

## ANNEX I

This document has been modified from Badano LP, Posteraro A, Salustri A, Astarita C, Mantero A, Erlicher A on behalf of the Italian Society of Cardiovascular Echocardiography (SIEC). Minimal dataset ecocardiografico.

[www.anmco.it/download/pdf/aree/elenco/informativa/MDS\\_Ecocardiografia.pdf](http://www.anmco.it/download/pdf/aree/elenco/informativa/MDS_Ecocardiografia.pdf).

It contains a proposal for quantitative and semiquantitative parameters to be used to report size and function of heart structures in a structured computerized echo reporting system.

### 1. GEOMETRY AND FUNCTION

#### 1.1 LEFT VENTRICLE

End-diastolic diameter (cm)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	End-diastolic volume index (ml/m <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
End-systolic diameter (cm)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	End-systolic volume index (ml/m <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Interv. septum thickness(cm)	<input type="checkbox"/> <input type="checkbox"/>	End-diastolic shape	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Posterior wall thickness (cm)	<input type="checkbox"/> <input type="checkbox"/>	End-systolic shape	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Diameters and thickness measured by M-mode			
2D			
		Maximal wall thickness	<input type="checkbox"/> <input type="checkbox"/>
End-diastolic volume (ml)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Fractional shortening %	<input type="checkbox"/> <input type="checkbox"/>
End-systolic volume (ml)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Lateral annulus excursion (cm)	<input type="checkbox"/> <input type="checkbox"/>
Volumes measured by			
	single-plane A-L		
	Biplane A-L		
	Single plane Simpson		
	Biplane Simpson		
	Triplane		
	3D		
		Septal annulus excursion (cm)	<input type="checkbox"/> <input type="checkbox"/>
Outflow tract diameter (cm)	<input type="checkbox"/> <input type="checkbox"/>	Anterior annulus excursion (cm)	<input type="checkbox"/> <input type="checkbox"/>
End-diastolic long axis (cm)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Inferior annulus excursion (cm)	<input type="checkbox"/> <input type="checkbox"/>
End –systolic long axis (cm)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Average annulus excursion (cm)	<input type="checkbox"/> <input type="checkbox"/>
Ejection Fraction (%)	<input type="checkbox"/> <input type="checkbox"/>		
Mass (g)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Mass Indexed by BSA (g/m <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Massa indexed by height (g/m <sup>2.7</sup> )	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Radium/Thickness ratio	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Septum/posterior wall ratio	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Massa diameters 1 x 2 (cm)	<input type="checkbox"/> <input type="checkbox"/> x <input type="checkbox"/> <input type="checkbox"/>

#### 1.2 MITRAL VALVE

Anulus diameter (LAX)(cm)	<input type="checkbox"/> <input type="checkbox"/>	Anterior leaflet thickness (cm)	<input type="checkbox"/> <input type="checkbox"/>
Annulus diameter (4-CH) (cm)	<input type="checkbox"/> <input type="checkbox"/>	Posterior leaflet thickne (cm)	<input type="checkbox"/> <input type="checkbox"/>
Planimetered Valve area 2D (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/>	Coaptation distance (cm)	<input type="checkbox"/> <input type="checkbox"/>
Planimetered Valve area 3D (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/>	Tenting area (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/>
Wilkins score	<input type="checkbox"/> <input type="checkbox"/>		

#### 1.3 AORTIC VALVE

Planimetered valve area 2D (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/>	Cusp opening distance (cm)	<input type="checkbox"/> <input type="checkbox"/>
Planimetered valve area 3D (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/>		

#### 1.4 LEFT ATRIUM

Antero-posterior diameter (cm)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	End-systolic area (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
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Superior-inferior diameter (cm)	<input type="checkbox"/> <input type="checkbox"/> .	Mass diameters 1 x 2 (cm)	<input type="checkbox"/> . <input type="checkbox"/> x <input type="checkbox"/> . <input type="checkbox"/>
Medial-lateral diameter (cm)	<input type="checkbox"/> <input type="checkbox"/> .	End-systolic volume (ml)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
		Volume measured by	M-mode (Cubed) Ellipsoidal formula Single-plane Biplane 3D

### 1.5 LEFT ATRIAL APPENDAGE

End-systolic area (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/> .	Fractional shortening (%)	<input type="checkbox"/> <input type="checkbox"/>
End-diastolic area (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/> .	Mass diameters 1 x 2 (cm)	<input type="checkbox"/> . <input type="checkbox"/> x <input type="checkbox"/> . <input type="checkbox"/>

