EMERGENCY MEDICINE BEDSIDE REFERENCE

Non-Standard EKG Lead Placements

Quick-reference comparison of clinical indications, anatomical electrode positioning, and diagnostic criteria

Lead Set	Primary Clinical Indication	Exact Electrode Placement	Diagnostic Criteria & Key Pearls
Posterior Leads **V7 – V9**	Suspected posterolateral myocardial infarction (often presents on standard 12-lead with isolated horizontal ST depression in **V1–V3**).	• **V7:** Left posterior axillary line (5th intercostal space) • **V8:** Tip / apex of the left scapula • **V9:** Left paraspinal / paravertebral border	• **Men ≥ 40 & Women:** ≥ 0.5 mm ST elevation in V7–V9 • **Men < 40:** ≥ 1.0 mm ST elevation in V7–V9 **ED Tip:** Temporarily move leads V4–V6 to V7–V9 and manually label the printed tracing.
Right-Sided Leads **V4R (V1R – V6R)**	Suspected right ventricular infarction (frequently accompanies inferior STEMI in leads **II, III, and aVF**).	• **V4R:** Right 5th intercostal space at the mid-clavicular line (mirror image of standard V4)	• **Diagnostic Cutoff:** ≥ 0.5 mm ST elevation in V4R (≥ 1.0 mm in men < 30 years) **Critical Pearl:** RV infarcts are preload-dependent; **avoid nitrates** to prevent profound hypotension.
Lewis Lead **Modified Lead I**	Amplifying atrial activity (P waves) to identify AV dissociation in wide-complex tachycardia (VT vs. SVT) or atrial flutter.	• **RA:** Manubrium • **LA:** 4th intercostal space, right sternal border • **LL:** Right lower costal margin	• **Interpretation:** Inspect **Lead I** on the monitor or 12-lead printout • Prominent P waves reveal independent atrial activity (AV dissociation), confirming ventricular tachycardia
Fontaine Leads **F-ECG (Lead I / D)**	Detecting epsilon waves associated with arrhythmogenic right ventricular cardiomyopathy (ARVC).	• **RA:** Manubrium • **LA:** Xiphoid process • **LL:** Standard V4 position	• **Interpretation:** Inspect **Lead I** (bipolar Fontaine lead) • Increases sensitivity (~50%–60%) for low-frequency notches (epsilon waves) at the end of the QRS / J-point

> **Bedside Documentation Reminder:** Always mark repositioned lead labels directly on the physical EKG strip immediately upon acquisition to prevent misinterpretation during cardiology consultation or chart review.