



Criteria di scelta tra TAVI e chirurgia nei pazienti con stenosi aortica severa

Corrado Lettieri

ASST Mantova

**HOT TOPICS
IN CARDIOLOGIA
2021**

27 e 28 Settembre

Sede della Camera di Commercio di Napoli



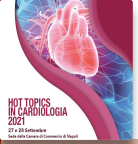
Carlo Poma

Sistema Socio Sanitario



Regione
Lombardia

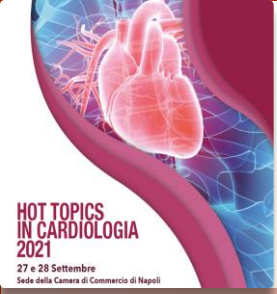
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TAVI vs SAVR up to 2 years follow-up: an updated meta-analysis

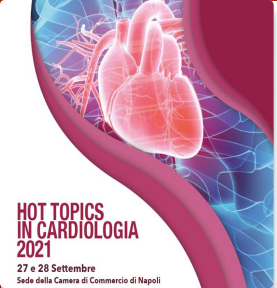
(Partner 1A, US Corevalve High-risk, Notion, Partner 2A, Surtavi, Partner 3, Evolut low-risk)

	Favors SAVR	Favors TAVI
All cause mortality		- 12% RR
All cause mortality (transfemoral TAVI)		- 17% RR
Cardiovasc. Mortality + MI	ns	ns
Any Stroke		- 19% RR
Major bleeding		- 54% RR
AKI		- 44% RR
NOAF		- 66% RR
Major vascular complications	- 99% RR	
Permanent PM implantation	- 130% RR	



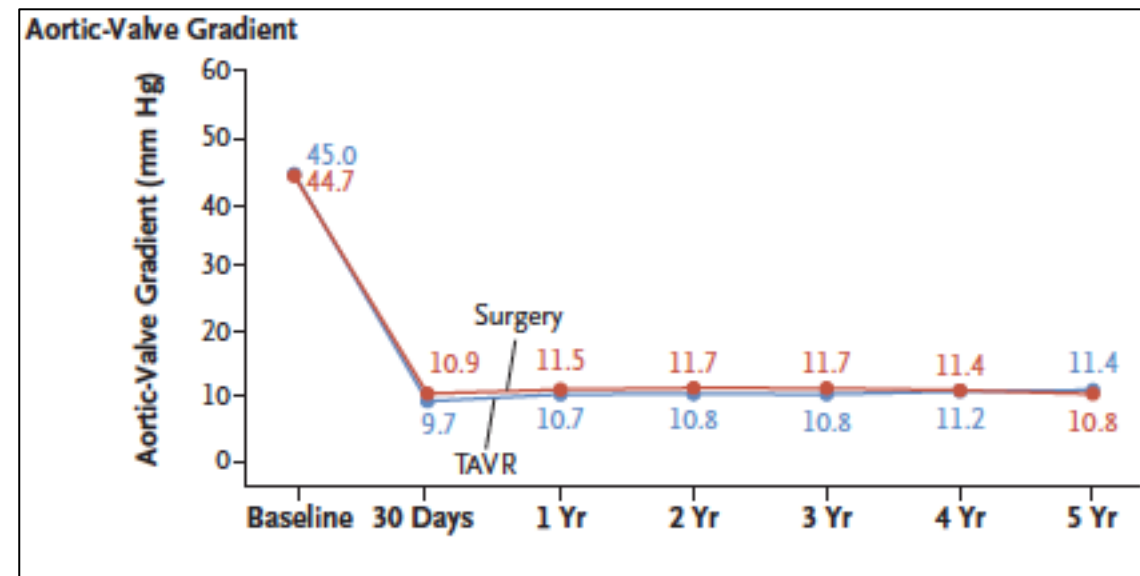
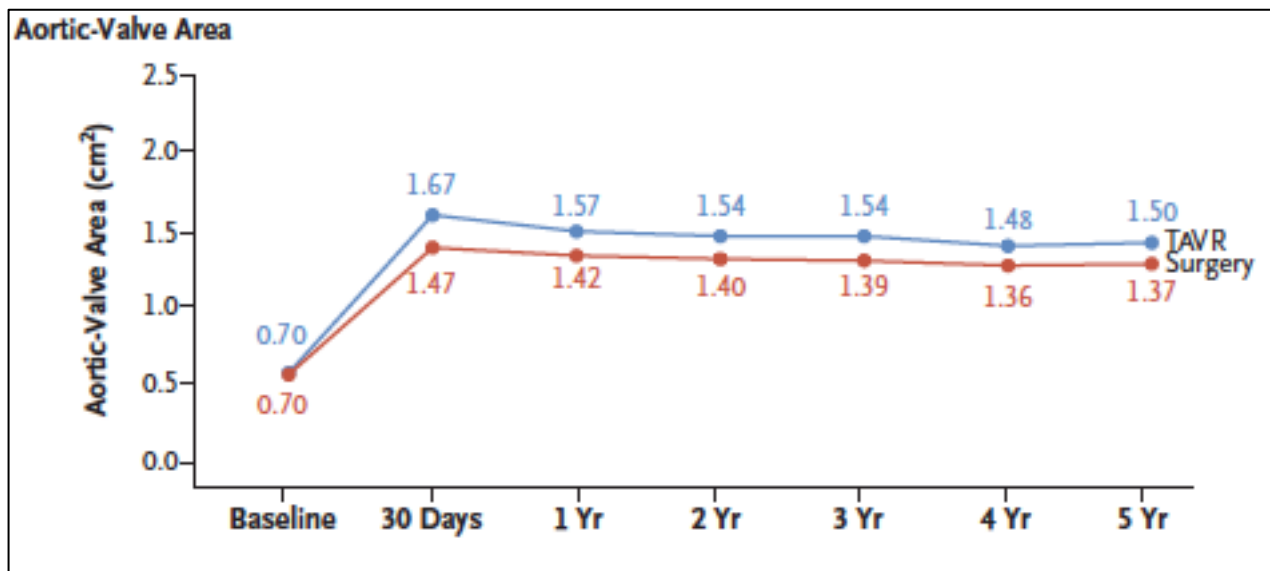
TAVI: problematiche ancora aperte nei pazienti a basso rischio chirurgico di età < 75 anni

