



ESC /EACTS Guidelines for the Management of Asymptomatic Severe Aortic Stenosis

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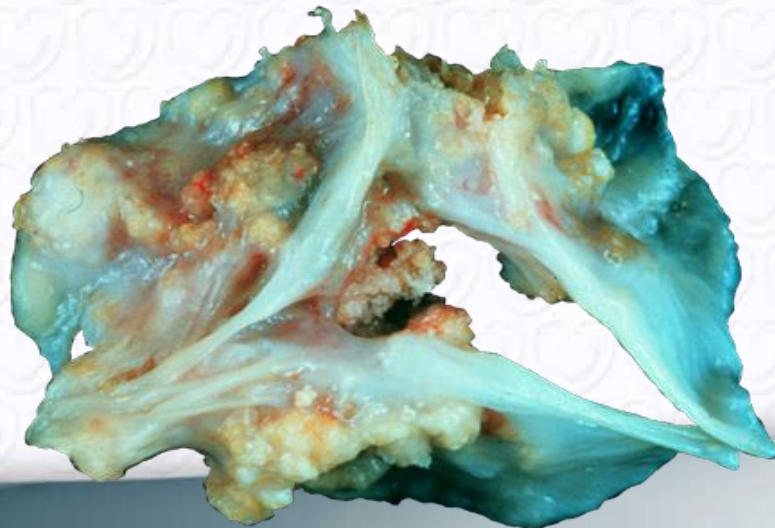
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Aortic stenosis

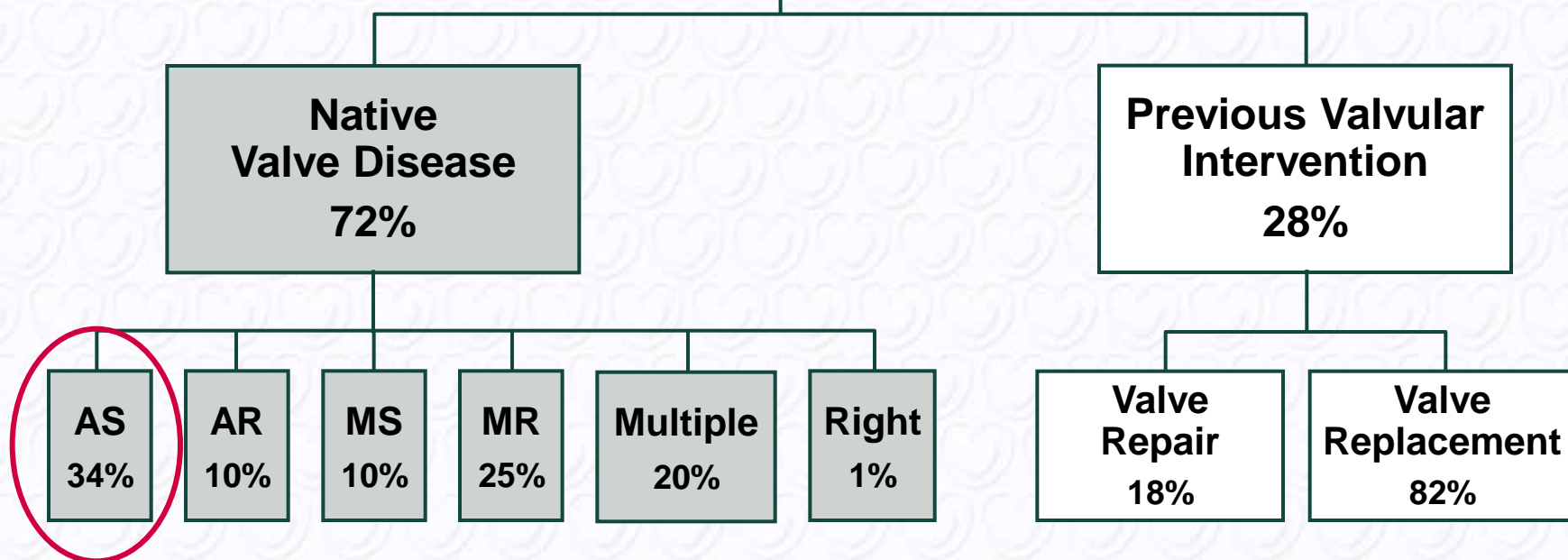
- Most frequent valvular heart disease requiring intervention in Europe
- 5% of the population > 75 years



