

SNS COLLEGE OF ALLIED HEALTH SCIENCE
Affiliated to The Tamil Nadu Dr MGR Medical University, Chennai



DEPARTMENT OF CARDIAC TECHNOLOGY

COURSE NAME : Advanced Electrocardiography

UNIT : Basics Of Variants ECG

TOPIC : Left and Right atrial abnormalities

FACULTY NAME: Kavipriya S

Case scenario - Left and Right Atrial Abnormalities

Patient Profile

- **Name:** Mrs. S, 45 years
- **Occupation:** Teacher
- **History:** Shortness of breath on exertion, occasional palpitations, fatigue for 6 months
- **Clinical Findings:** Mild pedal edema, systolic murmur over apex
- **Investigations Ordered:** ECG, Echocardiography, Chest X-ray

Empathize (Understanding the Problem)

Goal: Understand the patient's symptoms, clinical background, and underlying cardiac function.

Patient Symptoms:

- ✓ Dyspnea on exertion → suggests elevated atrial pressure or pulmonary congestion
- ✓ Palpitations → possible atrial enlargement leading to arrhythmia



Empathize

Clinical Observation:

- Murmur over apex → could indicate mitral valve disease
- Edema → possible right heart dysfunction

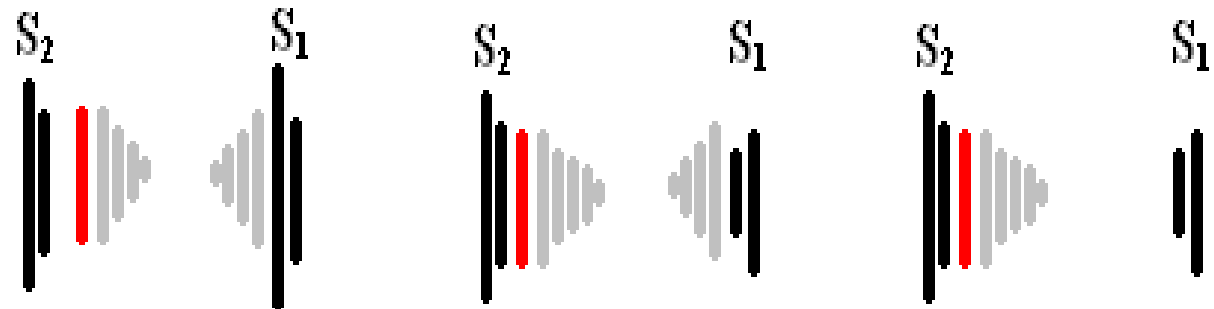
The murmur of mitral stenosis

Severe mitral stenosis with atrial fibrillation

Mild mitral stenosis

Severe mitral stenosis

Severe mitral stenosis with atrial fibrillation



— Opening Snap



Define (Identify the Core Problem)

