# aVR STEMI

### Definition

Electrical activity from the right upper portion of the heart is recorded by aVR. Infarction in this area produces ST elevation in aVR and reciprocal changes in leads I, II, aVL, and V4-6.

Indicative of Left Main coronary artery occlusion, though can also reflect proximal LAD occlusion or severe triple-vessel disease.

### History/Physical Exam

History and findings suggestive of acute coronary syndrome.

### Key 12-Lead Features

- Widespread horizontal ST depression (often I, II, aVL, and V4-6)
- ST elevation in aVR ≥ 1mm
- ST elevation in aVR ≥ V1
- aVR elevation in the presence of a tachycardia is often rate related and not suggestive of LMCA occlusion

### Key Treatment Points

- Transmit as per current guidelines if believed ischemic
- Convey to PCI capable hospital
- Monitor for 12-lead changes and patient decompensation
- Treat as Acute Coronary Syndrome
- Patient advocacy at the hospital

### Predictive Value of aVR Elevation

In the context of widespread ST depression + symptoms of myocardial ischemia:

- STE in aVR ≥ 1mm indicates proximal LAD / LMCA occlusion or severe 3VD
- STE in aVR ≥ 1mm predicts the need for CABG
- STE in aVR ≥ V1 differentiates LMCA from proximal LAD occlusion
- Absence of ST elevation in aVR almost entirely excludes a significant LMCA lesion

In the context of anterior STEMI:

- STE in aVR ≥ 1mm is highly specific for LAD occlusion proximal to the first septal branch

Magnitude of ST elevation in aVR is correlated with mortality in patients with acute coronary syndromes:

- STE in aVR ≥ 0.5mm was associated with a 4-fold increase in mortality
- STE in aVR ≥ 1mm was associated with a 6- to 7-fold increase in mortality
- STE in aVR ≥ 1.5mm has been associated with mortalities ranging from 20-75%

### 12 Lead ECG Sample


Further Reading

**References**

1. Aygul N, et al. Value of lead aVR in predicting acute occlusion of proximal left anterior descending coronary artery and in-hospital outcome in ST-elevation myocardial infarction: An electrocardiographic predictor of poor prognosis. 2008. [Link]
2. Barrabes JA, et al. Prognostic value of lead aVR in patients with a first non-ST-segment elevation acute myocardial infarction. 2003. [Link]
3. Nabati M, et al.. ST-segment elevation in lead aVR in the setting of acute coronary syndrome. 2016. [Link]