TAVR 2022: Who Should Get it? Who Still Needs Surgery?

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BEST HOSPITALS U.S.News & WORLD REPORT CARDIOLOGY & HEART SURGERY 2021-22

Disclosures

Advisory Board Member: Edwards Lifesciences, Philips, Bracco

Core Lab Contracts: Edwards Lifesciences, Medtronic, Abbott

Will not mention investigational devices

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It's a moving target….

Focus on symptomatic “classic” severe AS

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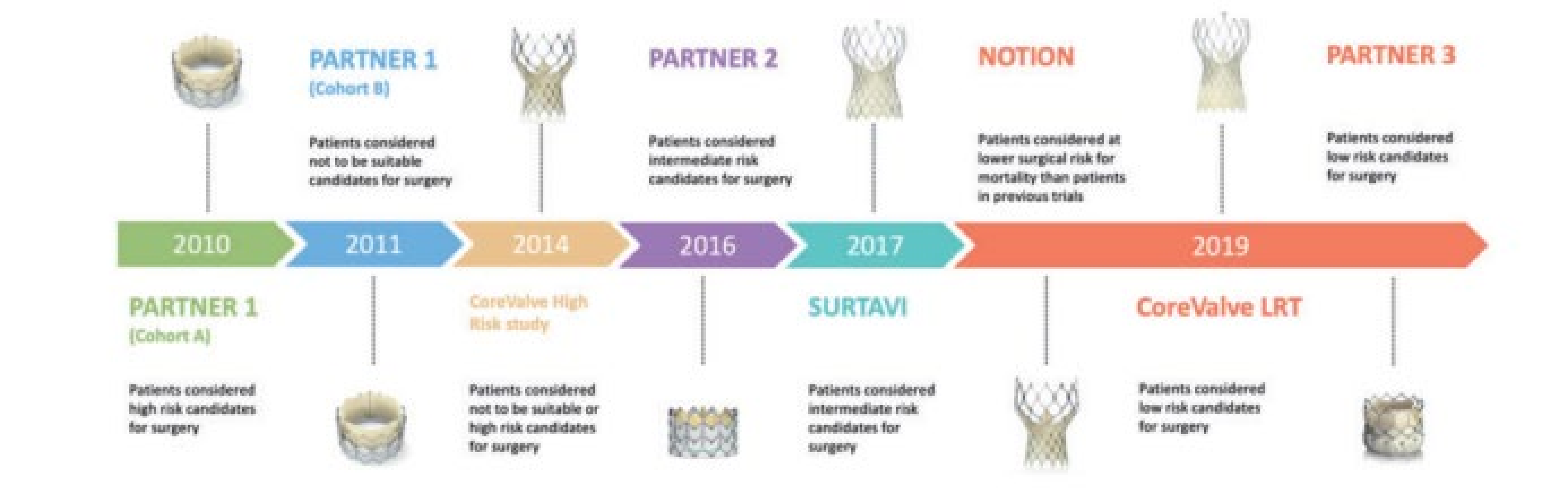
European Heart Journal Supplements (2020) **22** (Supplement L), L140–L145
The Heart of the Matter
doi:10.1093/eurheartj/suaa154

ESC
European Society
of Cardiology

The path of transcatheter aortic valve implantation: from compassionate to low-risk cases

Corrado Tamburino*, Roberto Valvo, Enrico Criscione, Claudia Reddavid, Andrea Picci, Giuliano Costa, and Marco Barbanti



Partner 3 - Low risk 2 year results
ACC 2020/TCT 2020

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ORIGINAL INVESTIGATIONS

Outcomes 2 Years After Transcatheter Aortic Valve Replacement in Patients at Low Surgical Risk

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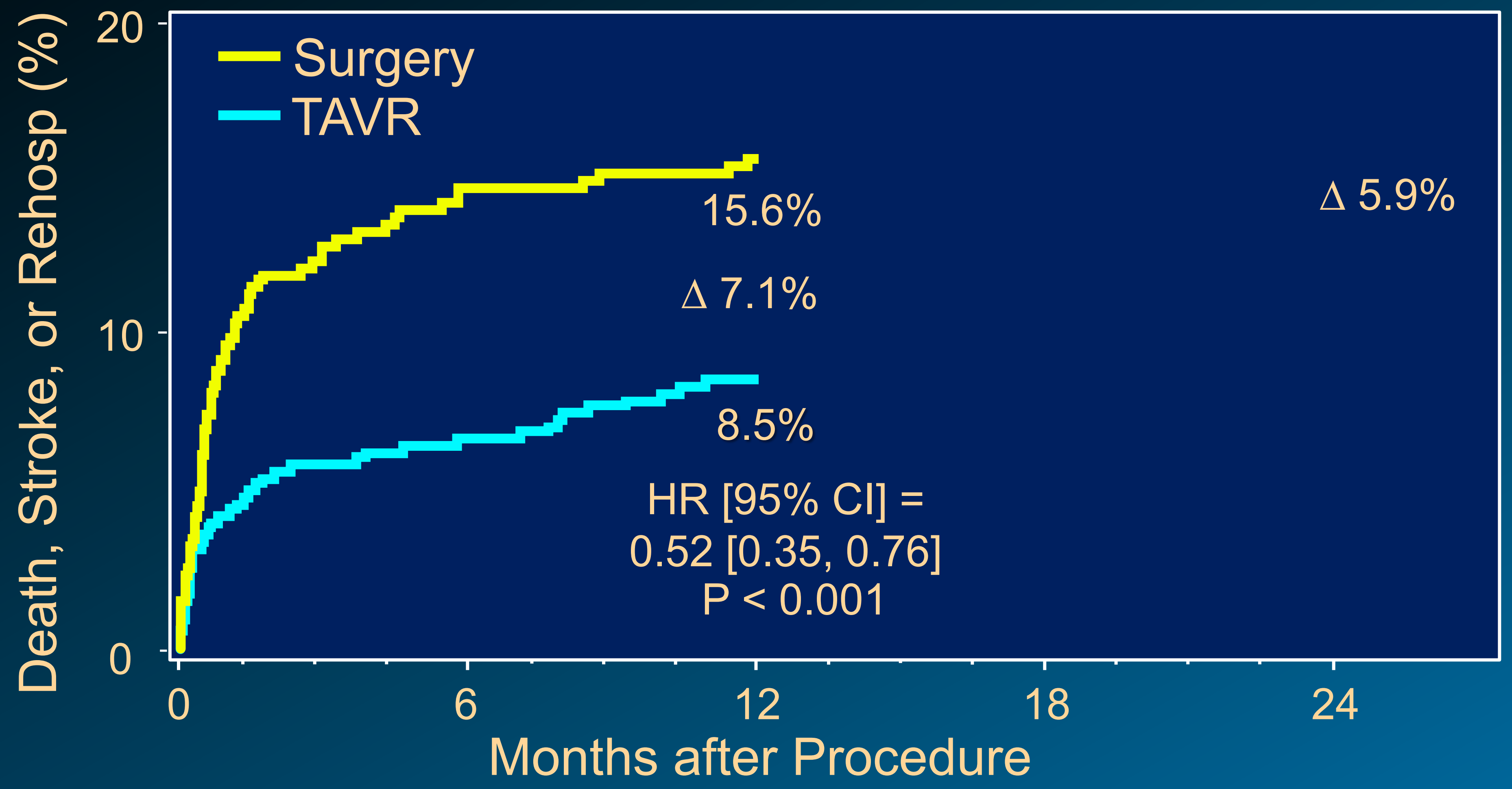
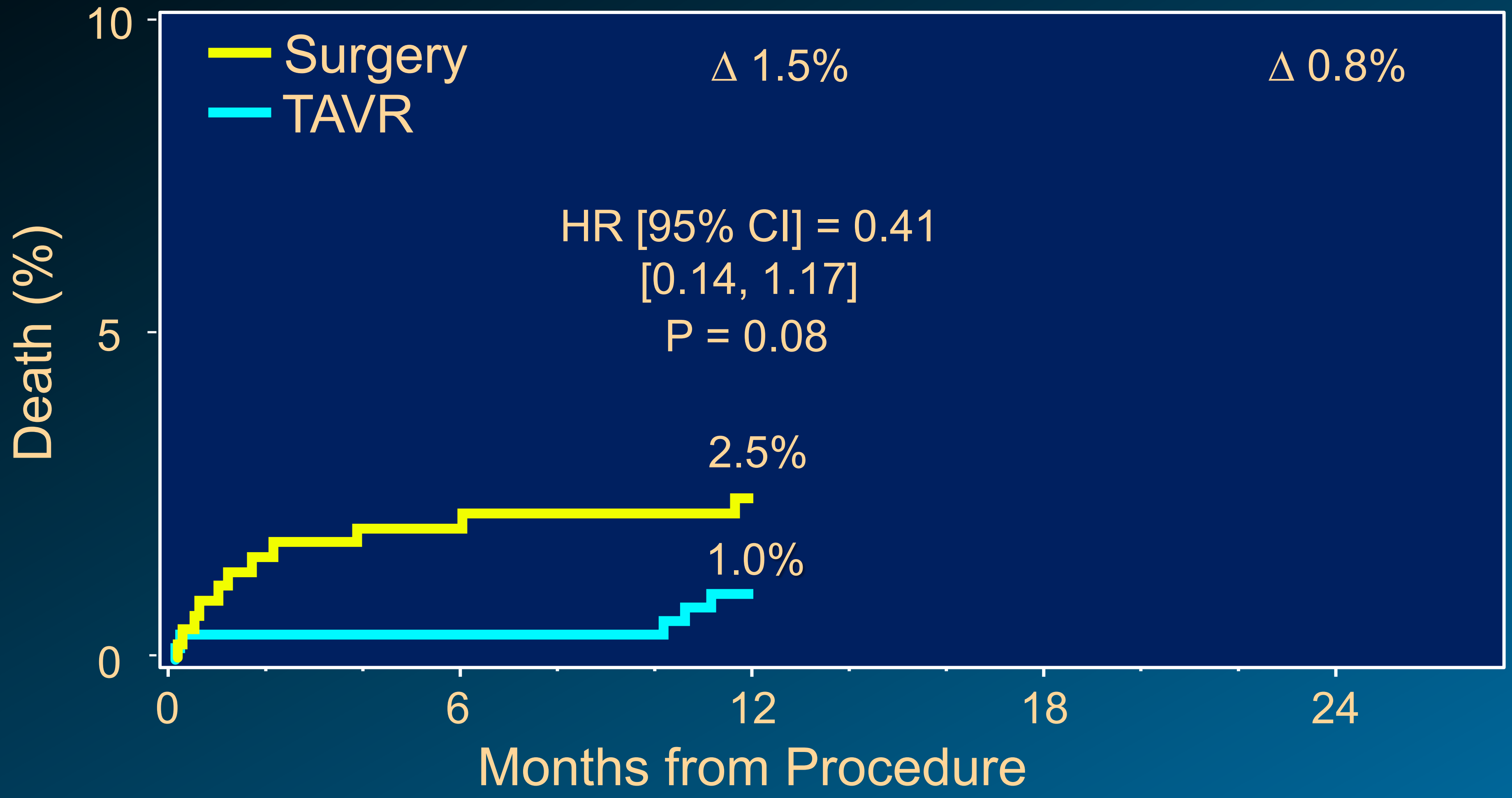
TAVR Superiority → Non-inferiority

