

12-Lead EKG Protocol

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Updated: 11-02-07

12-LEAD EKG PROTOCOL

RATIONAL: The potential for identification of some patients with Acute Coronary Syndromes (ACS) in the field exists with the acquisition of serial prehospital 12-lead EKGs.

- A. 12-Lead acquisition **is required by University Hospitals EMS Protocols** on the following (if equipment available):
1. Adults patients who access the emergency medical system with a complaint of non-traumatic, heart related symptoms.
 2. All patients with previous cardiac history.
 3. All adult patients with medical emergencies over 35 years of age.
- B. Criteria for exclusion of 12-lead EKG acquisition:
1. A patient for whom the acquisition of a prehospital 12-lead EKG will cause a significant time delay or other circumstance that is not in the best interest of patient care at that time.
 2. A patient who refuses to allow a 12-lead EKG to be performed.
- C. Acquisition
1. Lead Placement - Limb leads (augmented leads)
The limb leads are the paramedic's first response to acquire rate and rhythm. Four patches are required for this procedure. (Reference: "12-Lead EKG-04")
 - a. Left anterior axillary line - Left anterior shoulder
 - b. Right anterior axillary line - Right anterior shoulder
 - c. Left anterior superior iliac crest - left hip
 - d. Right anterior superior iliac crest - right hip
 2. Lead Placement, Precordial leads
 1. V-1, fourth intercostal space just to the right of the sternum.
 2. V-2, fourth intercostal space just to the left of the sternum.
 3. V-3, in between V2 and V4
 4. V-4, fifth intercostal space mid clavicular line.
 5. V-5, anterior axillary line level with V4
 6. V-6, mid axillary line level with V4 and V5.
 7. V4R, fifth intercostal space in right mid-clavicular line.
 8. V5R, right anterior axillary line
 9. V6R, right mid axillary

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3. What each lead sees
- | | | |
|----|----------------------|-----------------|
| 1. | Leads I, AVL, V5, V6 | lateral wall |
| 2. | Leads II, III, AVF | inferior wall |
| 3. | Leads V1, V2 | septal wall |
| 4. | Leads V3, V4 | anterior wall |
| 5. | Lead V4R, V5R, V6R | right ventricle |

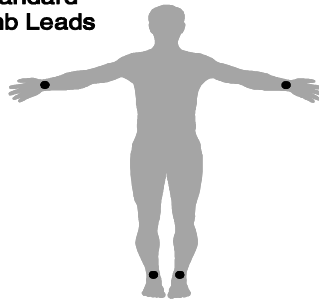
D General Description of Procedures

1. **A 12-lead EKG with standard limb lead electrode placement will be performed on all eligible patients.**
2. 12-lead EKG interpretive findings should be reported to receiving medical direction hospital during transmission of patient assessment. If an ACS is suspected, the thrombolytic check sheet **will** be filled out on the way to the hospital, as time permits.
3. A copy of the 12-lead EKG will be hand delivered to the receiving hospital with the patient's name appearing on the 12-lead EKG.
 - a. Attach precordial electrodes and acquire 12-lead EKG while patient assessment and or treatment is taking place, to keep scene time from being adversely affected.
 - b. Acquisition of early and serial 12-lead EKGs should be performed when possible.
 - c. Carry towels and blankets in the rescue squad for the modesty benefit of female patients on whom 12-lead EKG's are acquired. This allows you to acquire the 12-lead EKG in the privacy of a patient's home. Note: In the female patient, chest leads must be positioned under the breast. This may be accomplished by lifting the breast with the back of a gloved hand.
 - d. Enter all pertinent data in the cardiac monitor system.
 - e. **It is mandated by the UH EMS Medical Director that all 12-lead EKG's are to be sent to the UH medical direction facility.**

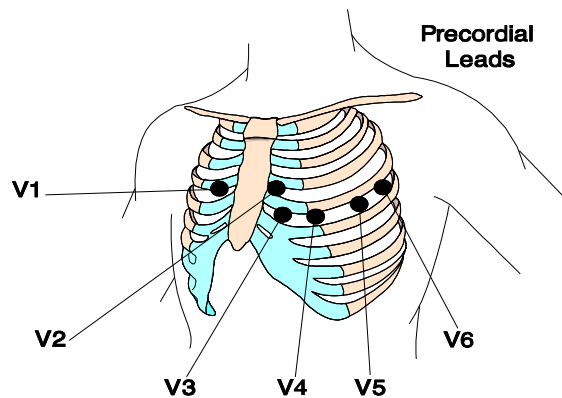
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- f. If either defibrillation, synchronized cardioversion or pacing is necessary, quickly remove the necessary precordial leads to allow for quick-combo patch placement and proceed with appropriate protocol.
- g. If feasible, the 12-lead EKG should be acquired with the patient in the supine position. Do not, however, compromise your patient to acquire it. Many of your cardiac patients may be orthopneic and unable to tolerate the supine position. Write on the 12-lead EKG what position it was acquired in.