Distribution of Valvular Heart Diseases in the Euro Heart Survey



5001 patients

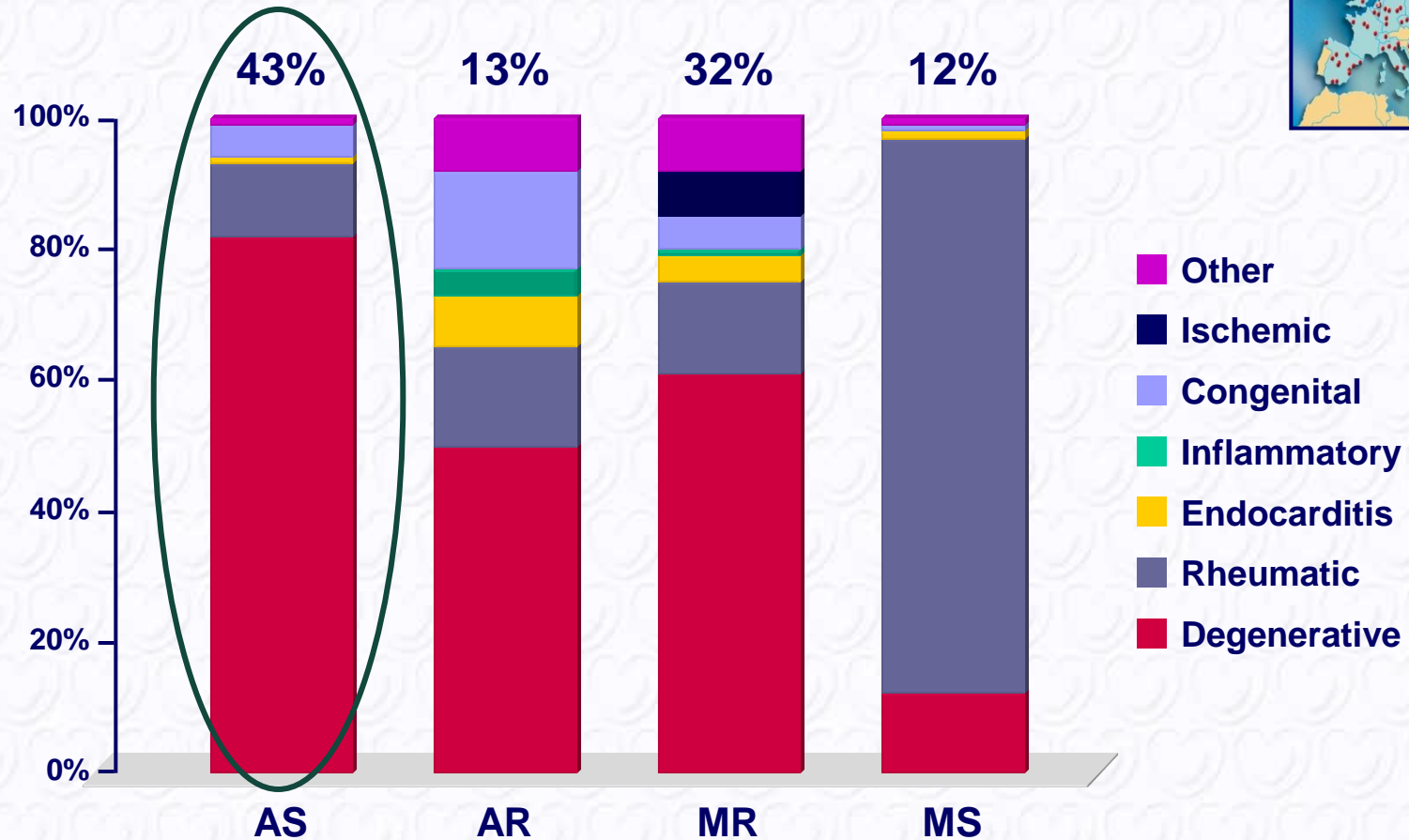


lung et al. *Eur Heart J* 2003;24:1244-53

European Heart Journal 2012 - doi:10.1093/eurheartj/ehs109 &
European Journal of Cardio-Thoracic Surgery 2012 -
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Aetiologies of Single Valvular Heart Diseases in the Euro Heart Survey



lung et al. *Eur Heart J* 2003;24:1244-53

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Patient Characteristics in the Euro Heart Survey



	Age (years)	≥ 70 years (%)	≥ 1 comorbidity (%)
AS	69±12	56	36
AR	58±16	25	26
MS	58±13	18	22
MR	65±14	44	42

lung et al. *Eur Heart J* 2003;24:1244-53

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Patient Evaluation

- **Clinical assessment**

- Symptoms, comorbidities, patient education.
- Auscultation.

- **Echocardiography**

- Key examination to confirm diagnosis and assess severity and prognosis.
- Need to check consistency between the different echocardiographic findings (severity, mechanism, anatomy of valvular disease) and with clinical assessment.



Echocardiographic criteria for the definition of severe aortic valve stenosis: *an integrative approach*

	Aortic stenosis
Valve area (cm ²)	< 1.0
Indexed valve area (cm ² /m ² BSA)	< 0.6
Mean gradient (mmHg)	> 40
Maximum jet velocity (m/s)	> 4.0
Velocity ratio	< 0.25

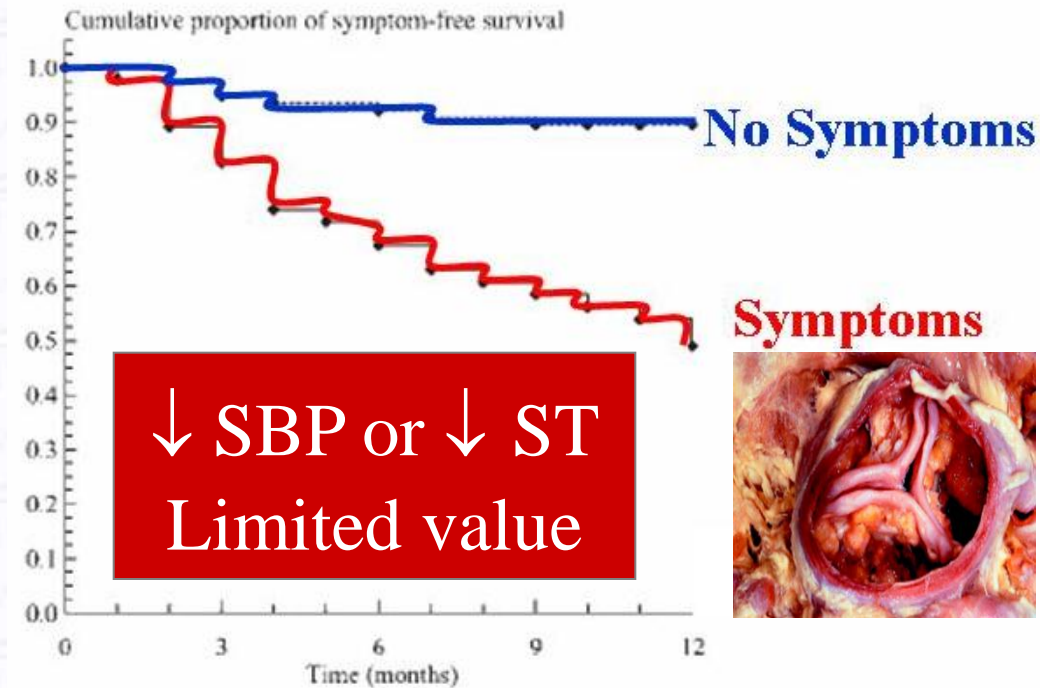
Adapted from Baumgartner, EAE/ASE recommendations. *Eur J Echocardiogr* 2010;10:1-25

European Heart Journal 2012 - doi:10.1093/eurheartj/ehs109 &
European Journal of Cardio-Thoracic Surgery 2012 -
doi:10.1093/ejcts/ezs455).

