SNS COLLEGE OF ALLIED HEALTH SCIENCE

Affiliated to The Tamil Nadu Dr MGR Medical University, Chennai

DEPARTMENT OF CARDIAC TECHNOLOGY

COURSE NAME : Echocardiography

UNIT : Principles & Techniques of Echocardiography

TOPIC : Standard Echocardiographic views

FACULTY NAME : Kavipriya S

Empathize Stage – Understanding the Need

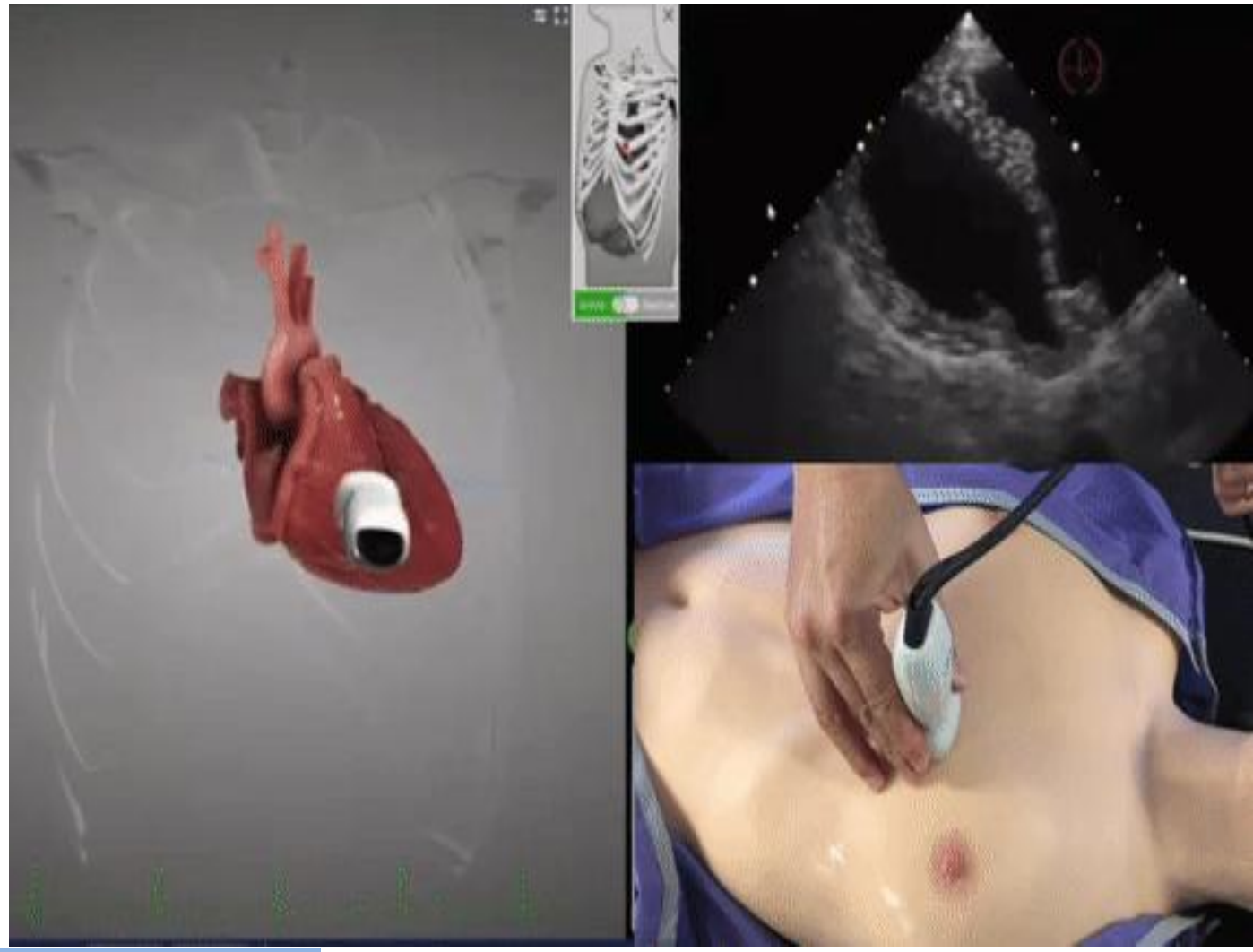
Objective:

To understand the importance of standard echocardiographic views in cardiac assessment.

Clinical Context:

When performing echocardiography, it's crucial to obtain reproducible, standard views of the heart.

