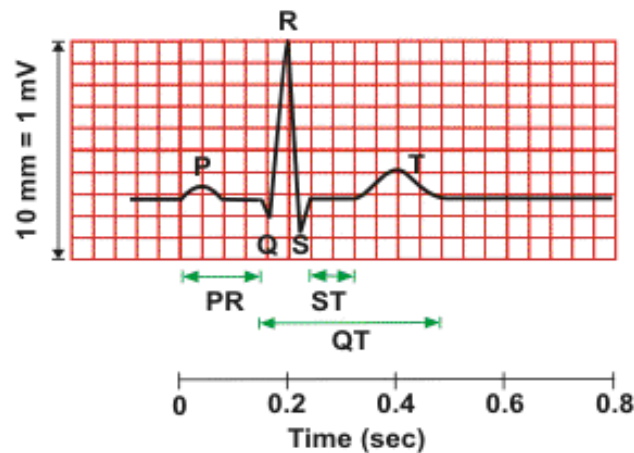


ELECTROCARDIOGRAPHY

The ECG strip shows the normal ECG wave which contains P, Q, R, S, and T intervals.



P wave (0.08 - 0.10 s)	QRS (0.06 - 0.10 s)
P-R interval (0.12 - 0.20 s)	Q-T _c interval (≤ 0.44 s)*
	*QT _c = $\frac{QT}{\sqrt{RR}}$

Patient: What's ECG for?

Doctor: ECG or Electrocardiography is an interpretation of the electrical activity of the heart over a period of time, as detected by electrodes attached to the outer surface of the skin and recorded by a device external to the body. An ECG is the best way to measure and diagnose abnormal rhythms of the heart, particularly abnormal rhythms caused by damage to the conductive tissue that carries electrical signals, or abnormal rhythms caused by electrolyte imbalances.

Patient: Why do I need that for?

Doctor: An ECG will help find the cause of symptoms such as palpitations or chest pain. Sometimes it is done as part of routine tests – for example, before you have an operation.

Patient: Can you tell me what P wave is?

Doctor: P wave represents the wave of depolarization or the time wherein the heart conducts electrical impulses throughout the heart, and is usually 0.08 to 0.1 seconds (80-100 ms) in duration. An abnormal P wave may designate a cardiac or sinus rhythm.

Patient: What about P-R interval?

Doctor: The period of time from the onset of the P wave to the beginning of the QRS complex is termed the P-R interval, which normally ranges from 0.12 to 0.20 seconds in duration. If the P-R interval is >0.2 sec, there is an AV conduction block, which is also termed a first-degree heart block if the impulse is still able to be conducted into the ventricles.

Patient: What does QRS complex corresponds to?

Doctor: The QRS complex represents ventricular depolarization, which is normally 0.06 to 0.1 seconds. If it is prolonged or reaches more than 0.1 seconds, conduction is impaired in the ventricles. The shape of the QRS complex may change depending on which recording electrodes are being used. It will also change when there is abnormal conduction of electrical impulses within the ventricles.

Patient: And how about the Q-T interval?

Doctor: The Q-T interval represents the time for both ventricular depolarization and repolarization to occur, and therefore roughly estimates the duration of an average ventricular action potential. This interval can range from

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0.2 to 0.4 seconds depending upon heart rate. At high heart rates, ventricular action potentials shorten in duration, which decreases the Q-T interval.

Patient: How is ECG done?

Doctor: You will be brought into a cubicle in the diagnostic department by a technician. He will ask you to remove all your top clothes. If you are wearing knee length stockings or tights you will need to remove them. When you are undressed you will be asked to lie flat on the examination couch. The technician will apply small stickers called "electrodes" to your wrists, ankles and your chest, generally 10 electrodes in all. He will then attach the electrodes to the E.C.G. machine via small cables. Once all the electrodes are in place you will be asked to try and relax and stay still for approximately one to two minutes. This may be extended if more information is required. The technician may ask you to take a deep breath in and to hold your breath for a few seconds. Once the E.C.G. is completed the E.C.G. machine prints out a graph of your heart rhythm. The technician will remove the electrodes. The test generally takes about 5 minutes.

Patient: How will I prepare for this test?

Doctor: Make sure your health care provider knows about all the medications you are taking, as some can interfere with test results. Exercising or drinking cold water immediately before an ECG may cause false results.

Patient: What will I feel after the test?

Doctor: An ECG is painless. No electricity is sent through the body. The electrodes may feel cold when first applied. In rare cases, some people may develop a rash or irritation where the patches were placed.

Patient: Are there risk in doing this test?

Doctor: There are no risks. No electricity is sent through the body, so there is no risk of shock.

TEST YOUR KNOWLEDGE:

- **Who can undergo ECG?**
- **How is ECG being done?**
- **What are the important things to do before undergoing ECG?**