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[Cardiomyopathy](#) refers generally to failure of the heart muscle. [Boxers](#) are one of several breeds with a higher chance of contracting cardiomyopathy—specifically one type of cardiomyopathy. It's called Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) and, although seen in other breeds as well, it's often called Boxer cardiomyopathy. ARVC is characterized by a fatty infiltrate of the right ventricular muscle. It's a hereditary condition that generally produces no indication of disease until adulthood.

Symptoms of ARVC in Boxers

There are three clinical forms of ARVC:

- The concealed form, which may have no clinical signs at all. (Dogs appear totally healthy but ECG/Holter evaluation shows arrhythmias.)
- The overt form; dogs with this form show clinical signs including [collapse](#), [weakness](#), and/or [fainting](#).
- Myocardial failure and resultant heart failure. Signs include syncope and fainting (Heart rates can be as high as 300 beats per minute. Since it takes 6–8 seconds of no blood flow to the brain to result in unconsciousness, the tachycardia must last for that long for the dog to lose consciousness.)

ARVC can lead to [congestive heart failure](#) and sudden death depending on the form and stage.

Detection of ARVC in Boxers

Because many affected dogs are without symptoms, we really don't know how common the disease is. Abnormal cardiac rates and rhythms can occur in dogs not affected. When listening to the heart, it is not uncommon to hear occasional extra or absent beats in any dog. These abnormalities do not necessarily indicate cardiomyopathy in any [breed](#) or ARVC in a boxer. The diagnosis must then be based on a

combination of factors including:

- A family history of ARVC
- Presence of ventricular arrhythmias (abnormal heart rhythm)
- History of syncope (fainting)
- Exercise intolerance

The diagnosis can be confirmed by excessive numbers of abnormal beats over a 24 hr period. While a regular ECG is able to detect these beats, it only evaluates beats over a short period of time. A device about the size of a deck of cards, called a Holter monitor, can be used to monitor the heart for longer¹.

Genetic testing is available but while a positive genetic test confirms the presence of the disease, a negative test does not rule it out. There are two known genetic mutations resulting in ARVC in Boxers, so the absence of one may have no predictive value. Additionally, it is likely other mutations will be discovered in dogs down the road.

Treatment of ARVC in Boxers

Management of a complex cardiac disease, like cardiomyopathy, requires an experienced clinician. If your veterinarian is unfamiliar with this disease seek out a veterinary cardiologist.

- Arrhythmia is often treated with antiarrhythmic drugs. Nutritional supplements such as L-Carnitine or Omega-6 fatty acids².
- Congestive heart failure is treated classically using drugs to enhance and strengthen contractions, prevent fluid retention and reduce the pressure against which the heart pumps.

Prognosis of ARVC in Boxers

The course of this disease is unpredictable. Even with treatment, sudden death may occur. Some affected dogs can live for years, others may die unexpectedly. Arrhythmias may respond to medical management but congestive heart failure carries a much worse prognosis.

Prevention of ARVC in Boxers

Unfortunately there is no known way of preventing the disease in genetically affected dogs. Because the condition is hereditary, one of only a few preventive

steps to take is selective breeding. Dogs who test positive genetically or who are diagnosed as having the disease or even who come from lines where the disease is known to exist should not be bred.

Watching for clinical signs or even a regular physical examination is not sufficient. By then you may be too late to affect response. The best way to monitor for the presence of Boxer cardiomyopathy is regular cardiac evaluation which may include Holter monitoring and echocardiography. Annual [checkups](#) may allow for an early diagnosis.

Questions for your veterinarian

- I am thinking of bringing a Boxer into my family but I understand they are predisposed to heart disease. What are the chances my dog would have heart disease?
- What should I do if my Boxer faints?

If you have any questions or concerns, you should always visit or call your veterinarian -- they are your best resource to ensure the health and well-being of your pets.

Resources:

1. [Holter Monitor \(24h\): MedlinePlus Medical Encyclopedia." Holter Monitor \(24h\). U.S. National Library of Medicine, n.d. Web. 26 Sept. 2014.](#)
2. [Arrhythmogenic Right Ventricular Cardiomyopathy." Veterinary Cardiology. Cardiac Care for Cats, n.d. Web. 26 Sept. 2014.](#)