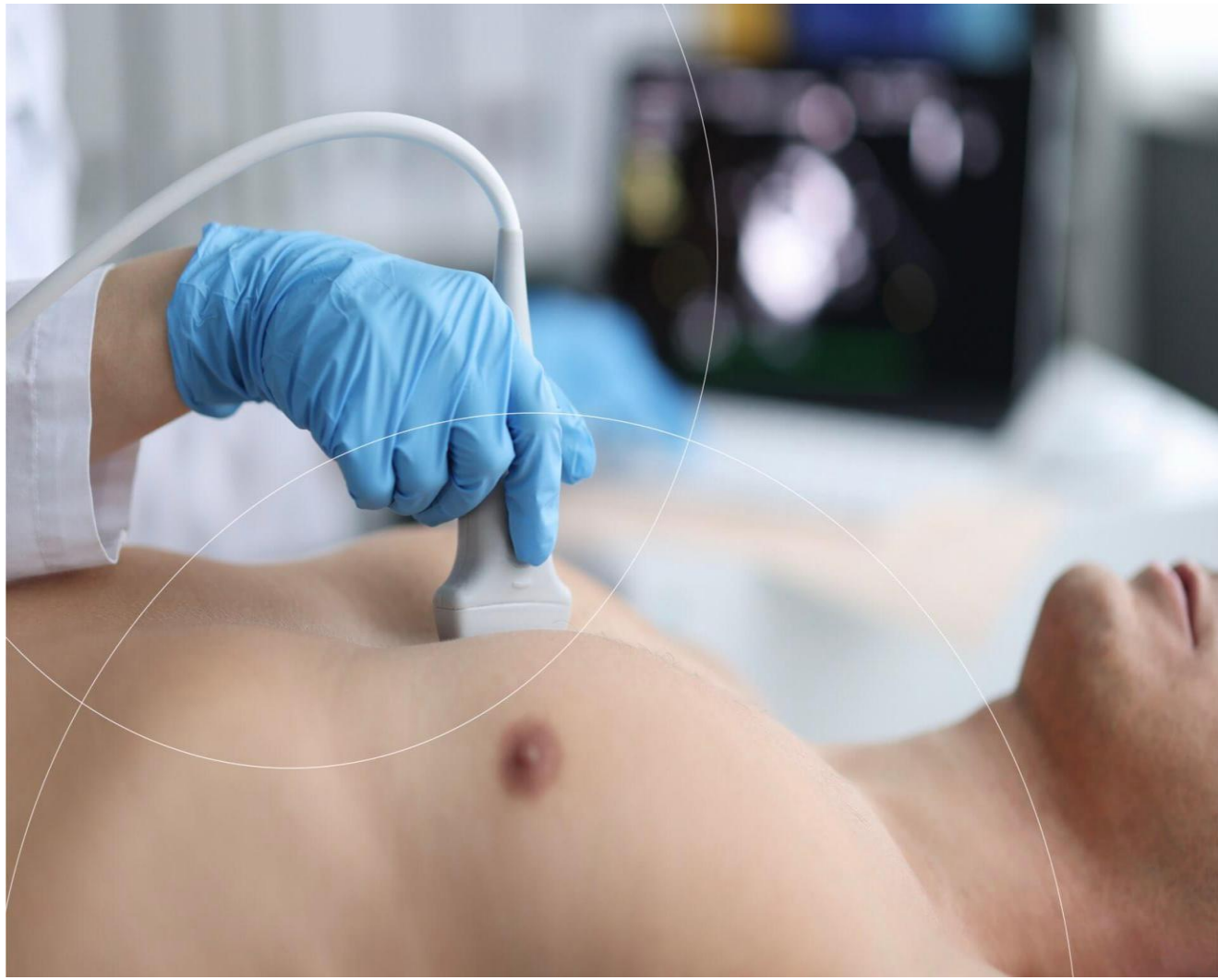
- These views provide clear visualization of cardiac chambers, valves, septa, and great vessels to detect structural or functional abnormalities.



Define Stage – Identifying the Problem

Problem Statement: Students need to master standard echocardiographic views for accurate imaging, measurement, and diagnosis, ensuring uniformity across practitioners.

Learning Goals : Identify types of echocardiographic windows and standard imaging planes. Learn transducer orientation and anatomical landmarks. Recognize structures visualized in each standard view.



💡 DEFINE - Ideate Stage – Generating Concepts

Echocardiographic Window	Standard Views Obtained	Key Structures Visualized
Parasternal Window	1. Parasternal Long-Axis (PLAX) View 2. Parasternal Short-Axis (PSAX) Views	LA, LV, RVOT, aortic root, mitral valve, papillary muscles
Apical Window	1. Apical 4-Chamber (A4C) 2. Apical 2-Chamber (A2C) 3. Apical 3-Chamber (A3C)	All chambers, interatrial and interventricular septa, valves
Subcostal (Subxiphoid) Window	Subcostal 4-Chamber and IVC Views	Cardiac chambers, pericardium, IVC
Suprasternal Window	Suprasternal Long-Axis and Short-Axis	Aortic arch and great vessels