Indications for aortic valve replacement in asymptomatic aortic stenosis

	Class	Level
AVR is indicated in asymptomatic patients with severe AS and systolic LV dysfunction (LVEF < 50%) not due to another cause.	I	C
AVR is indicated in asymptomatic patients with severe AS and abnormal exercise test showing symptoms on exercise clearly related to AS.	I	C
AVR should be considered in asymptomatic patients, with normal EF and none of the above mentioned exercise test abnormalities, if the surgical risk is low, and one or more of the following findings is present: <ul style="list-style-type: none"> • very severe AS defined by a peak transvalvular velocity > 5.5 m/s, • severe valve calcification and a rate of peak of transvalvular velocity progression ≥ 0.3 m/s per year. 	IIa	C
AVR may be considered in asymptomatic patients with severe AS, normal EF and none of the above mentioned exercise test abnormalities, if surgical risk is low, and one or more of the following findings is present: <ul style="list-style-type: none"> • markedly elevated natriuretic peptide levels confirmed by repeated measurements without other explanations, • increase of mean pressure gradient with exercise by > 20 mmHg, • excessive LV hypertrophy in the absence of hypertension. 	IIb	C

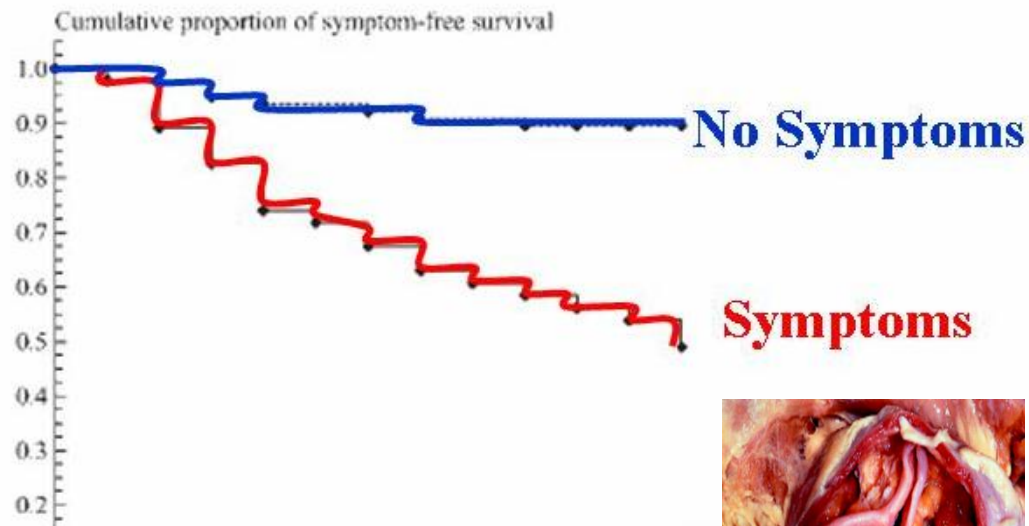
Risk stratification by exercise testing



Limiting symptoms during test : 46 of 125 pts (37 %)

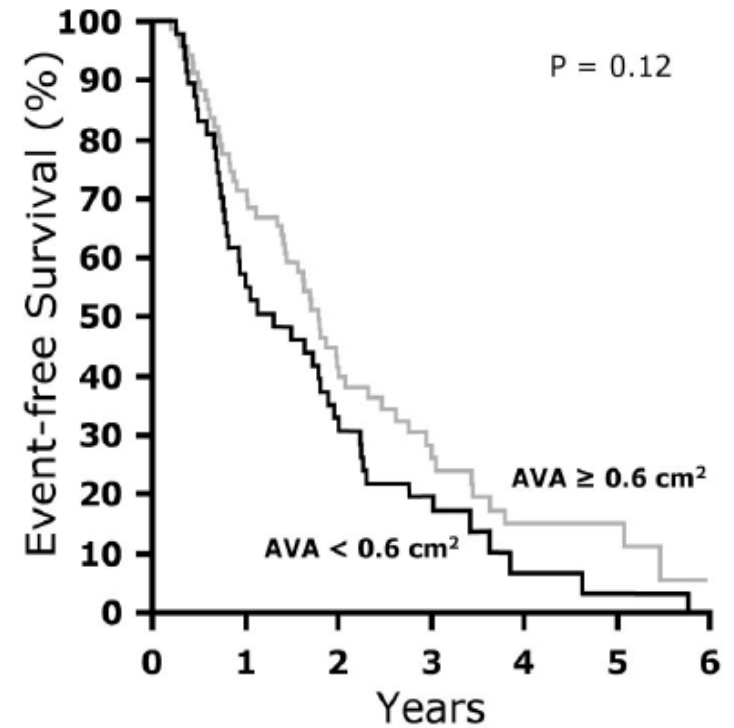
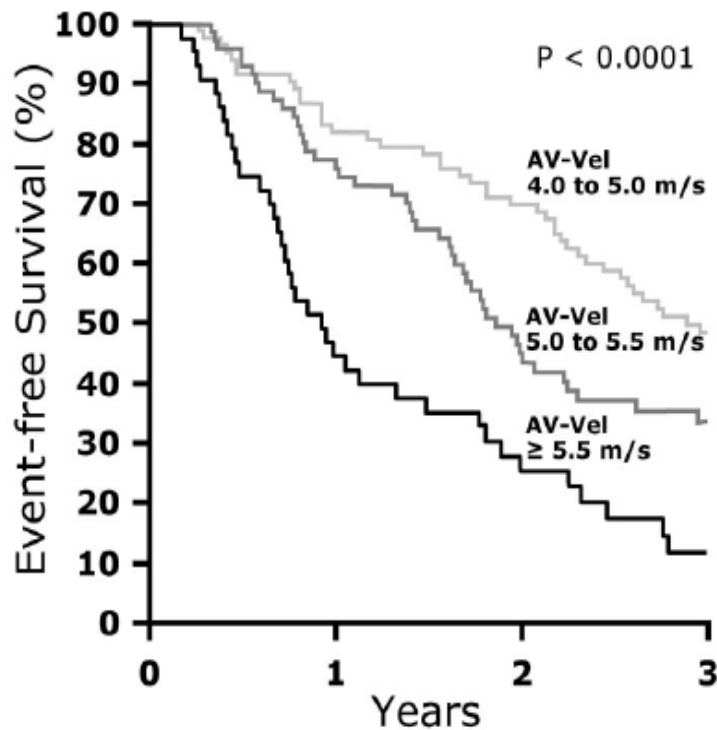
No events in pts with $AVA > 1 \text{ cm}^2$

