# STEMI LOCALISATION BY ECG

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## I LEFT MAIN (LMCA) OR 3-VESSEL DISEASE

- **ECG Hallmark:** ST-elevation (STE) in lead aVR ≥ 1 mm.
- **Co-existing Sign:** Often STE in aVR is greater than in V1.
- **Reciprocal Changes:** Widespread ST-depression in leads I, II, and V4-V6.

## II LEFT ANTERIOR DESCENDING (LAD) ARTERY

### A Proximal LAD (Above S1 and D1 Branches)

- STE in V1–V4 (Anterior/Septal).
- STE in aVL and Lead I (High lateral).
- New Right Bundle Branch Block (RBBB) or Bifascicular block.
- Reciprocal ST-depression in inferior leads (II, III, aVF) > 1 mm.

### B Mid/Distal LAD (Below S1 and D1)

- STE in V1–V4.
- **Absence** of reciprocal ST-depression in inferior leads.
- If the LAD is a “Wraparound” vessel, you may actually see STE in II, III, and aVF alongside the anterior changes.

## III RIGHT CORONARY (RCA) VS. CIRCUMFLEX (LCX) IN INFERIOR STEMI

### A Right Coronary Artery (RCA)

- STE in Lead III > Lead II (The vector points more to the right).
- Reciprocal ST-depression in Lead I and aVL.
- High association with Heart Block and Bradycardia.

### B Left Circumflex Artery (LCx)

- STE in Lead II ≥ Lead III (The vector points more to the left).
- Isoelectric or STE in Lead I and aVL (High lateral involvement).
- ST-depression in V1–V3 (Representing posterior wall involvement).

## IV SPECIFIC SITES AND EQUIVALENTS

### A Right Ventricular (RV) Infarction

- Culprit: Proximal RCA.
- Diagnostic Sign: STE in V4R (Right-sided lead) > 1 mm.
- Clue on Standard ECG: STE in V1 that is greater than STE in V2.

### B Posterior Wall MI

- Culprit: LCx or Distal RCA.
- Standard ECG: Horizontal ST-depression in V1–V3 with tall R-waves (the “mirror image”).
- Confirmation: STE in V7–V9 (Posterior leads).

## V THE INDIAN CLINICAL CONTEXT

- **Rural Triage:** The “aVR sign” (LMCA/3-vessel disease) should trigger urgent transfer to a PCI-capable centre for immediate angiography; fibrinolysis is not indicated for diffuse ST-depression with aVR elevation.
- **RV MI Safety:** Record a V4R lead for every inferior STEMI to prevent the accidental administration of Nitrates, which can cause life-threatening hypotension in RV MI.
- **Standardization:** In emergency rooms, tall R-waves in V1–V2 with horizontal ST-depression in V1–V3 in the setting of chest pain must be treated as a STEMI-equivalent (Posterior MI) until proven otherwise.