TITLE: ELECTROCARDIOGRAM (ECG) MONITORING PROTOCOL

INTRODUCTION

Cardiac monitoring, also referred to as ECG monitoring, is defined a test that checks for problems with the electrical activity of your heart. An ECG shows the heart's electrical activity as line tracings on paper. The spikes and dips in the tracing are called waves.

The heart is a muscular pump made up of four chambers. The two upper chambers are called atria. The two lower chambers are called ventricles. A natural electrical system causes the heart muscle to contract. This pumps blood through the heart to the lungs and the rest of the body.

OBJECTIVE OF AN ECG TEST

Why is an ECG test requested?

- Check the heart's electrical activity
- For a medical examination
- Find the cause of unexplained chest pain or pressure
- To diagnose heart disease by identifying symptoms including shortness of breath, dizziness, fainting, and heartbeats that are rapid and irregular (palpitations)
- Find out how the walls of the heart chambers look
- Check how well medications are working and identify possible side effects from these medications
- Check how well mechanical devices that are implanted in the heart, such as pacemakers, are working. These devices help to control the heartbeat.
- Check the health of the heart when other diseases or conditions are present. These diseases include high blood pressure, high cholesterol, cigarette smoking, diabetes, and a family history of early heart disease.

How To Prepare

- Verify the Physician order
- Identify the patient in waiting area by name and escort to the ECG room

- Explain the procedure to the client. The ECG machine is designed to recognize and record any electrical activity within the heart. It prints out this information on ECG paper made up of small squares 1mm square. Emphasize that no electrical current will enter the body during the procedure
- Tell the client that the test typically takes about 5 minutes.
- Provide privacy
- Perform hand hygiene
- Advice the client to lie in supine position in the center of the bed with arms at his sides. You may raise the head of the bed to promote comfort. Expose the arms and legs and cover the client appropriately. The arms and legs should be relaxed to minimize muscle trembling. Make sure the feet are not touching the bed board
- Select flat, fleshy areas to place the limb lead electrodes, Avoid muscular and bony areas. If the client has an amputated limb, choose a site on the stump. If an area is excessively hairy, explain to client and seek permission to shave it
- Clean excess oil or other substances from the skin with alcohol pad to enhance electrode contact
- Apply disposable electrodes to the client's wrists and to the medial aspects of the ankles
- Expose the client's chest. Put a pre-gelled electrode at each electrode position. If your client is a woman, be sure to place the chest electrodes below the breast tissue. In a large-breasted woman, you may need to displace the breast tissue laterally.

Limb Lead Placement

• Connect the lead wires to the electrodes. The tip of each lead wire is lettered and color coded for easy identification.

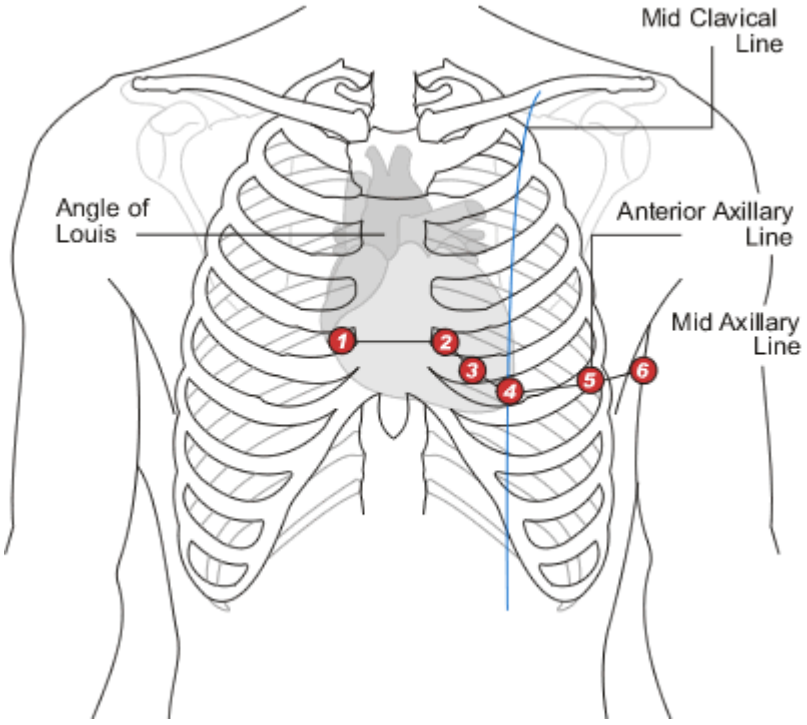
• The red (or RA lead wire) goes to the right arm

• The yellow (or LA lead wire) goes to left arm

• The black (or N/ RL lead wire) goes to right leg

• The green (or LL lead wire) goes to left leg

Chest lead placement



The 6 leads are labelled as "V" leads and numbered V1 to V6. They are positioned in specific positions on the rib cage. To position then accurately it is important to be able to identify the "angle of Louis", or "sternal angle".

To find it on yourself, place your fingers gently at the base of your throat in a central position and move your fingers downward until you can feel the top of the sternum, or rib cage. From this position, continue to move your fingers downward until you feel a boney lump. This is the "angle of Louis".

The angle of Louis is most easily found when the patient is lying down as the surrounding tissue is tighter against the rib cage.

From the angle of Louis, move your fingers to the right and you will feel a gap between the ribs. This gap is the 2nd Intercostal space. From this position, run your fingers downward across the next rib, and the next one. The space you are in is the 4th intercostal space. Where this space meets the sternum is the position for V1.Go back to the "angle of Louis" and move into the 2nd intercostal space on the left. Move down over the next 2 ribs and you have found the 4th intercostal space. Where this space meets the sternum is the position for V2.

From this position, slide your fingers downward over the next rib and you are in the 5th intercostal space . Now look at the chest and identify the left clavicle, a bone that runs from the left shoulder to the top of the sternum. The position for V4 is in the 5th intercostal space , in line with the middle of the clavicle (mid-clavicular). V3 sits midway between V2 and V4.

Follow the 5th intercostal space to the left until your fingers are immediately below the beginning of the axilla, or under-arm area. This is the position for V5.

Follow this line of the 5th intercostal space a little further until you are immediately below the centre point of the axilla, (mid-axilla). This is the position for V6.

Now look at the picture below showing the position of the heart in relation to the rib-cage and you get an idea as to which areas are being looked at by these leads.

- V1 ---- Red lead 4th Intercostal space to the right of the sternum
- V2 ----- Yellow Lead4th Intercostal space to the left of the sternum
- V3 ---- Green Lead Midway between V2 and V4
- V4 ----- Brown lead 5th Intercostal space at the midclavicular line
- V5 ----- Black lead Anterior axillary line at the same level as V4
- V6 ---- Violet lead Midaxillary line at the same level as V4 and V5

  - Now you ready to begin the recording
  - Ask the patient to lie still and not to talk, breath normally and relax when recording ECG
  - machines have a display screen so that you can preview waveforms before the machine records them on paper
  - Press the PRINT button. Observe the tracing quality. The machine will record all 12 leads automatically, recording three consecutive leads simultaneously.
  - When the machine finishes recording the 12-lead ECG, remove the electrodes and clean the client's skin with tissue
  - Thank client for cooperating

- Ensure the bed is in a low position
- Assist the client to a comfortable position and provide assistance to dress up
- Remove any remaining equipment and wash your hands. Label ECG recording with ⎫Patient's name ⎫Medical record no ⎫Date ⎫Time ⎫Signature
- After disconnecting the lead wires from the electrodes, CLEAN & DRY the electrodes as per manufacture instruction.
- Document the procedure