



The unseen disease

Why does aortic regurgitation go undetected?

Aortic regurgitation (AR) is a progressive condition that may remain asymptomatic for many years.¹ About 15% of cases of aortic regurgitation go undetected,² posing significant risks due to the condition being associated with poor patient outcomes.³

This brochure provides you with the necessary information on aortic regurgitation to support you when referring your patients to the Heart Team so that they receive the timely and comprehensive care they need.



Find out more about
aortic regurgitation



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Aortic regurgitation: a recap



How can you best manage your aortic regurgitation patients?



Aortic regurgitation occurs when the aortic valve fails to close properly during diastole, allowing for the retrograde flow of blood into the left ventricle.¹ This persistent regurgitation prompts the heart to undergo compensatory remodelling aimed at preserving systolic function and is characterised by eccentric hypertrophy and dilatation of the left ventricular chamber.¹ However, as the condition progresses, these mechanisms become insufficient, decompensation occurs leading to a decline in systolic function and development of heart failure.^{1,4}

Aortic regurgitation is a progressive disease that can be classed as mild, moderate or severe. Guidance on how to manage the different stages of disease severity are outlined in the 2021 ESC/EACTS Guidelines:⁹

Mild-moderate aortic regurgitation

Patients may not qualify for surgery but should undergo annual follow-ups, with echocardiography recommended every two years.⁹ Vasodilator therapy may be considered to alleviate symptoms or manage hypertension.^{10,11}

Severe aortic regurgitation

Surgical indication will depend on clinical symptoms and left ventricle size. The guidelines recommend (Class I, level B) surgery for:⁹

- Symptomatic patients, regardless of left ventricular function
- Asymptomatic patients with left ventricular end-systolic diameter >50 mm (>25 mm/m² body surface area) or left ventricular ejection fraction ≤50%

Intervention of aortic regurgitation is crucial because if left untreated, patients can experience a rapid decline in functional cardiovascular health and high mortality.^{1,3,12}

Following conservative treatment of patients with moderate to severe aortic regurgitation, death usually occurs within four years from the start of angina and two years after heart failure onset.¹ In addition, the 2021 ESC/EACTS Guidelines also state that eligible patients should be referred to the Heart Team before irreversible damage occurs.⁹

Aortic regurgitation is the

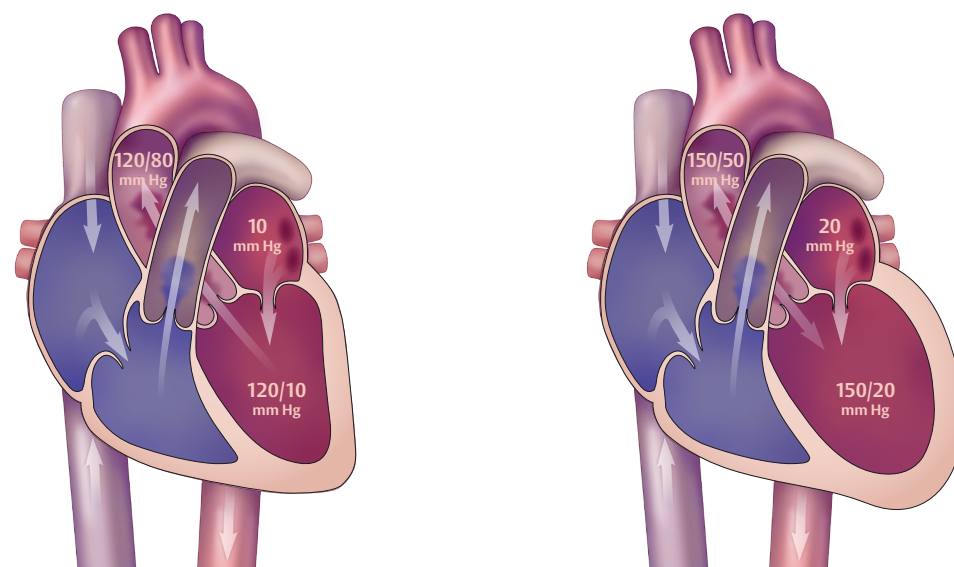
3rd

most common valvular pathology observed in the general population⁵

4.8%

is the estimated prevalence of aortic regurgitation⁶

The disease becomes more common with age, particularly among individuals aged 50 and older.⁶ Along with an ageing population,⁷ the incidence of clinically significant valvular heart disease—including aortic regurgitation—is expected to increase considerably over the next five decades.²



