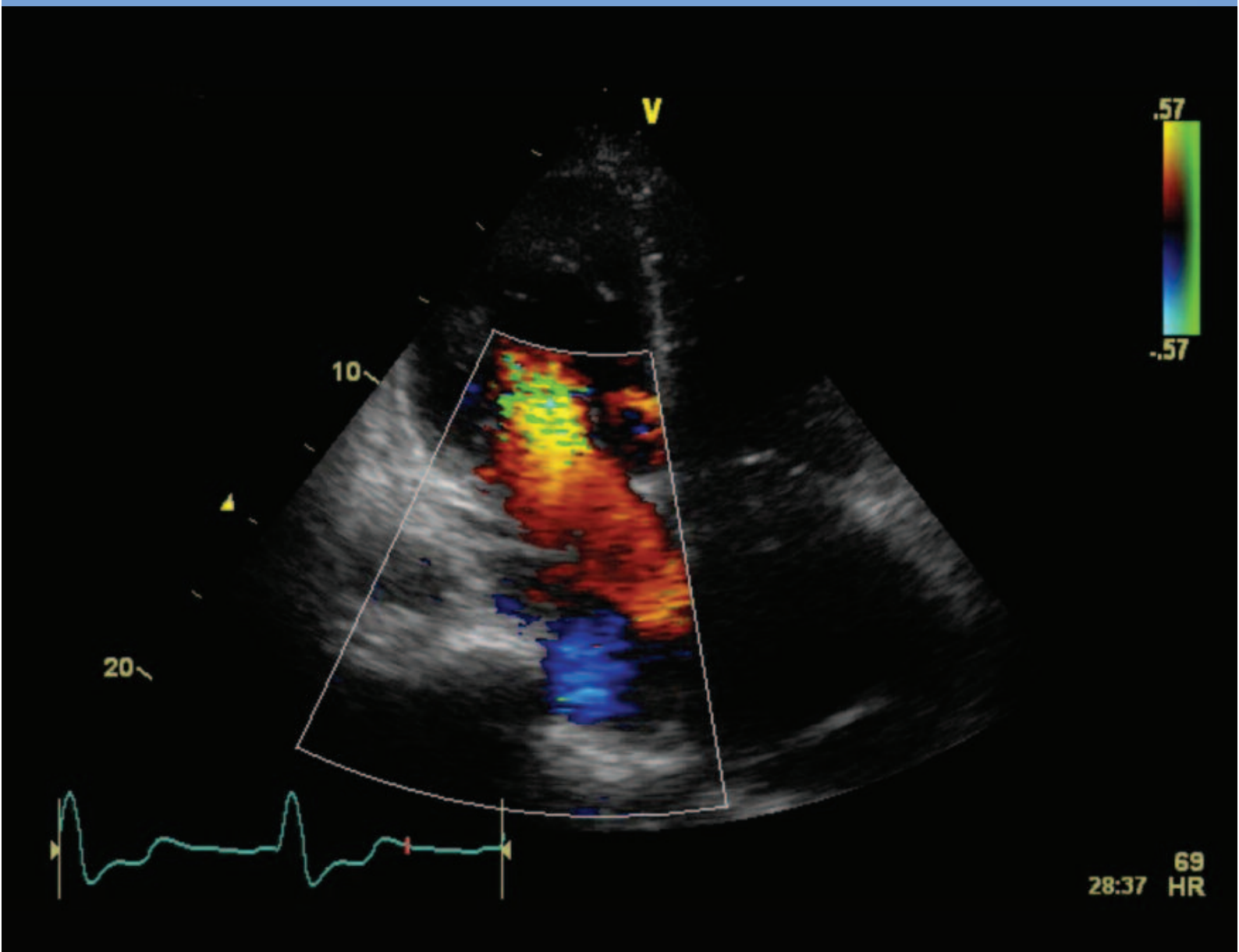
Basic Level Critical Care Echocardiography

LOG BOOK



Basic Level
Critical Care Echocardiography

LOG BOOK

Trainee Name: _____

Intensive Care from: _____ **to:** _____

Contents: 30 case studies

CASE STUDY #_____ **Date of Study ___/___/___** **Images saved echo machine:** _____