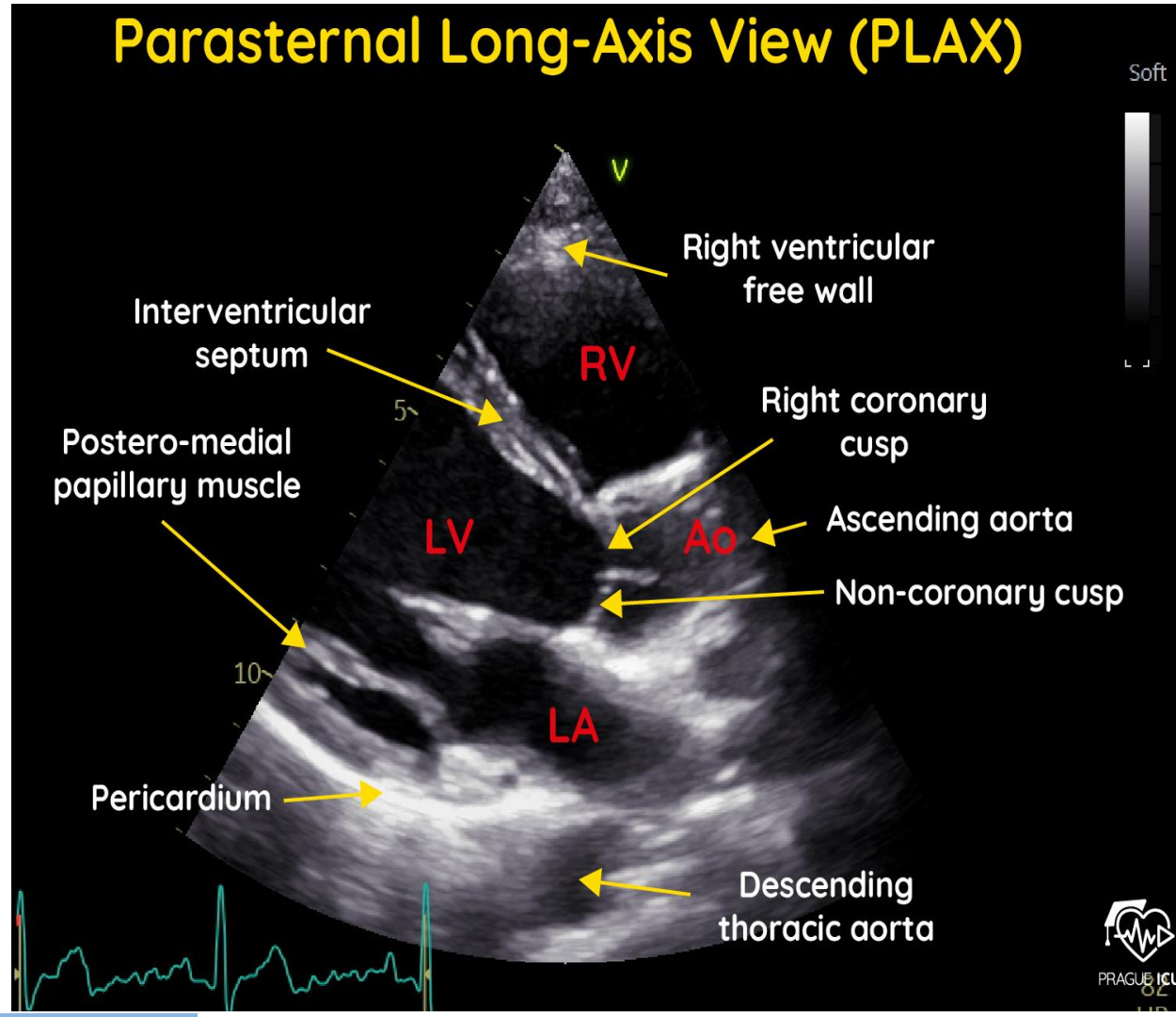
🧠 Parasternal Long-Axis (PLAX) View

Probe Position: Left 3rd–4th intercostal space, left sternal border.

Orientation Marker: Toward right shoulder.

Structures Seen: LV, LA, RVOT, aortic valve, mitral valve, IVS, posterior wall.

Use: Chamber size, wall motion, aortic and mitral valve evaluation.



🧠 Parasternal Short-Axis (PSAX) View

Probe rotated 90° from PLAX.

