

# Electrocardiography: Intermittent and Continuous

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## Purpose of Procedure

Electrocardiography is performed if an abnormal heart rhythm (arrhythmia) is suspected or unexplained collapsing or fainting episodes occur. Intermittent electrocardiograms (ECGs) can identify continuous or constant arrhythmias. If the arrhythmia is not present at all times, it may be recommended that your animal wear a Holter monitor or an event monitor at home. Continuous monitoring may also be done in the hospital, especially if the arrhythmia is frequent or is being treated.

## Description of Technique

An ECG is a recording of the electrical activity of the heart; it does not give information on how well the heart is contracting. An ECG machine is attached to the animal by special alligator clips that have been filed down and bent outward so that they do not pinch the skin too forcefully. Several clips and leads may be applied to the legs and the chest. A *routine ECG* is run for a few minutes and is printed out so that your veterinarian can read it or send it to a specialist for interpretation. Several telephone transmission services are available for sending an ECG to a specialist for interpretation. Some veterinarians are very experienced in reading ECGs and are comfortable interpreting them.

In *telemetry monitoring*, a transmitter is attached to the animal's chest and sends the ECG signal to a monitor located nearby. The ends of the ECG electrodes are snapped onto a sticky patch that is attached to the animal's skin (after hair is shaved from the site so that the patch will stick), making the device comfortable enough for continuous use. Telemetry is used for hospitalized animals, and it allows 24-hour continuous ECG monitoring without having the animal physically attached to an ECG machine. Telemetry units have limited range, usually several meters. They come with audible alarms that are triggered if an abnormal heart rhythm occurs.

A *Holter monitor* is a device used for recording the ECG on an outpatient basis. It contains either a tape or a digital recorder and is attached to the animal for 24 hours. The ECG leads are attached to the animal by a method similar to telemetry monitoring. The Holter monitor is taped and bandaged to the animal's chest (small

animals) or worn in a specially designed jacket (larger dogs). Some of the devices are too big for very small animals to carry around.

The Holter monitor continuously records the ECG for 24 hours; it is then removed, and the entire tracing is printed out. While your animal is wearing a Holter monitor, it is very important to keep a diary of your pet's activities. The person interpreting the 24-hour tracing needs to know when your animal was sleeping, when it was active and running around, and when it had a fainting episode. The diary is returned with the monitor. Without a record of the exact times of these events, the Holter tracings cannot be accurately interpreted.

An *event monitor* is a smaller device that is attached to the animal in a fashion similar to a Holter monitor. Because of its smaller size, it can be used in cats and small dogs. It is used when an animal is not having a daily problem but might be having fainting episodes every few days to once weekly. An event monitor does not record the ECG unless a button is pushed. If the animal is observed having a problem, the button is pushed, and the monitor then records the ECG for 2 minutes. Up to four events can be recorded over 2 weeks. The event monitor is then removed and attached to a machine that prints out the ECG tracings for examination by your veterinarian or a specialist.

## **Preparation of Animal**

Little preparation is needed for any of these ECG methods. If sticky patches are used, a small area of fur will be shaved where the patch attaches to the skin.

## **Potential Complications**

Electrocardiography is a very safe procedure. The most common complications are removal of the electrodes by the animal or loosening of the bandage holding the monitor or transmitter to the chest.

## Follow-up Care

Frequent ECGs or repeat monitoring may be done to evaluate how well anti-arrhythmia medications are working, especially until the arrhythmia is controlled. The frequency of other follow-up visits and testing is based on the cause of the arrhythmia.