Age:____ Weight: _____ HR/rhythm:_____ BP:_____ CVP:_____ Lactate: _____mmol/L

Indication: _____

Clinical History: _____

Vasoactive Medications: _____

Settings: Mechanical Ventilation _____CPAP_____BiPaP _____

Windows: PLAX ☐ PSAX ☐ APICAL 4-C ☐ Sub Costal ☐

(Grade image quality per window: Good = 1; Adequate = 2; Poor = 3)

CHAMBERS

Left Ventricle (LV):

LV visually dilated: Y ☐ N ☐ LVEDd_____mm **LV wall hypertrophy:** Y ☐ N ☐

LV function: Normal **LV function depressed:** Mild/Moderate/Severe

Fractional Shortening %_____ **Ejection fraction %:** Visual _____ Simpson biplane_____

Global Wall Motion Abnormalities (WMA's): Y ☐ N ☐

Regional WMA's: Y ☐ N ☐ *(Indicate on diagram)*

Right Ventricle (RV):

RV dilated: Y ☐ N ☐ **RV/LV diameter ratio** > 0.6: Y ☐ N ☐

RV global hypokinesis: Y ☐ N ☐ **TAPSE** _____mm

VALVES

Aortic Valve: Native/normal Prosthetic Calcified Possible Vegetation

Colour Flow Regurgitation (AR): None/Mild/Moderate/Severe **AR Vena Contracta:**_____mm

Mitral Valve: Native/normal Prosthetic Annular calcification/leaflet calcification

Leaflets Flail/Prolapse Possible Vegetation

Colour Flow Regurgitation(MR): None/ Mild/Moderate/Severe

Tricuspid Valve: Native Leaflets flail/prolapse Possible Vegetation

Colour Flow Regurgitation (TR): None/Mild/Moderate/Severe Peak Velocity TR_____m/s

PERICARDIUM

Pericardial Effusion: Y ☐ N ☐ Max. diameter diastole: ____mm

RA diastolic collapse: Y ☐ N ☐ RV diastolic collapse: Y ☐ N ☐ IVC plethora: Y ☐ N ☐

VOLUME STATUS

LV PSAX: End systolic cavitary obliteration: Y ☐ N ☐

IVC: Diameter: _____mm Distensibility Index %:_____

CARDIAC OUTPUT

LVOT diam. diastole_____mm LVOT VTI _____cm^2 Stroke Volume_____ml

OTHER

Ascending aorta: Normal/Dilated/Flap Y ☐ N ☐

Intracardiac mass: Y ☐ N ☐ Pacing wire/PAC/ECMO cannula Y ☐ N ☐

Summary findings: _____

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Left Ventricle (LV):

LV visually dilated: Y ☐ N ☐ LVEDd_____mm **LV wall hypertrophy:** Y ☐ N ☐

LV function: Normal **LV function depressed:** Mild/Moderate/Severe

Fractional Shortening %_____ **Ejection fraction %:** Visual _____ Simpson biplane_____

Global Wall Motion Abnormalities (WMA's): Y ☐ N ☐

Regional WMA's: Y ☐ N ☐ *(Indicate on diagram)*

Right Ventricle (RV):

RV dilated: Y ☐ N ☐ **RV/LV diameter ratio** > 0.6: Y ☐ N ☐

RV global hypokinesis: Y ☐ N ☐ **TAPSE** _____mm

VALVES

Aortic Valve: Native/normal Prosthetic Calcified Possible Vegetation

Colour Flow Regurgitation (AR): None/Mild/Moderate/Severe **AR Vena Contracta:**_____mm

Mitral Valve: Native/normal Prosthetic Annular calcification/leaflet calcification

Leaflets Flail/Prolapse Possible Vegetation

Colour Flow Regurgitation(MR): None/ Mild/Moderate/Severe

Tricuspid Valve: Native Leaflets flail/prolapse Possible Vegetation

Colour Flow Regurgitation (TR): None/Mild/Moderate/Severe Peak Velocity TR_____m/s

PERICARDIUM

Pericardial Effusion: Y ☐ N ☐ Max. diameter diastole: ____mm

RA diastolic collapse: Y ☐ N ☐ RV diastolic collapse: Y ☐ N ☐ IVC plethora: Y ☐ N ☐

