5 ± 27.5 h	3.4 ± 2.3			
Lauck, 2016 (4)	ED	<24 h	1.3 ± 0.8	≤2 days	150/150 (100)	0
	SD		3.3 ± 0.8		234/243 (96)	9/243 (3.7)
Serletis-Bizios, 2016 (23)	ED	24 h	2.2 ± 0.5	≤3 days	NA	NA
	SD	24 h	6.5 ± 2.6			
Barbanti, 2015 (8)	ED	1.2 ± 0.4	2.1 ± 0.8	≤3 days	NA	NA
	SD	3.6 ± 1.9	6.5 ± 3.5			
Durand, 2015 (3)	ED	1 ± 0.8	3 ± 0.8	≤3 days	NA	NA
	SD	2 ± 1.5	6 ± 3.0			
Parry-Williams, 2014 (21)	ED	NA	NA	<4 days	NA	NA
	SD					

FIGURE 2 Discharge to 30-Day Mortality and 30-Day Readmission According to Discharge Strategy



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TAVI fast track protocol: a propensity matching analysis of in-hospital and post-discharge results

Afonso Félix de Oliveira, Rui Campante Teles, João Brito, Luís Raposo, Pedro Araújo Gonçalves, Henrique Mesquita Gabriel, Mariana Gonçalves, António Tralhão, Marisa Trabulo, Jorge Ferreira, Manuel Almeida, Miguel Mendes

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Background

- In line with the minimalist TAVI procedure, **a fast-track protocol for post-procedure recovery and discharge** was developed in ou center for uncomplicated transfemoral TAVI:

  - **Conscious sedation**
  - **Radial artery as a secondary arterial access**
  - **Pacing through the LV wire for valve deployment and backup pacing**
  - **No vascular sheat at the end of procedure**
  - **Early mobilization**
  - **EKG telemonitoring instead of Holter examination**

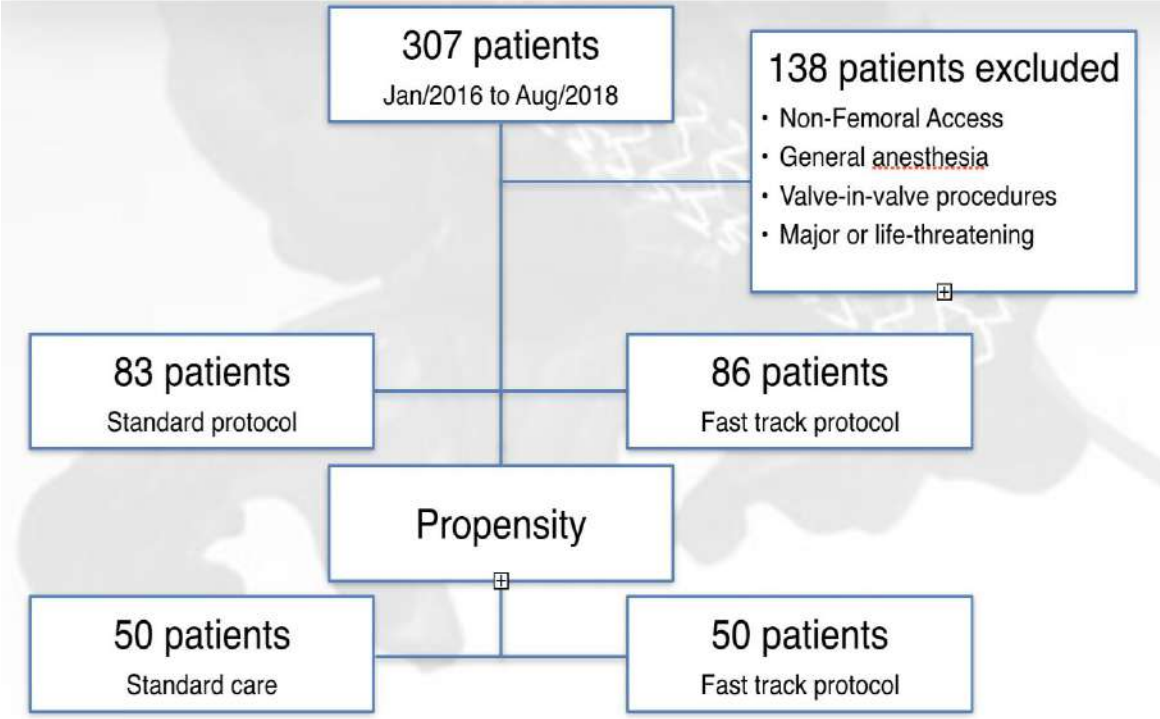
- **Minimalist TAVI and fast-track protocol were consistently performed after January/2018**

Afonso Oliveira et al, CPC 2019

Methods

- Aim: Evaluate the impact of the fast track protocol on TAVI-to-discharge time and mortality at 30-days in a propensity matched population.