Primary Endpoint

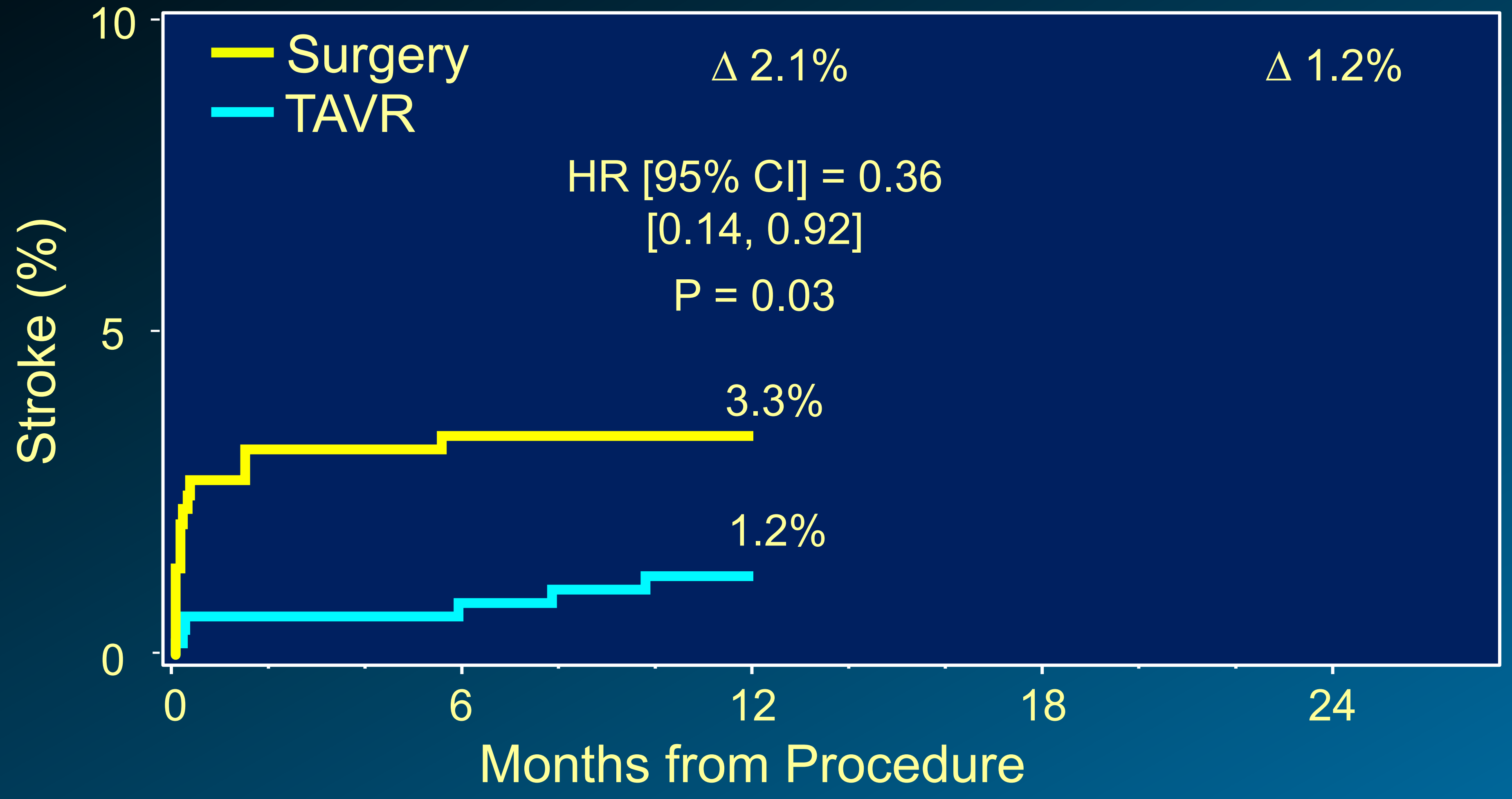


Death



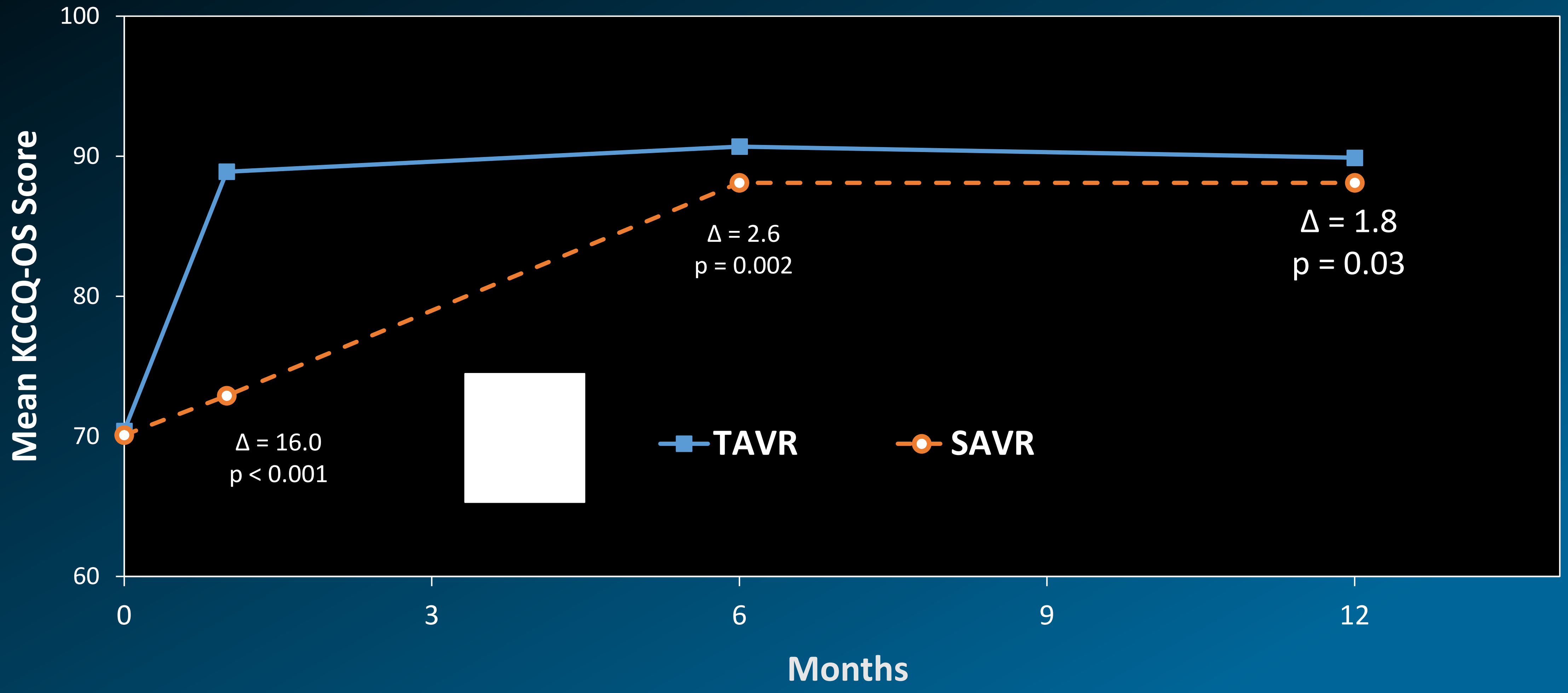
Surgery
TAVR
Δ 1.5%
Δ 0.8%
HR [95% CI] = 0.41
[0.14, 1.17]
P = 0.08
2.5%
1.0%
Death (%)
10
5
0
0
6
12
18
24
Months from Procedure