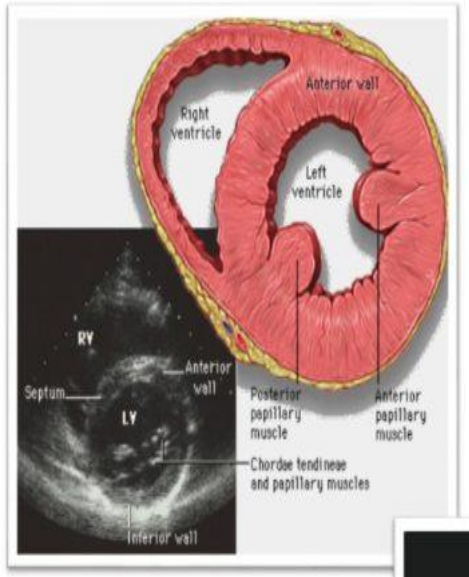
Levels:

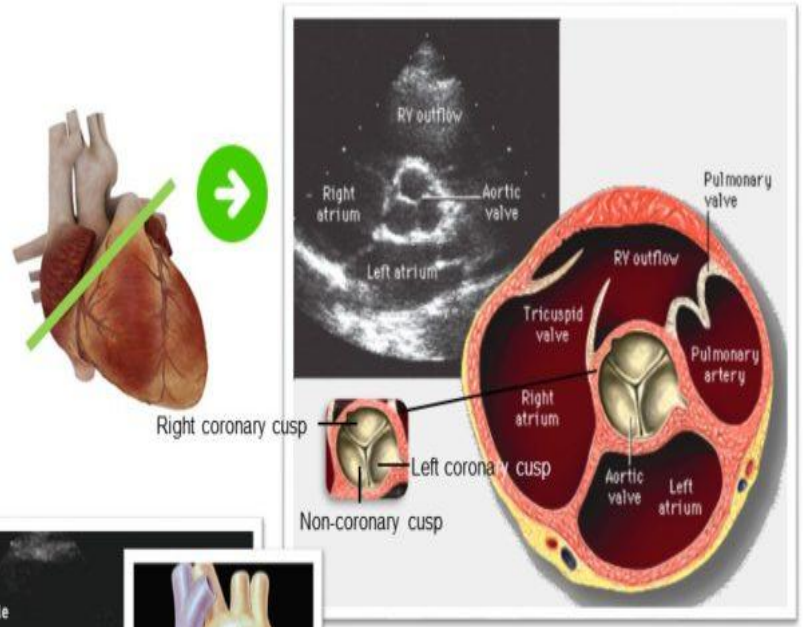
Aortic level: AoV, LA, RVOT, PV.

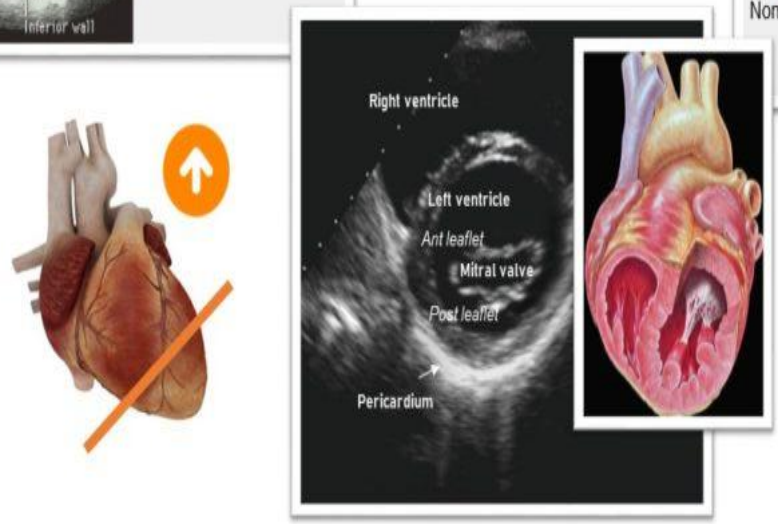
Mitral level: LV “fish-mouth” mitral valve.

Papillary muscle level: LV wall motion assessment.

Apical level: LV apex visualization.







🧠 Apical Views

Position: Cardiac apex, 4th–5th intercostal space, midclavicular line.