- **Case-control study of TF-TAVI** patients between Jan/2016-Aug/2018 in a single tertiary center.
- **Clinical, procedural and length-of-hospitalization** data were collected prospectively. Mortality was registered retrospectively.
- **Exclusion criteria:** major vascular/bleeding complications, invasive ventilation/general anaesthesia, non-femoral access and valve-in-valve procedures were not eligible and were excluded.
- **Propensity score matching:**
  - 1:1 propensity matching analysis was performed to adjust for baseline characteristics (Age, Gender, EuroScore II (ESII), LVEF, previous pacemaker, valve type and NT-proBNP).
- **Primary endpoint:** The primary outcome was TAVI-to-discharge time
- **Secondary endpoint:** 30 day mortality



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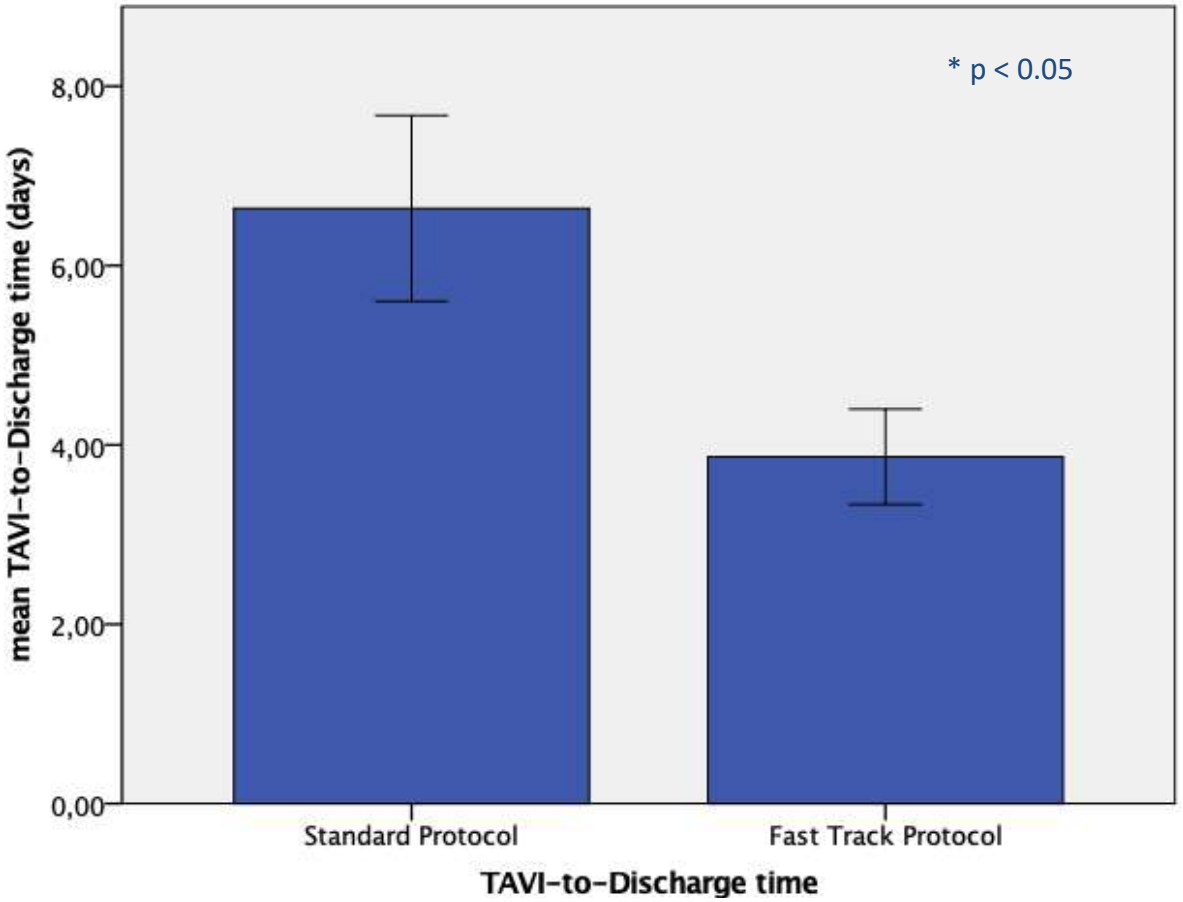
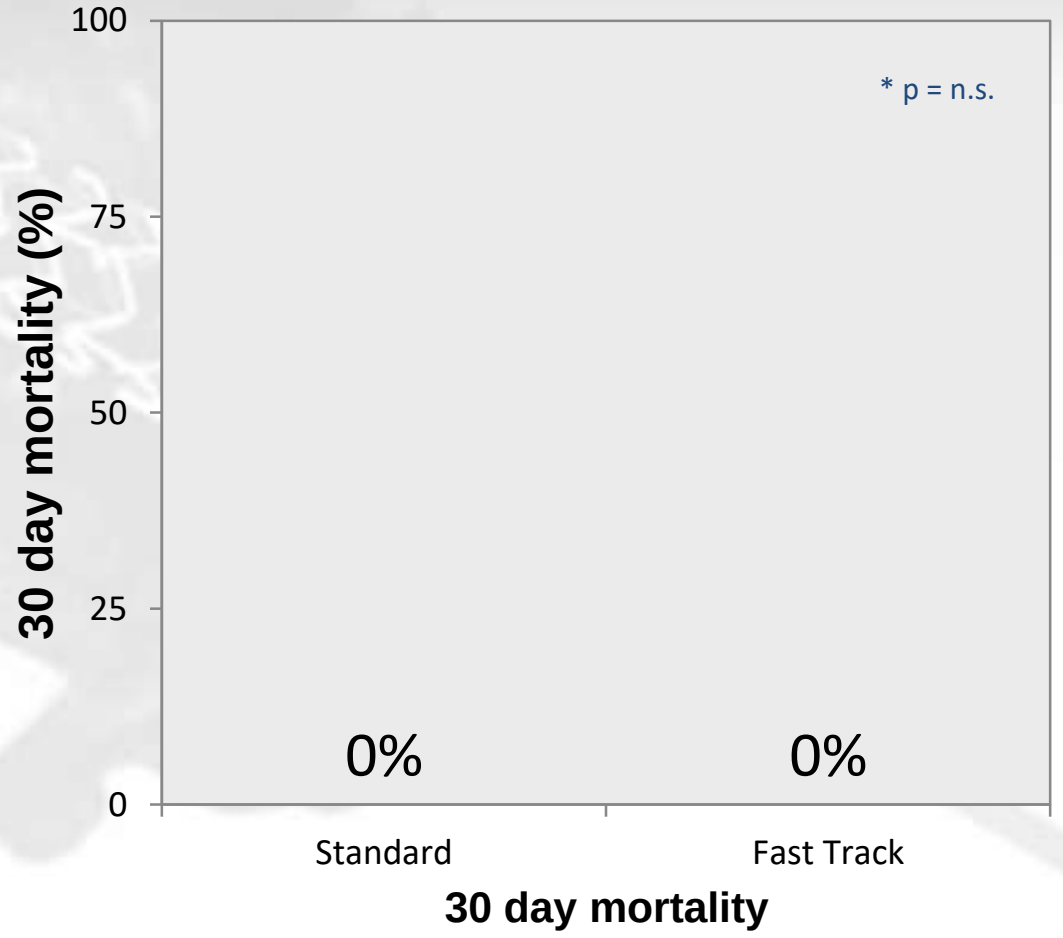
Results

