

CHAPTER	II	Operations
SUBJECT	4	Emergency Medical Services
TOPIC	6	12 Lead EKG Set-up

A. INDICATIONS

Instances in which an EMT-Basic may assist in the set up of a 12 lead EKG:

1. Chest pain (prior to administration of Nitroglycerin by paramedics).
2. Syncope.
3. Palpitations.
4. Patient exhibiting signs and symptoms of congestive heart failure, pulmonary edema, or acute respiratory distress.
5. Patient is elderly and has past medical history including: CAD (coronary artery disease) or smoking.
6. Patient who has suffered significant blood loss.
7. Anytime set up of a 12 Lead EKG is requested by a CFD paramedic.

B. PHYSICAL FINDINGS:

1. Patient complains of pain in chest.
2. Patient complains of pain in the jaw, arm, neck or back (independent of an injury).
3. Patient's skin condition is diaphoretic and/or skin color that is pale or cyanotic.
4. Patient is unable to complete sentences without taking a breath.
5. Heart rate greater than 120 beats per minute, by palpation.
6. Nausea with or without vomiting that is acute and accompanied by any of the following: chest pain, jaw, arm, neck or back pain with no reported trauma, trouble breathing, diaphoresis, or significant blood loss.
7. Systolic blood pressure greater than 200 or less than 100.

C. PROCEDURE

1. Explain the process to all patients. The EMT-Basic should explain that it will be necessary to place several electrodes directly on the chest. If the patient does not express an understanding of the process or the benefit of 12 Lead Electrocardiography, ask the paramedic to intervene. Remove the shirt of male patients ONLY. Male EMT Basics may elect to have another CFD EMT/Paramedic witness the placement of EKG electrodes on female patients. Protect the female patient's modesty by asking her to unhook her bra. The female patient's bra and shirt shall remain in place unless the patient's condition is deemed by paramedics to necessitate the removal of a woman's clothing (i.e., arrhythmia that is unstable or high index of suspicion for cardiac arrest). All personnel shall document whether any

- patient's clothing was removed, and to whom clothing or personal effects were transferred to upon arrival at the hospital. Anytime a woman's breast must be adjusted in order to properly place EKG electrodes, the EMT-Basic should use the back of the hand to lift or move the breast out of the way.
2. Prepare the patient's skin. Cleanse the skin as needed to remove grime, skin oils or sweat in areas where electrodes will be placed. This is best accomplished by first, cleansing the area with an alcohol prep, then drying the area with a towel or gauze pad.
 3. Place the patient in a comfortable position that allows all extremities to rest on a supportive surface.
 4. With the patient in standard anatomical position (seated or lying supine with palms facing forward), place each electrode and wire in its designated position.

Electrode Placement:

Electrode Marking Reads:	Proper Placement
RA – (Right Arm)	Place on the right wrist, just above palm of hand or upper right arm
LA – (Left Arm)	Place on left wrist, just above palm of hand or upper left arm
RL – (Right Leg)	Place this electrode on the lower part of the right leg, toward the midline and just above the foot
LL – (Left Leg)	Place this electrode on the lower part of the left leg, toward the midline and just above the foot.
V1	V1 should be placed in the fourth intercostal space and to the right of patient's sternum (remember the first rib lies beneath the collarbone, so count 3 ribs down from there and place in the area between 3rd and 4 th ribs)
V2	The electrode marked V2 should be placed in the fourth intercostal space and to the left of the sternum (it should be directly across the sternum from V1)
V3	Position the V3 electrode AFTER V4 is in place. V3 should then be placed between V2 and V4.
V4	V4 should be placed in the fifth intercostal space (below the 4 th rib, but above the 5 th) and centered with the middle of the collarbone on the patient's left side.
V5	Place V5 1" - 2" to the left and level with V4
V6	Place V6 1" - 2" inches to the left and level with V5. The V6 lead should lie in the mid-axillary line (mid-way point of the torso, beneath the armpit)

Notes:

**ADDITIONAL
EMT-BASIC
PROTOCOLS**

204.06

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1. *This protocol serves as physician authorization for EMT-Basics to assist paramedics in setting up 12 lead EKG. This protocol meets the guidelines published in the Ohio Administrative Code 4765-15-04 (EMT-Basic Scope of Practice).*
2. *The paramedic bears the ultimate responsibility for the 12 lead EKG set up by the EMT-Basics. It is recommended that the EMT and the Paramedic work collectively to ensure that the proper procedures have been followed.*