## *12-Lead ECG*

*Paramedic Protocol (may be Specialist or EMT per MCA selection)*

**Indications:**

1. A 12-lead ECG is indicated and must be performed on patients exhibiting any of the following signs/symptoms:
   A. Chest pain or pressure
   ~~B.~~A. ~~Abdominal pain~~
   ~~C.~~B. Syncope
   ~~D.~~C. Shortness of breath
   ~~E.~~D. Pain/discomfort which are often associated with cardiac ischemia:
      a. Jaw, neck, shoulder, left arm or other presentations; unless no other symptoms exist and the cause of the specific pain can be identified with a traumatic or musculoskeletal injury.
      b. If there is any doubt about the origin of the pain/discomfort, or the presentation seems atypical for the mechanism, a 12-lead should be performed.

2. Patients exhibiting any of the following signs/symptoms must have a 12-lead ECG performed if the etiology of the illness is indicative of an Acute Coronary Syndrome or the etiology of the illness is indeterminate:
   A. Nausea
   — Abdominal pain
   ~~A.~~B.
   ~~B.~~C. Vomiting
   ~~C.~~D. Diaphoresis
   ~~D.~~E. Dizziness
   ~~E.~~F. Patient expression of “feelings of doom”

3. A 12-lead ECG should be performed based on the clinical judgment of the paramedic even in the absence of the above signs/symptoms.

**Procedure:**

1. Follow **General Pre-hospital Care-Treatment Protocol.**

2. Perform 12-lead ECG per manufacturer guidelines, if available.

MCA approval to obtain ECG
☐ Specialist
☐ EMT
MCA approval to transmit ECG (and notify of STEMI)
☐ Specialist
☐ EMT

MCAs will be responsible for maintaining a roster of the BLS and LALS agencies choosing to participate and will submit roster to MDHHS

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3. Report if acute MI is suspected, either by device or paramedic provider interpretation and promptly relay either the 12-lead findings via MCA approved communications system or transmit 12-lead to the receiving facility.
4. Alternative 12-lead ECG lead placement.
    A. 12-leads that exhibit contiguous ST segment elevation in leads II, III, or aVF should have a right sided 12-lead ECG performed with a minimum of V4r.
    B. 12-leads that exhibit ST segment depression in V1-V4 with accompanying ACS symptoms ~~should~~ may have a posterior 12 Lead performed with a minimum of 2 leads.
        i. V4 becomes V7, V5 becomes V8, and V6 becomes V9.

5. Agencies, in cooperation with hospitals with pre-hospital 12-lead ECG receiving capability, should have the relay done electronically as soon as possible for the following conditions:
    A. ST elevation ≥1mm in 2 contiguous leads.
    B. Chest pain patient with left bundle branch block.
    C. EMS personnel request assistance by hospital for interpretation of ECG.
    D. Hospital requests ECG be sent.

6. The Acute MI Report relayed to the receiving facility should include the following:
    A. *** **STEMI Suspected** *** or equivalent machine indication of Acute MI.
    B. Location of MI, “ST elevation, consider _____injury”.
    C. Time of onset of the chest pain if present.
    D. Current level of pain.
    E. Cardiac history (previous MI, CHF, CABG, Angioplasty or Stent).
    F. Presence of possible indicators of false positive ECG (tachyarrhythmia, left bundle branch block, pacemaker, wide complex QRS, positive ECG with artifact after previous negative ECG).

7. Transport patients per MCA transport protocol.

8. Repeat 12-lead is indicated for prolonged transports or changes in condition.
    A. Patients that meet criterial for initial 12-lead ECG should have leads left in place during transport
    B. 12-lead should be repeated every 5-10 minutes for any patient if they met the initial criteria for a 12-lead ECG.
    C. Devices with active ST segment monitoring do not require repeat ECGs unless there is a noticeable change in the patient's condition.