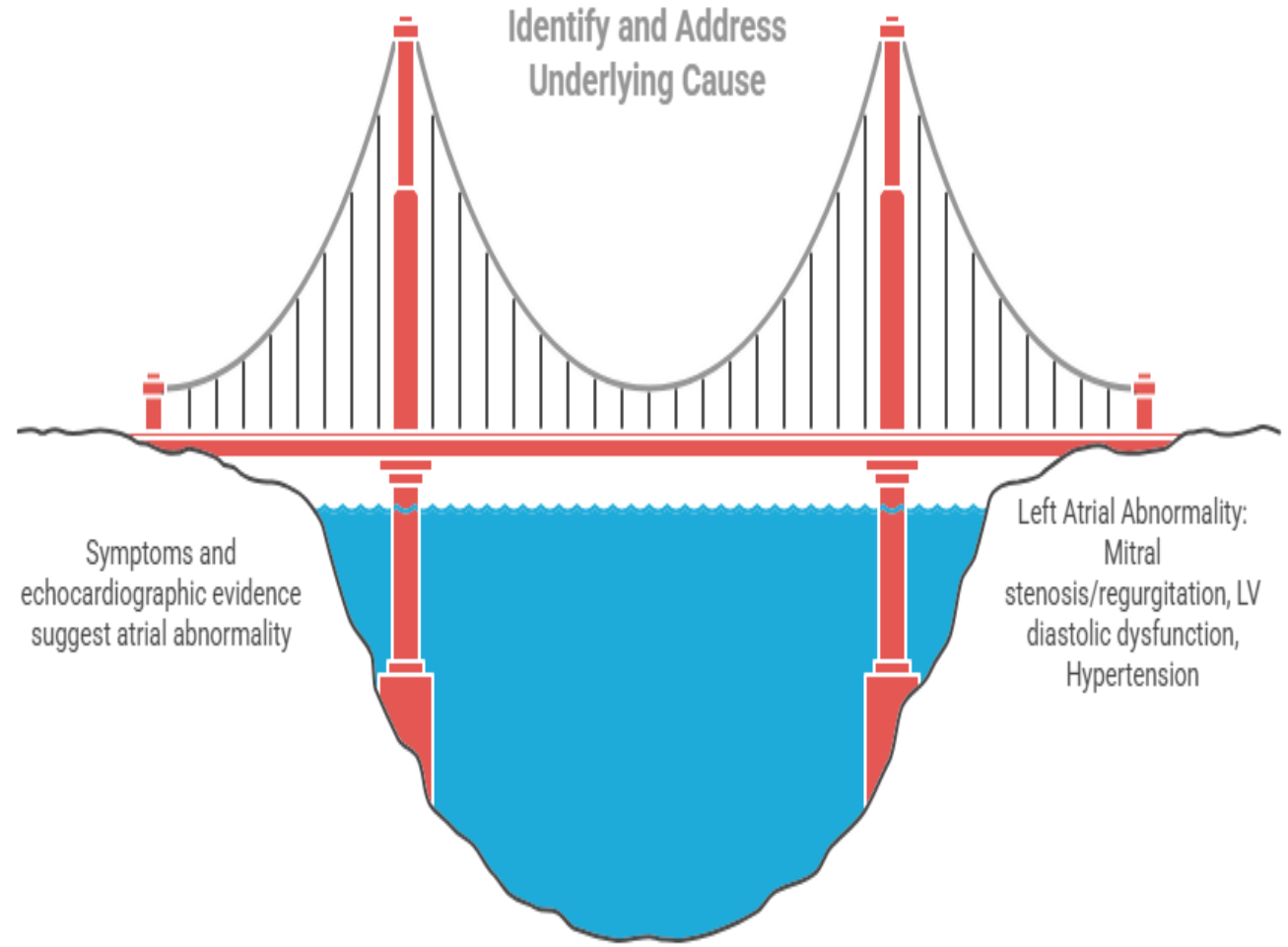
Problem Statement:

“The patient presents with symptoms and echocardiographic evidence suggesting abnormal atrial size and function due to underlying valvular or pressure overload pathology.”

Possible Causes:

– Left Atrial Abnormality:

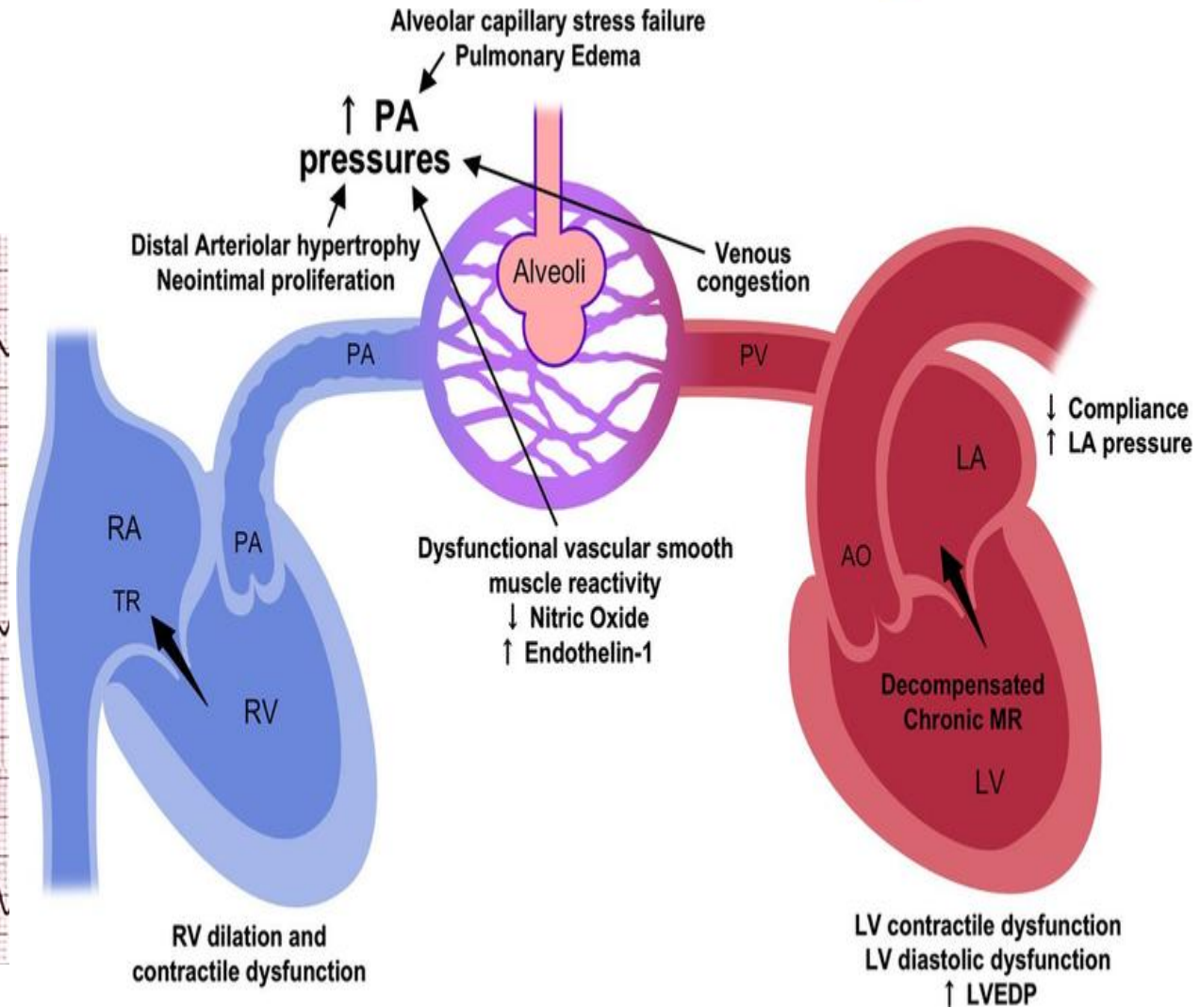
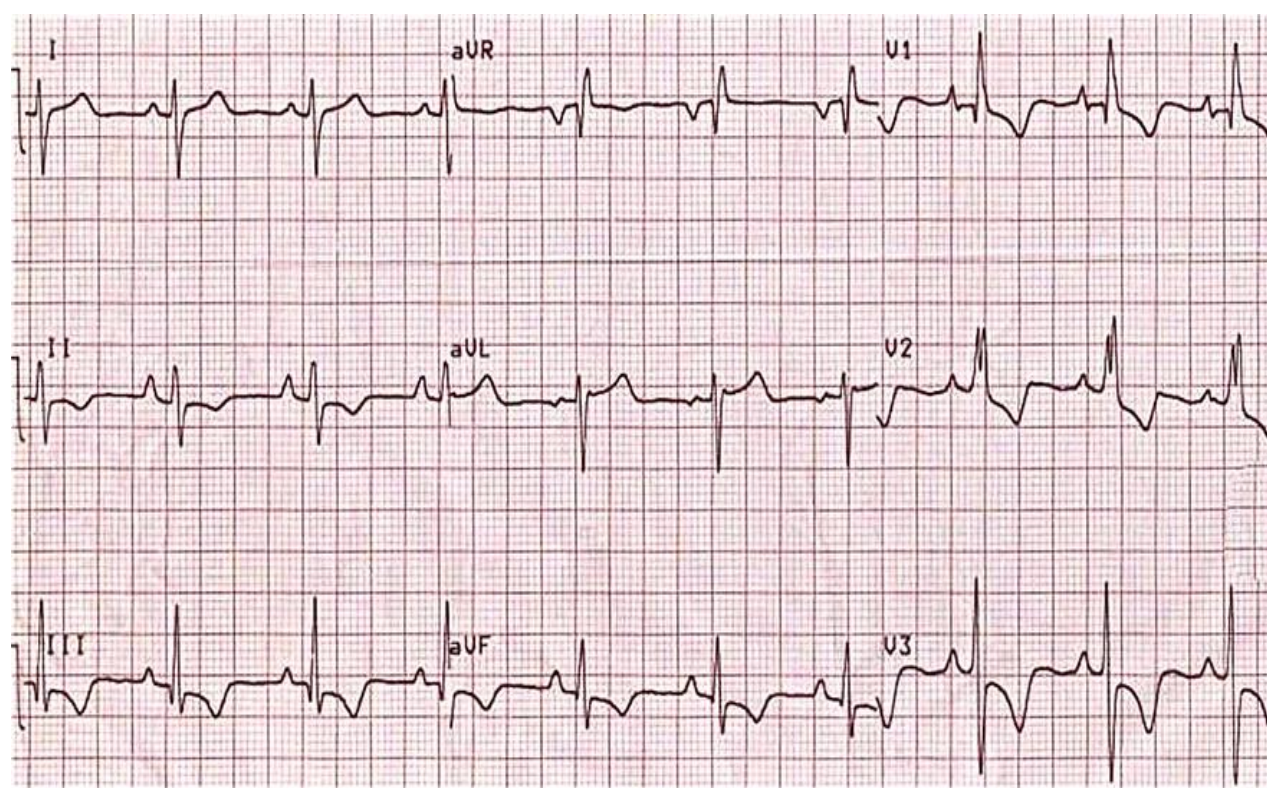
- Mitral stenosis or regurgitation
- Left ventricular diastolic dysfunction
- Hypertension



