Moderate Aortic Stenosis

Quick Reference Guide

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What is aortic stenosis?

Aortic stenosis (AS) is a heart valve disease caused by fibrosis or calcium buildup that narrows the aortic valve's opening and restricts blood flow from the heart to the rest of the body.[1]

Aortic stenosis severity is categorized in three stages:

Mild | **Moderate** | Severe

AS severity guides surveillance, referral, and treatment planning.[2]

- When AS is undiagnosed or untreated, it can progress into severe AS.
- Severe AS is associated with significant morbidity and mortality if left untreated.
- If severe AS is suspected, it is critical for clinicians to refer their patients to the Heart Team for monitoring and treatment.

Why does moderate AS matter?

- **Moderate AS is a progressive condition.** It occurs when there is a **moderate** amount of fibrosis or calcium buildup on the aortic valve, causing the valve's opening to be smaller than normal.[2]
- **Moderate AS requires ongoing monitoring.[2]** Some patients may develop symptoms or progress more rapidly than expected, highlighting the importance of regular monitoring and clinical reassessment.[3]

Suspect moderate AS? *Clinical signs or symptoms that may warrant evaluation*[1]

Patients with suspected or known AS should be evaluated or reassessed if they present:



Prior echo showing valve calcification



Exertional dyspnea



Reduced exercise tolerance



Syncope or presyncope



Angina or chest discomfort



Signs of heart failure

These signs and symptoms may signal disease progression or reduced cardiac reserve.

How do I assess for AS severity? *Order an echo!*

Echocardiography is the primary tool for assessing AS severity, monitoring progression, and identifying discordant or high-risk findings that may warrant further evaluation.[4]

A complete transthoracic echocardiogram (TTE) should be performed if a patient presents with new or worsening symptoms suggestive of valve disease or as part of their routine AS surveillance.[4]

Does this patient meet moderate AS criteria?[2,4]

Using echo findings to assess AS severity

Key echo parameters	Mild	**Moderate**	Severe
Aortic valve area (cm^2)	>1.50	**≥1.01 – ≤1.50**	≤1.00
Peak aortic valve velocity (m/s)	2.0 – 2.9	**3.0 – 3.9**	≥4.0
Mean gradient (mmHg)	<20	**20 – 39**	≥40

Understanding echo results

Aortic valve area (AVA)

- **Definition:** AVA estimates the size of the aortic valve opening.
- **Implication:** An AVA in the moderate AS range suggests clinically significant valve narrowing that requires routine surveillance and reassessment for symptoms or progression.

Peak aortic valve velocity and mean gradient

- **Definition:** Peak aortic valve velocity measures the speed of blood flow across the aortic valve, while mean gradient reflects the average pressure difference across the valve.
- **Implication:** Higher values indicate greater obstruction and should be interpreted alongside AVA measurements, symptoms, and overall clinical status.

Conflicting values? Additional considerations for discordant AS and assessing AS severity[2,4]

Discordant AS occurs when individual echo parameters suggest differing levels of disease severity. When mild, moderate, and severe indicators coexist, additional measures such as **left ventricular ejection fraction (LVEF), stroke volume index (SVI), and qualitative characterizations** may help clarify and support the evaluation of AS severity.

In some cases, additional testing may be necessary to accurately determine AS severity, such as low-dose dobutamine echocardiography or CT aortic valve calcium scoring.

Left ventricular ejection fraction (LVEF)

- **Definition:** LVEF is the percentage of blood that is ejected from the left ventricle with each heartbeat. A normal LVEF is typically 50–70%.
- **Implication:** In cases of discordant findings, a reduced LVEF may indicate low-flow physiology, which can result in lower gradients despite significant valve obstruction.

Stroke volume index

- **Definition:** Stroke volume index (SVI) measures how much blood the left ventricle pumps with each heartbeat, indexed to the body surface area.
- **Implication:** In moderate AS, an SVI ≤35 mL/m^2 may signal reduced stroke volume, making the severity of AS more difficult to determine using mean gradients and peak velocities.

Qualitative characterization of AS severity

- Echo reports may include qualitative descriptors to guide severity assessments alongside quantitative measures.

Additional testing

- If echo results remain inconclusive, engage the Heart Team for further evaluation and consider additional testing, such as low-dose dobutamine stress echocardiography or CT aortic valve calcium scoring.

What is recommended for patient care and monitoring?

Get the full picture – order an echo!

- Consider a complete transthoracic echocardiogram (TTE) for patients with:

Symptoms suggestive of valve disease

Change in symptoms or clinical status

Known AS requiring surveillance

New systolic murmur

Symptoms: shortness of breath, reduced exercise tolerance, chest discomfort, syncope and presyncope, signs or symptoms of heart failure

Monitor disease progression

- Schedule repeat echocardiography every 1–2 years, or sooner if symptoms develop or progression is suspected.
- Routinely reassess AVA, mean gradient, peak velocity, stroke volume index (SVI), and LVEF to monitor disease progression and guide clinical decision-making.

Coordinate care

- Multidisciplinary collaboration is critical to improve outcomes: Consider early Heart Team evaluation for severity confirmation, risk assessment, and clinical trial opportunities, as appropriate.

Plan ahead

- Discuss disease trajectory, management, and future intervention expectations.

Referrals or questions?

Refer suspected AS patients to a multidisciplinary Heart Valve Team. Key contacts for AS patients may include valve clinic coordinator, structural heart coordinator, general cardiology, and imaging/echo lab.

Contact info:

Kardigan is a supporter of the American Heart Association's Heart Valve Initiative.

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Your Moderate AS Action Plan

American Heart Association.

01. Remain alert for signs and symptoms:

Maintain a high index of suspicion for AS, particularly in patients with exertional symptoms, declining functional status, or prior evidence of valve disease.

02. Order an echo:

Get the full picture to assess disease severity and establish a baseline for monitoring.

03. Engage the Heart Team:

Consider early team evaluation for severity confirmation, risk assessment, and clinical trial opportunities, as appropriate.

04. Monitor progression:

Schedule repeat echocardiography every 1–2 years, or sooner if symptoms develop or progression is suspected.

05. Plan ahead:

Discuss disease trajectory, management, and future intervention expectations with your patients.

06. Refer or escalate:

Involve a Valve Team or specialist if symptoms worsen, progression is suspected, or additional expertise is needed.

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References

1. American Heart Association. (2024). Aortic stenosis overview. https://www.heart.org/en/health-topics/heart-valve-problems-and-disease/heart-valve-problems-and-causes/problem-aortic-valve-stenosis

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