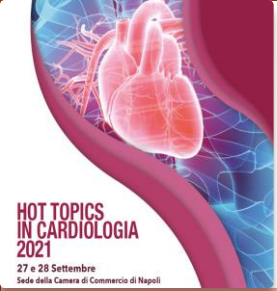
- ✓ % impianto PM
- ✓ risultati in *subsets* anatomici particolari (bicuspidia)
- ✓ riaccesso alle coronarie
- ✓ PVL
- ✓ “durability” delle protesi



Five-Year Outcomes of Transcatheter or Surgical Aortic-Valve Replacement

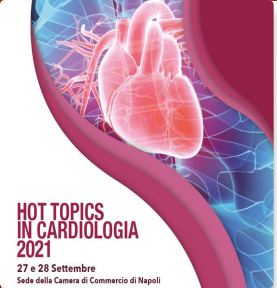
“durability” delle protesi transcatetere





Key points

- ✓ Criteri di scelta della strategia terapeutica (TAVI vs SAVR)
 - a) Rischio chirurgico ed interventistico
 - a) Aspettativa di vita (età)
 - a) Caratteristiche anatomiche e fattibilità tecnica
 - a) Preferenze del paziente

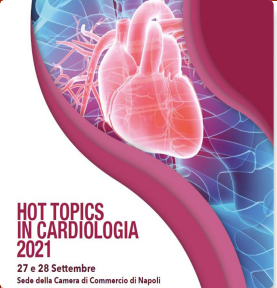


Aortic stenosis: Evaluation of Surgical and Interventional Risk

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2020 ACC/AHA guidelines for the management of patients with valvular heart disease

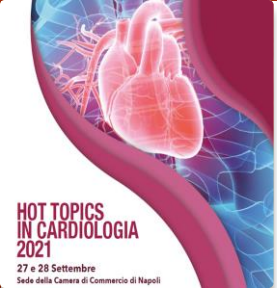
Criteria	Low-Risk SAVR (Must Meet ALL Criteria in This Column)	High Surgical Risk (Any 1 Criterion in This Column)	Prohibitive Surgical Risk (Any 1 Criterion in This Column)
STS-predicted risk of death*	<3% AND	>8% OR	Predicted risk of death or major morbidity (all-cause) >50% at 1 y OR
Frailty†	None AND	≥2 Indices (moderate to severe) OR	≥2 Indices (moderate to severe) OR
Cardiac or other major organ system compromise not to be improved postoperatively‡	None AND	1 to 2 Organ systems OR	≥3 Organ systems OR
Procedure-specific impediment§	None	Possible procedure-specific impediment	Severe procedure-specific impediment