Healthy heart

Heart with aortic regurgitation*

Adapted by Flint N et al. *Curr Cardiol Rep.* 2019.⁴

*Aortic regurgitation can also develop acutely. The normal-sized left ventricle is unable to adapt to the sudden increase in volume/pressure and can result in pulmonary oedema and decreased cardiac output.^{1,8} Acute aortic regurgitation is a medical emergency and may require immediate intervention.⁹

Effectively monitoring aortic regurgitation



Treating severe aortic regurgitation



The 2021 ESC/EACTS Guidelines recommend echocardiography as the key imaging modality for diagnosing and monitoring the progression of valvular heart diseases and, thus, holds significant influence over clinical decision-making.^{9,13}

Grading of aortic regurgitation requires a multiparametric assessment based on qualitative, semiquantitative and quantitative parameters.^{9,14} Below is a selection of echocardiographic criteria required to characterise aortic regurgitation as severe.

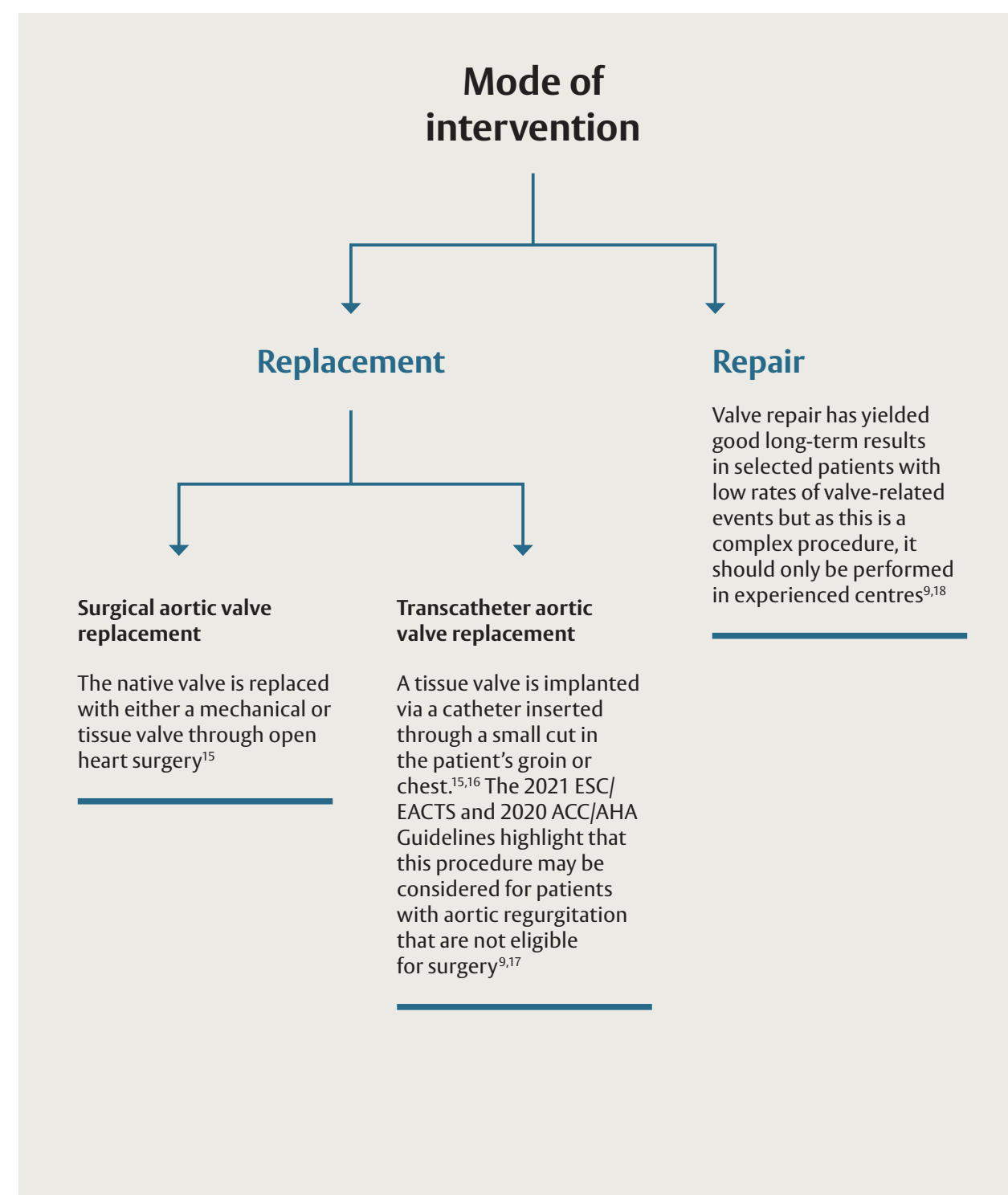
Qualitative	
Valve morphology	Abnormal/flail/large coaptation defect
Colour flow regurgitant jet area (at Nyquist limit of 50–60 cm/s)	Large in central jets, variable in eccentric jets
Continuous wave signal of regurgitant jet	Dense
Other	Holodiastolic flow reversal in descending aorta (end diastolic volume >20 cm/s)
Semiquantitative	
Vena contracta width (mm)	>6
Pressure half-time (ms)	<200
Quantitative	
Effective regurgitant orifice area (mm ²)	≥30
Regurgitant volume (mL/beat)	≥60
Enlargement of cardiac chambers	Left ventricle dilatation

Adapted from Vahanian A, et al. *Eur Heart J*. 2022⁹ & Lancellotti P, et al. *Eur Heart J Cardiovasc Imaging*. 2022.¹⁴

Once aortic regurgitation is classed as severe, the 2021 ESC/EACTS Guideline triggers for referring a patient for surgery are:⁹

- Symptomatic regardless of left ventricular status or asymptomatic with left ventricular end-systolic diameter >50 mm (>25 mm/m² body surface area) or left ventricular ejection fraction ≤50% even if asymptomatic (*Class I, Level B*)
- Asymptomatic with left ventricular end-systolic diameter >20 mm/m² body surface area or resting left ventricular ejection fraction ≤55%, if surgery is low risk (*Class IIb, level C*)

Severe aortic regurgitation patients may be eligible for either an aortic valve replacement or repair.⁹



Mechanical or tissue valves?



Management of aortic regurgitation needs shared decision-making

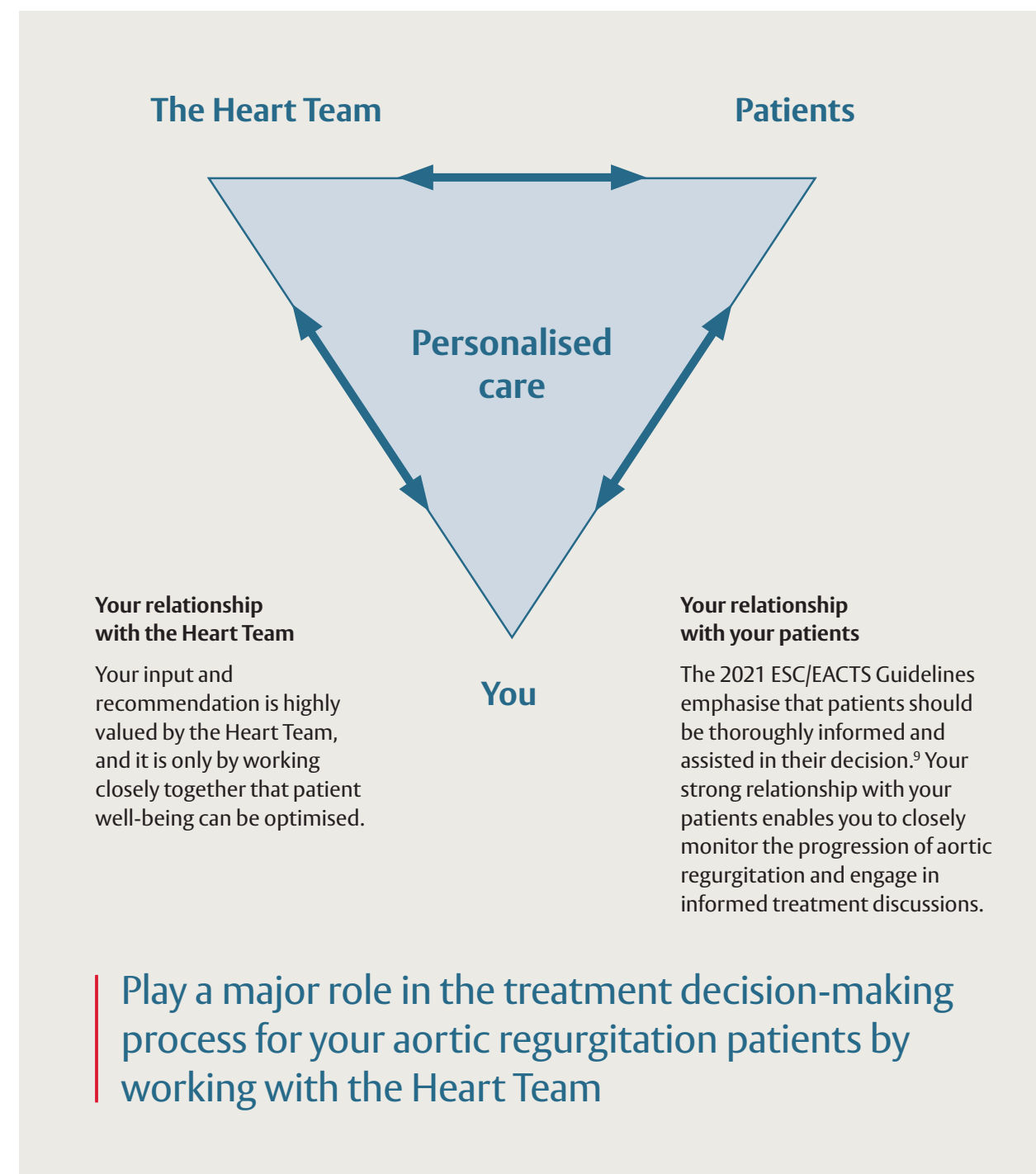


Your patient will be fitted with either a tissue or mechanical valve. Both valves have advantages and pitfalls so it's important to be well informed.

The below table will help you to engage in meaningful discussions with your patients, assisting them in making an informed decision about the most suitable valve for their needs.

	Tissue valve	Mechanical valve
What is the valve made out of?	Animal tissue, such as from cows or pigs ¹⁹	Materials such as titanium and carbon ¹⁹
How long will the valve last?	Approximately 10–20 years ²⁰	Usually lasts a lifetime ²⁰
Will the patient need to be on long-term anticoagulation medication?	No ⁹	Yes Mechanical valves need lifelong use of a vitamin K antagonist, which prevents blood clotting ⁹
Does the patient need to make any lifestyle changes?	No	Yes Taking a vitamin K antagonist means regular monitoring and changing your lifestyle to avoid injuries ²¹
Does the patient need to consider their diet?	You might need to reduce your calcium intake ²²	Keep the amounts of foods high in vitamin K (leafy greens like kale, brussel sprouts, or broccoli) consistent in your diet ^{21,23}
Will the patient be able to hear their replacement valve?	No	Yes You'll be able to hear some clicking sounds as your valve closes ²⁴
What are the risks if the patient plans on becoming pregnant in the future?	No known pregnancy complication risk ⁹	High pregnancy complication risk ⁹

The collaborative partnership between you, the Heart Team, and your patients is a key component in providing a personalised approach in managing aortic regurgitation. Ultimately, this empowers your patients in making decisions aligned with their individual needs.





Abbreviations

ACC, American College of Cardiology; AHA, American Heart Association; EACTS, European Association of Cardio-Thoracic Surgery; ESC, European Society of Cardiology.

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