MITRAL REGURGITATION - SEVERITY

	Mild	**Moderate**	**Severe**
Specific signs of severity	Small central jet < 4 cm^2 or < 20% of LA area Vena Contracta width < 0.30 cm No or minimal flow convergence	Signs of MR > mild present , but no criteria for severe MR	Vena Contracts width >= 0.7 cm with large central MR jet (area < 40% of LA) or with a wall impinging jet of any size Large flow convergence Systolic reversal in pulmonary veins Prominent flail MV leaflet or ruptured papillary muscle
Supportive signs	Systolic dominant flow in pulmonary vein A-wave dominant mitral inflow Soft density : parabolic CW Doppler MR signal Normal LV size	Intermediate signs / findings	Dense triangular CW Doppler MR jet E wave dominant mitral flow (E > 1.2 m/s) Enlarged LV and LA size (particularly when the normal LV function is present)

Quantitative parameters	**Reference value**	**Mild**	**Moderate**	**Severe**
R Vol (ml/beat)	< 30	30 - 44	45 - 59	>= 60
RF (%)	< 30	30 - 39	40 - 49	>= 50
EROA	< 0.20	0.20 – 0.29	0.30 – 0.39	>= 0.40

MITRAL STENOSIS - SEVERITY

	Mild	Moderate	Severity
Valve area (cm2)	>1.5	1.0 – 1.5	< 1.0
Supportive findings			
Mean Gradient (mmHg) a	< 5	5 – 10	>10
Pulmonary artery pressure (mmHg)	<30	30 – 50	>50
a – heart rates between 60 and 8- bpm and in sinus rhythm			

MITRAL STENOSIS - ROUTINE MEASUREMENT

Grade	Mobility	Thickening	Calcification	Subvalvular Thickening
1	Highly mobile valve with only leaflet tips restricted	Leaflets near normal in thickness (4 – 5 mm)	A single area of increased echo brightness	Minimal thickening just below the mitral leaflets
2	Leaflet mid and base portions have normal mobility	Mid leaflets normal, considerable	Scattered areas of brightness confined to leaflet margins	Thickening of chordal structures extending to one third of the chordal length
3	Valve continues to flow forward in diastole mainly from the base	Thickening extending through the entire leaflet (5 – 8 mm)	Brightness extending into mid portions of the leaflets	Thickening extended to distal third of the chords
4	No or minimal forward movement of the leaflets is diastole	Considerable thickness of all the leaflets (> 8 – 10 mm)	Extensive brightness throughout much of the leaflet tissue	Extensive thickening and shortening of all chordal structures extending down to the papillary muscles

MITRAL STENOSIS ROUTINE MEASUREMENTS

Data element	Recording	Measurement
Planimetry	2D parasternal short axis view Determine the smallest orifice by scanning from apex to base Positioning of the measurement plan can be orientated by 3D echo Lowest gain setting to visualise the whole mitral orifice Continuous wave Doppler	Contour of the inner mitral orifice Include commissures when opened In mid diastole Average measurement if atrial fibrillation Mean gradient from the traced contour of the

		diastolic mitral flow
Mitral flow	Apical windows often suitable (optimise intercept angle) Adjust gain setting to obtain well defined flow contour	Pressure half time from the descending slope of the E wave (md diastole slope if not linear) Average measurement if artrial fibrillation
Systolic pulmonary artery pressure	Continuous wave Doppler Multiple acoustic windows to optimise intercept angle Parasternal short axis view Parasternal long axis view	Maximum velocity of the tricuspid regurgitant flow Estimation of right atrial pressure according to inferior vena cava diameter Valve thickness (maximum and heterogeneity) Commissural fusion Extension and location of the localised bright zones (fibrous nodules or calcification)
Valve anatomy	Apical two chamber view	Valve thickness Extension of calcification Valve pliability (chordal thickening, fusion or shortening) Subvalvular apparatus (chordal thickening, fusion or shortening) Subvalvular apparatus (chordal thickening, fusion or shortening)