Define

– Right Atrial Abnormality:

- Pulmonary hypertension
- Tricuspid regurgitation or stenosis
- Chronic lung disease



Ideate (Generate Diagnostic and Assessment Approaches)

Investigations to Confirm Atrial Abnormalities:

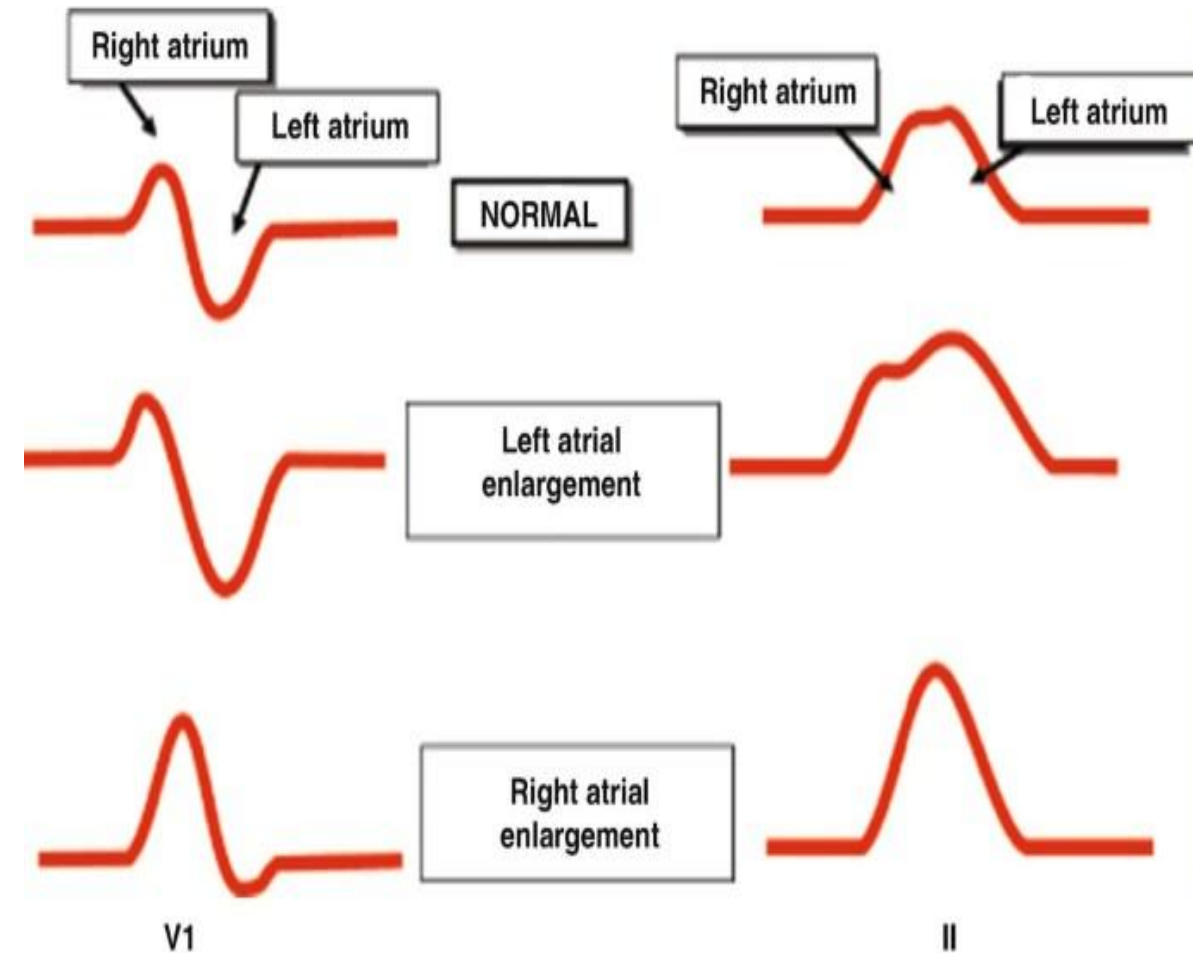
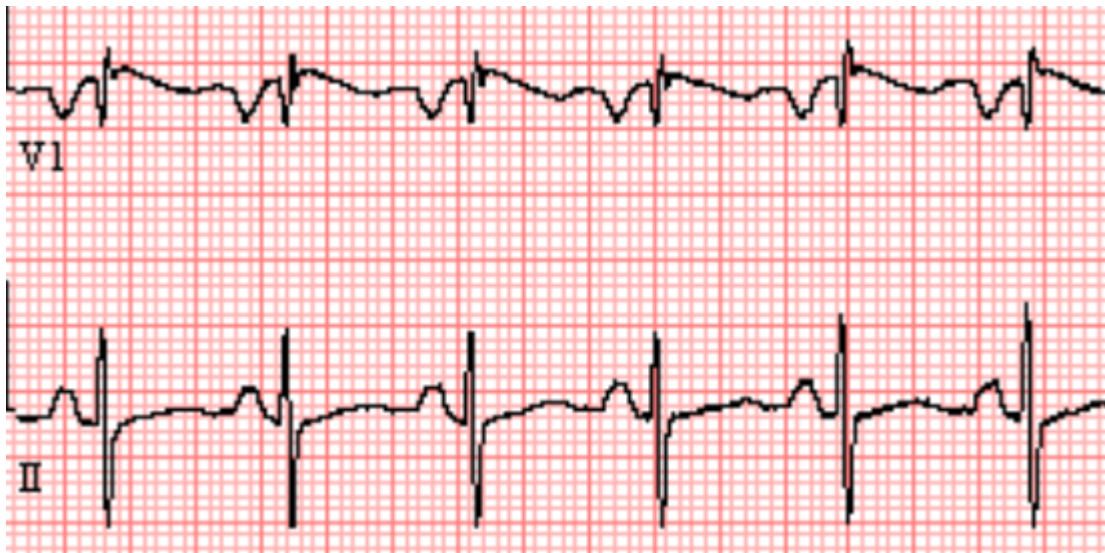
– ECG Analysis:

