County of Santa Cruz

HEALTH SERVICES AGENCY

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EMERGENCY MEDICAL SERVICES PROGRAM

Procedure No. 5900
Reviewed 04/01/2010

Emergency Medical Services Program

Approved

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Medical Director

Subject: 12 LEAD ECG PROCEDURE

I. Purpose

The application and interpretation of 12 Lead ECGs is a critical skill needed to identify ST Elevation MI (STEMI), cardiac ischemia, cardiac conduction abnormalities, and arrthymias. This procedure outlines the inclusion criteria for use of the 12 Lead ECG, and the procedure for implementing it.

II. 12 Lead ECG Inclusion Criteria

A. Chest pain /anginal equivalent symptoms

1. Chest pain consistent with Acute Coronary Syndrome (ACS). Suspicion of ACS is primarily based upon patient history: chest discomfort, jaw pain, arm pain, neck pain, etc.
2. Be alert to patients likely to present with atypical symptoms or "silent AMIs": women, the elderly, and diabetics. Atypical symptoms may include non-pulmonary shortness of breath, syncope, dizziness, diaphoresis, nausea/vomiting, or altered level of consciousness.
3. Patients with chronic SOB such as a COPD may be included if there are additional new symptoms such as dizziness, weakness, diaphoresis, nausea/vomiting or ALOC.

B. Consider 12-lead when the following conditions are present:

1. Arrhythmias
2. Cardiogenic pulmonary edema
3. Cardiogenic shock
4. Post cardiac arrest (ROSC)

III. 12 Lead ECG Transmission Criteria

ECGs should be transmitted to the appropriate hospital when a confirmed or suspected STEMI has been identified, or whenever paramedics need consultation regarding the interpretation and treatment of any 12 Lead ECG rhythm.

IV. 12 Lead ECG Procedure

1) Expose Chest. Remove excess chest hair, prep skin. May leave bra in place if not interfering with lead placement.
2) Place electrodes on chest and limbs. See section below (12-lead placement).

3) Acquire ECG tracing as per manufacturer's directions. ECG can be done prior to medication administration if it can be done in a timely fashion. Paramedics may acquire ECG at incident location or in vehicle prior to beginning transport.
4) When indicated, transmit the ECG to the receiving hospital and complete a call-in.
5) Observe patient identification conventions for labeling the ECG prior to transmission.
6) Leave electrodes in place unless defibrillation or cardioversion is required.
7) Make hard copy of ECG and keep with PCR.

V. Documentation

PCR documentation should reflect findings of 12-lead ECG.

VI. 12-Lead Electrode Placement

1) Limb leads should be placed lateral deltoids and mid-thighs if possible. May be moved onto trunk if needed.
2) Chest leads should be placed:
    a. V1 – 4th intercostal space at the right sternal border
    b. V2 – 4th intercostal space at the left sternal border
    c. V3 – Directly between V2 and V4
    d. V4 – 5th intercostal space at left midclavicular line
    e. V5 – Level of V4 at the left anterior axillary line
    f. V6 - Level of V4 at left mid-axillary line