

WEST MICHIGAN REGIONAL PROTOCOL

12 LEAD EKG POLICY/PROCEDURE

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Purpose: To provide a procedure for the performance of 12-lead EKG monitoring and reporting according to West Michigan Regional and/or Kent County protocols. This procedure is limited to utilization by paramedics only.

I. Indications

- A. All ALS agencies are required to have a 3 lead EKG monitor/defibrillator on licensed ALS vehicles; a monitor/defibrillator with 12 lead capabilities is preferred however, it remains an optional piece of equipment.
- B. Agencies within the West Michigan Region choosing to utilize 12 lead EKG's must adhere to this policy and procedure.
- C. A 12 EKG, if available, must be performed on patients exhibiting any of the following signs/symptoms:
 1. Chest pain or pressure
 2. Upper abdominal pain
 3. Syncope or dizziness
 4. Shortness of breath
 5. Pain/discomfort often associated with cardiac ischemia
 - a. Jaw, neck, shoulder, left arm or other presentation; 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.
 6. Patients exhibiting the following signs/symptoms should have a 12 lead EKG performed if the etiology of the illness is indicative of an Acute Coronary Syndrome or the etiology of the illness is indeterminate:
 - a. Nausea
 - b. Vomiting
 - c. Diaphoresis
 - d. Patient expression of "feelings of doom"
 7. A 12 lead may be performed based on the clinical judgment of the paramedic even in the absence of the above signs/symptoms.

II. EKG Performance Procedure

- A. Administer oxygen
- B. Provide a thorough patient assessment including baseline VS.
- C. Apply limb leads (I, II and III) to determine rhythm or dysrhythmia
- D. For the purposes of this procedure, a patient is considered to be hemodynamically stable if they are alert, have a systolic blood pressure of at least 90 mmHg and the cardiac rhythm does not pose an immediate life threat.
- E. **If the patient is hemodynamically stable:**
 - a. Conduct the 12 lead EKG prior to administration of medication. The EKG performance should not exceed 3 minutes.
 - b. If at any time during the application or performance of the EKG, should the patient's condition deteriorate, immediately administer appropriate treatment and then proceed to the performance of the 12 lead once the patient's condition stabilizes or time permits.
- F. **If the patient is not hemodynamically stable:**
 - a. Immediately provide appropriate treatment and perform the 12 lead once the patient's condition stabilizes or time permits.
 - b. In certain patients time limits and patient condition may not allow for the performance of a 12 lead.

III. Lead placement

- A. Limb leads (at least 10cm from the heart)
 - a. Black – left shoulder or arm
 - b. White – right shoulder or arm
 - c. Red – left leg

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B. Chest leads

- a. V1: Right 4th intercostal space (adjacent to sternum)
- b. V2: Left 4th intercostal space (adjacent to sternum)
- c. V3: Halfway between V2 and V4
- d. V4: Left 5th intercostal space, midclavicular line
- e. V5: Horizontal to V4, anterior axillary line
- f. V6: Horizontal to V5, mid-axillary line

Note: To find the 4th intercostal space, first locate the Angle of Louis. This is a hump near the top third of the sternum. Start feeling down the sternum from the top and you will feel it. It is located next to the second rib. The space directly beneath it is the 2nd intercostal space. Count down 2 additional intercostal spaces and place V1 on the right and V2 on the left immediately adjacent to the sternum.

IV. Cardiac pre-alert policy

- A. Following the completion of the 12 lead EKG, the paramedic must review the EKG looking for indications of infarct and ischemia.
 - a. ST elevation in 2 contiguous leads
 - b. T wave inversion
- B. The monitor's interpretation, on the printed EKG, should be considered along with an inspection of the EKG and consideration of the patient's presentation.
- C. If there is an indication of an Acute Coronary Syndrome (infarct or ischemia):
 - a. Contact the hospital to which the patient will be transported and provide a brief report that begins with the phrase "Cardiac Pre-Alert". The patient's age, gender, duration of symptoms, pertinent presentation symptoms, EKG findings and ETA to the hospital should be reported.
 - b. Establish IV access
 - c. Consider establishing a second IV during transport if time permits
- D. If the EKG does not show signs of infarct or ischemia, treat the patient based on their presenting signs/symptoms according to protocol. A cardiac pre-alert is not necessary.
 - a. Do not withhold treatment of chest pain if the EKG does not indicate infarct or ischemia.
 - b. Lack of EKG changes does not rule out the possibility of infarct.
- E. If a "cardiac pre-alert" report was called to the hospital, an update should be called while enroute to the hospital.

V. Documentation

- A. A copy of the 12 lead EKG must be attached to the EMS run form for company records, a copy given to the hospital ED for inclusion in the patient chart and a copy attached to the medical control copy of the EMS form.