Aortic stenosis: Evaluation of Surgical and Interventional Risk: 2020 vs 2017 ACC/AHA guidelines in perspective

HIGH-RISK

	2017	2020
Criteria	High Risk (Any 1 Criterion in This Column)	High Surgical Risk (Any 1 Criterion in This Column)
STS-predicted risk of death*	>8% OR	>8% OR
Frailty†	≥2 Indices (moderate to severe) OR	≥2 Indices (moderate to severe) OR
Cardiac or other major organ system compromise not to be improved postoperatively‡	No more than 2 organ systems OR	1 to 2 Organ systems OR
Procedure-specific impediment§	Possible procedure-specific impediment	Possible procedure-specific impediment



Aortic stenosis: Evaluation of Surgical and Interventional Risk: 2020 vs 2017 ACC/AHA guidelines in perspective

LOW-RISK

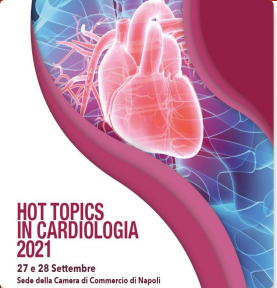
2017

2020

Criteria
STS-predicted risk of death*
Frailty†
Cardiac or other major organ system compromise not to be improved postoperatively‡
Procedure-specific impediment§

Low Risk (Must Meet ALL Criteria in This Column)
<4% AND
None AND
None AND
None

Low-Risk SAVR (Must Meet ALL Criteria in This Column)
<3% AND
None AND
None AND
None

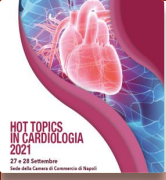


Aortic stenosis:

Evaluation of Surgical and Interventional Risk: 2020 vs 2017 ACC/AHA guidelines in perspective

INTERMEDIATE-RISK (NOT HIGH RISK*)

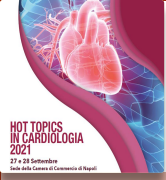
	2017	2020*
Criteria	Intermediate Risk (Any 1 Criterion in This Column)	Estimated risk not high or prohibitive
STS-predicted risk of death*	4%–8% OR	3-8%
Frailty†	1 Index (mild) OR	
Cardiac or other major organ system compromise not to be improved postoperatively‡	1 Organ system OR	
Procedure-specific impediment§	Possible procedure-specific impediment	



Factors Favoring SAVR or TAVI in patients not at high risk

Key factor in decision making

ratio of patient life expectancy (patient age often used as a surrogate for life expectancy) to known valve durability.

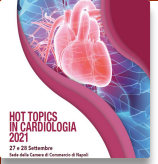


Factors Favoring SAVR or TAVI in patients not at high risk

Key factor in decision making

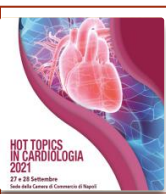
ratio of patient life expectancy (patient age often used as a surrogate for life expectancy) to known valve durability.

	Favors SAVR	Favors TAVI
Age/life expectancy	Younger age/longer life expectancy	Older age/fewer expected remaining years of life



Factors Favoring SAVR or TAVI in patients not at high risk

	Favors SAVR	Favors TAVI
Valve anatomy	BAV Subaortic (LV outflow tract) calcification	Calcific AS of a trileaflet valve
Concurrent cardiac conditions	Aortic dilation Severe primary MR Severe CAD requiring bypass grafting	Severe calcification of the ascending aorta (“porcelain” aorta)
Noncardiac conditions	No frailty	Severe lung, liver, or renal disease Frailty or mobility issues and conditions that may affect the rehabilitation process
Procedure-specific impediments	annular size, or low coronary ostial height that precludes TAVI Vascular access does not allow transfemoral TAVI	Previous cardiac surgery with at-risk coronary grafts Previous chest irradiation



Clinical, anatomical and procedural factors that influence the choice of treatment modality for an individual patient