Tavi-to-discharge time & 30 day mortality





Standard: **mean of 6.63 days** (CI 95%: 5.59-7.67)

Fast Track: **mean of 3.87 days** (CI 95%: 3.33-4.40)

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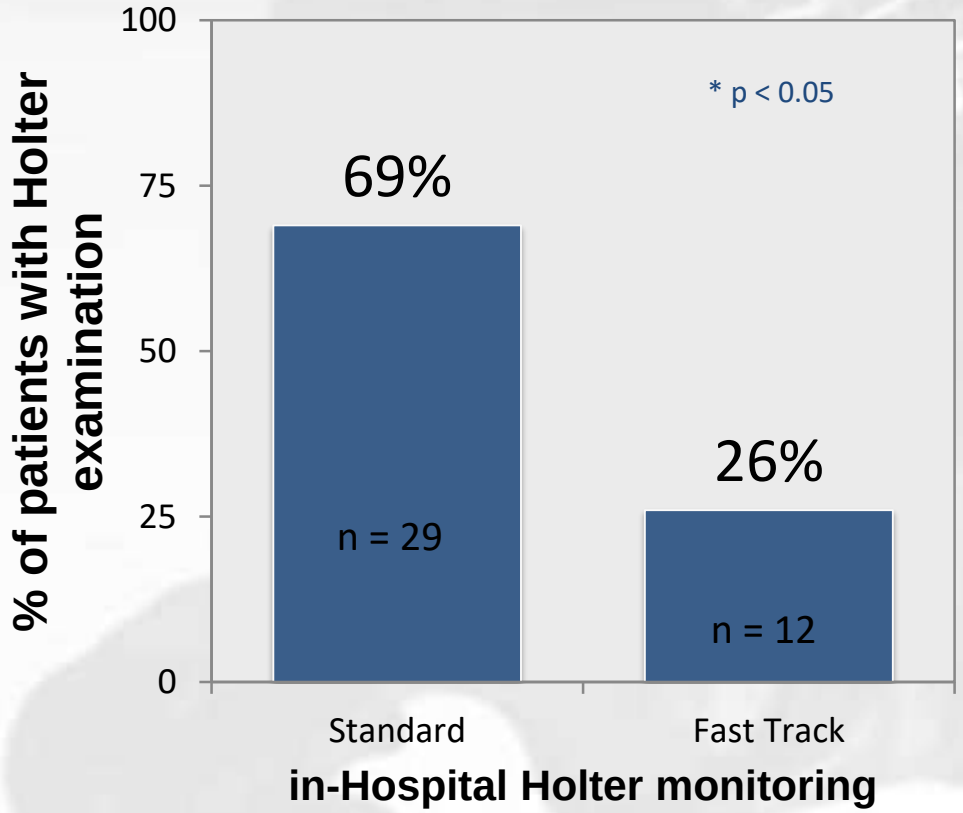
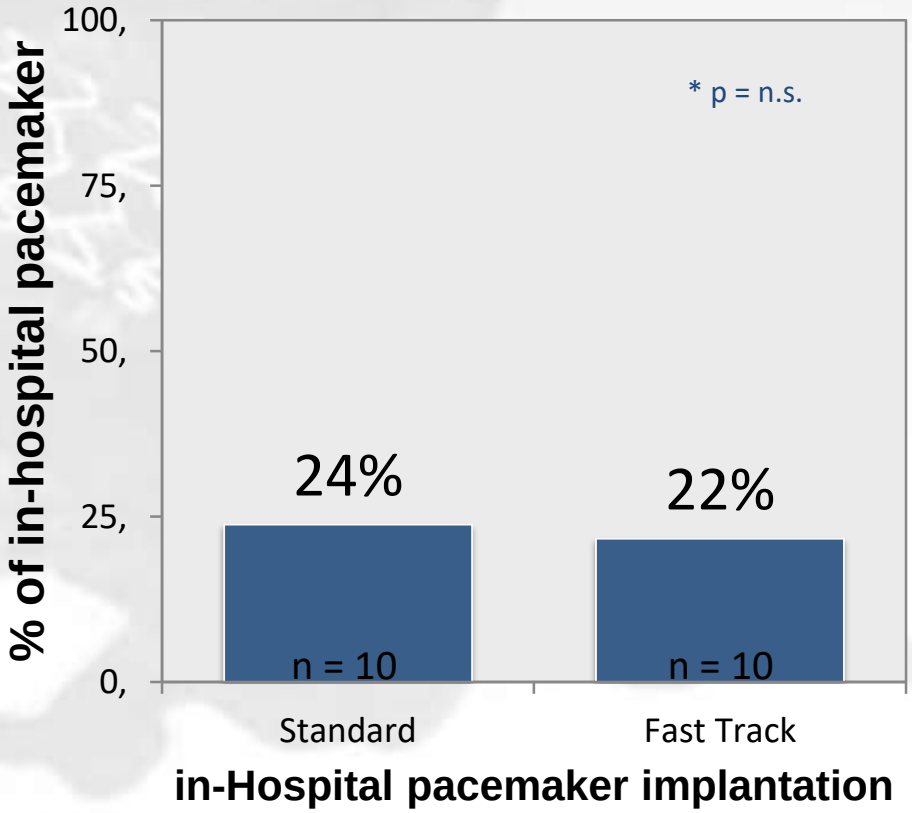
Results

Holter monitoring and in-hospital pacemaker implantation





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Conclusions

- TAVI procedures have gradually progressed to less invasive strategies performed in intermediate risk patients

- **We analysed and compared our *fast track protocol* in terms of hospitalisation time and short-term safety:**

  - **We have concluded that it is feasible and appears to reduce hospitalisation time without compromising patient safety**

- **What are the next steps?**
  - Continue to monitor the ongoing changes in the real-world TAVI procedures
  - Larger studies with less selected populations should further inform about the effectiveness and safety of such strategies
  - Analyse how different TAVI protocols impact on the economical analysis of TAVI programs in comparison to SAVR - **a shifting paradigm**

Afonso Oliveira et al, CPC 2019

Key points in early discharge programs

Pre

1. Joint clinics
2. One-stop-shop assessment
3. **MDT**
4. **Procedure planning and communication**

Peri

1. CASE REVIEW
2. Pre-pacing
3. Expert TAVI team
4. Full percutaneous transfemoral approach
5. Local anaesthetic/ conscious sedation
6. Radial artery for contralateral access
7. No catheter
8. Pacing through LV wire
9. Transthoracic echo

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Key points in early discharge programs

Pre

Discharge planning should start before admission……

- Know the whole patient – comorbidities **and** social situation – Important role of Pre-assessment.
- Thorough procedural planning
- Education
  - Patient & Family – when to expect to go home, discharge advice
  - Local hospitals/GPs – early identification/intervention

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Key points in early discharge programs

Peri

1. **Case Review**
   - The wider cath lab team attending the case review where the plan for the procedure is reiterated and images reviewed.