Stroke



Surgery
TAVR
Δ 2.1%
Δ 1.2%
HR [95% CI] = 0.36
[0.14, 0.92]
P = 0.03
3.3%
1.2%
10
5
0
Stroke (%)
0
6
12
18
24
Months from Procedure

Primary Endpoint:
KCCQ-Overall Summary



JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
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CLINICAL PRACTICE GUIDELINE: FULL TEXT

2020 ACC/AHA Guideline for the Management of Patients With Valvular Heart Disease

A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines

Developed in collaboration with and endorsed by the American Association for Thoracic Surgery, American Society of Echocardiography, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Anesthesiologists, and Society of Thoracic Surgeons

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†ACC/AHA Joint Committee on Clinical Practice Guidelines Liaison.

Recommendations for Choice of SAVR Versus TAVI for Patients for Whom a Bioprosthetic AVR Is Appropriate
Referenced studies that support the recommendations are summarized in Online Data Supplement 11 to 13.

COR	LOE	RECOMMENDATIONS
1	A	1. For symptomatic and asymptomatic patients with severe AS and any indication for AVR who are <65 years of age or have a life expectancy >20 years, SAVR is recommended (1-3).
1	A	2. For symptomatic patients with severe AS who are 65 to 80 years of age and have no anatomic contraindication to transfemoral TAVI, either SAVR or transfemoral TAVI is recommended after shared decision-making about the balance between expected patient longevity and valve durability (1,4-8).
1	A	3. For symptomatic patients with severe AS who are >80 years of age or for younger patients with a life expectancy <10 years and no anatomic contraindication to transfemoral TAVI, transfemoral TAVI is recommended in preference to SAVR (1,4-10).
1	B-NR	4. In asymptomatic patients with severe AS and an LVEF <50% who are ≤80 years of age and have no anatomic contraindication to transfemoral TAVI, the decision between TAVI and SAVR should follow the same recommendations as for symptomatic patients in Recommendations 1, 2, and 3 above (1,2,4-10).
1	B-NR	5. For asymptomatic patients with severe AS and an abnormal exercise test, very severe AS, rapid progression, or an elevated BNP (COR 2a indications for AVR), SAVR is recommended in preference to TAVI (1-3,11).
1	A	6. For patients with an indication for AVR for whom a bioprosthetic valve is preferred but valve or vascular anatomy or other factors are not suitable for transfemoral TAVI, SAVR is recommended (1-3,11).
1	A	7. For symptomatic patients of any age with severe AS and a high or prohibitive surgical risk, TAVI is recommended if predicted post-TAVI survival is >12 months with an acceptable quality of life (12,13,14,15).
1	C-EO	8. For symptomatic patients with severe AS for whom predicted post-TAVI or post-SAVR survival is <12 months or for whom minimal improvement in quality of life is expected, palliative care is recommended after shared decision-making, including discussion of patient preferences and values.
2b	C-EO	9. In critically ill patients with severe AS, percutaneous aortic balloon dilation may be considered as a bridge to SAVR or TAVI.

ESC/EACTS GUIDELINES

ESC
European Society of Cardiology

European Heart Journal (2021) **00**, 1–72
doi:10.1093/eurheartj/ehab395

2021 ESC/EACTS Guidelines for the management of valvular heart disease

Developed by the Task Force for the management of valvular heart disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

Authors/Task Force Members: Alec Vahanian * (ESC Chairperson) (France), Friedhelm Beyersdorf*[1] (EACTS Chairperson) (Germany), Fabien Praz (ESC Task Force Coordinator) (Switzerland), Milan Milojevic[1] (EACTS Task Force Coordinator) (Serbia), Stephan Baldus (Germany), Johann Bauersachs (Germany), Davide Capodanno (Italy), Lenard Conradi[1] (Germany), Michele De Bonis[1] (Italy), Ruggero De Paulis[1] (Italy), Victoria Delgado (Netherlands), Nick Freemantle[1] (United Kingdom), Martine Gilard (France), Kristina H. Haugaa (Norway), Anders Jeppsson[1] (Sweden), Peter Jüni (Canada), Luc Pierard (Belgium), Bernard D. Prendergast (United Kingdom), J. Rafael Sádaba[1] (Spain), Christophe Tribouilloy (France), Wojtek Wojakowski (Poland), ESC/EACTS Scientific Document Group

C) Mode of intervention		
Aortic valve interventions must be performed in Heart Valve Centres that declare their local expertise and outcomes data, have active interventional cardiology and cardiac surgical programmes on site, and a structured collaborative Heart Team approach.	I	C
The choice between surgical and transcatheter intervention must be based upon careful evaluation of clinical, anatomical, and procedural factors by the Heart Team, weighing the risks and benefits of each approach for an individual patient. The Heart Team recommendation should be discussed with the patient who can then make an informed treatment choice.	I	C
SAVR is recommended in younger patients who are low risk for surgery (<75 years[e] and STS-PROM/EuroSCORE II <4%)[e,f], or in patients who are operable and unsuitable for transfemoral TAVI.[244]	I	B
TAVI is recommended in older patients (≥75 years), or in those who are high risk (STS-PROM/EuroSCORE II[f] >8%) or unsuitable for surgery.[197–206,245]	I	A
SAVR or TAVI are recommended for remaining patients according to individual clinical, anatomical, and procedural characteristics.[202–205,207,209,210,212] [f,g]	I	B
Non-transfemoral TAVI may be considered in patients who are inoperable and unsuitable for transfemoral TAVI.	IIb	C
Balloon aortic valvotomy may be considered as a bridge to SAVR or TAVI in haemodynamically unstable patients and (if feasible) in those with severe aortic stenosis who require urgent high-risk NCS (*Figure 11*).	IIb	C

Several additional factors influence the choice of treatment modality

2021 ESC/EACTS Guidelines – What has changed?

	Favours TAVI	Favours SAVR
Clinical characteristics		
Lower surgical risk	–	+
Higher surgical risk	+	–
Younger age[a]	–	+
Older age[a]	+	–
Previous cardiac surgery (particularly intact coronary artery bypass grafts at risk of injury during repeat sternotomy)	+	–
Severe frailty[b]	+	–
Active or suspected endocarditis	–	+

Adapted from: Vahanian, A. *et al.* 2021

	Favours TAVI	Favours SAVR
Anatomical and procedural factors		
TAVI feasible via transfemoral approach	+	–
Transfemoral access challenging or impossible and SAVR feasible	–	+
Transfemoral access challenging or impossible and SAVR inadvisable	+[c]	–
Sequelae of chest radiation	+	–
Porcelain aorta	+	–
High likelihood of severe patient–prosthesis mismatch (AVA <0.65 cm^2/m^2 BSA)	+	–
Severe chest deformation or scoliosis	+	–
Aortic annular dimensions unsuitable for available TAVI devices	–	+
Bicuspid aortic valve	–	+
Valve morphology unfavourable for TAVI (e.g. high risk of coronary obstruction due to low coronary ostia or heavy leaflet/LVOT calcification)	–	+
Thrombus in aorta or LV	–	+

	Favours TAVI	Favours SAVR
Concomitant cardiac conditions requiring intervention		
Significant multi-vessel CAD requiring surgical revascularization[d]	–	+
Severe primary mitral valve disease	–	+
Severe tricuspid valve disease	–	+
Significant dilatation/aneurysm of the aortic root and/or ascending aorta	–	+
Septal hypertrophy requiring myectomy	–	+

1. Vahanian, A. *et al.* 2021 ESC/EACTS Guidelines for the management of valvular heart disease. *European Heart Journal* 2021; 00: 1-72

