



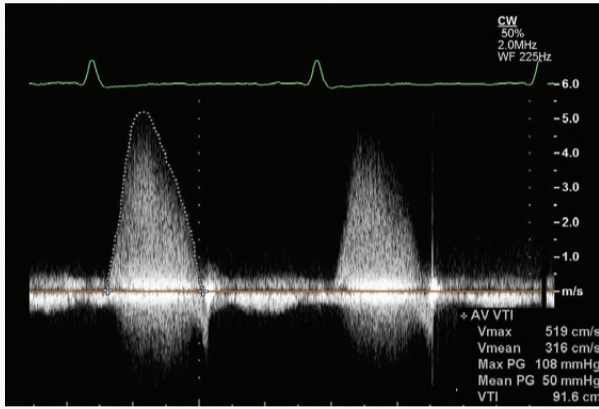
Echocardiography: Guidelines for Valve Quantification

British Society of Echocardiography Education Committee

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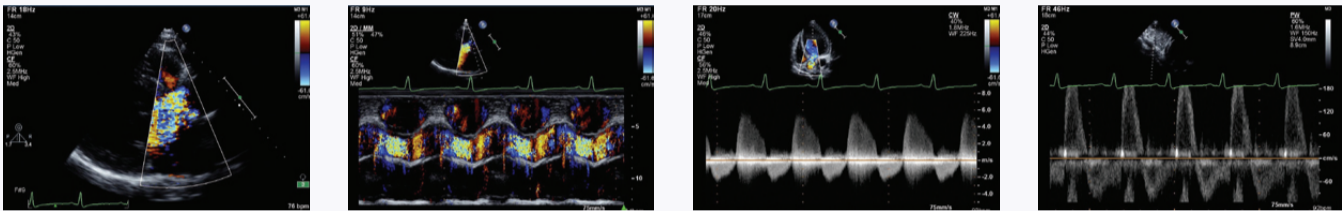
Aortic stenosis

	Normal	Mild	Moderate	Severe
Peak velocity (m/s)	-	<2.9	3.0–3.9	>4.0
Mean pressure drop (mmHg)	-	<25	25–40	>40
Valve area (cm ²)	>2.0	1.5–2.0	1.0–1.4	<1.0
Velocity ratio (m/s)	-	≥0.5	0.25–0.5	≤0.25