• Left Atrial Enlargement:

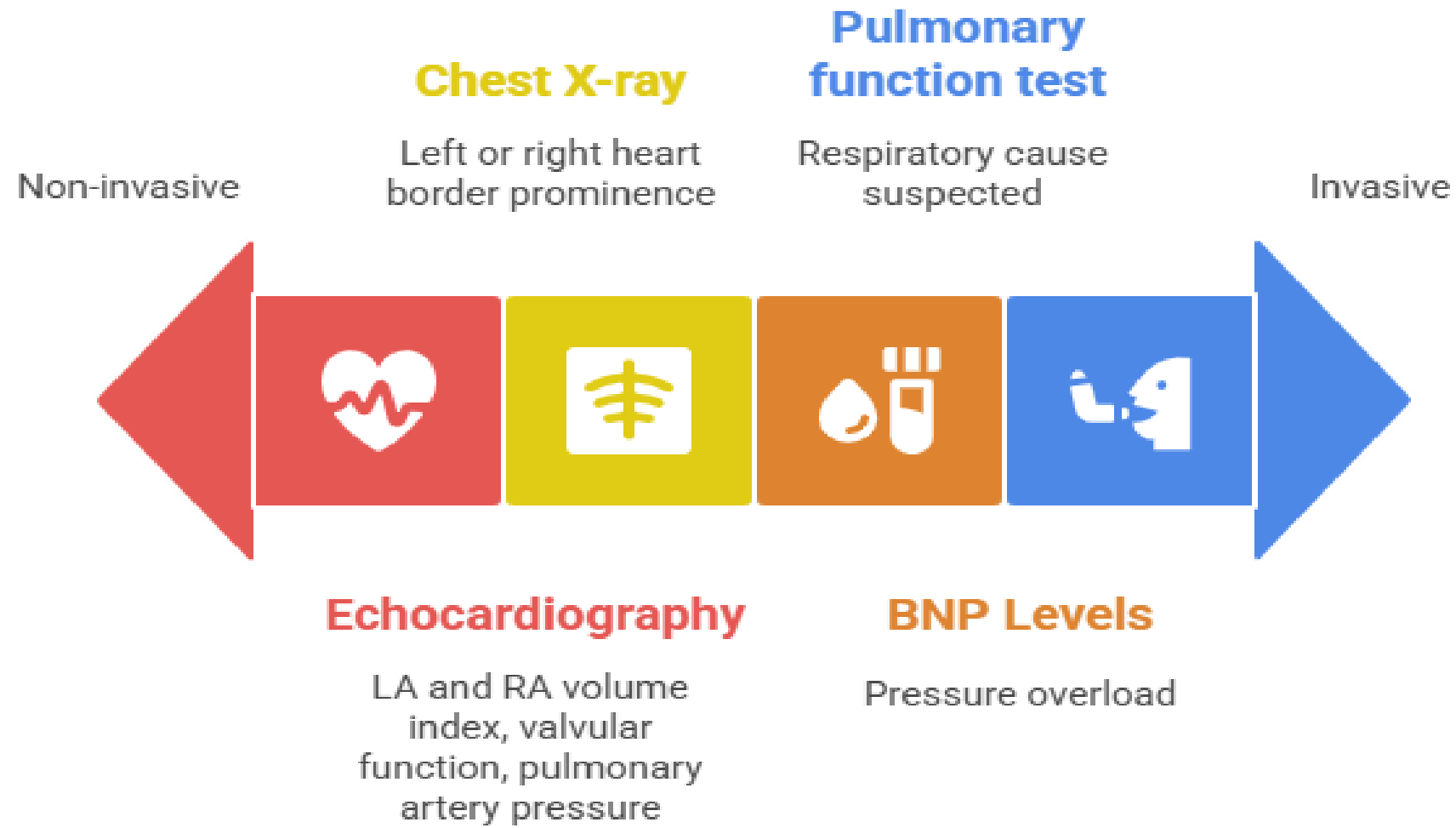
- *P mitrale* – broad, notched P wave in lead II (>0.12 sec)
- Biphasic P wave in V1 with wide negative terminal portion