2. **Pre-pacing**
   - Pre-pacing known RBBB with a permanent system

3. **Expert TAVI team**
   - The right people, at the right time (e.g. IR support prior to complications arising)
   - Having the right equipment in the lab such as the vascular bail out kit

Kumar, Nilay (2018) JACC vol. 71 no. 11 Supplement A1338

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Key points in early discharge programs

Peri

4 Percutaneous transfemoral

- Pre closing with a closure device. Different centres have different techniques such as the Manta device, 2x Proglides or 1 Proglide + 1 Angioseal.
- Borderline femoral arteries carefully assessed, ultrasound guidance used at puncture.
- Shorter procedure time, faster patient recovery, lower in hospital mortality

5 No GA

- Using local anaesthetic or conscious sedation will lower risk of delirium, decreases likelihood of needing level 3 (sometimes level 2) care
- Shortens overall hospital stay

Kumar, Nilay (2018) JACC vol. 71 no. 11 Supplement A1338

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Key points in early discharge programs

Peri

6 Radial artery as secondary access
- Reduces bleeding risk and risk of major vascular complications
- Improves patient mobility post procedure

7 No catheter
- Significantly lowers risk of UTIs requiring antibiotics and in turn risk of delirium in the elderly patient

8 Pacing through LV wire
- Reduces procedural time and is as safe as rapid pacing through a TPW in the RV
- Reduces risk of cardiac Tamponade

9 Transthoracic echo
- Avoiding TOE and in turn a GA
- TTE adequate at recognising PVL and pericardial effusion

Kumar, Nilay (2018) JACC vol. 71 no. 11 Supplement A1338

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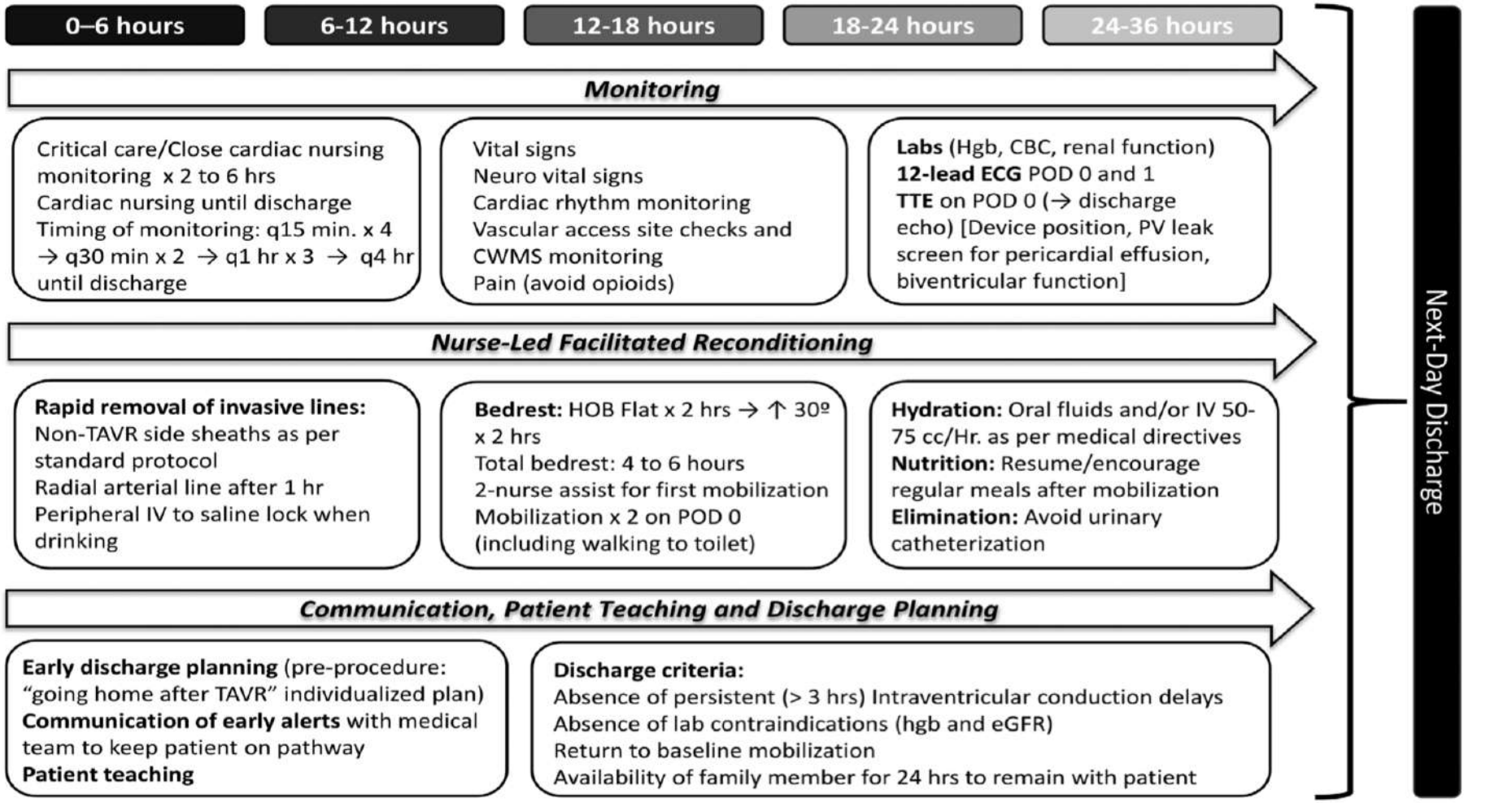
Key points in early discharge programs