Considerations

- Age
- Valve/annular/aortic anatomy
- Procedural considerations
  - Risk (TAVR and SAVR)
  - Access (TAVR and SAVR)
- Likelihood of severe PPM
- Concomitant disease
- Life expectancy/ QOL
- Local/regional expertise
- Patient preference

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Considerations

- Age
- Valve/annular/aortic anatomy
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  - Risk (TAVR and SAVR)
  - Access (TAVR and SAVR)
- Likelihood of severe PPM
- Concomitant disease
- Life expectancy/ QOL
- Local/regional expertise
- Patient preference

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Age

- ACC/AHA

< 65 or life expectancy >20 years	SAVR
65-80	TAVR or SAVR
>80 or <80 with life expectancy <10 years	TAVR

- ESC/EACTS

<75 low risk for surgery (PROM <4%)	SAVR
≥75	TAVR

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Considerations

- Age
- Valve/annular/aortic anatomy
- Procedural considerations
  - Risk (TAVR and SAVR)
  - Access (TAVR and SAVR)
- Likelihood of severe PPM
- Concomitant disease
- Life expectancy/ QOL
- Local/regional expertise
- Patient preference

Valve Anatomy

Bicuspid aortic valve

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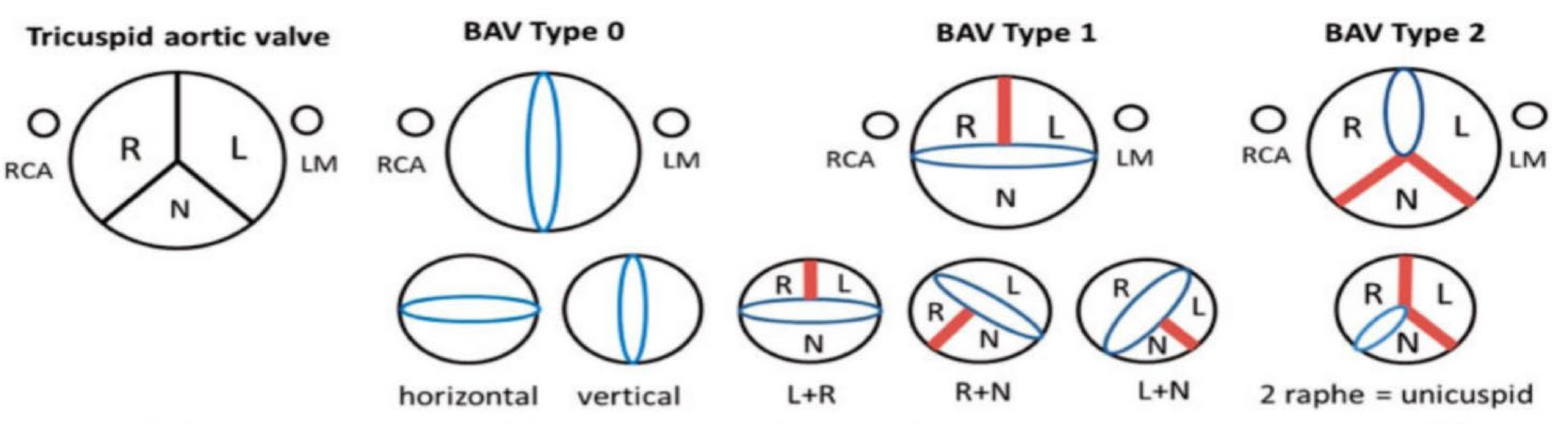
Sievers Classification



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JACC: CARDIOVASCULAR INTERVENTIONS VOL. 14, NO. 19, 2021

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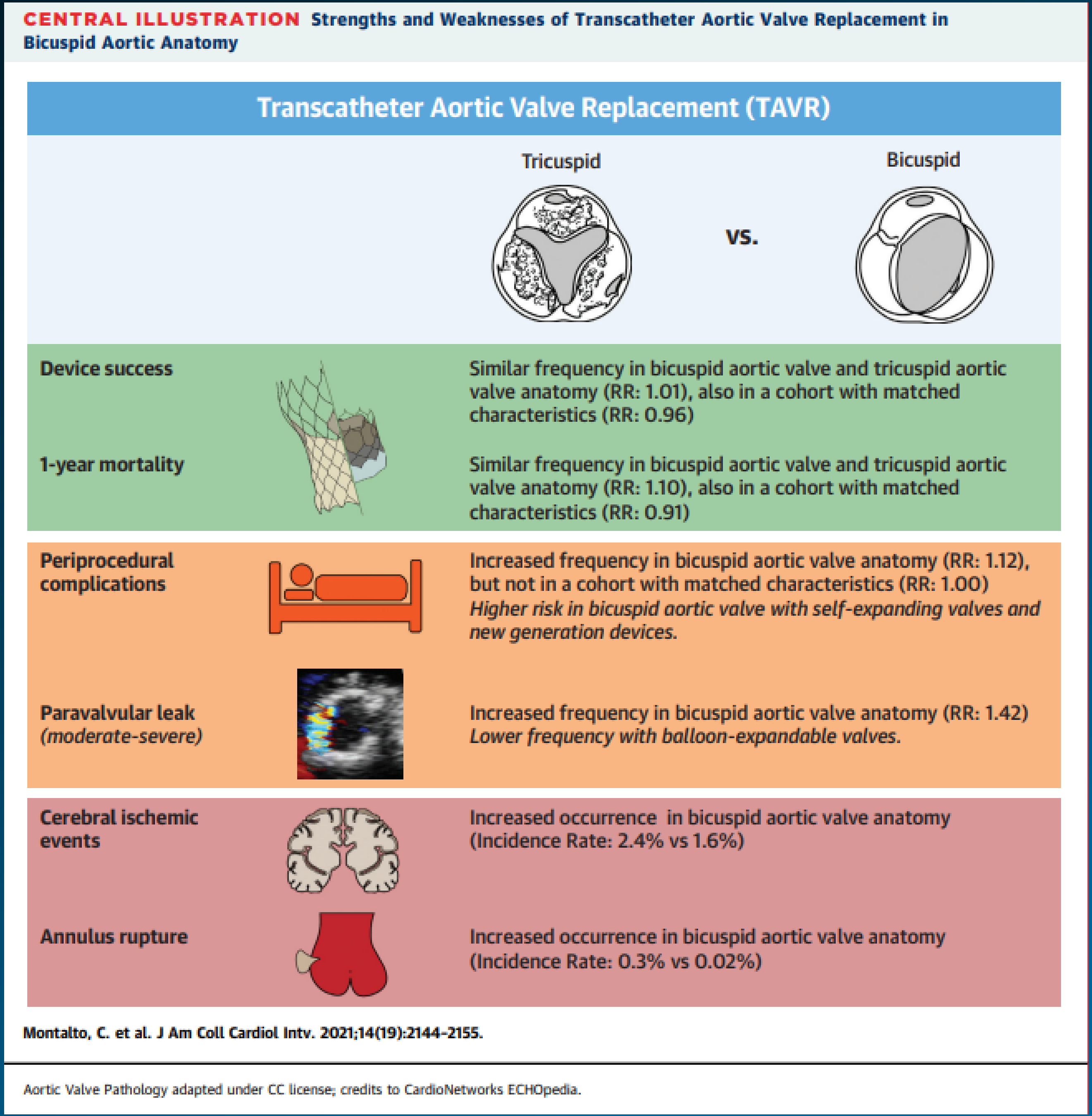
Outcomes After Transcatheter Aortic Valve Replacement in Bicuspid Versus Tricuspid Anatomy

A Systematic Review and Meta-Analysis

Claudio Montalto, MD,[a,b,*] Alessandro Sticchi, MD,[c,d,*] Gabriele Crimi, MD,[e] Alessandra Laricchia, MD,[f] Arif A. Khokhar, BM BCh,[f] Francesco Giannini, MD,[f] Bernhard Reimers, MD,[g,h] Antonio Colombo, MD,[g,h] Azeem Latib, MD,[i] Ron Waksman, MD,[j] Antonio Mangieri, MD[g,h]