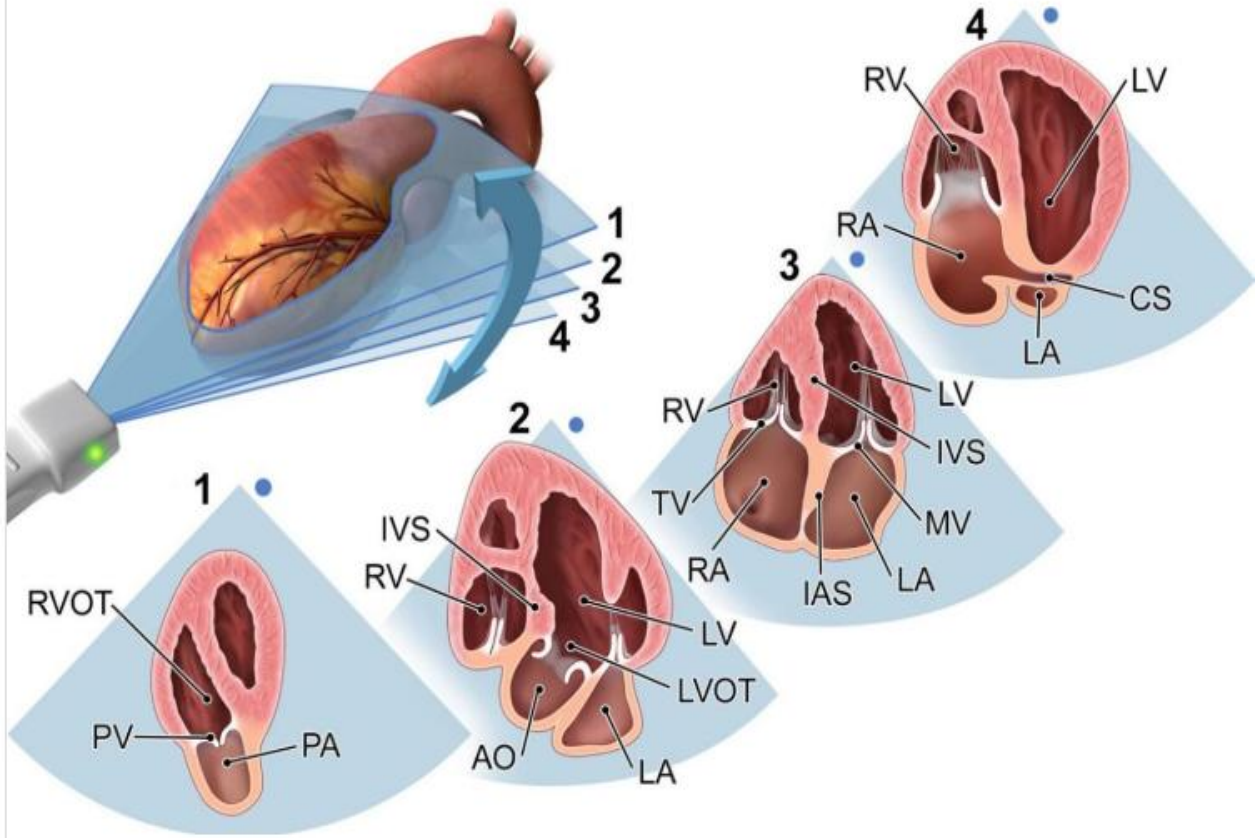
Orientation: Marker toward left side or posteriorly.

Types:

A4C: All four chambers visible.

A2C: LA, LV, anterior and inferior walls.

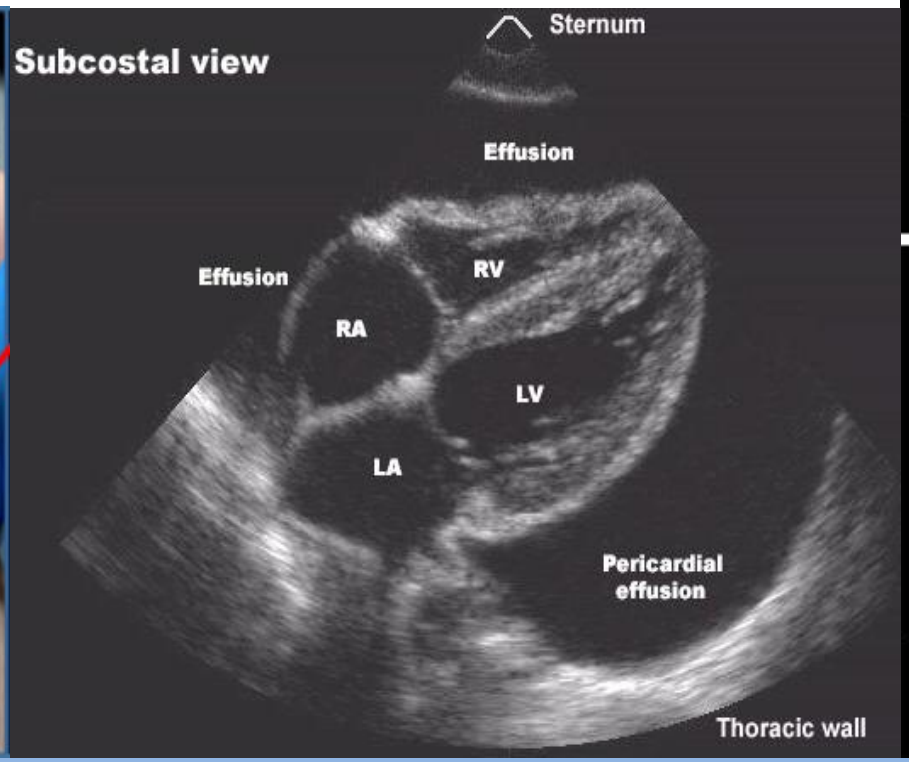
A3C: LV outflow, aortic and mitral valves.