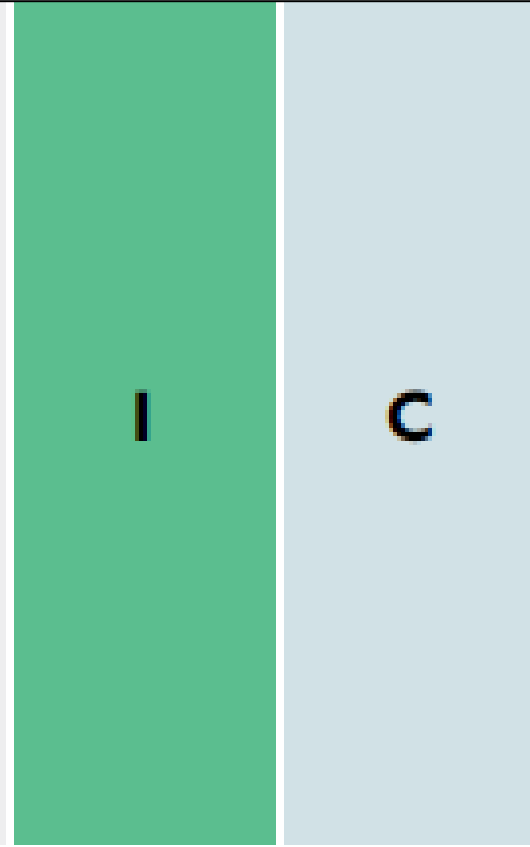
	Favours TAVI	Favours SAVR
Clinical characteristics		
Lower surgical risk	-	+
Higher surgical risk	+	-
Younger age ^a	-	+
Older age ^a	+	-
Previous cardiac surgery (particularly intact coronary artery bypass grafts at risk of injury during repeat sternotomy)	+	-
Severe frailty ^b	+	-
Active or suspected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

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	-	+

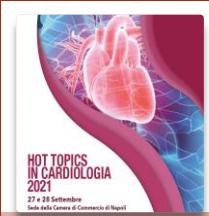
2020 AHA/ ACC and 2021 ESC GL for the management of patients with valvular heart disease

Choice of TAVR Versus Surgical AVR in Severe AS

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.