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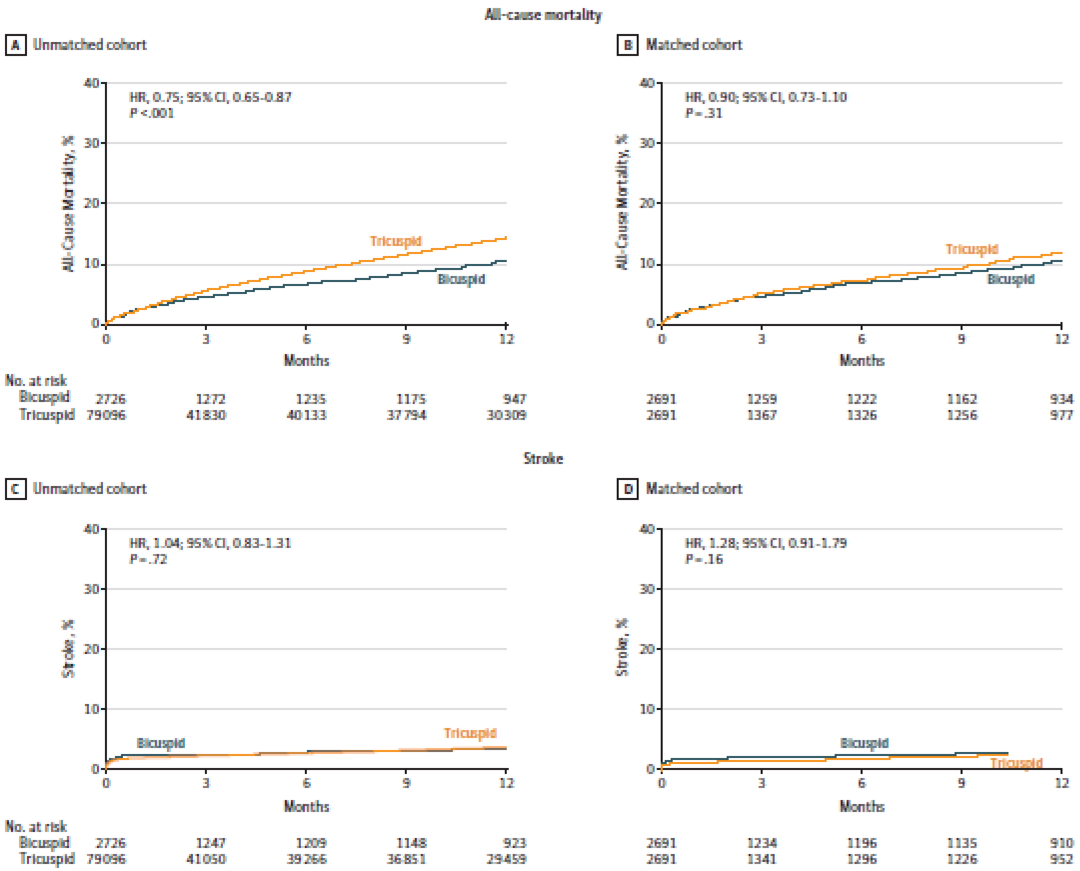
JAMA | Preliminary Communication

Association Between Transcatheter Aortic Valve Replacement for Bicuspid vs Tricuspid Aortic Stenosis and Mortality or Stroke

Raj R. Makkar, MD; Sung-Han Yoon, MD; Martin B. Leon, MD; Tarun Chakravarty, MD; Michael Rinaldi, MD; Pinak B. Shah, MD; Eric R. Skipper, MD; Vinod H. Thourani, MD; Vasilis Babaliaros, MD; Wen Cheng, MD; Alfredo Trento, MD; Sreekanth Vemulapalli, MD; Samir R. Kapadia, MD; Susheel Kodali, MD; Michael J. Mack, MD; Gilbert H. L. Tang, MD, Msc, MBA; Tsuyoshi Kaneko, MD

Figure 2. One-Year Cumulative Event Rates of All-Cause Mortality or Stroke Among Patients With Bicuspid and Tricuspid Aortic Stenosis in Unadjusted and Propensity-Matched Cohorts



The *P* values were obtained from Cox proportional hazards models. In the unadjusted cohort, the median follow-up for the bicuspid group was 44 days (interquartile range [IQR], 31-365 days) and for the tricuspid group, 55 days (IQR, 32-365 days). In the propensity score–matched cohort, the median follow-up for the bicuspid group was 44 days (IQR, 31-365 days) and for the tricuspid, 53 days (IQR, 32-365 days). This is a continuous registry in which all patients will not have reached the 1-year follow-up at any given time point.

At 1 year, there were missing data from 1586 patients in the bicuspid group (660 had not completed their first year of follow-up at the time of the analysis; 926, unknown) and 1514 patients in the tricuspid group (684 had not completed their first year of follow-up at the time of the analysis; 830, unknown), which were further assessed in the Centers for Medicare & Medicaid Services linked sensitivity analyses (eFigure 3 in the Supplement).

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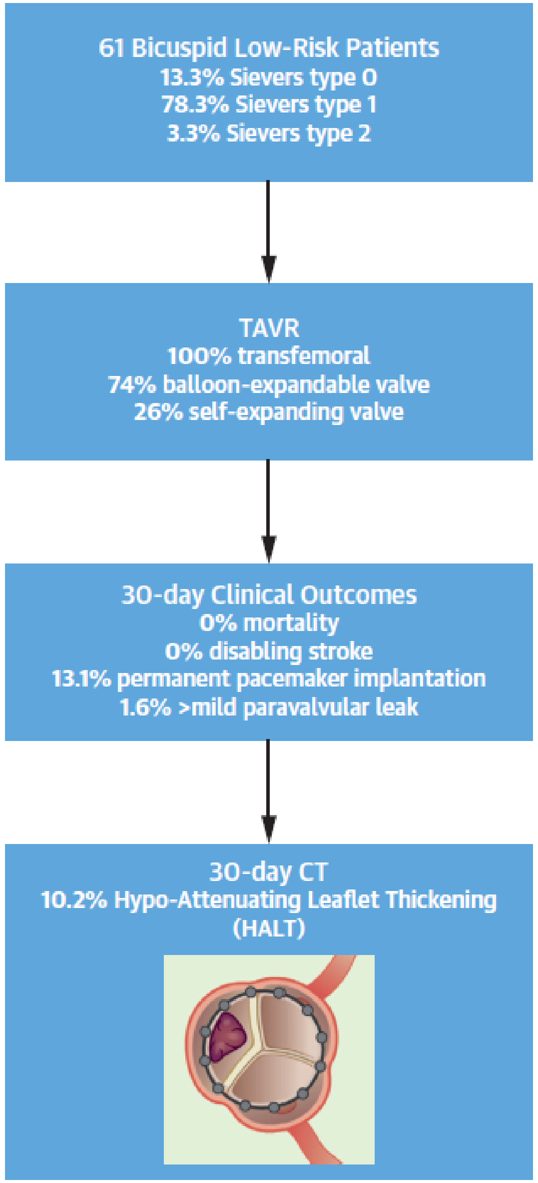
JACC: CARDIOVASCULAR INTERVENTIONS VOL. 13, NO. 9, 2020

FOCUS ON TRANSCATHETER AORTIC VALVE REPLACEMENT

Transcatheter Aortic Valve Replacement in Low-Risk Patients With Symptomatic Severe Bicuspid Aortic Valve Stenosis

Ron Waksman, MD,[a] Paige E. Craig, MPH,[a] Rebecca Torguson, MPH,[a] Federico M. Asch, MD,[b] Gaby Weissman, MD,[c] Daniel Ruiz, MD,[a] Paul Gordon, MD,[d] Afshin Ehsan, MD,[e] Puja Parikh, MD,[f] Thomas Bilfinger, MD,[g] Robert Levitt, MD,[h] Chiwon Hahn, MD,[i] David Roberts, MD,[j] Michael Ingram, MD,[j] Nicholas Hanna, MD,[k] George Comas, MD,[l] Cheng Zhang, PhD,[a] Itsik Ben-Dor, MD,[a] Lowell F. Satler, MD,[a] Hector M. Garcia-Garcia, MD, PhD,[a] Christian Shults, MD,[m] Toby Rogers, MD, PhD[a,n]

CENTRAL ILLUSTRATION Summary of the Bicuspid Low-Risk TAVR Trial



Waksman, R. et al. J Am Coll Cardiol Intv. 2020;13(9):1019-27.

CT = computed tomography; TAVR = transcatheter aortic valve replacement.