• Right Atrial Enlargement:

- *P pulmonale* – tall, peaked P wave in lead II (>2.5 mm)



Diagnostic Modalities For Cardiac and Pulmonary Evaluation



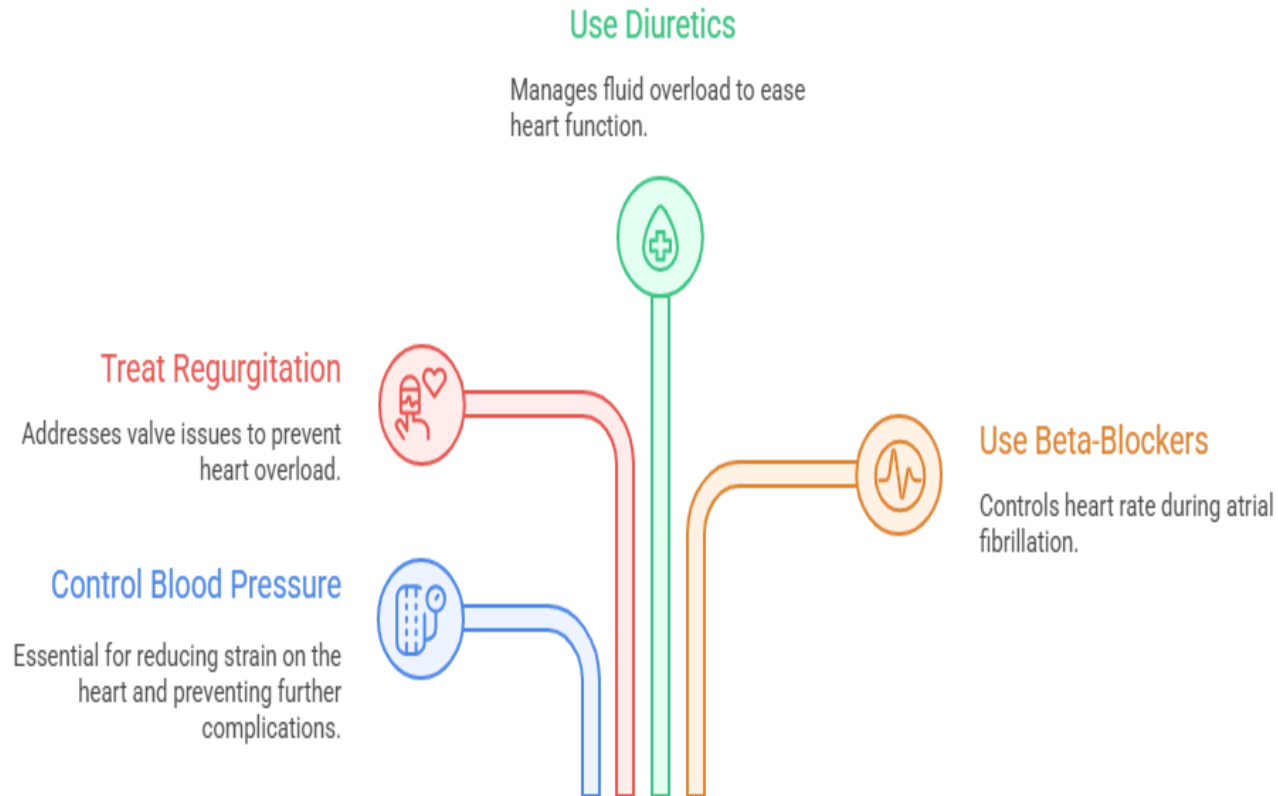
Prototype (Formulate Diagnostic Plan and Interpretation)