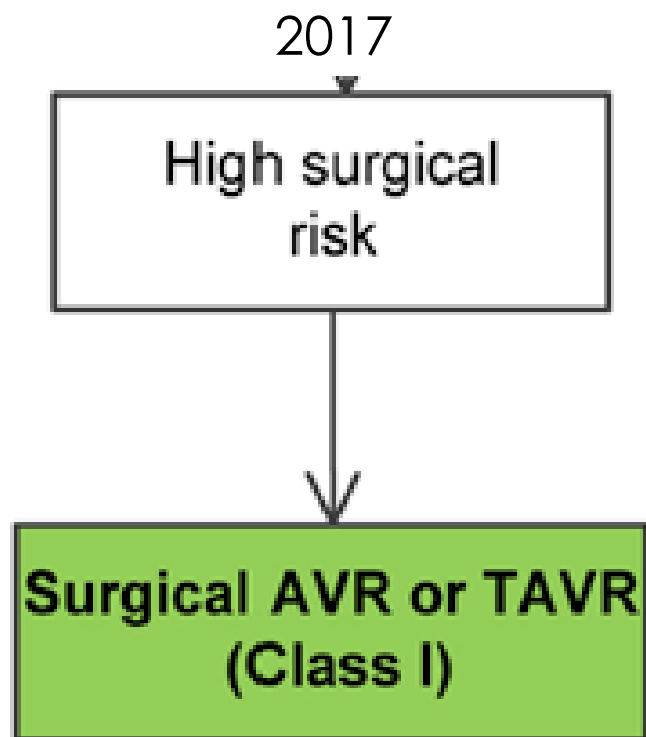
European Heart Journal (2021) 00, 1-72



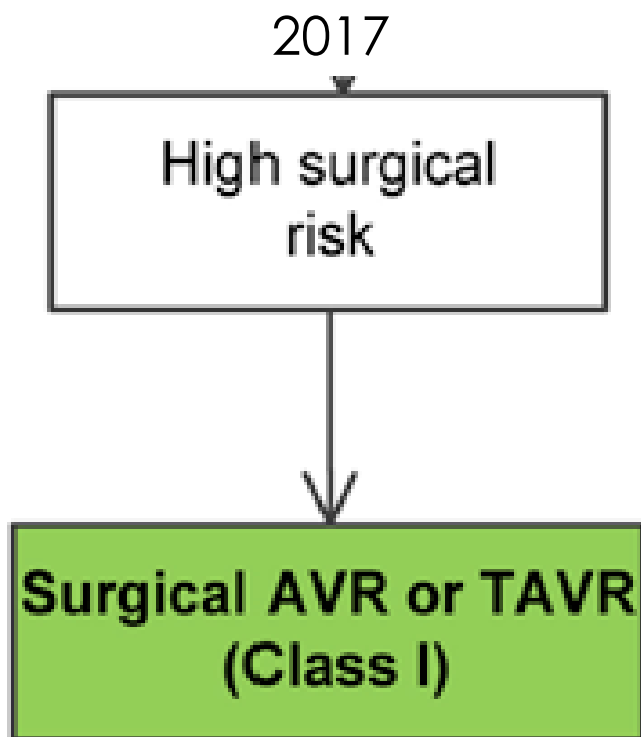
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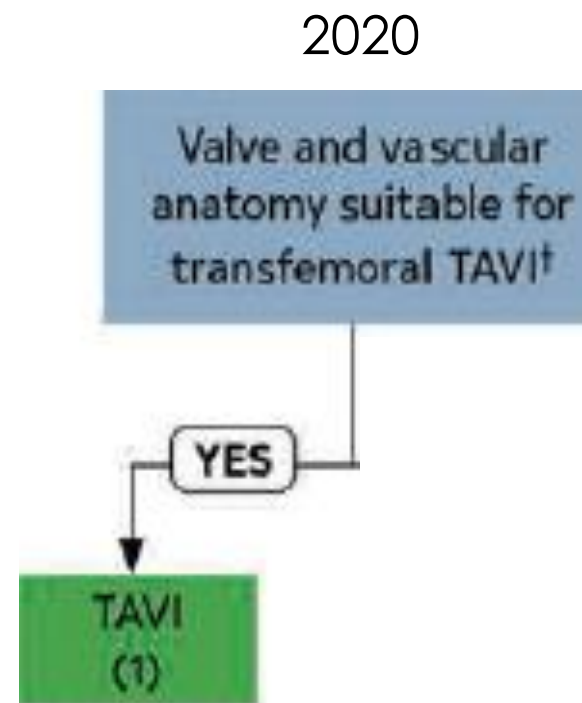
Choice of intervention: **high-risk**



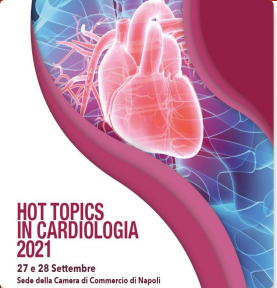
Choice of intervention: **high-risk**



Nishimura et al. Circulation 2017



Otto et al. Circulation 2021



2020 AHA/ ACC guidelines for the management of patients with VHD

Choice of intervention: **not high-risk**

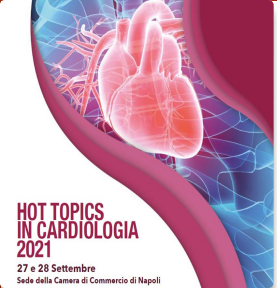
Both SAVR and TAVI (transfemoral approach) technically suitable

AGE or LIFE EXPECTANCY/VALVE DURABILITY RATIO

Age <65 y



SAVR
(1)