Catheter Cardiovasc Interv. 2019;1–9.

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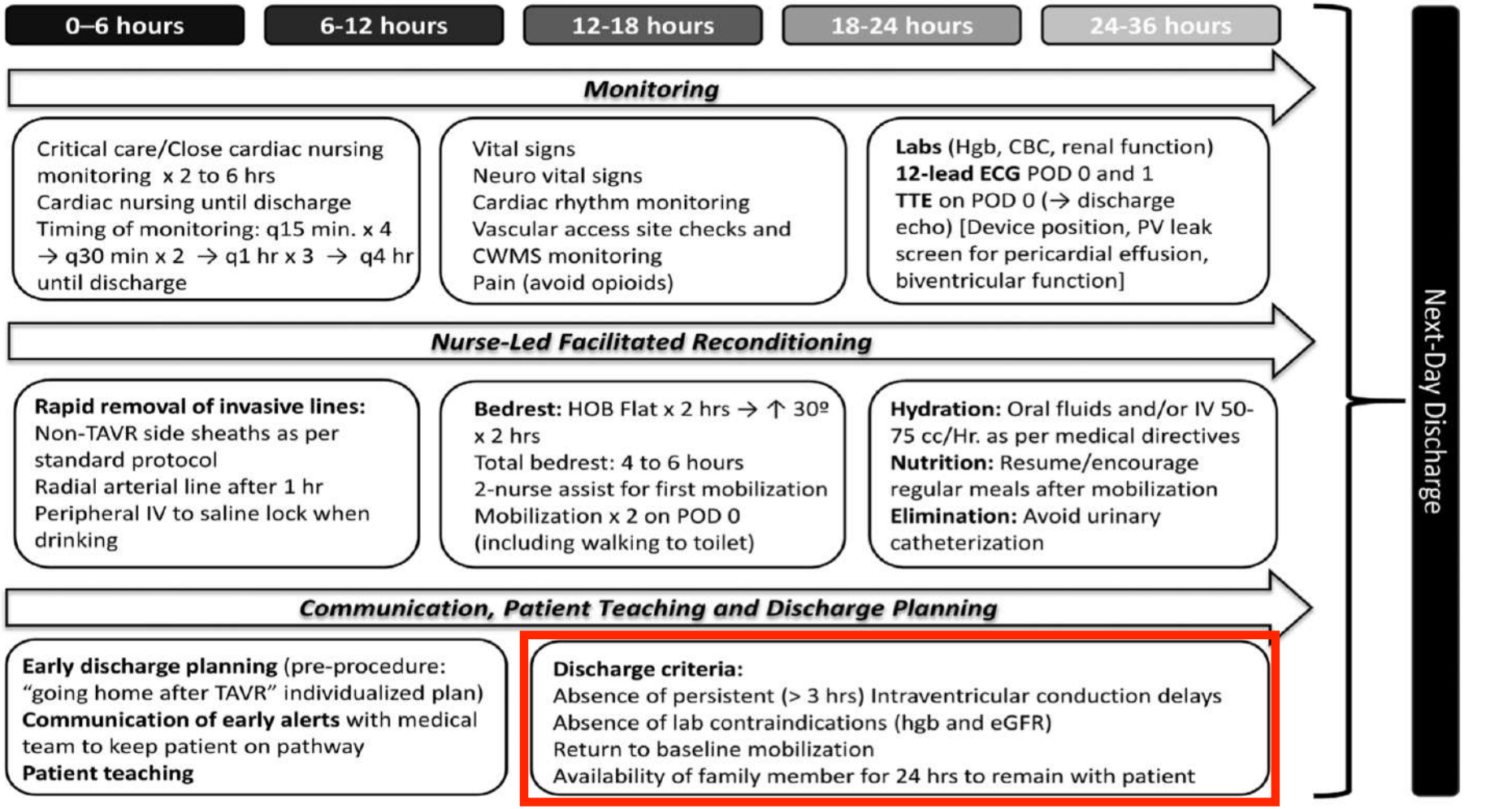
Key points in early discharge programs



Catheter Cardiovasc Interv. 2019;1–9.