Risk stratification by exercise testing



+ PV 79% if age < 70 y
+ PV 57 % whole population
Best predictor: Dizziness

Very severe asymptomatic AS



Rosenhek et al Circ 2010;121;151-6

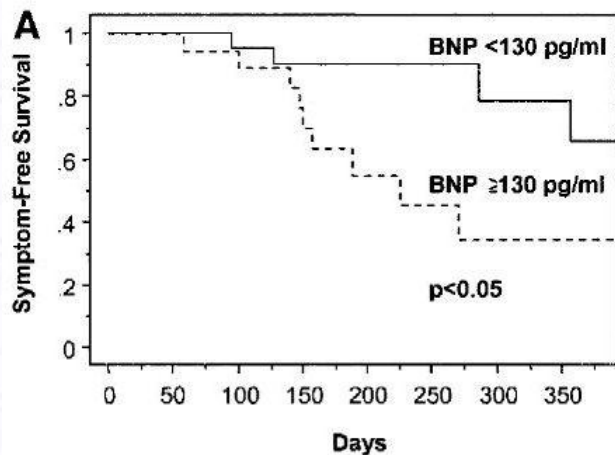
Prospective study of asymptomatic severe AS

Table 2

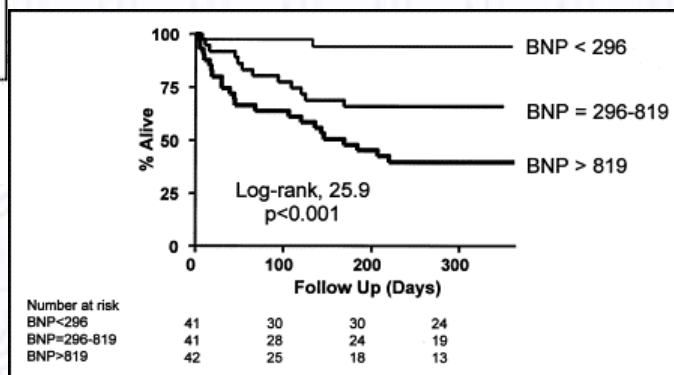
Area under curve, sensitivity, specificity, and optimal cutoff values of significant variables for predicting outcome

Data at Inclusion	Cutoff Value	Area Under Curve	Sensitivity	Specificity
Left atrial area index (cm ² /m ²)	≥12.4	0.90	83.9%	90.6%
Peak systolic velocity (cm/s)	≤4.5	0.87	88.7%	82.8%
Peak Aa velocity (cm/s)	≤9	0.81	80.6%	75%
Early diastolic filling/annular velocity	>13.8	0.67	42%	88%
B-type natriuretic peptide (pg/ml)	≥61	0.89	82%	93.7%

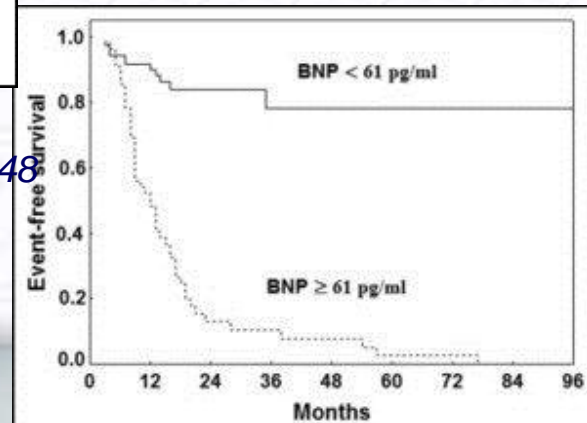
Event-free survival curves according to BNP



Berger-Klein et al Circulation 2004;109:2302-2308



Nessmith et al Am J Cardiol 2005;96:1445-1448



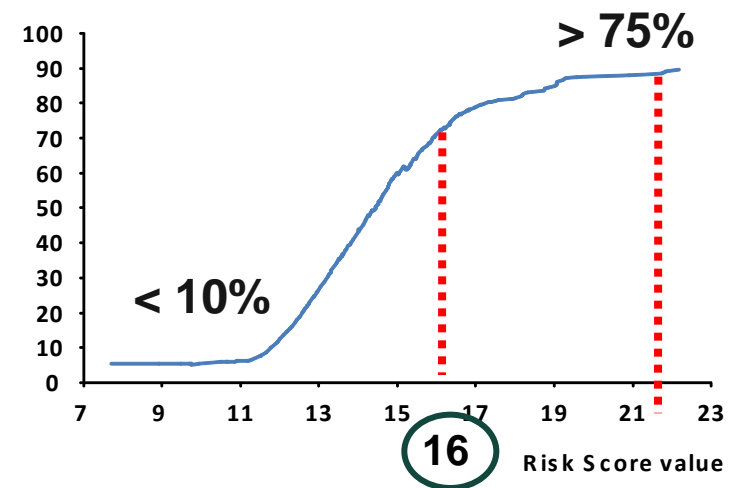
Risk Score for Predicting Outcome in Patients With Asymptomatic Aortic Stenosis