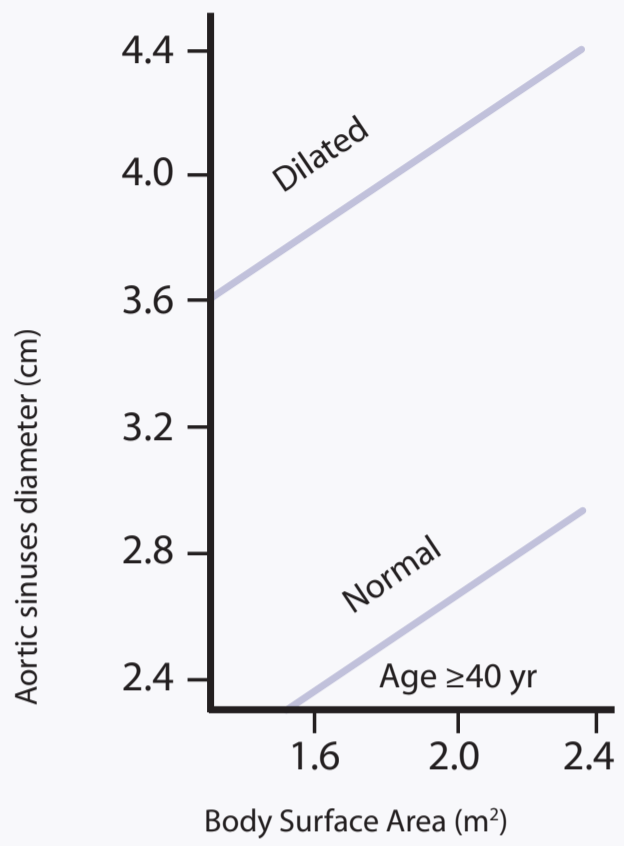
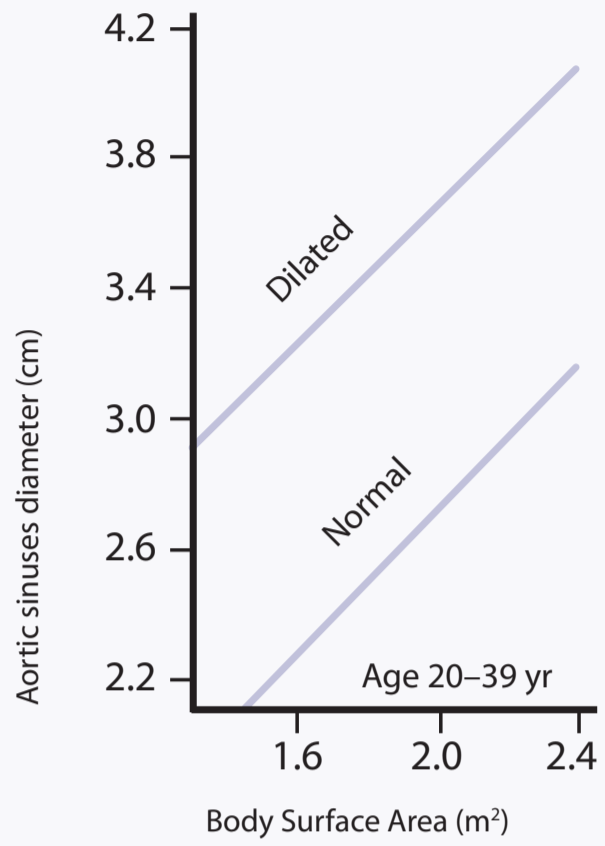
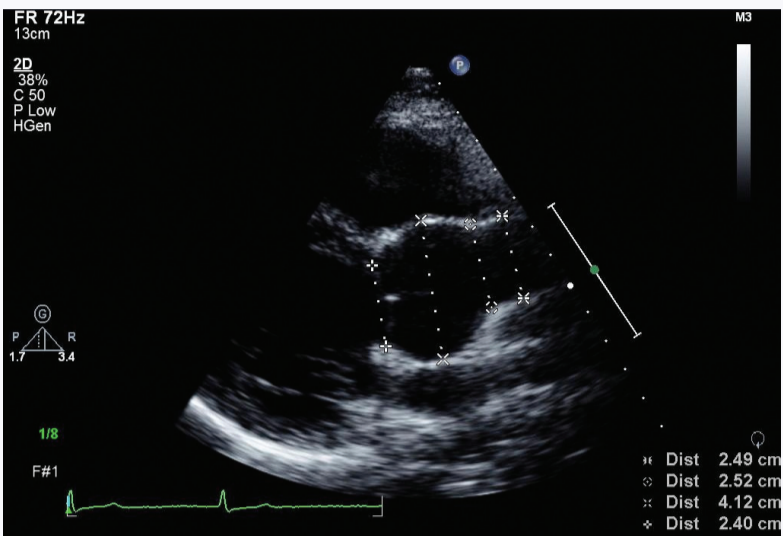


Aortic regurgitation

	Mild	Moderate	Severe
Vena contracta width (cm)	<0.3		>0.6
Jet width/LVOT diam. (%)	<25		≥65
Regurgitant volume (ml/beat)	<30	31–59	≥60
Regurgitant fraction (%)	<30	31–49	≥50
Regurgitant orifice area (cm ²)	<0.10	0.11–0.29	≥0.30
VTI diastolic flow reversal (upper DAo) (cm)			15
Pressure half time (ms)	>500		<250