**Standard
Limb Leads**



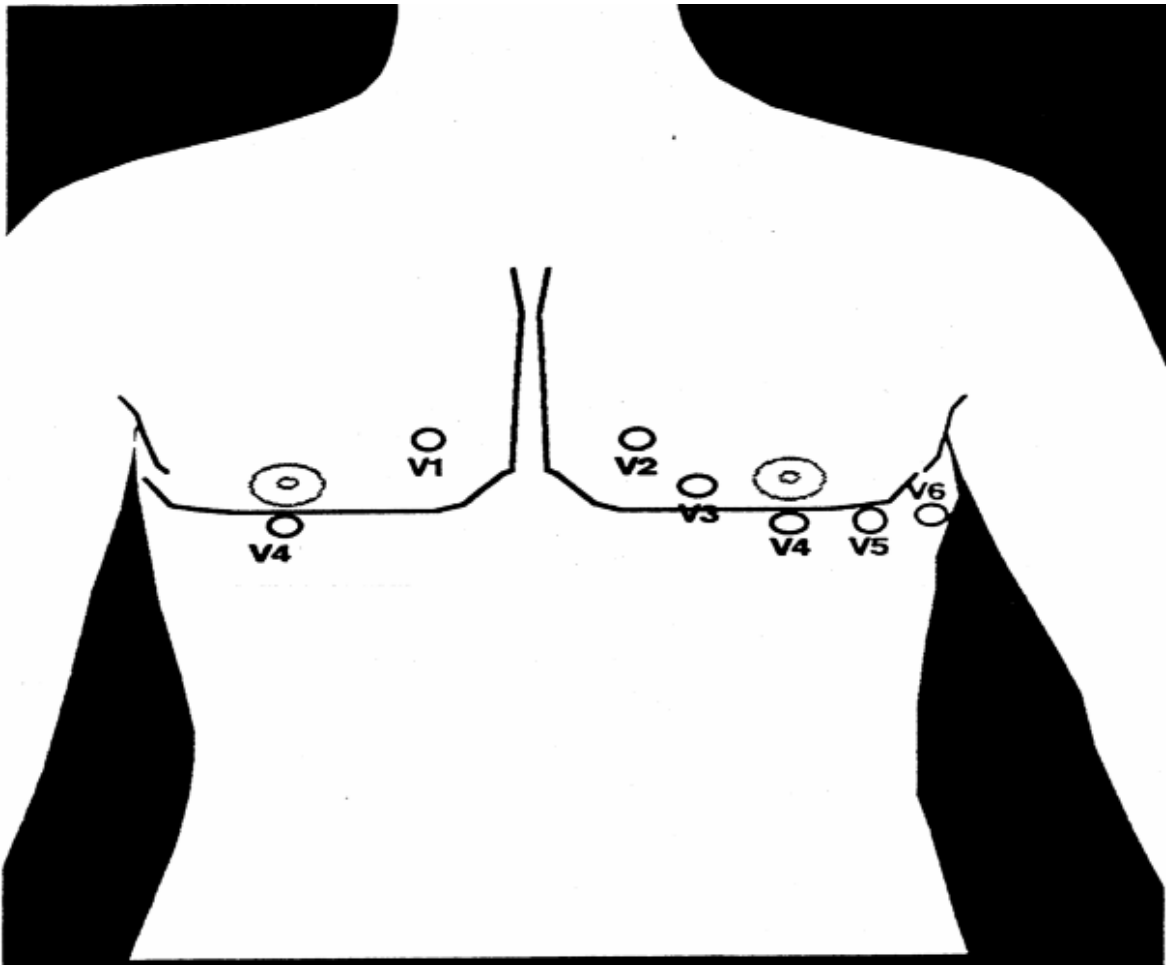
**Precordial
Leads**



12-LEAD EKG PROTOCOL

Limb Leads

Precordial Leads



(Rate/rhythm)

(12-lead)

RA
LA
RL
LL

V1
V2
V3
V4
V5
V6

12-LEAD EKG PROTOCOL

University Hospitals EMS Training & Disaster Preparedness Institute

PRE-HOSPITAL THROMBOLYTIC CHECK SHEET

PATIENT NAME _____ AGE _____ RESCUE SQUAD _____

DATE _____ PARAMEDIC NAME _____

- | | | Circle | |
|-----|--|--------|----|
| | | Yes | No |
| 1. | Oriented | Yes | No |
| 2. | Chest Pain < 6 hours?..... | Yes | No |
| 3. | Active internal bleeding or known blood disorder?.... | Yes | No |
| 4. | History of CVA, intracranial or aneurysm?..... | Yes | No |
| 5. | Neurosurgery, head or spine trauma?..... | Yes | No |
| 6. | Major surgery or biopsy within 6 weeks?..... | Yes | No |
| 7. | Chest or abdominal trauma within 6 weeks?..... | Yes | No |
| 8. | CPR within the past 10 days?..... | Yes | No |
| 9. | GI or GU bleeds within 3 months?..... | Yes | No |
| 10. | Acute pericarditis, acute aortic dissection, esophageal varices? | Yes | No |
| 11. | Pregnant?..... | Yes | No |
| 12. | Severe renal or hepatic disease?..... | Yes | No |
| 13. | Diabetic?..... | Yes | No |
| 14. | Retinopathy?(eye disorders)..... | Yes | No |
| 15. | BP (>180 systolic, >120 diastolic)?..... | Yes | No |
| 16. | Taking anticoagulants?..... | Yes | No |

COMMENTS: _____