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
VOL. 76, NO. 9, 2020

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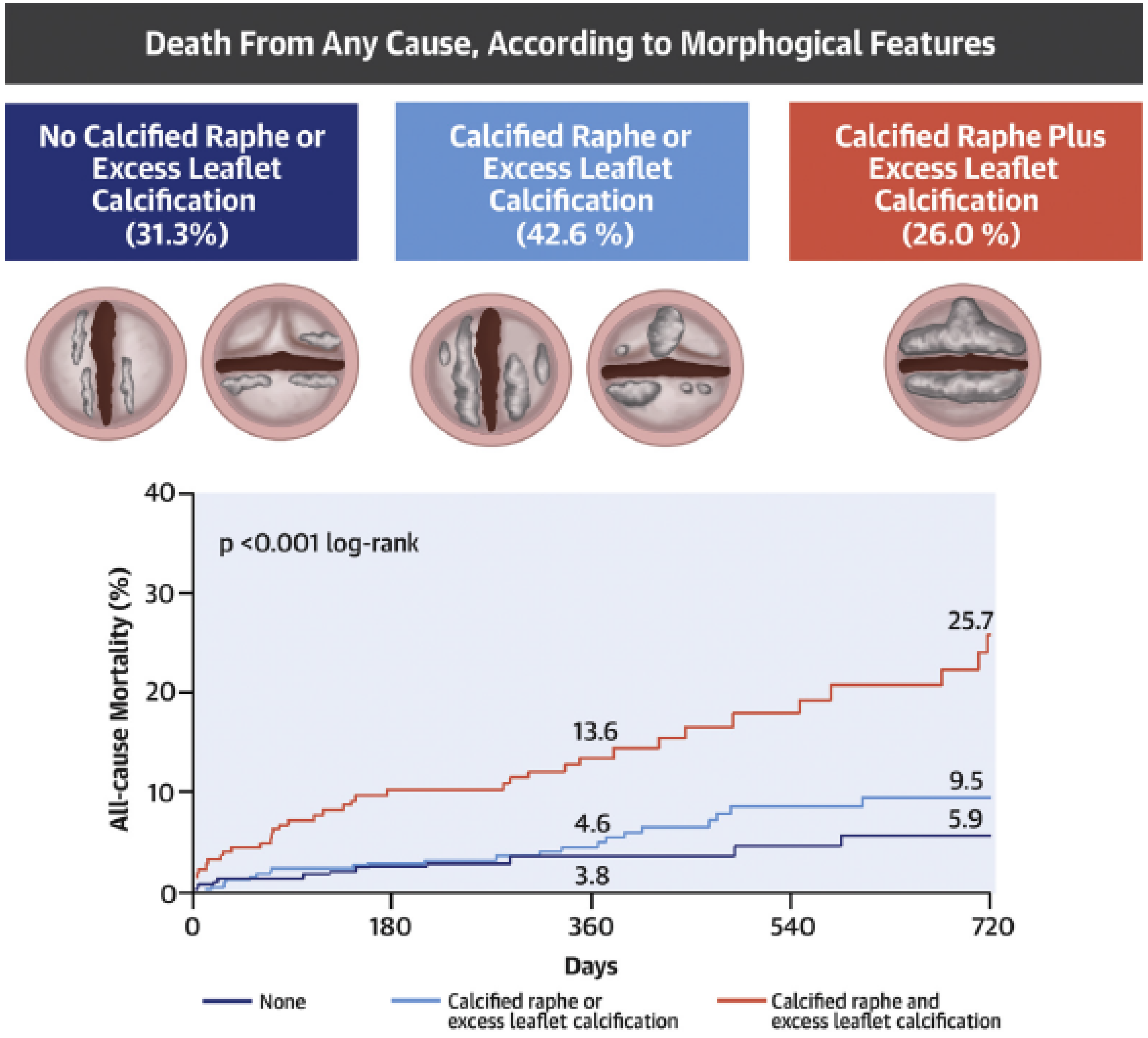
Bicuspid Aortic Valve Morphology and Outcomes After Transcatheter Aortic Valve Replacement

Sung-Han Yoon, MD,[a] Won-Keun Kim, MD,[b] Abhijeet Dhoble, MD,[c] Stephan Milhorini Pio, MD,[d] Vasilis Babaliaros, MD,[e] Hasan Jilaihawi, MD,[f] Thomas Pilgrim, MD,[g] Ole De Backer, MD,[h] Sabine Bleiziffer, MD,[i] Flavien Vincent, MD,[j] Tobias Shmidt, MD,[k] Christian Butter, MD,[l] Norihiko Kamioka, MD,[e] Lena Eschenbach, MD,[m] Matthias Renker, MD,[b] Masahiko Asami, MD,[g] Mohamad Lazkani, MD,[n] Buntaro Fujita, MD,[o,p] Antoinette Birs, MD,[q] Marco Barbanti, MD,[r] Ashish Pershad, MD,[s] Uri Landes, MD,[t] Brad Oldemeyer, MD,[n] Mitusnobu Kitamura, MD,[k] Luke Oakley, MD,[a] Tomoki Ochiai, MD,[a] Tarun Chakravarty, MD,[a] Mamoo Nakamura, MD,[a] Philip Ruile, MD,[u] Florian Deuschl, MD,[v] Daniel Berman, MD,[a] Thomas Modine, MD,[j,w] Stephan Ensminger, MD,[o,p] Ran Kornowski, MD,[t] Rudiger Lange, MD,[m] James M. McCabe, MD,[q] Mathew R. Williams, MD,[f] Brian Whisenant, MD,[x] Victoria Delgado, MD,[d] Stephan Windecker, MD,[g] Eric Van Belle, MD,[j] Lars Sondergaard, MD,[h] Bernard Chevalier, MD,[y] Michael Mack, MD,[z] Jeroen J. Bax, MD,[d] Martin B. Leon, MD,[aa] Raj R. Makkar, MD,[a]
for the Bicuspid Aortic Valve Stenosis Transcatheter Aortic Valve Replacement Registry Investigators

CENTRAL ILLUSTRATION Death From Any Cause According to Morphological Features



Yoon, S.-H. et al. J Am Coll Cardiol. 2020;76(9):1018-30.

(Top) Schematic presentations of various bicuspid aortic valve morphology. Bicuspid aortic valve with no morphological features (calcified raphe or excess leaflet calcification), either, or both of these features. **(Bottom)** All-cause mortality according to the morphological features. Event rates were calculated with the use of Kaplan-Meier methods and were compared with the log-rank test.

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The PARTNER 3 Bicuspid Registry for SAPIEN 3 TAVR in Low-risk Patients

Mathew R. Williams, MD &
John G. Webb, MD
on behalf of the PARTNER 3 Trial Investigators

Baseline Morphology

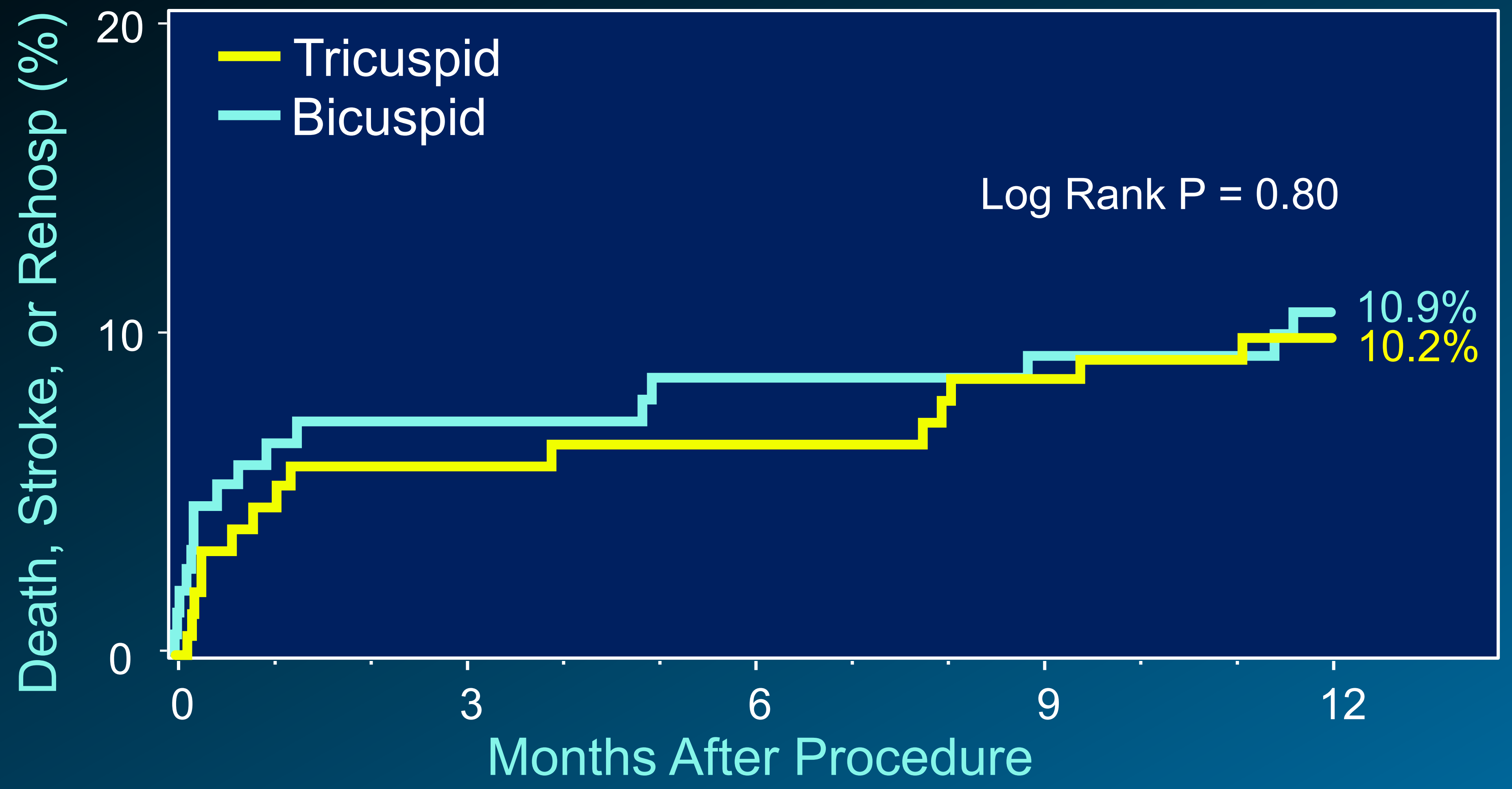
% of patients

Bicuspid Sievers Classification			
	Type 0 (No raphe)	**Type 1** (1 raphe)	**Type 2** (2 raphae)
			
Registry (N=71)	**14.1%**	**84.5%**	**1.4%**
CAP (N=98)	**13.3%**	**86.7%**	**0%**

Figures adapted from Mylotte D et al. J Am Coll Cardiol. 2014 Dec, 64 (22) 2330-2339.