Jean-Luc Monin, MD, PhD; Patrizio Lancellotti, MD, PhD; Mehran Monchi, MD; Pascal Lim, MD; Emmanuel Weiss, MD; Luc Piérard, MD, PhD; Pascal Guéret, MD

107 pts followed in Créteil
Risk score according to
independent variables
Validation in Liège (107 pts)

$$\text{Score} = (\text{Peak velocity} \times 2) \\ + (\text{nat log BNP} \times 1.5) \\ + 1.5 \text{ (if female)}$$

Observed 24-month event rates (%)



Monin, Lancellotti, Pierard et al. *Circulation*, 2009

Exercise Doppler echo



During exercise

Exercise echo in asymptomatic AS

Exercise Echo in Asymptomatic Aortic Stenosis *I-381*

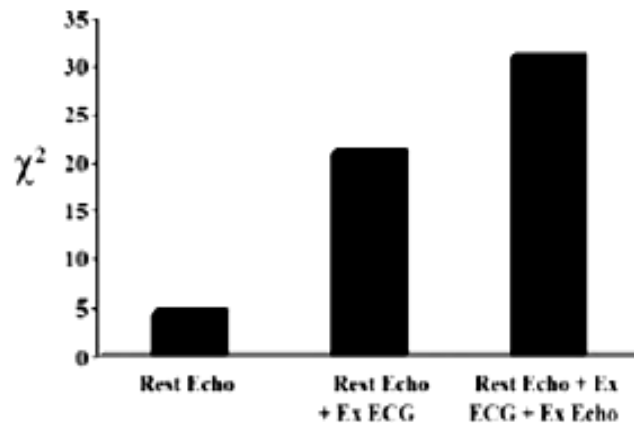
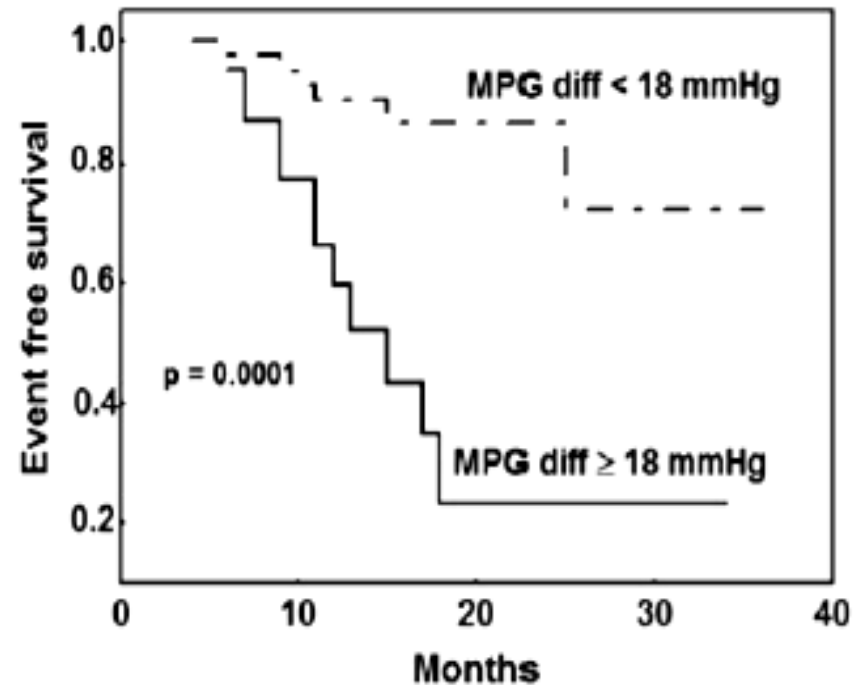


Figure 3. Incremental prognostic value of exercise Doppler echocardiography over resting echocardiographic and exercise electrocardiographic parameters. Ex indicates exercise; Echo, echocardiography.



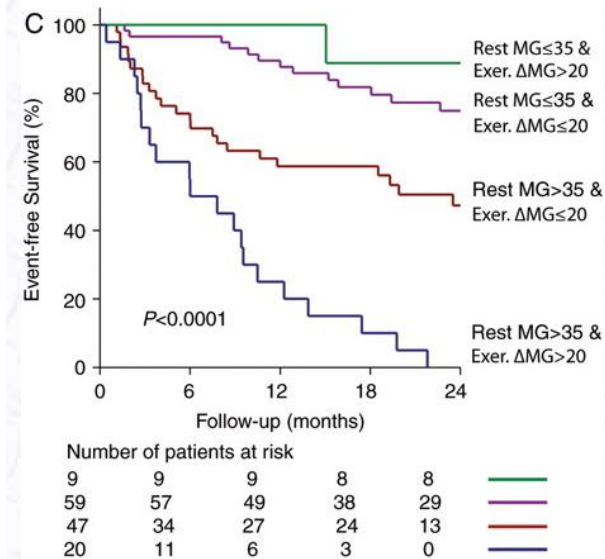
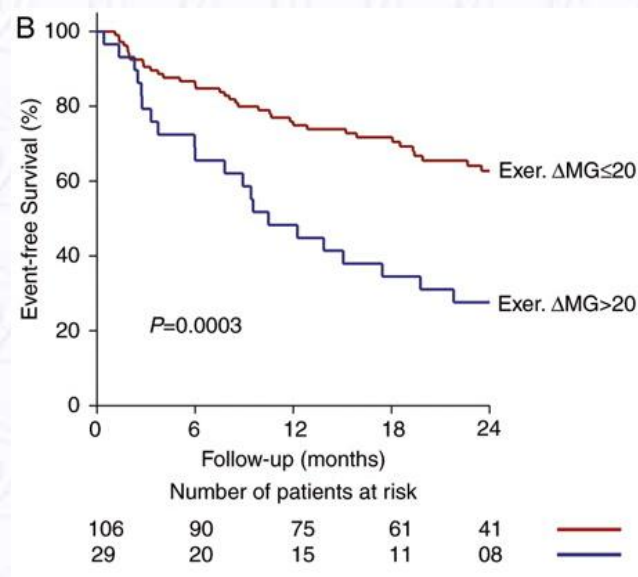
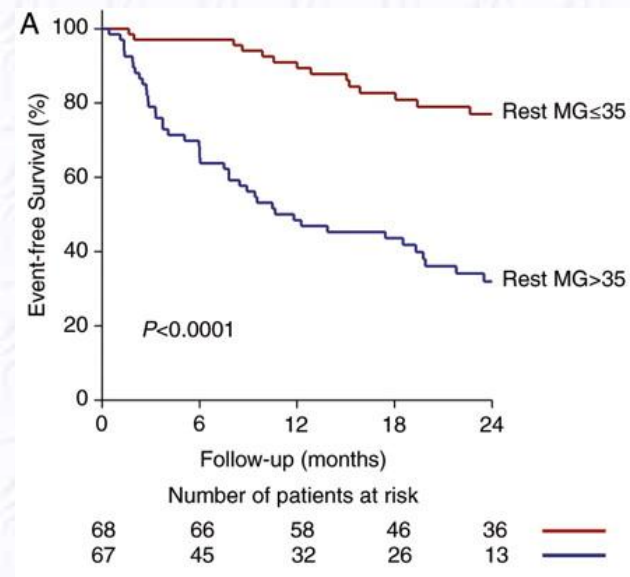
Lancellotti, Piérard Circulation 2005

