Interpreting Lead aVR on EKG

1. Acute myocardial infarction: ST elevation>1.5 mm in aVR, indicative of left main coronary artery (LMCA), left anterior descending (LAD), or 3-vessel coronary dz

• LMCA occlusion has a high mortality and often refractory to thrombolytics.
• aVR ST elevation in ACS patients: Independent predictor of recurrent ischemic events in-hospital, heart failure, and death.

2. Pericarditis: PR elevation in aVR

• PR elevation in aVR: Subepicardial atrial injury from pericardial inflamm'n
• Multilead ST elevation: Differential diagnosis includes ACS vs pericarditis
  - Concurrent PR elevation in aVR suggests pericarditis instead of ACS.

3. Tricyclic antidepressant (TCA) & TCA-like overdose: Prominent R wave in aVR

• Classic EKG findings: Sinus tachycardia, widened QRS and QTc interval, RAD 130°-170°, prominent terminal R wave in aVR
• Predictor of arrhythmia: (Buckley, *Crit Care* 2003)
  - R/S ratio in aVR> 0.7: PPV = 46%, NPV = 95%

4. Atrioventricular reentry tachycardia (AVRT) in WPW: ST elevation in aVR in narrow complex tachycardia

• Narrow complex tachycardia ddx: AVNRT, AVRT, atrial tachycardia
• ST elevation in aVR suggestive more of AVRT in WPW (sens 71%, spec 70%)

5. Differentiating ventricular tachycardia (VT) from supraventricular tachycardia (SVT) in wide complex tachycardia: Vereckei criteria

• Vereckei criteria only looks at aVR lead. Asks 4 questions. More sensitive and specific to detect VT than Brugada criteria. (Vereckei et al, *Heart Rhythm* 2008)

	Sensitivity	Specificity	PPV	NPV
Brugada	89%	73%	92%	67%
Vereckei	97%	75%	93%	87%

• Criteria looks ONLY at lead aVR (if answer is yes, then VT):
  1. Is there an initial R wave?
  2. Is there a r or q wave > 40 msec (*1 small box width*)
  3. Is there a notch on the descending limb of a negative QRS complex?
  4. Measure the voltage change in the first (v_i) and last 40 msec (v_t). Is $v_i / v_t < 1$?

From Vereckei et al,
Heart Rhythm 2008: