3 - Medical therapy (Cont.)

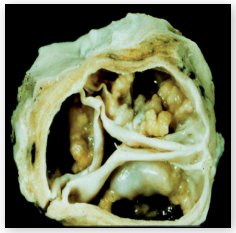
- In patients with valve prosthesis when choosing an optimum target INR, one should consider patient risk factors and the thrombogenicity of the prosthesis, as determined by reported valve thrombosis rates for that prosthesis in relation to specific INR levels (Table below).

Prosthesis thrombogenicity[a]	Patient-related risk factors[b]	
	No risk factor	Risk factor ≥1
Low	2.5	3.0
Medium	3.0	3.5
High	3.5	4.0

[a]Prosthesis thrombogenicity: Low = Carbomedics, Medtronic Hall, St Jude Medical, ON-X; Medium = other bileaflet valves; High = Lillehei-Kaster, Omniscience, Starr-Edwards, Bjork-Shiley and other tilting-disc valves.
[b]Patient-related risk factors: mitral or tricuspid valve replacement; previous thromboembolism; atrial fibrillation; mitral stenosis of any degree; left ventricular ejection fraction <35%.

The substitution of vitamin K antagonists by new agents is not recommended because specific trials in patients with VHD are not available.

Anticoagulation during non-cardiac surgery requires very careful management, based on risk assessment. It is recommended not to interrupt oral anticoagulation for most minor surgical procedures (including dental extraction, cataract removal) and those procedures where bleeding is easily controlled. Appropriate techniques of haemostasis should be used and the INR should be measured on the day of the procedure. Major surgical procedures require an INR of 1.5. In patients with a mechanical prosthesis, oral anticoagulant therapy should be stopped before surgery and bridging, using heparin, is recommended. Unfractionated heparin (UFH) remains the only approved heparin treatment in patients with mechanical prostheses; intravenous administration should be favoured over the subcutaneous route. The use of subcutaneous low molecular weight heparin (LMWH) should be considered as an alternative to UFH for bridging. However, despite its widespread use, LMWH is not approved in patients with mechanical prostheses, due to the lack of controlled comparative studies with UFH. When LMWH is used, it should be administered twice a day using therapeutic doses, adapted to body weight, and, if possible, with monitoring of anti-Xa activity with a target of 0.5–1.0 U/ml.



SUMMARY OF VALVULAR HEART DISEASE*

The importance of a collaborative approach between cardiologists and cardiac surgeons (the 'heart team') in the management of patients with valvular heart disease (VHD) has led to the production of a joint document by the European Society of Cardiology and the European Association for Cardio-Thoracic Surgery.

1 - Patient evaluation

- A comprehensive clinical examination is the first step and plays a major role in the detection of VHD. An electrocardiogram and a chest X-ray are usually carried out in conjunction with a clinical examination.
- Echocardiography is the key examination to confirm diagnosis and assess severity and prognosis. The physician should check consistency between the different echocardiographic findings evaluating severity, mechanism, anatomy of valvular disease and the clinical assessment.
- The use of stress testing is encouraged in asymptomatic patients.
- The decision-making process is difficult in patients with VHD who are often elderly with comorbidities. In the absence of evidence from randomised clinical trials, the decision to intervene in a patient with VHD relies on an individual risk-benefit analysis suggesting that improvement of prognosis, as compared with natural history, outweighs the risk of intervention and its potential late consequences. Decision making can be summarised according to the approach described below.
  - Is valvular heart disease severe?
  - Does the patient have symptoms?
  - Are symptoms related to valvular disease?
  - What are patient life expectancy and expected quality of life?
  - Do the expected benefits of intervention (vs. spontaneous outcome) outweigh its risks?
  - What are the patient's wishes?
  - Are local resources optimal for planned intervention?

2 - Indication for intervention in specific valvular diseases

Aortic regurgitation

- In patients with severe aortic regurgitation (AR), symptom onset is an indication for surgery. Surgery is indicated in asymptomatic patients with severe AR and impaired left ventricular (LV) function.
- Pathology of the aortic root is frequent, and surgery is recommended, whatever the severity of AR, above certain thresholds especially in patients with Marfan syndrome or those with bicuspid valves.

For more information
www.escardio.org/guidelines

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*From The new ESC/EACTS Guidelines on the management of valvular heart disease - Alec Vahanian[a,b], Ottavio Alfieri[c]
[a]Cardiology Department, Bichat Hospital, AP-HP, Paris, France
[b]University Paris Diderot
[c]Raffaele University Hospital, 20132 Milan, Italy
Corresponding author: Alec Vahanian, Cardiology Department, Bichat Hospital, AP-HP
46 rue Henri Huchard, 75018 Paris, France.
Tel: +33 1 40 25 67 60 - Fax: +33 1 40 25 67 32
Email address: alec.vahanian@bch.aphp.fr

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2 - Indication for intervention in specific valvular diseases (Cont.)