Event-free survival

Rest mean gradient

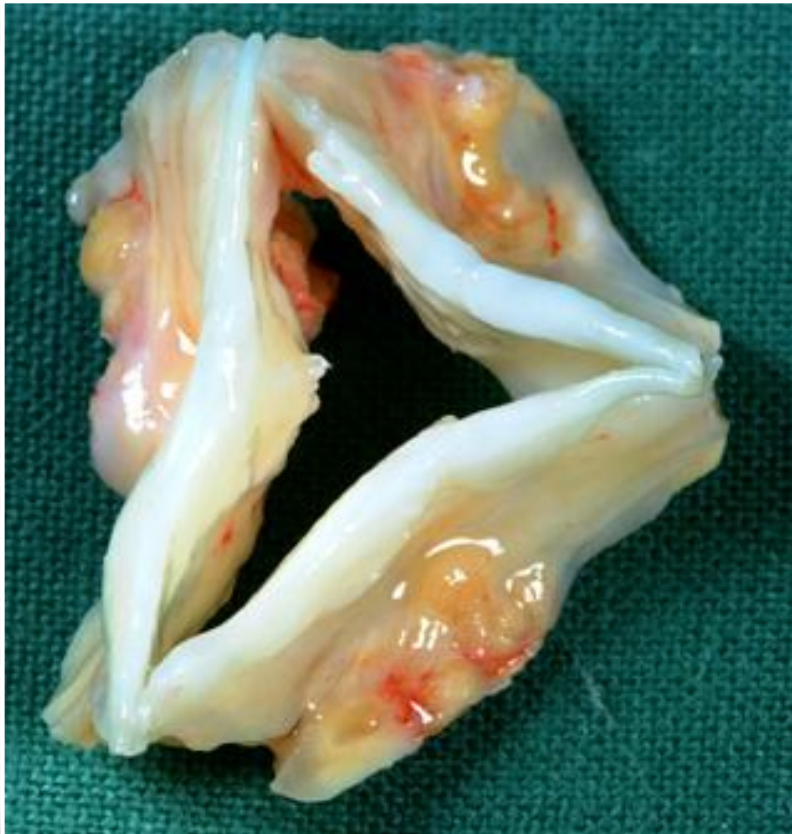
↑ in gradient with Ex

Combination

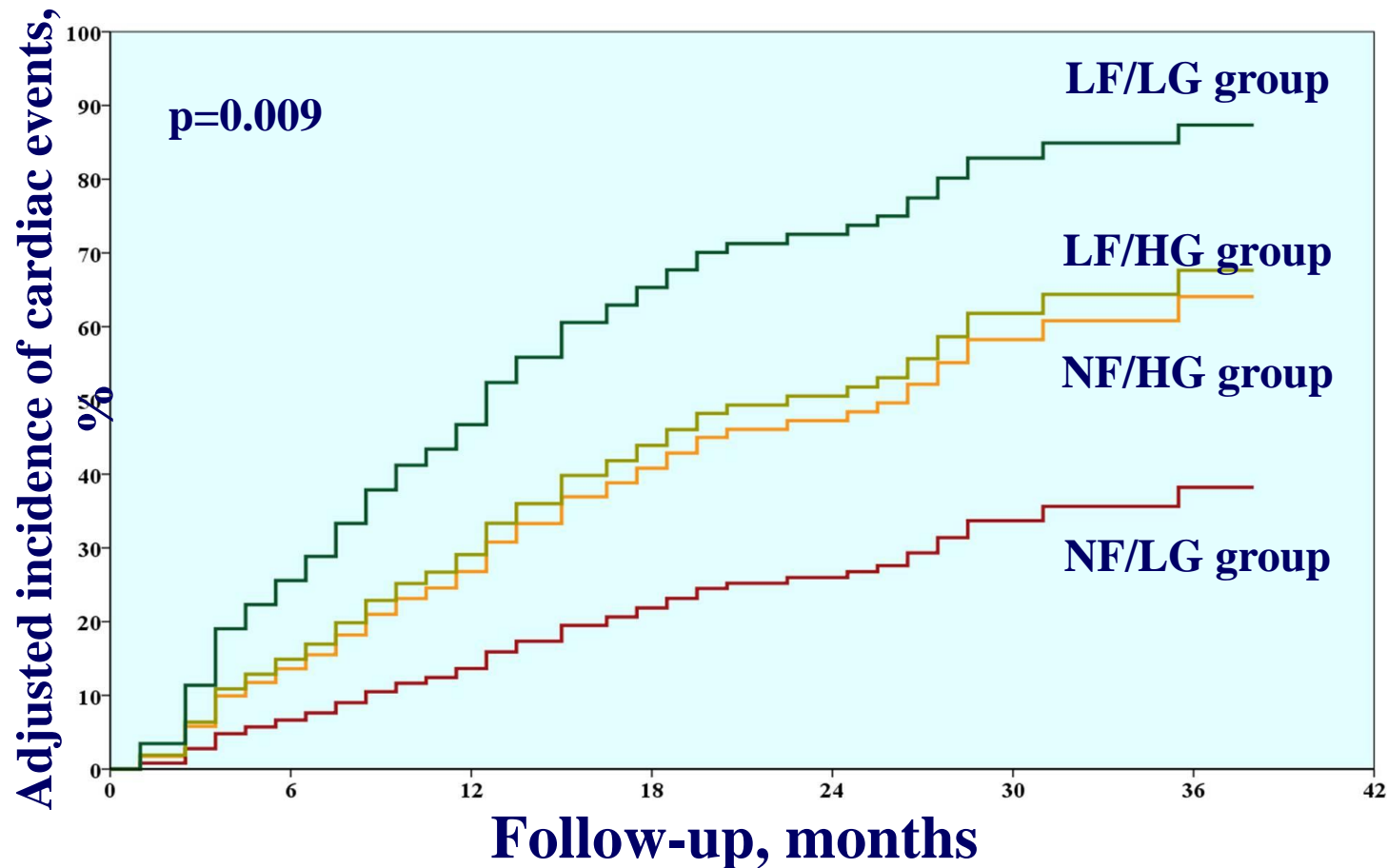


Δ mean gradient > 20 mmHg

Severe or pseudosevere AS ?



Asymptomatic paradoxical LF/LG severe AS




Indications for antithrombotic therapy after valvular surgery

	Class	Level
Oral anticoagulation is recommended lifelong for all patients with a mechanical prosthesis.	I	B
Oral anticoagulation is recommended lifelong for patients with bioprostheses who have other indications for anticoagulation.	I	C
The addition of low-dose aspirin should be considered in patients with a mechanical prosthesis and concomitant atherosclerotic disease.	IIa	C
