

**CLINICAL PRACTICE GUIDELINES:
ECHOCARDIOGRAMS FOR AORTIC VALVE STENOSIS**

Target Audience:

These guidelines are intended for physicians and advance practice practitioners in both the outpatient and inpatient settings.

Scope/Patient Population:

The intent of these Clinical Practice Guidelines is to provide a concise summary of the standardized process for conducting an echocardiogram to evaluate a patient for aortic valve stenosis.

Rationale:

Using a consistent, integrative approach to all echoes done to determine severity of aortic stenosis will help to eliminate discrepancies in echo reports and will help providers make appropriate treatment decisions for patients.

Objective

Improve quality and consistency of echo data collected.

Recommendations

It is recommended that echocardiograms should follow a standardized process for patients with aortic valve stenosis.

It is important to use an “Integrative Approach” to grading the severity of aortic stenosis, combining all 2D and Doppler data. It is equally important to note the discrepancies between gradients and valve area. This may be due to loading conditions, high and low cardiac output, and irregular rhythms.

Suggested recommendations for Standard Clinical Practice – appropriate in all patients with AS:

1. AS Jet Velocity by CW Doppler – from at least 2 imaging planes, with guided CW (Pedoff) – appropriately documented and labeled
2. Mean Trans-Aortic Velocity
3. Valve area by Continuity Eq. (AoV VTI, LVOT VTI, LVOT diam)
 - Continuity Equation measures the effective valve area, and is the primary predictor of clinical outcome.
 - LVOT diam – RES, Inner to Inner, 0.5-1.0 cm from annulus
 - LVOT sample volume placed in same location as LVOT diam measured

Suggested Alternate Measures of stenosis severity when applicable:

1. Dimensionless Index/Velocity Ratio – Severe Cutoff = 0.25
2. AVA Planimetry – PSAX window – Severe Cutoff = 1.0 cm²

Reporting recommendations

- Aortic Jet Velocity (m/s), Mean Grad (mmHg), Indexed AVA cm²/m²
- Velocity Ratio will be added to reporting structure for documentation.

Important Sonographer Questions:

- Is there a discrepancy between the gradient and the AVA? Why?
- Have you calculated CO and SV?
- CO (Cardiac Output) = HR x SV
- SV (Stroke Volume) = LVOT Area x LVOT VTI
- LVOT diameter is squared in Continuity Equation – therefore greatest source for error
- Low-flow low-gradient AS?

Table 3 Recommendations for classification of AS severity

	Aortic sclerosis	Mild	Moderate	Severe
Aortic jet velocity (m/s)	≤2.5 m/s	2.0-2.9	3.0-4.0	>4.0
Mean gradient (mmHg)	–	<20 (<30 ^a)	20-40 ^b (30-50 ^a)	>40 ^b (>50 ^a)
AVA (cm ²)	–	>1.5	1.0-1.5	<1.0
Indexed AVA (cm ² /m ²)	–	>0.85	0.60-0.85	<0.6
Velocity ratio	–	>0.50	0.25-0.50	<0.25

^aESC Guidelines.

^bAHA/ACC Guidelines.

PDCA Plan:

This guideline will be reviewed and revised by a Cardiologist and the Manager of Cardiovascular Diagnostic Imaging every three years, or sooner if needed, based on current best practice and review of literature.

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