Subcostal View

Probe below xiphoid process, angled toward left shoulder.

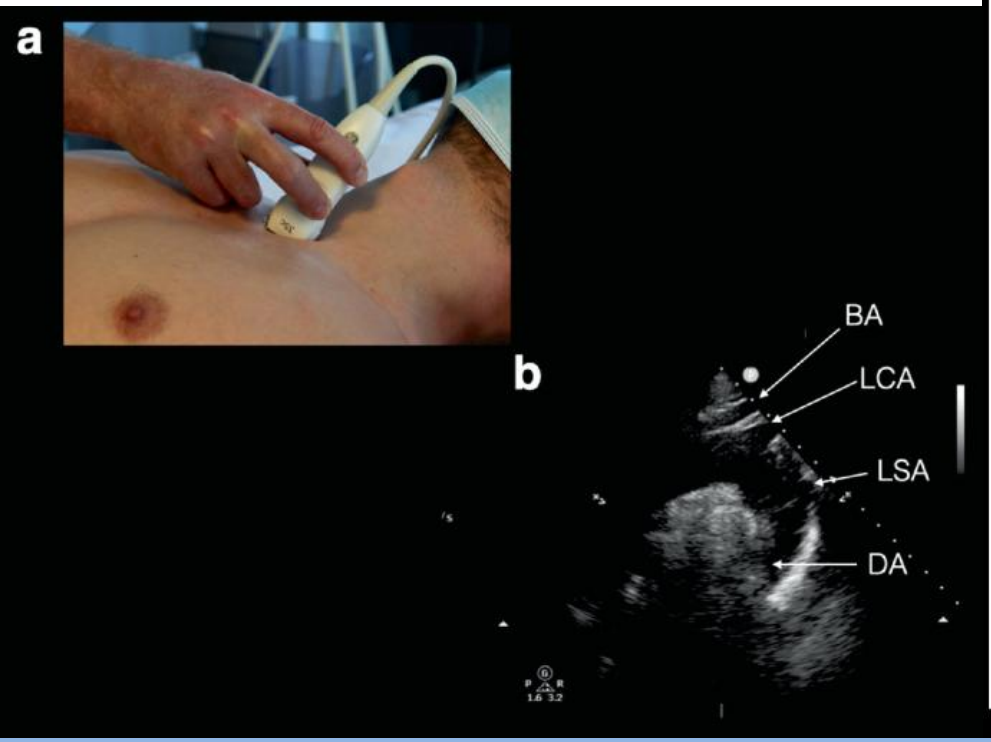
Uses: Pericardial effusion, IVC assessment, cardiac tamponade detection.