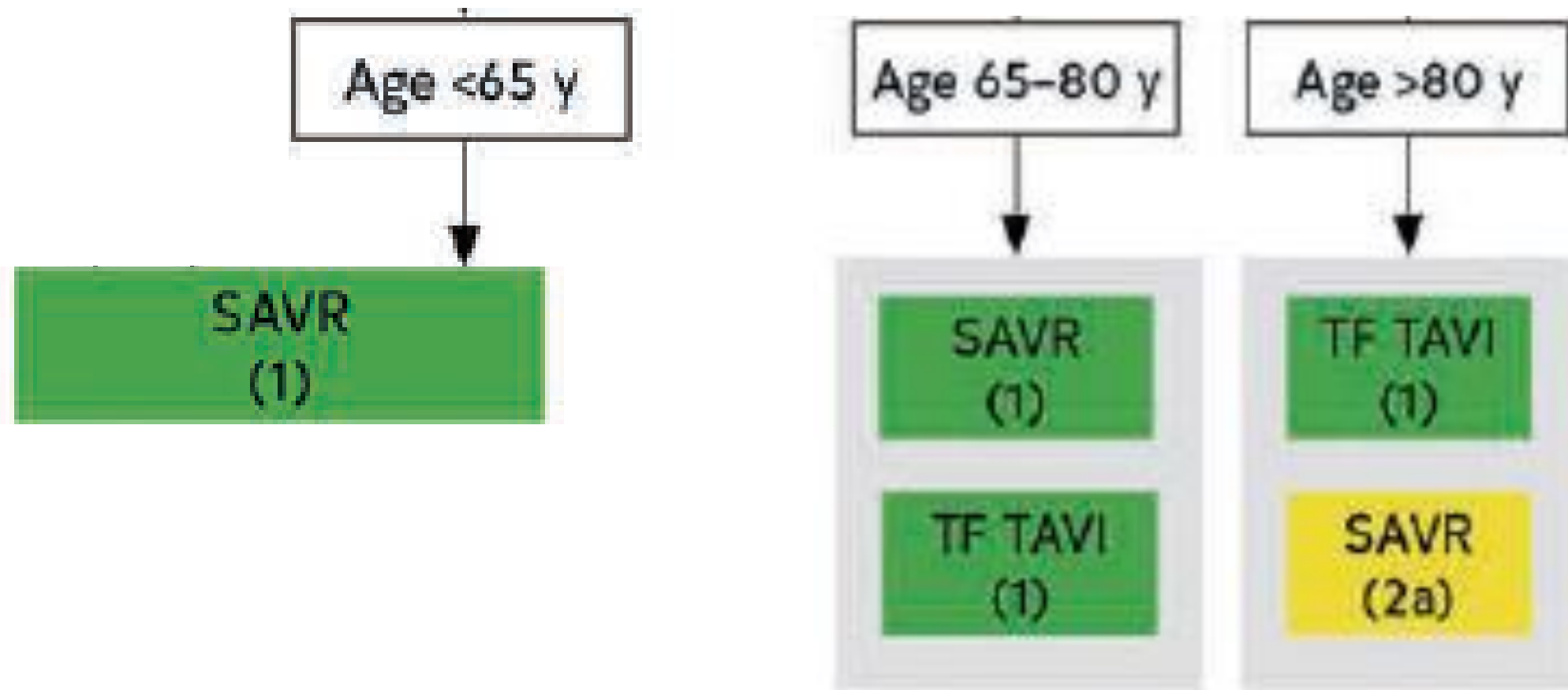


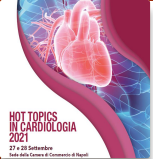
2020 AHA/ ACC guidelines for the management of patients with VHD

Choice of intervention: **not high-risk**

Both SAVR and TAVI (transfemoral approach) technically suitable

AGE or LIFE EXPECTANCY/VALVE DURABILITY RATIO





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

Patients < 75 years at low-risk for SAVR

Patients ≥ 75 years OR

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

SAVR^f

SAVR^f
OR
TAVI^f

TAVI^f



Timing of TAVI in AS

2017 AHA/ ACC guidelines for the management of patients with VHD

Surgical AVR or TAVR is recommended for symptomatic patients with severe AS (Stage D) and high risk for surgical AVR, depending on patient-specific procedural risks, values, and preferences.^{49–51}

TAVR is a reasonable alternative to surgical AVR for symptomatic patients with severe AS (Stage D) and an intermediate surgical risk, depending on patient-specific procedural risks, values, and preferences.^{62–65}

Timing of intervention in AS (TAVI)

