

3-Lead ECG Acquisition

Aim

To safely and effectively acquire a diagnostic quality 3-lead ECG

Indications

A 3-lead ECG (electrocardiogram) should be taken on any patient who has a suspected cardiac complaint, including suspected acute myocardial infarction, unstable angina, or any unstable patient with a history of cardiovascular disease. As a general rule, pain located between the naval and the head should be investigated with an ECG.

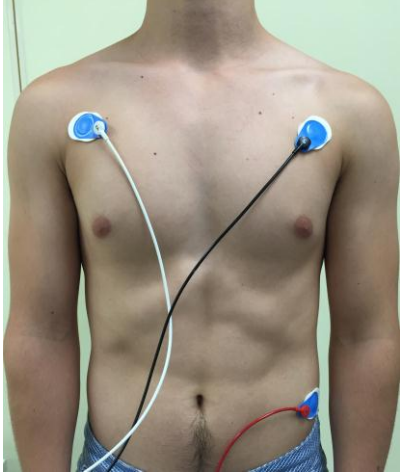
Background

An ECG is a diagnostic test that analyses the cardiac conduction system giving the clinician insight into the health of the heart and disease process, which the patient may be suffering from. Many patients calling for emergency care will either have an acute cardiac emergency or have a past medical history of cardiac disease. An accurate assessment of the patient increases accuracy of diagnosis, triage and management of the patient. This not only allows for timely intervention but also decreases long-term morbidity and mortality rates of patients.

Skill sheet does **NOT** include ECG interpretation, as this is a separate skill.

It is controversial as to whether the electrodes should be placed on bony prominences or on muscle tissue. There are currently no clinical trials that suggest one method is more effect than the other. Placing the electrodes on either site will produce a clear ECG if the patient is breathing normally and is still.

Objective	Rationale	Action
Manage Safety	Safety is the first priority in managing any patient.	<ol style="list-style-type: none"> 1. Use universal precautions. Always wear gloves and goggles when attending to a patient. 2. You may also want to consider wearing a face mask and gown.
Prepare equipment	To efficiently take an ECG, you must know what equipment is required and how it is used.	<ol style="list-style-type: none"> 1. Collect the ECG machine (MRX), the appropriate cables (red, white and black cables), ECG dots and skin preparation equipment (shaver, skin cleanser).
Consider patient privacy	<p>Taking an ECG may require that the patient bare their chest.</p> <p>Ensure that you have all of your equipment assembled before you start the ECG to minimise the time the patient is required to be exposed.</p>	<ol style="list-style-type: none"> 1. Identify an appropriately discreet, safe and comfortable location to acquire the ECG.
Prepare patient	<p>Good communication with patients reassures them and reduces anxiety.</p> <p>This will make the patient more compliant and improves the patient's experience.</p> <p>An effective ECG requires a patient to be still. This reduces 'artefact', which is distortion in the ECG due to movement.</p> <p>While the patient's chest is exposed, continue to ensure the patients privacy and dignity is maintained.</p> <p>Prepare the chest, ensuring that the ECG "dots" adhere effectively to the chest to optimise the quality of the ECG.</p>	<ol style="list-style-type: none"> 1. Explain the ECG procedure to the patient and gain consent. E.g. "Is it okay with you if we perform an ECG, it involves some sticky dots that go on your chest and helps us to have a look at the electrical activity of your heart?" 2. Place the patient in a comfortable position that minimises movement and maintains dignity, eg. sitting on a chair or lying down. 3. Make sure the electrode placement sites are clean and dry; this may involve shaving the patient if excessively hairy or cleaning the skin with an alcohol swab or clean dry cloth.

<p>Adhere electrodes</p>	<p>Connecting the leads to the electrodes prior to attaching them to the patient aides in ease of application.</p> <p>Incorrect placement of the leads can alter the accuracy, and therefore the diagnostic quality of the ECG. Therefore correct placement of the leads is essential.</p> <p>Ideally, you want the leads connected to the patient in the optimal positions as detailed right. However, there are alternate positions for the leads if you cannot gain access to their waist or chest such as: wrists for arm leads, and lower legs for leg/limb leads.</p> <p>TIP: An easy way to remember the lead placement is to say “West Beach Road” while you’re placing them, from right top to left bottom. White Black Red.</p> <p>The button to the top right of the screen is used to toggle between the leads (Lead I, Lead II, Lead III, and PADS).</p>	<ol style="list-style-type: none"> 1. Connect the ECG leads to the electrodes by pressing the buttons together. 2. Place the ECG electrodes in the correct anatomical positions. <p>Right arm = RA = White Left arm = LA = Black Left leg = LL = Red</p>  <ol style="list-style-type: none"> 3. Turn on MRx to “monitor” setting by turning the green dial. 4. Ensure there is a signal for all leads displayed. If signal is absent, double check connections and electrode contact with skin. 5. Check ECG display is satisfactory and relatively free from artefact (interference) then print a 10 second strip of each lead (I, II and III) by pressing the print button to start printing and pressing it again to stop printing.
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