The addition of low-dose aspirin should be considered in patients with a mechanical prosthesis after thromboembolism despite adequate INR.	IIa	C
Oral anticoagulation should be considered for the first 3 months after implantation of a mitral or tricuspid bioprosthesis.	IIa	C
Oral anticoagulation should be considered for the first 3 months after mitral valve repair.	IIa	C
→ Low-dose aspirin should be considered for the first 3 months after implantation of an aortic bioprosthesis.	IIa	C
Oral anticoagulation may be considered for the first 3 months after implantation of an aortic bioprosthesis.	IIb	C

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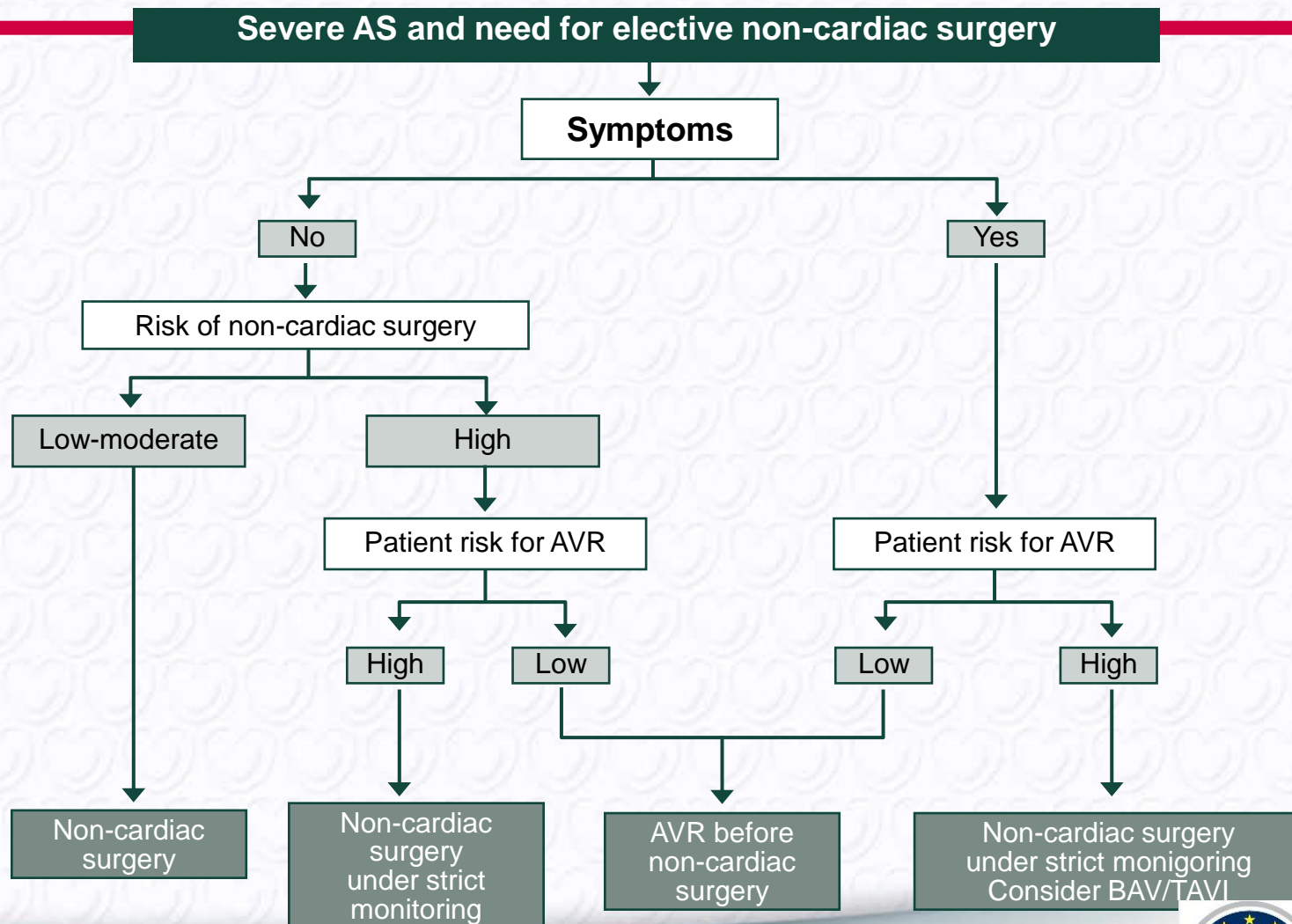
Management of coronary artery disease in patients with valvular heart disease

