



Introduction

The electrical activity produced in the heart which stimulates its rhythmical contraction, can be recorded using the 12 Lead ECG. The leads view this electrical impulse from a series of different directions, allowing the position of abnormalities of the conduction system and myocardial muscle to be identified. All 12 leads need to be reviewed to confirm the findings.

Patient Explanation

The patient may be very apprehensive and might misconstrue the purpose of the wires connecting them to the ECG machine. Best not to talk about electrical currents but rather talk in more general terms about recording the heart beat and reassuring the patient that they will not experience any discomfort or sensations during the test.

Taking a 12 lead ECG

The 12 lead Machine

- Ensure the ECG machine is either plugged into the mains or has a charged battery • The leads should be untangled and plugged into the ECG machine
- You should have sufficient patient contacts (ECG biotabs)
- Switch the ECG machine on and allow it to perform its self check

- Ensure the machine has enough paper to print the trace

The Patient

- Ensure the patient is comfortable in bed, rested and warm
- The arms and legs should be exposed as should the front of the chest
- Apply the patient contacts as described on this and the next page
- Ensure the patient is not shivering or otherwise moving before starting to record the trace

The Trace

- Check the ECG machine is correctly set up (speed of paper 25 mm/sec, and calibration 1mV = 1cm)
- Switch the machine to record and it should automatically record all the leads simultaneously
- The 12 Lead ECG should be printed off
- Quickly scan the trace to ensure it has been correctly taken and does not have any artefacts (repeat the trace if there are any • problems)

Completion

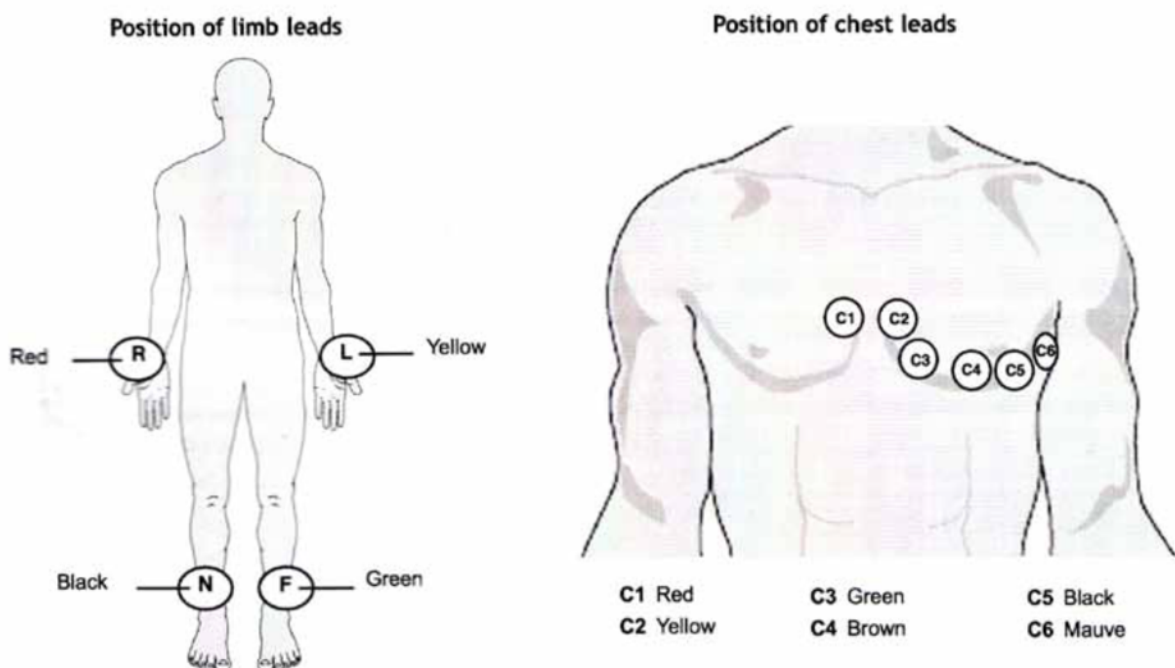
- Disconnect all the leads and carefully tidy the leads - leave unknotted
 - Remove all the ECG biotabs. DO NOT stick these onto your own skin.
 - Ensure the patient redresses, is comfortable and has no immediate questions •
- Correctly label the 12 Lead ECG
- The patient's name,
 - Date of birth,
 - CHI number (community health index - number is patient's DoB and four other digits),
 - Date and time ECG was taken,
 - Any symptoms the patient experienced over the time the ECG was taken (e.g. chest discomfort)
- Tell the patient that you will return to explain the results from the ECG

Position of the leads to take a 12 lead ECG

The four limb leads should be attached on the inside of the wrists and ankles. On the wrist the tabs on the patient contacts should point downwards while the contacts on the ankles should have the tabs pointing upwards. The colour coding for the limb leads is universal and the leads will be labelled to indicate the limb they should be attached to.

On all patients make sure the patient is not sweaty or the skin is otherwise moist - dry the skin to provide a good contact

The chest leads are attached across the front of the chest and are often called V or C. There is no difference with this nomenclature. You may find that different ECG machines may colour the chest leads differently - each lead is clearly numbered whatever the colour.



The surface points of contact for the chest leads are

- V/C 1 = 4th intercostal space to the right of the sternum
- V/C 2 = 4th intercostal space to the left of the sternum
- V/C 3 = midway between Leads 2 and 4
- V/C 4 = 5th left intercostal space midclavicular line
- V/C 5 = same level as Lead 4 anterior axillary line
- V/C 6 = same level as Lead 4 mid axillary line

While there are other chest lead positions that can be taken for special reasons those described here are the conventional positions which you should know. It is very important that lead placement is correct as often ECGs are compared over time to provide a diagnosis and if the lead position changes then the ECG may be misinterpreted.

Troubleshooting ECG problems

Common problems include

- base line wandering, interference (ensure the filter button is on), - poor contact (use cardioprep to clean skin)