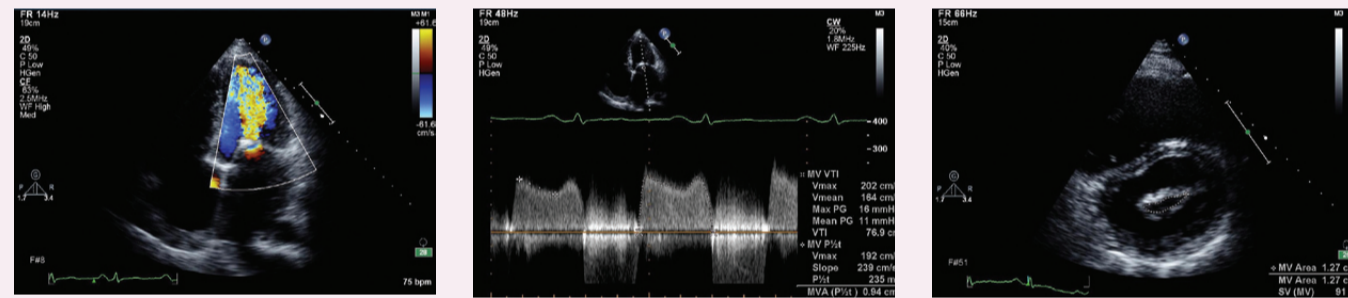


Aortic dimensions



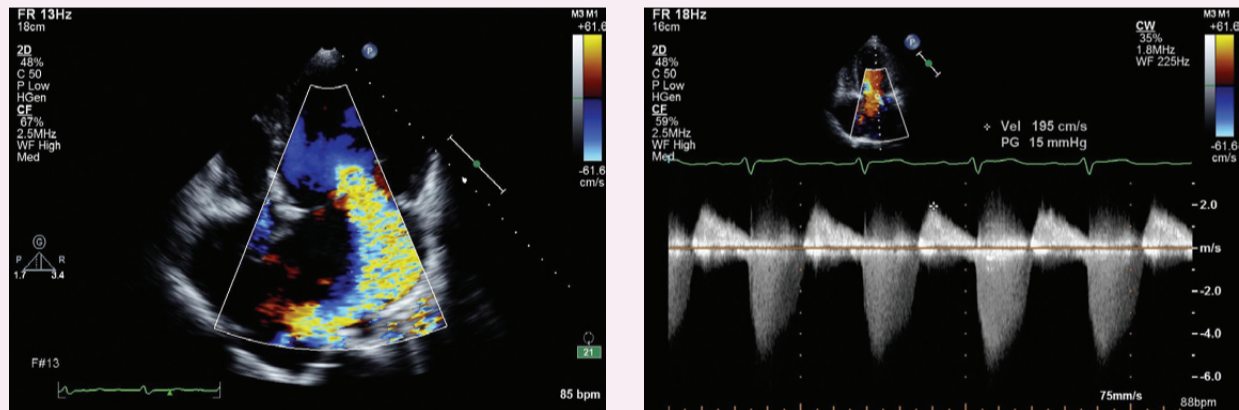
Mitral stenosis

	Normal	Mild	Moderate	Severe
Pressure half time (ms)	40–70	71–139	140–219	>219
Mean pressure drop (mmHg)		<5.0	5–10	>10
Valve area (cm ²)	4.0–6.0	1.6–2.0	1.0–1.5	<1.0



Mitral regurgitation

	Mild	Moderate	Severe
Jet area / LA (%)	<20%		>40%
Vena contracta (cm)	<0.3		≥0.7
PISA radius (Nyquist 40cm/s)	<0.4		>1.0
Regurgitant volume (mL)	<30	31–59	≥60
Regurgitant fraction (%)	<30	31–49	≥50
Regurgitant orifice area (cm ²)	<0.20	0.21–0.39	≥0.40

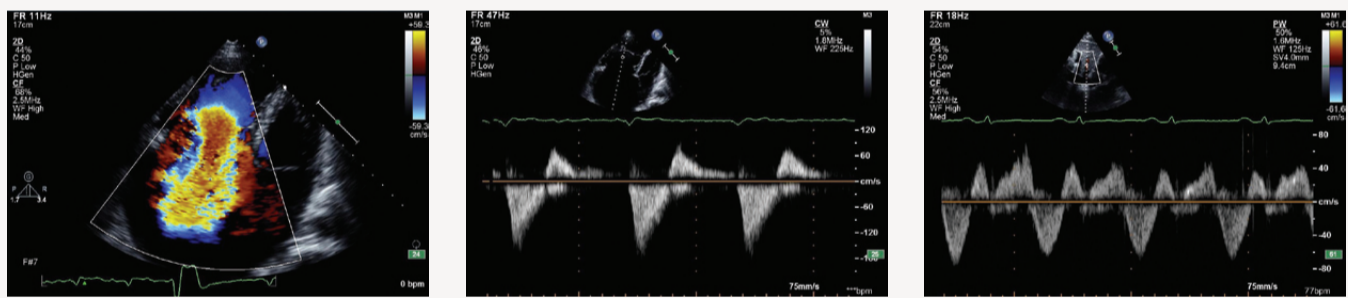


Tricuspid stenosis

	Normal	Severe
Mean pressure drop (mmHg)	-	≥5
Inflow velocity-time integral (cm)		>60
Valve area (cm ²)	>7.0	<1.0