Aortic stenosis

- Early valve replacement should be strongly recommended in all symptomatic patients with severe aortic stenosis (AS) who are otherwise candidates for surgery.
- Transcatheter aortic valve implantation (TAVI), is indicated in patients with severe symptomatic AS who are not suitable for aortic valve replacement (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. TAVI should be considered for high-risk patients with severe symptomatic aortic stenosis based on the individual risk profile as assessed by the 'heart team'.
- At present, TAVI should not be performed in patients at low or intermediate risk for surgery, for whom no supporting data are currently available.
- Early elective surgery is indicated in the very rare asymptomatic patients with depressed LV function that is not due to other causes or in those with an abnormal exercise test, particularly with symptom development. It should also be considered in those patients presenting a fall in blood pressure below baseline. In asymptomatic patients surgery should only be considered in patients at low operative risk.
- In the asymptomatic patient, the wide variability of the rate of progression of AS heightens the need for patients to be carefully educated about the importance of follow-up and reporting symptoms as soon as they develop.

Mitral regurgitation

- Mitral valve repair should be the preferred surgical technique when it is expected to be durable.
- In *organic mitral regurgitation* (MR) surgery is indicated in patients who have symptoms, but no contraindications to surgery. The indications in asymptomatic patients are still a matter of debate; in patients with signs of LV dysfunction surgery is indicated. If LV function is preserved, surgery should be considered in patients with new onset AF or pulmonary hypertension. Early surgery may be considered in patients at low operative risk, where there is a high likelihood of durable valve repair on the basis of valve lesion and the experience of the surgeon.
- *Severe secondary* MR should be corrected at the time of bypass surgery. The indications for isolated mitral valve surgery in symptomatic patients with severe secondary MR & severely depressed systolic LV function, who cannot be revascularised or who present with cardiomyopathy, are questionable.

Mitral stenosis

- Intervention should be performed in symptomatic patients. Most patients with favourable valve anatomy currently undergo percutaneous mitral commissurotomy (PMC). In patients with unfavourable anatomy PMC should be considered as an initial treatment for selected patients with mild-to-moderate calcification or unfavourable subvalvular apparatus, who have otherwise favourable clinical characteristics, especially in young patients. PMC is the procedure of choice when surgery is contraindicated.
- Truly asymptomatic patients are not usually candidates for the procedure, except in cases where there is increased risk of thromboembolism or haemodynamic decompensation.
- The most important contraindication to PMC is left atrial thrombosis.

Tricuspid disease

- Tricuspid disease should not be forgotten, and surgery should be carried out early enough to avoid irreversible right ventricular dysfunction. Surgery should be considered in patients with mild or moderate secondary tricuspid regurgitation with dilated annulus, undergoing left-sided valve surgery.

Valve prosthesis

- Choice of the type of valve prosthesis should be individualised & discussed in detail with the patient taking into account multiple factors. Age is one of the parameters for the decision. The age limit for implanting a bioprosthesis was lowered to 60–65 yrs for patients who receive an aortic prosthesis, & to 65–70 years in the case of mitral prosthesis.
  After valve replacement, a complete baseline assessment should, ideally, be performed 6–12 weeks after surgery. This includes clinical assessment, chest X-ray, ECG, transthoracic echocardiography (TTE), and blood testing. This postoperative visit is also useful to improve patient education on endocarditis prophylaxis and, if needed, on anticoagulant therapy and to emphasise that new symptoms should be reported as soon as they occur.
  All patients who have undergone valve surgery require lifelong follow-up by a cardiologist, in order to detect early deterioration in prosthetic function or ventricular function, or progressive disease of another heart valve. Clinical assessment should be performed yearly - or as soon as possible if new cardiac symptoms occur. TTE should be performed if any new symptoms occur after valve replacement or if complications are suspected. Yearly echocardiographic examination is recommended after the fifth year in patients with a bioprosthesis and earlier in young patients.

3 - Medical therapy

- Oral anticoagulation with a target international normalised ratio (INR) of 2 to 3 is recommended in patients with native VHD and any type of atrial fibrillation (AF). The substitution of vitamin K antagonists by new agents is not recommended, because specific trials in patients with VHD are not available. Except in cases where AF causes haemodynamic compromise, cardioversion is not indicated before intervention in patients with severe VHD, as it does not restore a durable sinus rhythm.
- Antibiotic prophylaxis should be considered for high-risk procedures in high-risk patients, such as patients with prosthetic heart valves or prosthetic material used for valve repair, or in patients with previous endocarditis or congenital heart disease according to current ESC guidelines. However, the general role of prevention of endocarditis is still very important in all patients with VHD, including good oral hygiene and aseptic measures during catheter manipulation or any invasive procedure, in order to reduce the rate of healthcare-associated infective endocarditis.
- Statin therapy should not be used in AS patients where the only purpose is to slow progression. On the other hand, modification of atherosclerotic risk factors must be strongly recommended, following the guidelines of secondary prevention in atherosclerosis.
- In severe secondary MR such as in ischemic cardiomyopathy, optimal medical therapy is mandatory: it should be the first step in line with the guidelines on the management of heart failure (HF).
- After valve surgery, the use of low-dose aspirin is now favoured during the first 3 months post operative in patients with aortic bioprotheses. Oral anticoagulation should still be considered for the first 3 months after implantation of a mitral or tricuspid bioprosthesis or mitral valve repair.