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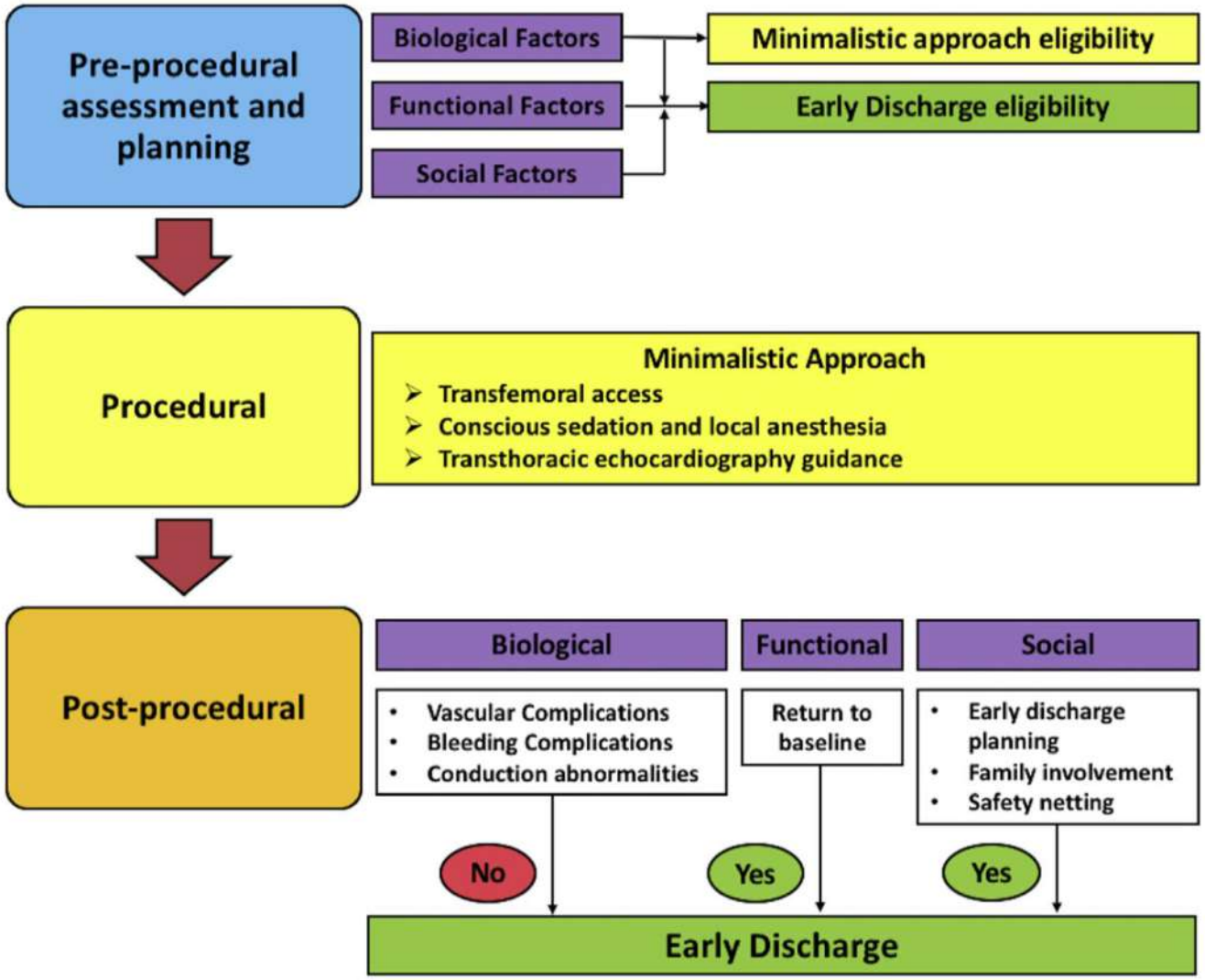
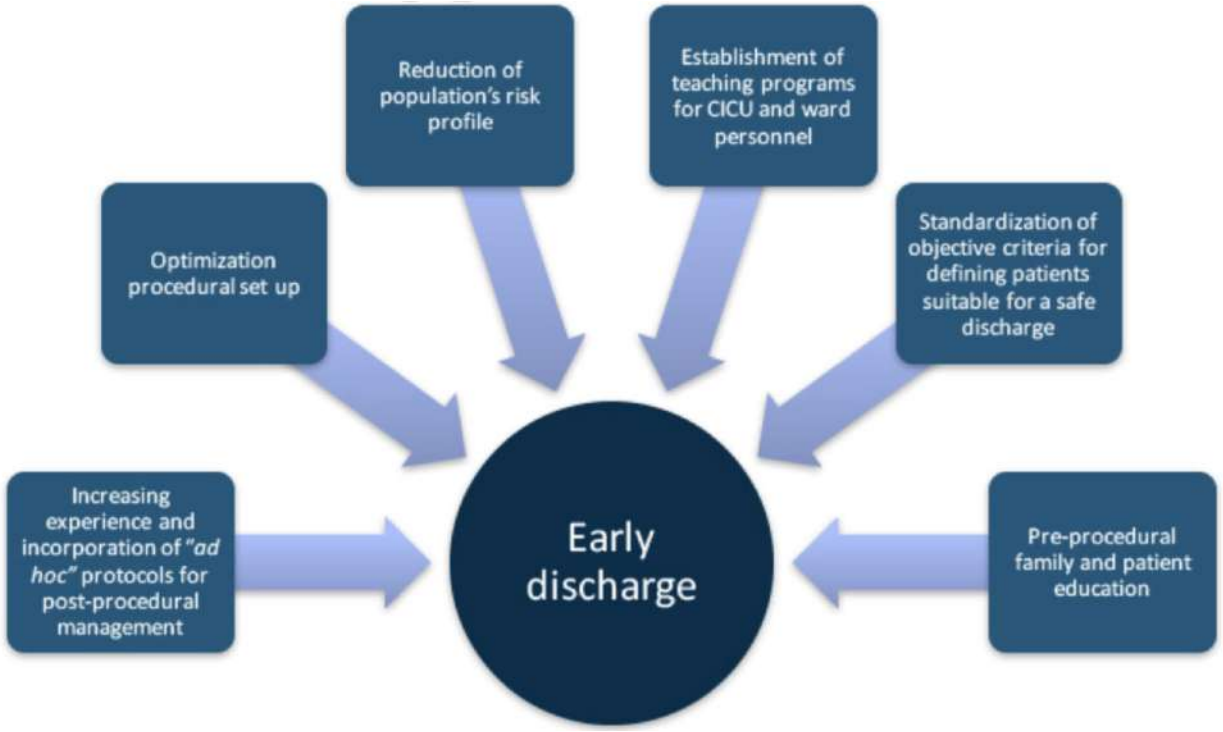
Fast-Track TAVI Programs

