



What is an arrhythmia?

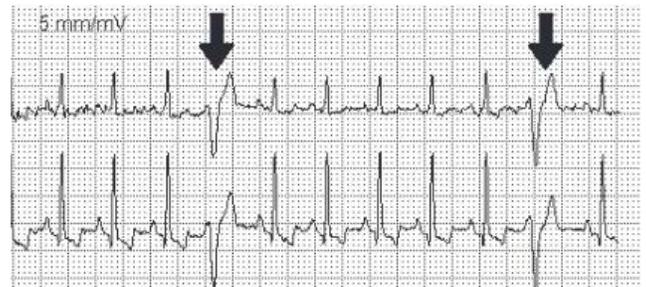
An arrhythmia is an irregular heartbeat caused by a disturbance in the electrical signal that passes through the heart. This signal controls the alternate squeezing and relaxing of the muscle's two chambers: first, the upper chambers (the atria), followed closely by the lower chambers (the ventricles). A disturbance in the electrical signal disrupts the rate and rhythm of contraction. In dogs and cats, arrhythmias may result from structural changes in the heart muscle itself, electrolyte abnormalities, tumors, or other disease processes in the body.

What are the symptoms of arrhythmias?

A pet's early symptoms of an arrhythmia may be nonspecific or variable, making it difficult to recognize as a heart problem. For instance, your pet may tire easily, pant excessively, or have labored breathing at times. At more advanced stages, animals can display signs of weakness, collapse, or even suffer sudden death. There is also the chance that arrhythmias can lead to congestive heart failure (fluid in the lungs, chest, or abdomen).

How are arrhythmias diagnosed?

During a pet's physical examination, a veterinarian can often detect an arrhythmia by listening to the heart or feeling the animal's pulse. If an arrhythmia is suspected, your veterinarian will likely suggest an electrocardiogram (ECG or EKG) to confirm and characterize the arrhythmia. Your veterinarian may recognize that this is a complex or life-threatening arrhythmia and refer you to a specialist for further work-up. To confirm a suspected arrhythmia and/or gauge its severity, your pet can be fitted with a Holter monitor. This small device records the heart rate and rhythm over a 24-hour time period and is most often recorded in the home setting.



The arrows on this ECG point to abnormal ventricular beats called VPCs.

Are there different types of arrhythmias?

Arrhythmias are largely categorized as fast or slow. Fast arrhythmias arise from either the top or bottom chambers of the heart; they're called atrial and ventricular arrhythmias, respectively. A slow arrhythmia may arise from a problem in the creation of the electrical stimulation (Sick Sinus Syndrome), or the signal may be blocked so that it cannot spread between chambers (AV nodal disease).



This ECG shows Sick Sinus Syndrome in a dog. The arrow points to a pause in heart beats.

What is the treatment for fast arrhythmias?

Some animals with fast arrhythmias simply require monitoring for progression. Others may require life-long medications to help control the arrhythmias. While some patients respond to the initial therapy, some take a few adjustments to see a response. A patient with life-threatening arrhythmias may receive intravenous medications in the hospital with the ultimate goal of transitioning to oral medications to receive at home. Follow-up electrocardiograms and Holter recordings are helpful to determine the response to treatment.

What is the treatment for slow arrhythmias?

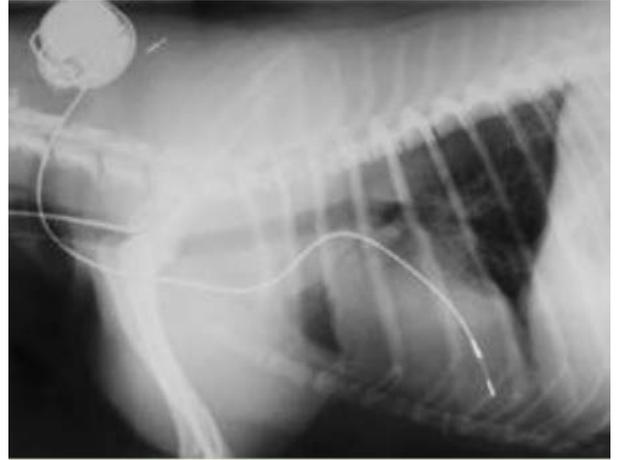
Medications can be given to speed up slow heart rates; however, the response tends to be poor or temporary. An internal pacemaker is often recommended when animals show signs of weakness or collapse due to slow heart rates. Veterinary cardiologists are skilled in permanent pacemaker implantation. (continued...)



This is a minimally invasive procedure requiring just a small incision and most patients are discharged the day after the pacemaker is placed. Patients quickly return to a normal level of activity, but must be rested for a few weeks after discharge. Pacemaker rechecks are yearly after the first recheck.

What is the prognosis?

The prognosis for fast arrhythmias can vary significantly depending on the severity. Intermittent arrhythmias that require monitoring may have no impact on quality or extent of life; in contrast to fast/severe arrhythmias which may cause weakness, collapse, or even sudden death. The prognosis is improved if the patient responds to medications. Rechecks are important as a once well-controlled arrhythmia may progress to severe, requiring medication adjustments. For slow arrhythmias where patients have a permanent pacemaker implanted, the long-term prognosis is excellent. Without a pacemaker, symptomatic patients usually have a poor quality of life.



This x-ray shows a dog who has been implanted with a pacemaker. The pacemaker is implanted in his neck and the lead goes into his heart.