



CARDIOLOGY: How to Get the Perfect ECG

Introduction

You hear an arrhythmia when listening to your patient, and need an ECG. What if your ECG quality is less than ideal? Instead of a beautiful ECG, does it look more like a lie detector test? Here's a list of tips to help you get a better one.

Knowing your machine

1. Locate the filter button to help decrease 60-cycle interference commonly seen when sharing electrical outlets with other equipment. Remember that other outlets may also be on the same circuit. Try to use a solitary outlet. If needed, unplugging the machine (if there is battery power), or unplugging other equipment may help to reduce this artifact. Sometimes, it's necessary to make sure that electrical cords from other equipment are not touching cords for your ECG machine.
2. Run your ECG at both 25mm/sec and 50mm/sec paper speeds. This will allow you to critically analyze your ECG for cardiac enlargement patterns and arrhythmias.
3. Adjust your ECG amplitude so that the full ECG fits on your paper. Standard amplitude is 10mm/mV. Take note of what amplitude you are using, as this is important when evaluating your ECG for cardiac enlargement patterns.
4. Run all leads (Lead I, II, III, avR, avL, avF) if possible. This will allow you to look at complexes from all angles, making it easier to evaluate completely.
5. Run a lead II rhythm strip for 3-5 minutes if you can. Some intermittent arrhythmias are hard to document.

Patient cooperation

1. Place your patient in right lateral recumbency on a towel or blanket. Laying them on a metal table may result in artifact on your tracing. Use two people for restraint if needed to keep your patient calm and quiet.
2. Avoid sedation if possible. Some anesthetics such as domitor and ketamine may affect the heart rate and rhythm. If you must sedate your patient, consider diazepam, torbugesic or midazolam.
3. Make sure that the leads are on the proper limbs: white – right forelimb, green – right hind limb, black – left forelimb, red – left hind limb. "*Grass and Snow are on the ground, and Christmas comes at the end of the year*" helps us remember that the white and green leads should be attached to the right limbs (near the ground), and the green and red leads should be on the hind limbs.
4. Place the ECG clips on the limbs close to the trunk. It is easier to get an adequate amount of skin here than distally, and this will help minimize movement artifact. However, if your patient is panting and has significant respiratory motion, placing the leads more distally may help clean up respiratory artifact.
5. Avoid having the machine wires drape across the body, chest, or other limbs as this may result in movement or respiratory artifact.
6. Try holding the wires in your hand out perpendicular from the body if shaking or respiratory artifact is present.

7. Use lots of alcohol on the clips and skin. You can use ultrasound gel as well but alcohol generally tends to work better.
8. Make sure that you label your ECG with the patient's name, the date and time.

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Our board-certified cardiologists are available for consultations at our Southfield and Grand Rapids hospitals. Emergency phone consults and echocardiograms with a boarded cardiologist are also available after hours by calling our emergency service.

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