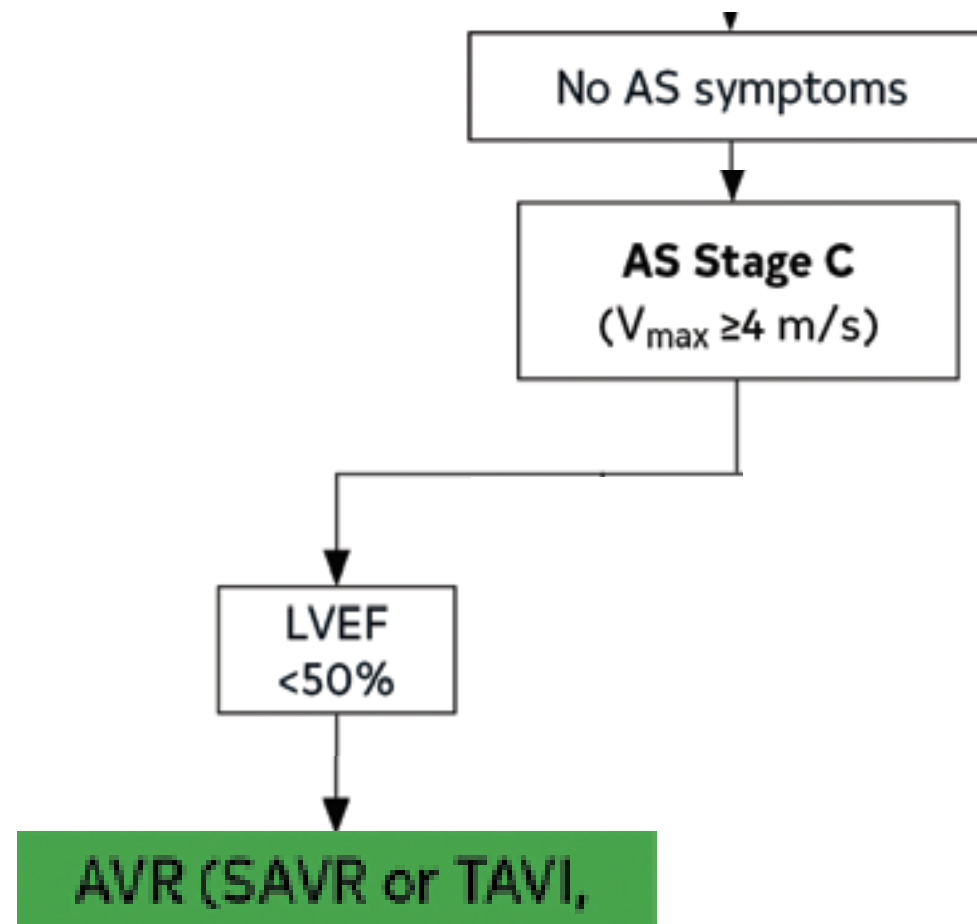


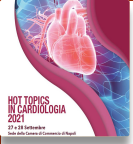
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COR	LOE	Recommendations
1	A	1. In adults with severe high-gradient AS (Stage D1) and symptoms of exertional dyspnea, HF, angina, syncope, or presyncope by history or on exercise testing, AVR is indicated. ¹⁻⁷
1	B-NR	4. In symptomatic patients with low-flow, low-gradient severe AS with reduced LVEF (Stage D2), AVR is recommended. ¹⁷⁻²⁴
1	B-NR	5. In symptomatic patients with low-flow, low-gradient severe AS with normal LVEF (Stage D3), AVR is recommended if AS is the most likely cause of symptoms. ²⁵⁻²⁷
1	B-NR	2. In asymptomatic patients with severe AS and an LVEF <50% (Stage C2), AVR is indicated. ⁸⁻¹¹

Timing of intervention in AS (TAVI)

1	B-NR	2. In asymptomatic patients with severe AS and an LVEF <50% (Stage C2), AVR is indicated. ⁸⁻¹¹
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Take home message (personale)

Criteri di scelta tra SAVR e TAVI

- ✓ **Heart Team per (quasi) tutti i pazienti**

- ✓ **pazienti > 80 anni:** TAVI indipendentemente dal livello di rischio (STS)
(se tecnicamente fattibile approccio transfemorale)

- ✓ **Pazienti tra 75 e 80 anni :** TAVI se fragilità + o comorbilità 1 o STS > 3-4%
(se tecnicamente fattibile approccio transfemorale).

Valutazione *case by case* se STS < 3%

NB: considerare preferenze del paziente dopo informazione congiunta dell'Heart team

- ✓ **pazienti < 75 anni:** TAVI se aspettativa di vita limitata (< 10 anni) o fragilità ++ o comorbilità > 1 o STS > 8%

Valutazione *case by case* se STS tra 3 e 8%

NB: considerare preferenze del paziente dopo informazione congiunta dell'Heart team