



## 12-LEAD ELECTROCARDIOGRAM

**Effective:** February 12, 2015  
**Replaces:** June 2012  
**Review:** February 12, 2021

### I. Purpose

The purpose of this policy is to identify patients that require 12-lead electrocardiogram (ECGs) and describe the process of obtaining and identifying the patients that require direct transport to a STEMI receiving facility.

### II. Definition

Electrocardiogram's (ECGs) are utilized by prehospital personnel when a patient is suspected of having cardiac ischemia. The use of a 12-lead ECG is essential to identify a patient experiencing an ST-elevation MI (STEMI).

### III. Indication

- A. Any patient with known or suspected Acute Coronary Syndrome (ACS). ACS patients will typically present with some or all of the following symptoms:
1. Substernal pain
  2. Discomfort or tightness radiating to the jaw, left shoulder or arm
  3. Symptoms indicating cardiogenic shock
  4. Nausea
  5. Diaphoresis
  6. Dyspnea
  7. Anxiety
  8. Syncope/dizziness
  9. Other "suspicious symptoms"
  10. Note: elderly, female, and diabetic patients may present atypically
  11. Known treatment for ACS
- B. ECG's can and should be used with a number of *Santa Clara Prehospital Care Policy*, such as:
1. *700-A03: Hypoglycemia*
  2. *700-A08: Chest Pain - Suspected Cardiac Ischemia*
  3. *700-A11: Respiratory Distress*
  4. *700-A19: Crush Injury Syndrome*

- C. Treatment under these policies should proceed in conjunction with the application of the 12-lead ECG

#### IV. Procedure

- A. Attach ECG leads to the patient (limb leads to the upper arms and ankles, and six chest leads):
  - 1. V1: right 4th intercostal space
  - 2. V2: left 4th intercostal space
  - 3. V3: halfway between V2 and V4
  - 4. V4: left 5th intercostal space, mid-clavicular line
  - 5. V5: horizontal to V4, anterior axillary line
  - 6. V6: horizontal to V5, mid-axillary line
- B. ECG criteria for STEMI Alerts: Please note that depending on the manufacturer of the cardiac monitor, STEMI indicators may vary. It is incumbent on the provider to know what indicators your manufacturer uses. Most manufacturers demarcate STEMI's with three (3) asterisks before and after the text and use capitalized and bolded text.

If the ECG monitor reading identifies a STEMI:

- 1. Immediately notify the receiving hospital with a **STEMI ALERT** and transmit the 12 lead ECG to the STEMI receiving hospital
  - 2. Transmission of the ECG can dramatically reduce the door to balloon time. Transmission shall be completed as soon as possible
- C. Serial 12-lead EKGs, en-route, are encouraged.

