B.1.4. Continuity equation (Level 2 Recommendation). As in the estimation of AVA, the continuity equation is based on the conservation of mass, stating in this case that the filling volume of diastolic mitral flow is equal to aortic SV.

$$\mathrm{MVA} = \pi\left(\frac{\mathrm{D}^2}{4}\right)\left(\frac{\mathrm{VTI}_{\mathrm{Aortic}}}{\mathrm{VTI}_{\mathrm{mitral}}}\right)$$

where D is the diameter of the LVOT (in cm) and VTI is in cm.[61]

Table 9 Recommendations for classification of mitral stenosis severity

	Mild	Moderate	Severe
Specific findings			
Valve area (cm^2)	>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]At heart rates between 60 and 80 bpm and in sinus rhythm.

Stroke volume can also be estimated from the pulmonary artery; however, this is rarely performed in practice because of limited acoustic windows.

The accuracy and reproducibility of the continuity equation for assessing MVA are hampered by the number of measurements increasing the impact of errors of measurements. The continuity equation cannot be used in cases of atrial fibrillation or associated significant MR or AR.