### 1.6 RIGHT ATRIUM

Superior-inferior diameter (cm)	<input type="checkbox"/> <input type="checkbox"/> .	End-systolic area (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/> .
Medial-lateral diameter (cm)	<input type="checkbox"/> <input type="checkbox"/> .	Mass diameters 1 x 2 (cm)	<input type="checkbox"/> . <input type="checkbox"/> x <input type="checkbox"/> . <input type="checkbox"/>
Volume (ml)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Volume measured by	M-mode (Cubed) Ellipsoidal formula Single-plane Biplane 3D

### 1.7 RIGHT VENTRICLE

End-diastolic area (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/> .	Septal annulus excursion (cm)	<input type="checkbox"/> . <input type="checkbox"/>
End-systolic area (cm <sup>2</sup> )	<input type="checkbox"/> <input type="checkbox"/> .	Lateral annulus excursion (cm)	<input type="checkbox"/> . <input type="checkbox"/>
Medial-lateral diameter (cm)	<input type="checkbox"/> <input type="checkbox"/> .	Average annulus excursion (cm)	<input type="checkbox"/> . <input type="checkbox"/>
Outflow tract diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>	Mass diameters 1 x 2 (cm)	<input type="checkbox"/> . <input type="checkbox"/> x <input type="checkbox"/> . <input type="checkbox"/>
Fractional area change (%)	<input type="checkbox"/> <input type="checkbox"/>	Free wall thickness (cm)	<input type="checkbox"/> . <input type="checkbox"/>
End-diastolic volume (ml)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Ejection fraction (%)	<input type="checkbox"/> <input type="checkbox"/>
End-systolic volume (ml)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		

### 1.8 TRICUSPID VALVE

Annulus diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>	Septal leaflet thickness (cm)	<input type="checkbox"/> . <input type="checkbox"/>
Planimetered valve area 2D (cm <sup>2</sup> )	<input type="checkbox"/> . <input type="checkbox"/>	Anterior leaflet thickness (cm)	<input type="checkbox"/> . <input type="checkbox"/>
Planimetered valve area 3D (cm <sup>2</sup> )	<input type="checkbox"/> . <input type="checkbox"/>	Posterior leaflet thickness (cm)	<input type="checkbox"/> . <input type="checkbox"/>

### 1.9 AORTA

M-Mode diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>	Ascending aorta max diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>
Annulus diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>	Arch diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>
Root Diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>	Descending aorta diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>
Sino-tubular junction (cm)	<input type="checkbox"/> . <input type="checkbox"/>	Abdominal aorta diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>
Ascending aorta at 1 cm from S.-T. junct (cm)	<input type="checkbox"/> . <input type="checkbox"/>		

### 1.10 INFERIOR VENA CAVA

Expiratory Diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>	Respiratory change	<input type="checkbox"/> . <input type="checkbox"/> <input type="checkbox"/>
Inspiratory Diameter (cm)	<input type="checkbox"/> . <input type="checkbox"/>		

### 1.11 PERICARDIUM

Max. effusion thickness (cm)	<input type="checkbox"/> . <input type="checkbox"/> <input type="checkbox"/>	Thickness (cm)	<input type="checkbox"/> . <input type="checkbox"/>
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### 1.12 PULMONARY ARTERY

Main artery diameter (cm)	□.□	Left branch diameter (cm)	□.□
Right branch diameter (cm)	□.□		

### 1.13 INTERATRIAL SEPTUM

ASD Diameters 1 x 2 (cm)	□.□ x □.□	Posterior-inferior rym (cm)	□.□
Anterior-superior rym(cm)	□.□	Posterior-superior rym (cm)	□.□
Anterior-inferior rym (cm)	□.□		

## 2. DOPPLER FLOWMETRY

### 2.1 MITRAL / TRICUSPID VALVE

They will be organized in two distinct pages (one for the mitral and another one for the tricuspid valve), however, since they share a lot of Doppler parameters, mitral and tricuspid valve Doppler variables will be listed together. ~~---~~ parameters should be omitted from tricuspid valve page

#### Anterograde Flow

E wave peak velocity (m/s)	□.□□	E velocità (Valsalva) (m/s)	□.□□
A wave peak velocity (m/s)	□.□□	A velocity (Valsalva) (m/s)	□.□□
E wave deceleration time (ms)	□□□	E/A ratio	□.□□
PHT (ms)	□□□	E/A ratio (Valsalva)	□.□□
Isovolumic relax. time (ms)	□□□	Effective Orifice Area (PHT) (cm <sup>2</sup> )	□.□□
<del>A wave duration (ms)</del>	□□□	Effective Orifice Area (Cont. Eq) (cm <sup>2</sup> )	□.□□
Peak velocity CW (m/s)	□□□	Effective Orifice Area (PISA) (cm <sup>2</sup> )	□.□□
Time Velocità Integral (cm)	□□.□	Effective Orifice Area measured by PHT	
A closure-E opening time (ms)	□□□	Continuity Equat.	
Flow propagation velocity (cm/s)	□□	PISA	
Peak gradient (mm Hg)	□□	<del>Stroke volume (ml)</del>	□□□
PISA radius (cm)	□.□□	<del>Capillary wedge pressure (mm Hg)</del>	□□
Aliasing velocity(cm/s)	□□	Mean Gradient (mm Hg)	□□

#### Regurgitant Flow

Severity	Absent	+dp/dt (mm Hg/s)	□□□□
	Mild		
	Moderate		
	Severe	Time-velocity integral (mm)	□□□
Color jet area (cm <sup>2</sup> )	□□.□	Jet/atrium area ratio	□.□□
Vena contracta (cm)	□.□□	Effective regurgitant orifice (cm <sup>2</sup> )	□.□□
PISA radius (cm)	□.□□	Regurgitant volume (ml)	□□□
Aliasing velocity(cm/s)	□□	Regurgitant flow (ml/s)	□□□
Peak velocity CW (cm/s)	□□□	Regurgitant fraction	□.□□

### 2.2 AORTIC/PULMONARY VALVE

They will be organized in two distinct pages (one for the aortic and another one for the pulmonary valve), however, since they share a lot of Doppler parameters, mitral and tricuspid valve Doppler variables will be listed together. ~~---~~ parameters should be omitted from pulmonary valve page. Parameter written in bold is pertinent for pulmonary valve only.

## Anterograde flow

Peak velocity CW (m/s)	□.□□	Mean gradient (mm Hg)	□□□
Time –velocity Integral (cm)	□□□.□	<del>Outflow tract/aortic velocity ratio</del>	□.□□
Mean velocity CW (m/s)	□.□□	Effective Orifice area (cm <sup>2</sup> )	□.□□
Ejection time (ms)	□□□	<del>Valve resistance</del>	□□□
Peak gradient (mm Hg)	□□□	<del>Stroke work loss</del>	□.□□
Flow (ml/s)	□.□□		

## Regurgitant Flow

Severity	Absent Mild Moderate Severe	Time-velocity integral (cm)	□□□
Jet diameter(cm)	□.□	Jet/outflow tract diameter ratio	□.□□
PHT (ms)	□□□	<del>Effective Regurgitant Orifice Area (cm<sup>2</sup>)</del>	□.□□
PISA radius (cm)	□.□□	Regurgitant volume (ml)	□□□
Aliasing velocità (cm/s)	□□	Regurgitant flow (ml/s)	□□□
Peak velocity (cm/s)	□□□	Regurgitant fraction	□.□□
		End-diastolic velocity (m/s)	□.□□

## 2.3 LEFT VENTRICLE

### Left ventricular cavity

Peak velocity (m/s)	□.□□	Peak gradient (mm Hg)	□□□
Pre-ejection time (ms)	□□□	Left ventricular delay (ms)	□□□

### Outflow tract

*Diameter (cm)	□.□□	Time-velocity Integral (cm)	□□.□
Peak velocity (m/s)	□.□□	Cardiac output (l/min)	□□.□
Mean velocity (m/s)	□.□□	cardiac index (l/min/m <sup>2</sup> )	□.□□
Performance Index (Tei)	□.□□	Stroke volume (ml)	□□□

\*This is the same parameter listed in section 1.1. It is listed twice (despite is the same record) because of its frequent use in the Doppler context.

## 2.4 PULMONARY VEINS

Peak systolic velocity (m/s)	□.□□	S/D ratio	□.□□
Peak diastolic velocity (m/s)	□.□□	Duration of pulmonary atrial reversal (ms)	□□□
Peak atrial reversal velocity (m/s)	□.□□		

## 2.5 ATRIO SINISTRO

Inflow peak velocità (m/s)	□.□□	Capillary wedge pressure (mm Hg)	□□
Outflow peak velocity (m/s)	□.□□		

## 2.6 AORTA

Coartaction rest peak velocity (m/s)	□.□□
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Coartaction rest peak gradient (mm Hg)	□□□
Coartaction rest mean gradient (mm Hg)	□□□
Coartaction exercise peak velocity (m/s)	□.□□
Coartaction exercise peak gradient (mm Hg)	□□□
Coartaction exercise mean gradient (mm Hg)	□□□

## 2.7 RIGHT VENTRICLE

### Outflow tract

Peak velocity (m/s)	□.□□	Time-velocity integral (cm)	□□.□
Mean velocity (m/s)	□.□□	Pulmonary output (l/min)	□□.□
		QP/QS	□.□□

## 2.8 PULMONARY ARTERY

Systolic pressure (mm Hg)	□□□	Mean pressure (mm Hg)	□□□
Diastolic pressure (mm Hg)	□□□		

## 2.9 INTERVENTRICULAR SEPTUM

Peak gradient through IVSD (mm Hg)	□□□
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