Parameter	Finding	Interpretation
LA Volume Index	48 mL/m ²	Enlarged (Normal <34 mL/m ²)
RA Area	24 cm ²	Mildly Enlarged (Normal <18 cm ²)
Mitral Valve	Thickened, mild regurgitation	Cause for LA overload
Tricuspid Valve	Mild regurgitation	Secondary RA enlargement
Pulmonary Pressure	45 mmHg	Mild pulmonary hypertension

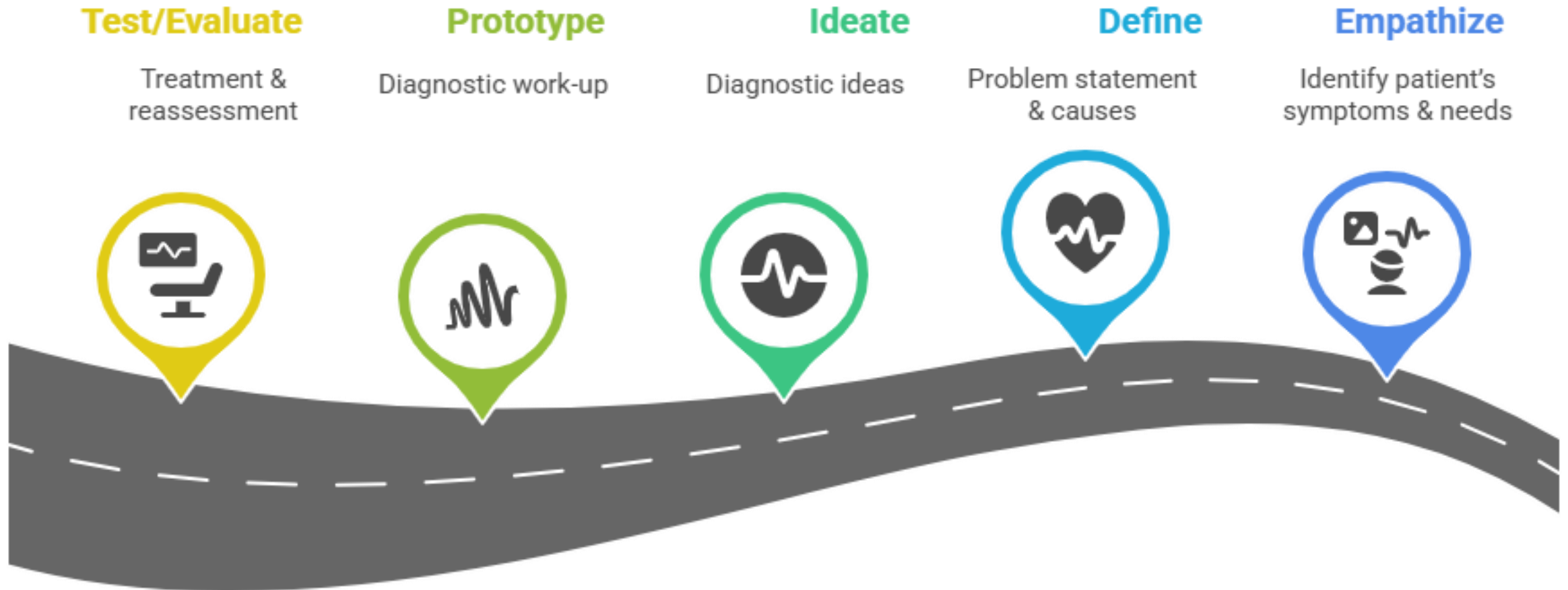
Test / Evaluate (Evolve the Understanding and Treatment Plan)

A) Medical Management:

B) Lifestyle Modifications:



Summary



Reference Books & Journals

- Otto CM, *Textbook of Clinical Echocardiography*, 6th Edition, Elsevier.
- Feigenbaum H., *Echocardiography*, 8th Edition, Lippincott Williams & Wilkins.
- Goldberger AL, *Clinical Electrocardiography: A Simplified Approach*, 9th Edition.
- Journal of the American Society of Echocardiography (JASE) – articles on atrial strain and remodeling.
- Braunwald's *Heart Disease: A Textbook of Cardiovascular Medicine*, 12th Edition.