

**APPENDIX: K****TITLE: CARDIAC MONITORING PROCEDURES****REVISED: January 28, 2010**

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**I. INDICATIONS:**

Patients at risk for dysrhythmias shall receive continuous EKG monitoring. A rhythm strip shall accompany each EKG rhythm interpreted in written patient reports. A 12 Lead EKG shall be obtained when appropriate.

**A PARAMEDIC SHALL ATTEND ALL PATIENTS REQUIRING CONTINUOUS EKG MONITORING.** All patient contacts requiring the use of an EKG, continuous or otherwise, shall be signed by at least one paramedic. If the chart is written by an EMT, the paramedic will co-sign the chart.

**II. CONTRAINDICATIONS:**

NONE

**III. PROCEDURE:****Limb Lead placement:**

- Place electrodes in the standard Lead II configuration. (One between the right nipple and the clavicle, one between the left nipple and the clavicle, and one in the "Apex" area, between the left nipple and the iliac crest)
- As an alternative, place the appropriate leads on the anterior aspects of the appropriate limbs. This is especially useful when a 12-Lead EKG is anticipated
- Attach the black wire to the left-arm electrode (Ground), the white wire to the right-arm electrode (Negative), and the red wire to the left leg electrode. (Positive). If present, the green wire is attached to the right leg electrode, and the brown wire is attached to the chest electrode in the V1 position
- Turn the control switch to the desired lead position

**12-LEAD EKG PLACEMENT:**

Limb leads are placed on a non-bony part of the distal anterior aspect of the appropriate extremity.

Chest leads are placed as follows, shave and gently abrade the area as needed.

## Left chest leads

- V1: fourth intercostal space just right of the sternum
- V2: fourth intercostal space just left of the sternum
- V3: fifth rib, between V2 and V4
- V4: fifth intercostal space, midclavicular line
- V5: fifth intercostal space, anterior axillary line
- V6: fifth intercostal space, midaxillary line

Right chest leads: (Optional)

- Placed in corresponding position on the right side of the chest
- Documented as V3R, V4R, etc. (V4R is preferred)

Posterior chest leads (V7-V9) (Optional)

- V7: Posterior axillary line, fifth intercostal space
- V8: Midscapular line, fifth intercostal space
- V9: Left of the vertebrae, fifth intercostal space

#### “12-LEAD EKG RULES TO LIVE BY”

- Watch for reciprocal (mirror image) changes opposite the site of a suspected MI
- Inferior MI with reciprocal changes in V1-V2, consider posterior MI
- Inferior MI with decreased B/P, decreased heart rate, consider right-sided MI. This is especially true if ST elevation is greater in lead III than lead II
- About 30% of left inferior MI's are also right-sided MI's
- Apparent A-Fib with regular R-R's, consider digoxin toxicity
- Right-sided MI's may need fluids before nitrates

#### IV. SPECIAL CONSIDERATIONS:

- Limb lead EKG monitoring is for rhythm interpretation only. A 12-lead must be obtained to document diagnostic EKG changes (ST segment changes, Q waves, etc.)
- If a 12-lead EKG is not available, a “Modified Chest Lead” (MCL) may be obtained by monitoring lead III and placing the left leg electrode in the V1, V4, or V6 position. This shall be documented as MCL-1/4/6
- The diagnostic 12-lead EKG is intended to assist in the recognition of infarction and dysfunction. **A normal 12-lead EKG does not preclude the presence of an MI.** A 12-lead EKG may be a valuable tool to document response to treatments, triage patient severity and destination, and decrease time to definitive treatment
- The acquisition of a 12-lead EKG should not significantly delay treatment or transport
- When possible, the 12-lead EKG should be transmitted to the receiving hospital with the patients name if possible as time permits. When possible, use the software in the 12 lead EKG to label the 12 lead with the patient's name prior to transmission of the 12 lead