VOLUME STATUS

LV PSAX: End systolic cavitary obliteration: Y ☐ N ☐

IVC: Diameter: _____mm Distensibility Index %:_____

CARDIAC OUTPUT

LVOT diam. diastole_____mm LVOT VTI _____cm^2 Stroke Volume_____ml

OTHER

Ascending aorta: Normal/Dilated/Flap Y ☐ N ☐

Intracardiac mass: Y ☐ N ☐ Pacing wire/PAC/ECMO cannula Y ☐ N ☐

Summary findings: _____

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Trainee Signature: _____

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Date: _____ /_____ /_____

Calculations

CASE STUDY #_____ **Date of Study ___/___/___** **Images saved echo machine:** _____

Age:____ Weight: _____ HR/rhythm:_____ BP:_____ CVP:_____ Lactate: _____mmol/L

Indication: _____

Clinical History: _____

Vasoactive Medications: _____

Settings: Mechanical Ventilation _____CPAP_____BiPaP _____

Windows: PLAX ☐ PSAX ☐ APICAL 4-C ☐ Sub Costal ☐

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Tricuspid Valve: Native Leaflets flail/prolapse Possible Vegetation

Colour Flow Regurgitation (TR): None/Mild/Moderate/Severe Peak Velocity TR_____m/s

PERICARDIUM

Pericardial Effusion: Y ☐ N ☐ Max. diameter diastole: ____mm

RA diastolic collapse: Y ☐ N ☐ RV diastolic collapse: Y ☐ N ☐ IVC plethora: Y ☐ N ☐

VOLUME STATUS

LV PSAX: End systolic cavitary obliteration: Y ☐ N ☐

IVC: Diameter: _____mm Distensibility Index %:_____

CARDIAC OUTPUT

LVOT diam. diastole_____mm LVOT VTI _____cm^2 Stroke Volume_____ml

OTHER

Ascending aorta: Normal/Dilated/Flap Y ☐ N ☐

Intracardiac mass: Y ☐ N ☐ Pacing wire/PAC/ECMO cannula Y ☐ N ☐

Summary findings: _____

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Clinical Recommendations:

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Trainee Signature: _____

Supervisor Signature: _____

Date: _____ /_____ /_____

Calculations

CASE STUDY #_____ **Date of Study ___/___/___** **Images saved echo machine:** _____

Age:____ Weight: _____ HR/rhythm:_____ BP:_____ CVP:_____ Lactate: _____mmol/L

Indication: _____

Clinical History: _____

Vasoactive Medications: _____

Settings: Mechanical Ventilation _____CPAP_____BiPaP _____

Windows: PLAX ☐ PSAX ☐ APICAL 4-C ☐ Sub Costal ☐

(Grade image quality per window: Good = 1; Adequate = 2; Poor = 3)

CHAMBERS

Left Ventricle (LV):

LV visually dilated: Y ☐ N ☐ LVEDd_____mm **LV wall hypertrophy:** Y ☐ N ☐

LV function: Normal **LV function depressed:** Mild/Moderate/Severe

Fractional Shortening %_____ **Ejection fraction %:** Visual _____ Simpson biplane_____

Global Wall Motion Abnormalities (WMA's): Y ☐ N ☐

Regional WMA's: Y ☐ N ☐ *(Indicate on diagram)*

Right Ventricle (RV):

RV dilated: Y ☐ N ☐ **RV/LV diameter ratio** > 0.6: Y ☐ N ☐

RV global hypokinesis: Y ☐ N ☐ **TAPSE** _____mm

VALVES

Aortic Valve: Native/normal Prosthetic Calcified Possible Vegetation

Colour Flow Regurgitation (AR): None/Mild/Moderate/Severe **AR Vena Contracta:**_____mm

Mitral Valve: Native/normal Prosthetic Annular calcification/leaflet calcification

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Clinical Recommendations:

_____

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_____

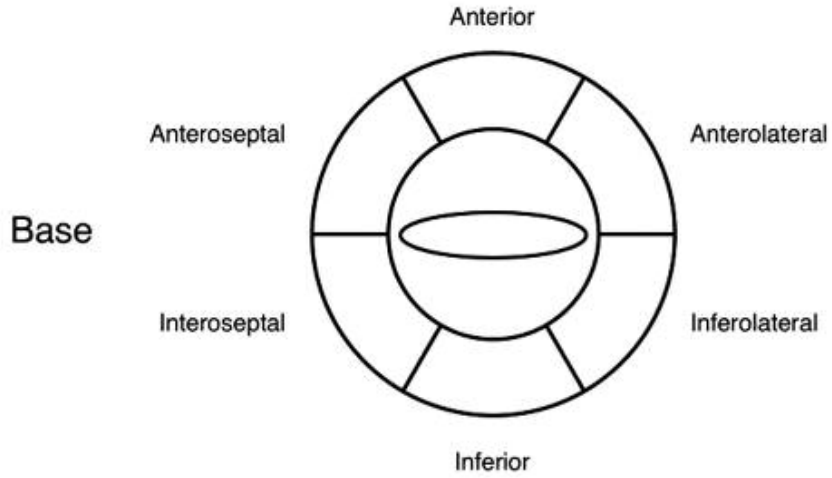
Trainee Signature: _____

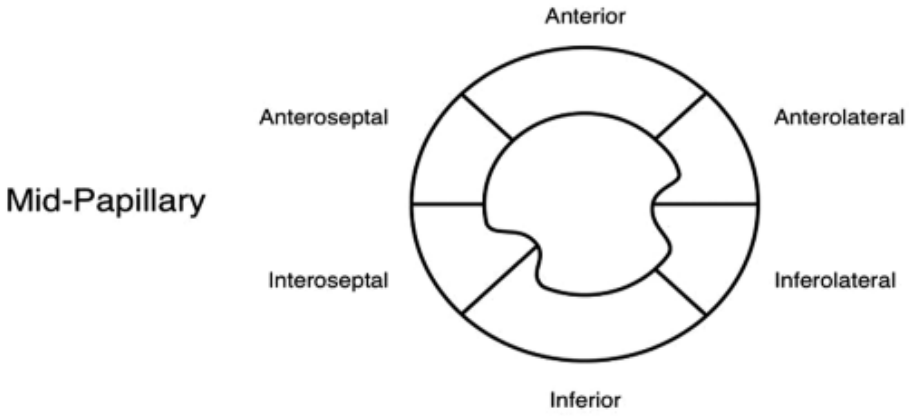
Supervisor Signature: _____

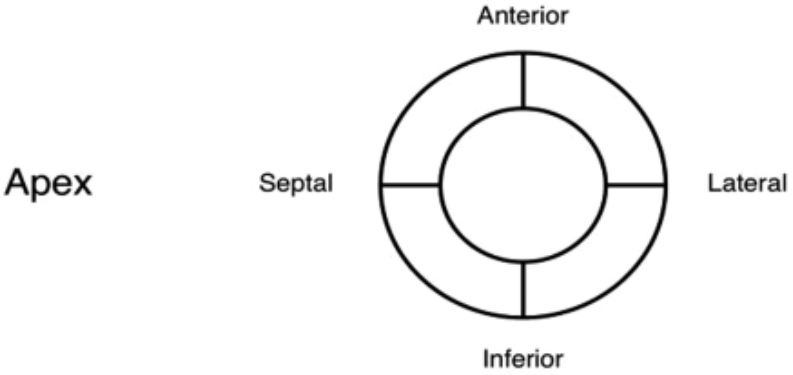
Date: _____ /_____ /_____

Calculations

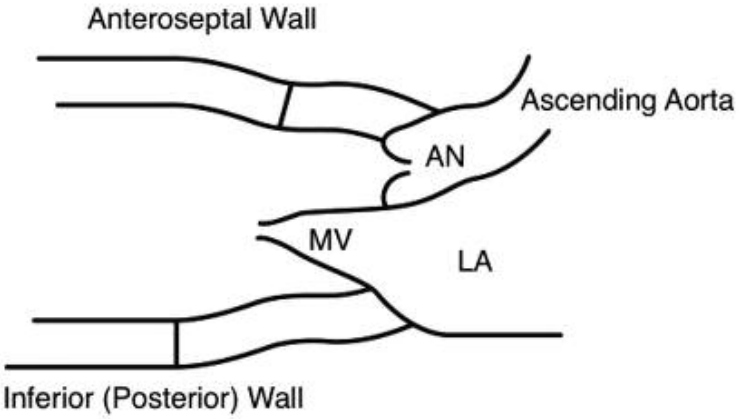
Parasternal Short Axis



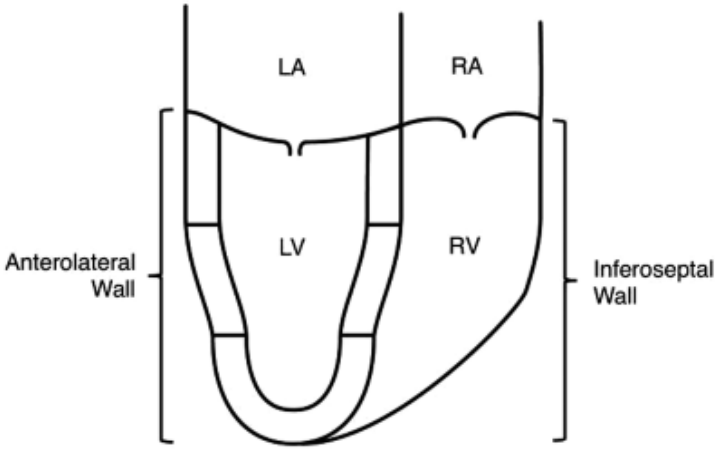




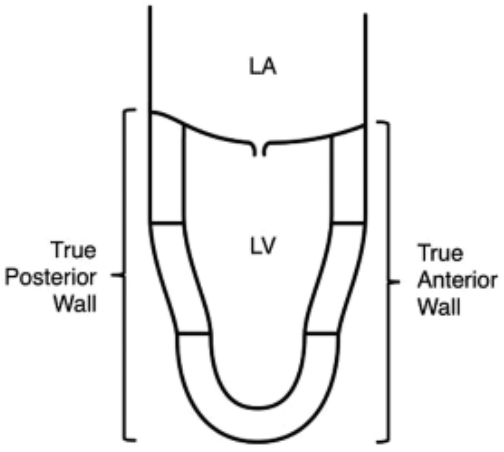
Parasternal Long Axis



Apical Views



Apical 4 - Chamber



Apical 2 - Chamber

Reference Data:

Left Ventricular End Diastolic diameter:

	Normal	Mildly dilated	Moderately dilated	Severely dilated
Men (cm)	**4.0 - 5.9**	**6.0 - 6.3**	**6.4 - 6.8**	**>6.9**
Women (cm)	**3.9 - 5.3**	**5.4 - 5.7**	**5.8 - 6.1**	**>6.2**

Fractional Shortening fraction %:

Normal : 25-45 Mild: 20-25 Moderate: 15-20 Severe: < 15

Ejection Fraction %:

Hyperdynamic LV function : > 65 Normal LV function: 55 - 60 Mild LV dysfunction: 45 - 54
Moderate LV dysfunction: 30 - 44 Severe LV dysfunction < 30

RVLV diameter ratio:

Apical 4 chamber view, end-diastole. Basal 1/3 of RV and LV, linear dimension

TAPSE: Normal (mm) 24 ± 3.5 Abnormal < 17

AR Vena Contracta: > 6mm indicates severe AR

Tricuspid Regurgitation: Peak velocity > 3 m/sec indicates pulmonary hypertension.

Modified Bernoulli equation: 4 $(V)^2$ = 4 $(3)^2$ = 36 + CVP = Pulmonary artery systolic pressure (in the absence of pulmonary stenosis)

Volume Assessment:

IVC size: < 1cm fluid responsive IVC > 2.5 cm fluid non-responsive (Feissel et al ICM 2004; 30:1834)

Distensibility Index (DI) = IVC diam max. – IVC diam min. / IVC diam mean (Barbier et al ICM 2004; 30: 1740)

DI % > 12 indicated fluid responsiveness