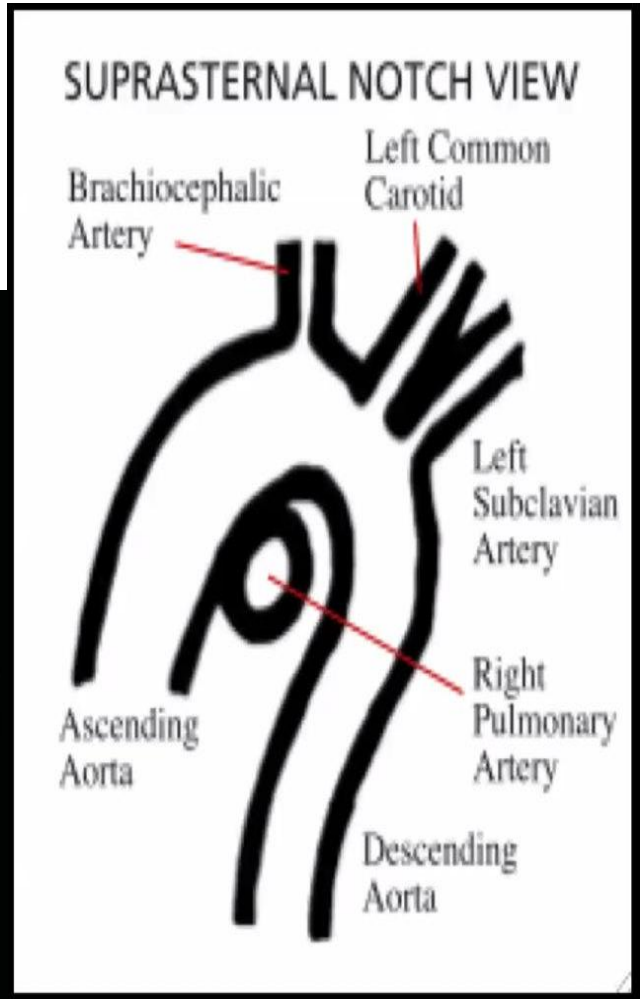


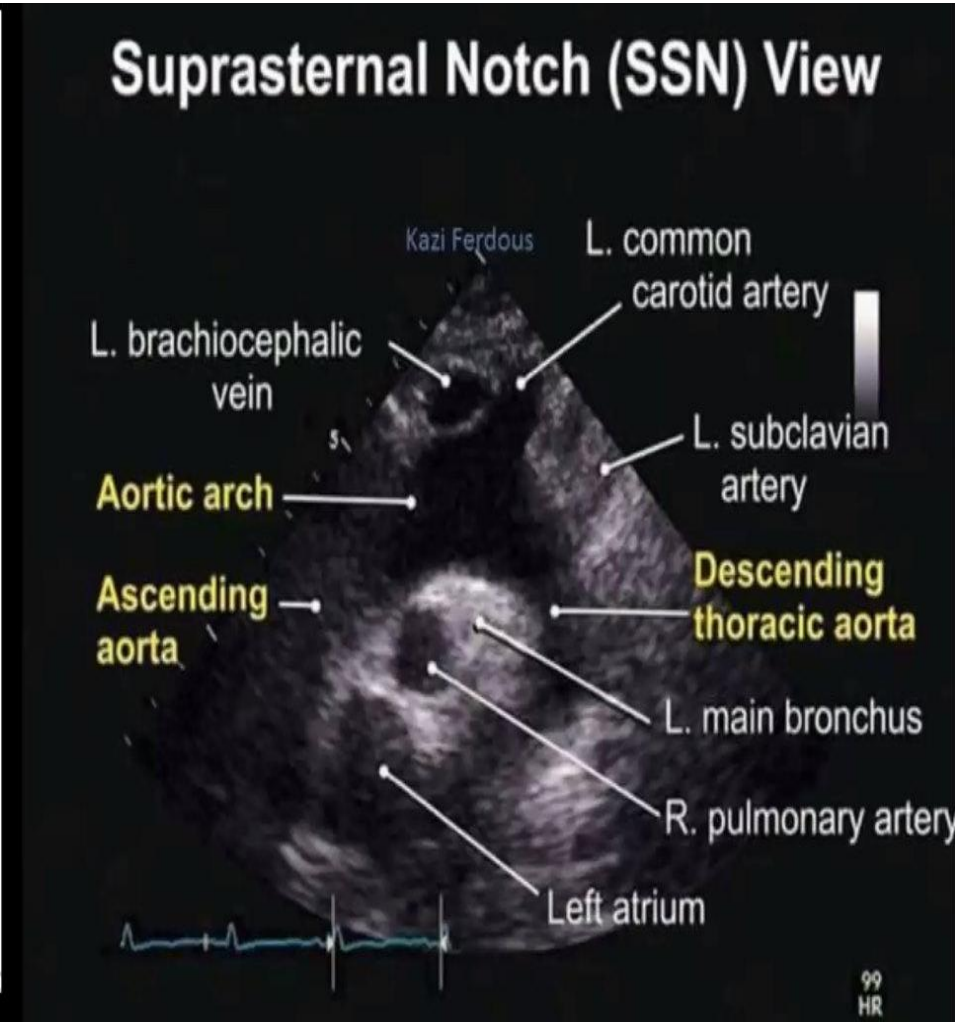
Suprasternal View

Probe at suprasternal notch, angled inferiorly.

Uses: Visualizes aortic arch, great vessels, coarctation.