Primary Endpoint

Matched



Number at risk:

Tricuspid	**148**	**127**
Bicuspid	**148**	**122**

Clinical Outcomes

Matched

Outcome (KM estimate as %)	**30 Days**			**1 Year**		
	Bicuspid N=148	**Tricuspid N=148**	**p value**	**Bicuspid N=148**	**Tricuspid N=148**	**p value**
Death, Stroke, or Rehospitalization	6.8%	4.7%	0.44	10.9%	10.2%	0.80
Death	0.0%	0.0%	NA	0.7%	1.4%	0.58
Stroke	1.4%	1.4%	0.99	2.1%	2.0%	0.99
Rehospitalization	5.4%	4.1%	0.58	9.6%	9.5%	0.96
New pacemaker	6.1%	6.8%	0.81	6.8%	7.4%	0.82

BAV – other considerations

- Aortopathy may require surgery
- Annulus may exceed available TAVR sizes
- Age

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Considerations

- Age
- Valve/annular/aortic anatomy
- Procedural considerations
  - Risk (TAVR and SAVR)
  - Access (TAVR and SAVR)
- Likelihood of severe PPM
- Concomitant disease
- Life expectancy/ QOL
- Local/regional expertise
- Patient preference

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TAVR Implantation Considerations

- Non-femoral access
- Hostile landing zone
- Low and unprotected coronaries
- Annular sizing

Surgical considerations

- Hostile chest
  - Radiation
  - Prior surgery
  - Scoliosis
- Porcelain aorta
- Frailty
- Risk (calculators)

Considerations

- Age
- Valve/annular/aortic anatomy
- Procedural considerations
  - Risk (TAVR and SAVR)
  - Access (TAVR and SAVR)
- Likelihood of severe PPM
- Concomitant disease
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- Patient preference

Prospective Strategy to Avoid PPM at time of Operation

- 1- Calculation of body surface area
- 2- Determination of minimal prosthetic valve EOA to avoid mismatch:
  - Multiply BSA (m^2) by desired objective for indexed EOA
  - (ex. 1.90 m^2 x 0.85 cm^2/m^2 = 1.62 cm^2)
- 3- Choose prosthesis using reference values of EOA for different types and sizes of prostheses

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Pibarot & Dumesnil JACC 2000; 36: 1131-41

EOA Reference Values for Most Currently Used Aortic Prostheses

Table 3 Normal reference values of EOAs* for prosthetic valves

Valve type	Prosthetic valve size (mm) 19	21	23	25	27	29	Reference
Stented bioprosthetic valves							
Medtronic Mosaic	1.20	1.22	1.38	1.65	1.80	2.00	6
Hancock II	NA	1.18	1.33	1.46	1.55	1.60	6
Carpentier-Edwards Perimount	1.10	1.30	1.50	1.80	1.80	NA	6
Stentless bioprosthetic valves							
Medtronic Freestyle	1.15	1.35	1.48	2.00	2.32	NA	6
St Jude Medical Toronto SPV	–	1.30	1.50	1.70	2.00	2.50	6
Prima Edwards	0.80	1.10	1.50	1.80	2.30	2.80	6
Mechanical valves							
Medtronic-Hall	1.19	1.34	NA	NA	NA	NA	6
St Jude Medical Standard	1.04	1.38	1.52	2.08	2.65	3.23	6
St Jude Medical Regent	1.60	2.00	2.20	2.50	3.60	4.40	40
MCRI On-X	1.50	1.70	2.00	2.40	3.20	3.20	41
Carbomedics	1.00	1.54	1.63	1.98	2.41	2.63	6
Sorin Bicarbon	NA	1.66	1.96	NA	NA	NA	42

*Expressed as mean values available in the literature.

Pibarot and Dumesnil, Heart. 2006; 92(8):1022-9.

Example of Chart Used to Avoid PPM at Time of Operation

	EOAi by Prosthesis size (mm)					
Prosthesis size (mm)	**19**	**21**	**23**	**25**	**27**	**29**
Average EOA (cm^2)	1.1	1.3	1.5	1.8	2.3	2.7
BSA (m^2)						
0.6	1.83	2.17	2.50	3.00	3.83	4.50
0.7	1.57	1.86	2.14	2.57	3.29	3.86
0.8	1.38	1.63	1.88	2.25	2.88	3.38
0.9	1.22	1.44	1.67	2.00	2.56	3.00
1	1.10	1.30	1.50	1.80	2.30	2.70
1.1	1.00	1.18	1.36	1.64	2.09	2.45
1.2	0.92	1.08	1.25	1.50	1.92	2.25
1.3	0.85	1.00	1.15	1.38	1.77	2.08
1.4	0.79	0.93	1.07	1.29	1.64	1.93
1.5	0.73	0.87	1.00	1.20	1.53	1.80
1.6	0.49	0.88	0.88	0.88	0.88	1.69
1.7	0.65	0.76	0.88	1.06	1.35	1.59
1.8	0.61	0.72	0.83	1.00	1.28	1.50
1.9	0.58	0.68	0.79	0.95	1.21	1.42
2	0.55	0.65	0.75	0.90	1.15	1.35
2.1	0.52	0.62	0.71	0.86	1.10	1.29
2.2	0.50	0.59	0.68	0.82	1.05	1.23
2.3	0.48	0.57	0.65	0.78	1.00	1.17
2.4	0.46	0.54	0.63	0.75	0.96	1.13
2.5	0.44	0.52	0.60	0.72	0.92	1.08

Considerations

- Age
- Valve/annular/aortic anatomy
- Procedural considerations
  - Risk (TAVR and SAVR)
  - Access (TAVR and SAVR)
- Likelihood of severe PPM
- Concomitant disease
- Life expectancy/ QOL
- Local/regional expertise
- Patient preference

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Surgical CAD, MVD, need for surgical myectomy, endocarditis etc.

SAVR

Considerations

- Age
- Valve/annular/aortic anatomy
- Procedural considerations
  - Risk (TAVR and SAVR)
  - Access (TAVR and SAVR)
- Likelihood of severe PPM
- Concomitant disease
- Life expectancy/ QOL
- Local/regional expertise
- Patient preference

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Role for palliation

- Life expectance <12 years
- No reasonable expectation of improved QOL

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Considerations

- Age
- Valve/annular/aortic anatomy
- Procedural considerations
  - Risk (TAVR and SAVR)
  - Access (TAVR and SAVR)
- Likelihood of severe PPM
- Concomitant disease
- Life expectancy/ QOL
- Local/regional expertise
- Patient preference

TABLE 11 Structure of Primary and Comprehensive Valve Centers

Comprehensive (Level I) Valve Center	Primary (Level II) Valve Center
Interventional procedures*	
TAVI-transfemoral	TAVI-transfemoral
Percutaneous aortic valve balloon dilation	Percutaneous aortic valve balloon dilation
TAVI-alternative access, including transthoracic (transaortic, transapical) and extrathoracic (eg, subclavian, carotid, caval) approaches	
Valve-in-valve procedures	
TEER	
Prosthetic valve paravalvular leak closure	
Percutaneous mitral balloon commissurotomy	
Surgical procedures*	
SAVR	SAVR
Valve-sparing aortic root procedures	
Aortic root procedures for aneurysmal disease	
Concomitant septal myectomy with AVR	
Root enlargement with AVR	
Mitral repair for primary MR	Mitral repair for posterior leaflet primary MR†
Mitral valve replacement‡	Mitral valve replacement‡
Multivalve operations	
Reoperative valve surgery	
Isolated or concomitant tricuspid valve repair or replacement	Concomitant tricuspid valve repair or replacement with mitral surgery

Considerations

- Age
- Valve/annular/aortic anatomy
- Procedural considerations
  - Risk (TAVR and SAVR)
  - Access (TAVR and SAVR)
- Likelihood of severe PPM
- Concomitant disease
- Life expectancy/ QOL
- Local/regional expertise
- Patient preference