Tricuspid regurgitation

	Mild	Moderate	Severe
Jet area (cm ²)	<5	5–10	>10
VC width (cm)	Not defined	<0.7	>0.7
PISA radius (cm)	<0.5	0.6–0.9	>0.9
CW jet density/contour	Soft/parabolic	Dense/variable	Dense/triangular early peaking
RA/RV/IVC size	Normal	Normal/dilated	Usually dilated
Hepatic vein flow	Systolic dominance	Systolic blunting	Systolic reversal

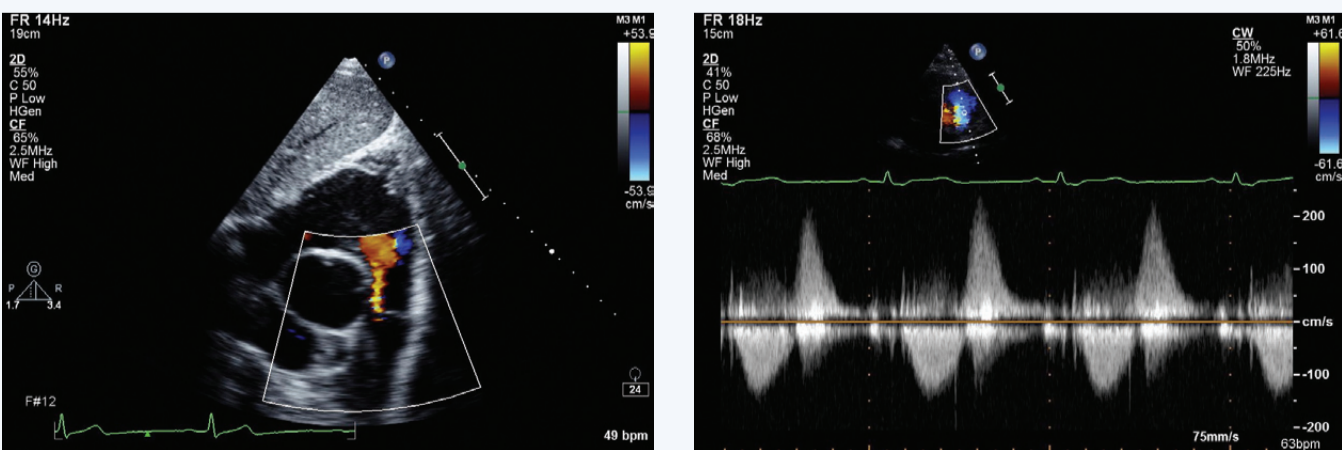


Pulmonary stenosis

	Mild	Moderate	Severe
Peak velocity (m/s)	<3	3–4	>4

Pulmonary regurgitation

	Mild	Moderate	Severe
Jet size (CFM) (cm)	Narrow, <1.0	Intermediate	Wide, large
Regurgitant fraction (%)	<40	40–60	>60
CW jet density/deceleration rate	Soft/slow	Dense/variable	Dense/steep
RVOT _{VTI} / LVOT _{VTI}	↑	↑↑	↑↑↑



Explanatory note & references

These guidelines have been developed by the Education Committee of the British Society of Echocardiography. They have been adapted from the international recommendations and guidelines referenced below. Where there are differences between published values, or there is a lack of clear evidence, recommended values have been developed on the basis of consensus opinion.

It is vital that echocardiographic measurements are made using standard, correct techniques and that all values are reported and interpreted in clinical context.

Valve Quantification

Adapted from: Recommendations for Evaluation of the Severity of Native Valvular Regurgitation with Two-dimensional and Doppler Echocardiography. A report from the American Society of Echocardiography's Nomenclature and Standards Committee and The Task Force on Valvular Regurgitation, developed in conjunction with the American College of Cardiology Echocardiography Committee, The Cardiac Imaging Committee Council on Clinical Cardiology, the American Heart Association, and the European Society of Cardiology Working Group on Echocardiography. Zoghbi WA et al. *J Am Soc Echocardiogr* 2003;**16**(7): 777–802

ACC/AHA 2006 guidelines for the management of patients with valvular heart disease. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Bonow RO et al. *J Am Coll Cardiol* 2006;**48**(3):e1–148

Aortic Dimensions

Adapted from: Two-dimensional echocardiographic aortic root dimensions in normal children and adults. Roman MJ et al. *Am J Cardiol* 1989;**64**:507–12