

Ventricular Arrhythmias

What is ventricular arrhythmia?

- Ventricular premature contractions (VPCs) are abnormal electrical impulses originating from the bottom chambers of the heart (the ventricles).
- VPCs cause an early heartbeat where there is not appropriate filling of the ventricles prior to contraction, causing there to be reduced blood flow out of the heart during that heartbeat.
- Ventricular arrhythmias can be mild, with a single abnormal VPC or they can be more severe in number.
- Multiple ventricular beats in a row is called ventricular tachycardia, which can be life threatening.
- Ventricular tachycardia can cause fast and unstable heart rate and rhythms, resulting in clinical signs of exercise intolerance, weakness, collapse, and sudden cardiac death.

What causes ventricular arrhythmias?

There are many causes of ventricular arrhythmias, including:

- Scar tissue formation secondary to heart disease
- Inherited or familial arrhythmias (ex: arrhythmogenic right ventricular cardiomyopathy, Inherited ventricular arrhythmia in German Shepherd Dogs)
- Systemic disease (ex: disease/tumors in the spleen, liver, adrenal glands; infection)
- Electrolyte abnormalities (ex: abnormal levels of potassium, magnesium, calcium, etc.)
- Drugs

How are ventricular arrhythmia diagnosed?

- Veterinarians can be suspicious of premature beats by listening to the heart rhythm with a stethoscope, but a definitive diagnosis is with an electrocardiogram (ECG).



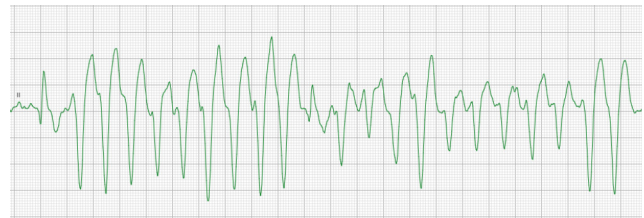
ECG of a dog with a normal heart rhythm that is interrupted by singlet VPCs (denoted with stars).

When do we treat?

- The cardiologist will assess your pet's risk for symptoms from the arrhythmia to determine a treatment and monitoring plan.
- Treatment generally involves antiarrhythmic medication. There are IV antiarrhythmic medications for use in the clinic or if your pet needs to be hospitalized, as well as oral formulations for your pet to take at home.

Follow up plan:

- It is important to have follow up ECGs (+/- ambulatory 24 hour ECG termed a Holter monitor) to assess if the management plan is working and to help make adjustments.
- The cardiologist may also discuss the options for at-home monitoring of the heart rate (see separate link/handout).
- Often a single medication can help control the ventricular arrhythmia although it may not completely resolve the arrhythmia. In some patients, multiple medications for the arrhythmia may be needed. Frequent reevaluations of the ECG and or the Holter monitors are important during the early stages after the diagnosis of this arrhythmia along with managing any concurrent medical issues. Once the rhythm is determined by your cardiologists to be well controlled, on some occasions medications can be stopped but are often continued for the long term. Continued routine monitoring of ECGs and Holter monitors are often recommended.



ECG of a dog. The first heartbeat on the left is normal, followed by a run of ventricular tachycardia.