Shared decision making

- Harder than it sounds
  - Inconsistent family position
  - Hard to say we have nothing to offer
  - Hard to educate
- Life long “strategy” with missing information
- Patients virtually always opt for TAVR

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Patient preference

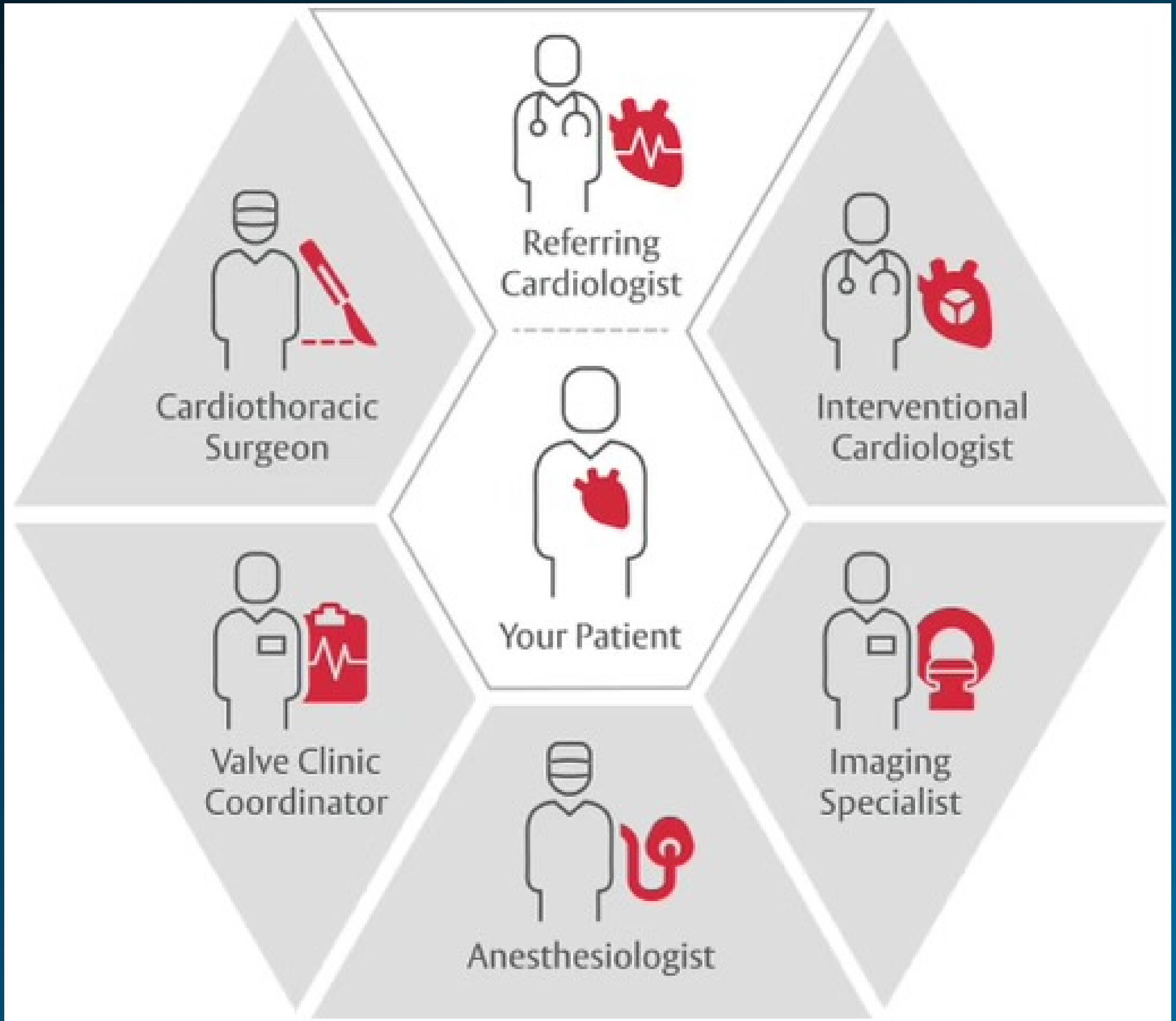
- TAVR preferred but have to consider valve longevity and life long strategy

Valve Thrombosis to 2 Years

CEC adjudicated valve thrombosis per VARC 2 (all patients received anticoagulation).

Outcomes	TAVR (N=496)	Surgery (N=454)	P-value
Valve Thrombosis	2.6% (13)	0.7% (3)	0.02
Mean Gradient > 20mmHg and ↑ > 10mmHg	53.8% (7)	0% (0)	
Mean Gradient > 20mmHg and ↑ < 10mmHg	30.7% (4)	100.0% (3)	
↑ transvalvular AR (mild) with no change in mean gradient	7.7% (1)	0% (0)	
CT findings with no change in hemodynamics	7.7% (1)	0% (0)	

Heart Team Discussion is Key



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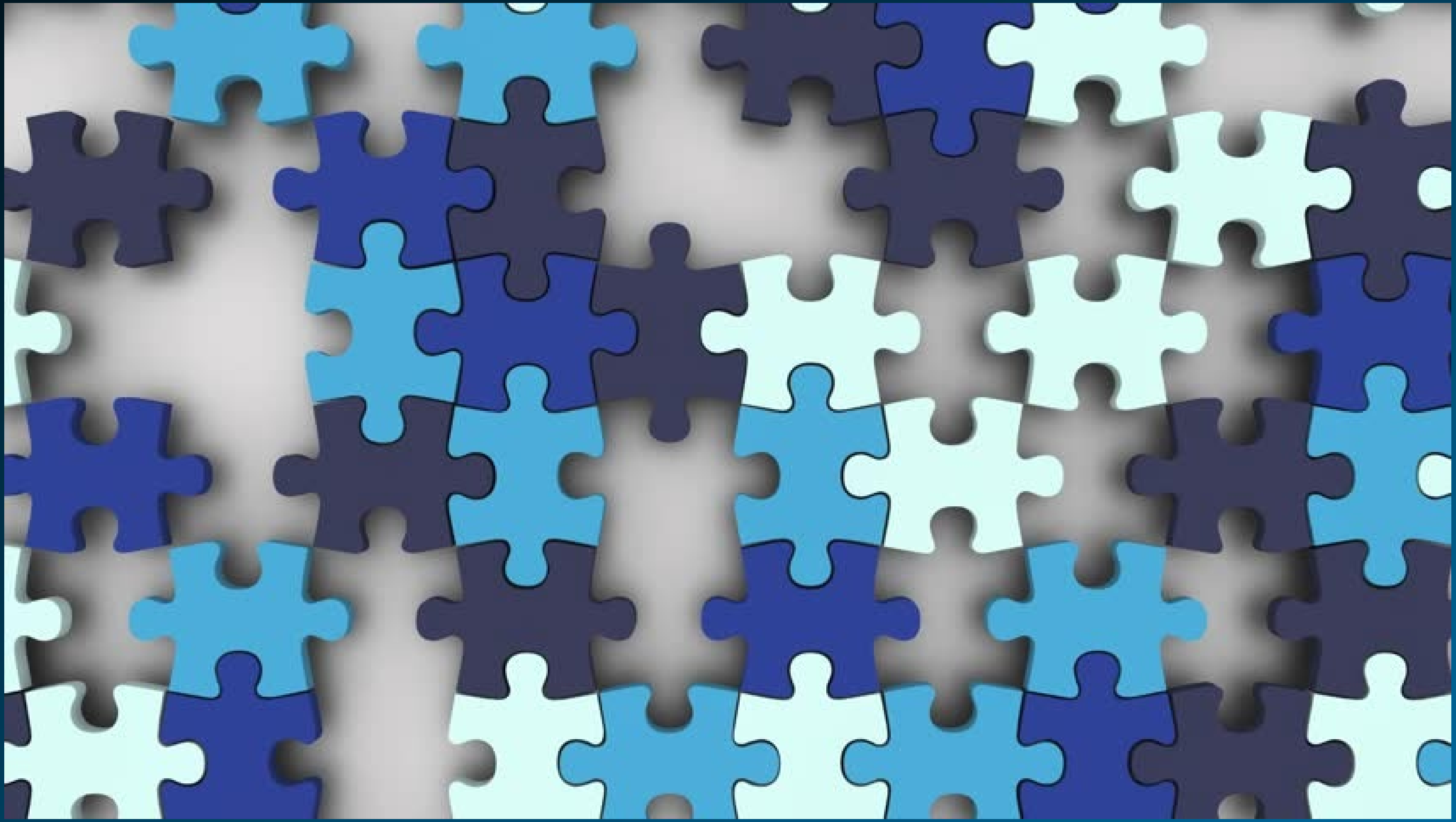

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Summary

- Because of robust evidence base, the choice between TAVR and SAVR is frequently clear cut
- Choices in the 70-80 year group are more nuanced
- The most difficult choice may be intervention vs. medical management

Thank you

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