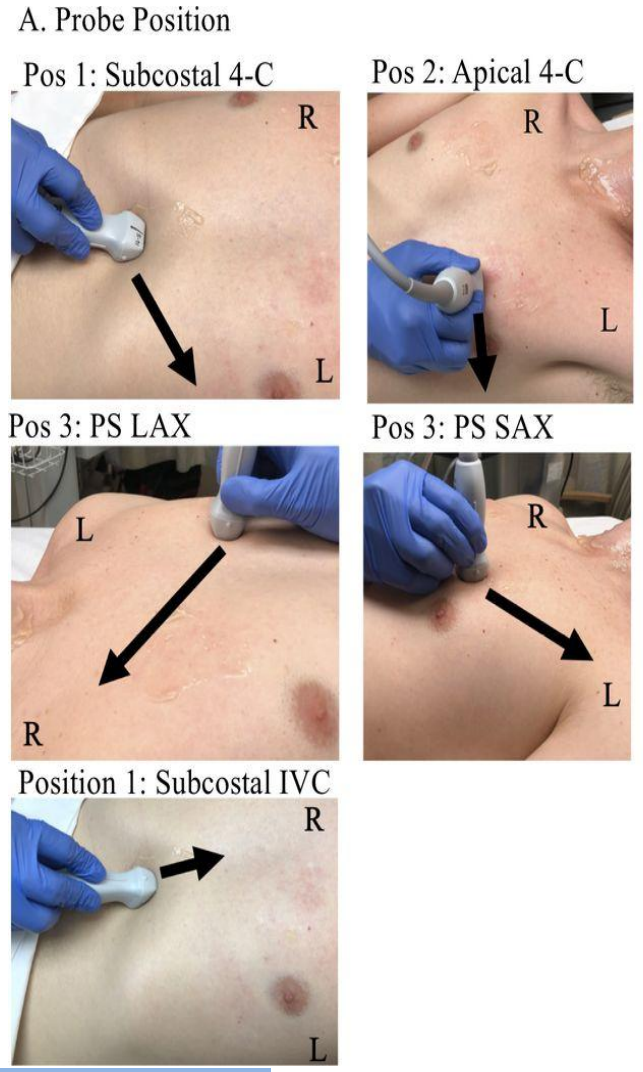


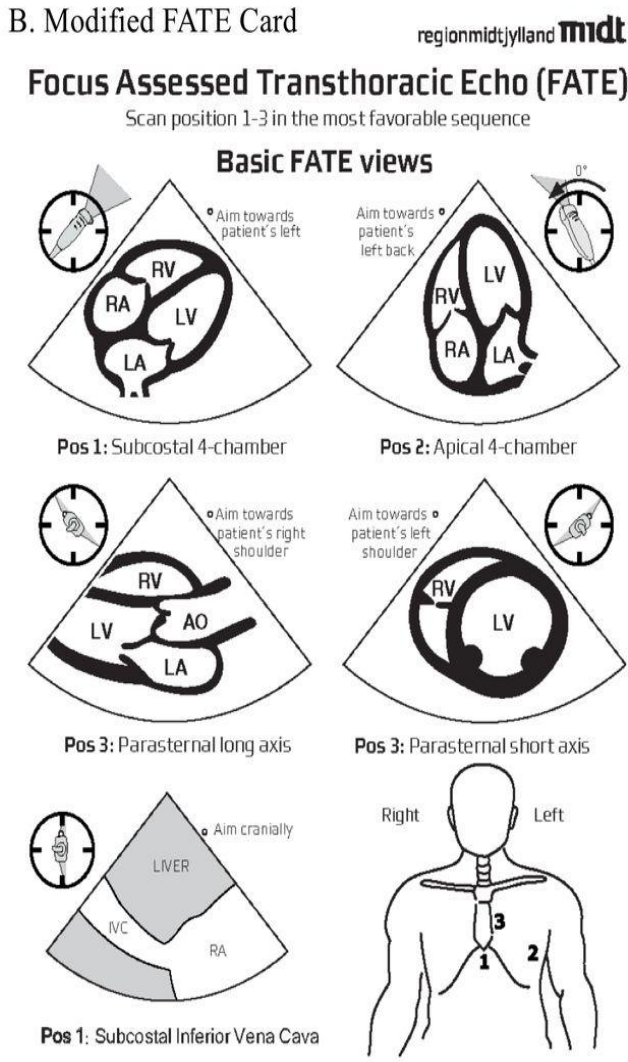




Prototype Stage – Applying Learning

- Prepare patient in **left lateral decubitus position** (except subcostal).
- Adjust **gain, depth, and focus** for clarity.
- Obtain and label **each standard view systematically.**
- **Record measurements** (LV dimensions, EF, valve gradients) in standard planes.
- Document **normal vs abnormal findings** (hypertrophy, regurgitation, stenosis).





Summary

View0	Patient Position	Probe Orientation	Major Structures Visualized	Clinical Use
PLAX	Left lateral	Toward right shoulder	LV, LA, RVOT, AV, MV	Chamber size, wall motion
PSAX	Left lateral	Toward left shoulder	LV cross-sections	Wall motion, valve morphology
A4C	Supine/LLD	Toward left side	All chambers	Chamber comparison, septal motion
A2C	Supine/LLD	Toward left shoulder	LV, LA	LV function, regional motion
Subcostal	Supine	Toward left shoulder	All chambers, IVC	Pericardial effusion, tamponade
Suprasternal	Supine	Toward spine	Aortic arch, great vessels	Coarctation, arch anomalies

📚 References

1.Otto CM. *Textbook of Clinical Echocardiography*, 6th Ed. Elsevier.

2.Feigenbaum H. *Echocardiography*, 8th Ed. Lippincott Williams & Wilkins.

3.Bonow RO, Mann DL, Zipes DP, Libby P. *Braunwald's Heart Disease*, 12th Ed.

4.ASE (American Society of Echocardiography) Guidelines for Cardiac Chamber Quantification (2023).