	Class	Level
Diagnosis of coronary artery disease		
<p>Coronary angiography is recommended before valve surgery in patients with severe valvular heart disease and any of the following:</p> <ul style="list-style-type: none"> • history of coronary artery disease, • suspected myocardial ischaemia, • left ventricular systolic dysfunction, • men aged over 40 years and postmenopausal women, • ≥ 1 cardiovascular risk factor. 	I	C
<p>European Heart Journal 2012 - doi:10.1093/eurheartj/ehs109 & European Journal of Cardio-Thoracic Surgery 2012 - doi:10.1093/ejcts/ezs455).</p>		
		

Management of CAD

Indications for myocardial revascularisation		
CABG is recommended in patients with a primary indication for aortic/mitral valve surgery and coronary artery diameter stenosis $\geq 70\%$.	I	C
CABG should be considered in patients with a primary indication for aortic/mitral valve surgery and coronary artery diameter stenosis $\geq 50-70\%$.	Ila	C

Management of severe aortic stenosis and elective non-cardiac surgery according to patient characteristics and the type of surgery

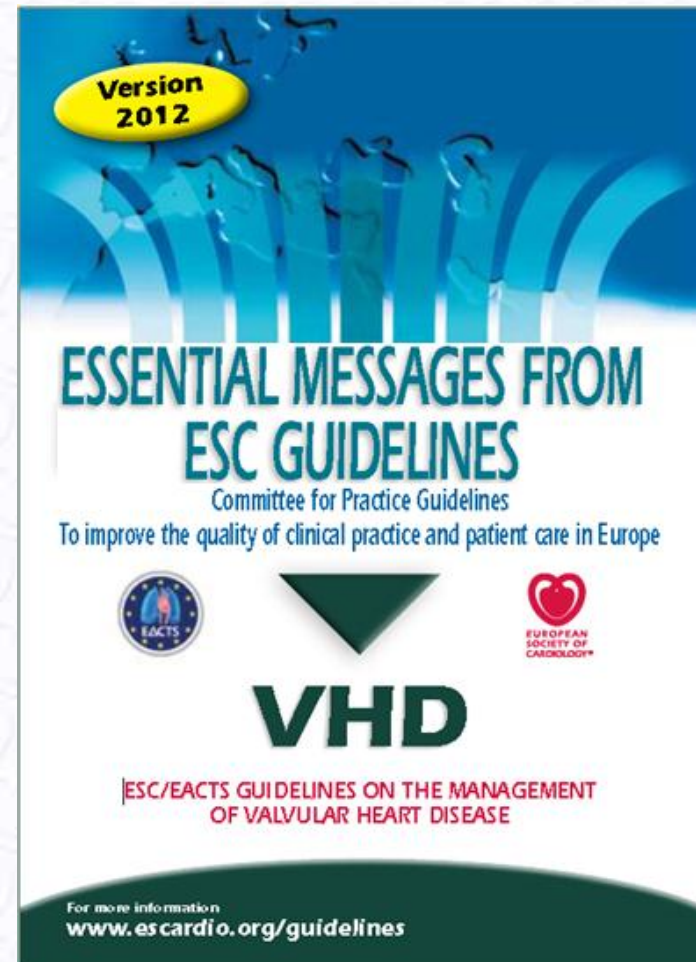


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Essential Messages

<http://www.escardio.org/guidelines-surveys/esc-guidelines/Pages/valvular-heart-disease.aspx>

Read The Take Home Messages & Gaps in Evidence on the ESC Web Site



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doi:10.1093/ejcts/ezs455).

www.escardio.org/guidelines



Indications for transcatheter aortic valve implantation

	Class	Level
TAVI should only be undertaken with a multidisciplinary “heart team” including cardiologists and cardiac surgeons and other specialists if necessary.	I	C
TAVI should only be performed in hospitals with cardiac surgery on-site.	I	C
TAVI is indicated in patients with severe symptomatic AS who are not suitable for AVR as assessed by a “heart team” and who are likely to gain improvement in their quality of life and to have a life expectancy of more than 1 year after consideration of their comorbidities.	I	B
TAVI should be considered in high risk patients with severe symptomatic AS who may still be suitable for surgery, but in whom TAVI is favoured by a “heart team” based on the individual risk profile and anatomic suitability.	Ila	B

Contraindications for transcatheter aortic valve implantation

Absolute contraindications

Absence of a "heart team" and no cardiac surgery on the site.
Appropriateness of TAVI, as an alternative to AVR, not confirmed by a "heart team".

Clinical

- Estimated life expectancy < 1 year.
- Improvement of quality of life by TAVI unlikely because of comorbidities.
- Severe primary associated disease of other valves with major contribution to the patient's symptoms that can be treated only by surgery.

Anatomical

- Inadequate annulus size (< 18 mm, > 29 mm).
- Thrombus in the left ventricle.
- Active endocarditis.
- Elevated risk of coronary ostium obstruction (asymmetric valve calcification, short distance between annulus and coronary ostia, small aortic sinuses).
- Plaques with mobile thrombi in the ascending aorta, or arch.
- For transfemoral/subclavian approach: inadequate vascular access (vessel size, calcification, tortuosity).

Relative contraindications

- Bicuspid or non-calcified valves.
- Untreated coronary artery disease requiring revascularization.
- Haemodynamic instability.
- LVEF < 20%.
- For transapical approach: severe pulmonary disease, LV apex not accessible.

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