"Less is more"

" Maximize functional and anatomical screening followed by a Minimalist procedure"



Fast-Track TAVI Programs



Optimization and simplification of transcatheter aortic valve implantation therapy, Expert Review of Cardiovascular Therapy, DOI: 10.1080/14779072.2018.1449644

Next-Day Discharge After Transcatheter Aortic Valve Replacement

A Goal or a Consequence?*

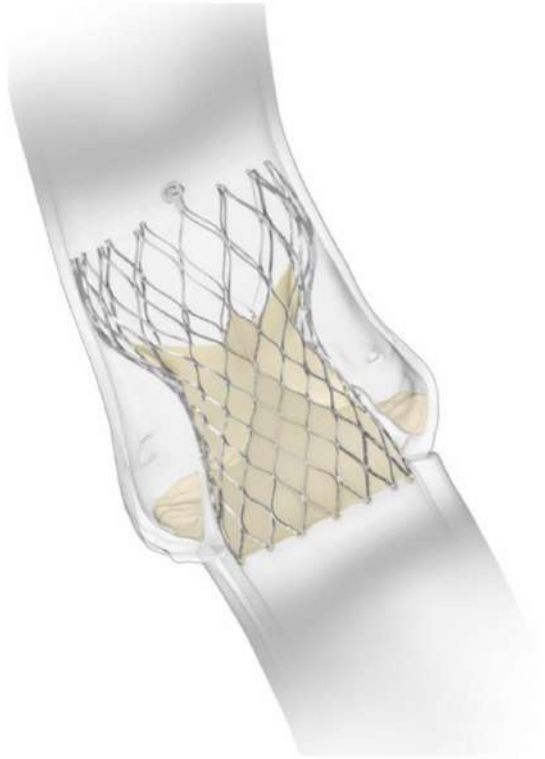
Molly Szerlip, MD

Sílvio Leal

Conclusions

- Length of stay post TAVI has naturally reduced with experience and improved technology
- Understanding and reacting to the factors impacting on discharge is key to safe discharge
- Early discharge has been shown to be comparable to, if no better than, longer length of stay in terms of readmission and mortality
- Further expedited discharge affords benefits to the patient and the healthcare system, but is only safe when the patient has been preselected and follows a post procedure algorithm / checklist

With careful planning, full assessment of the patient and no major procedural complications safe early discharge is possible and increasingly a reality



Obrigado

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