

CARDIAC TESTING IN DOGS

Some types of heart disease are remarkably difficult to diagnose, yet heart disease is very common. 5 -15% of dogs and cats have heart disease. It's important to diagnose heart problems early for the best possible outcome and longest life expectancy. Doberman pinschers, for example, have a two-year longer lifespan if their heart disease is caught early.

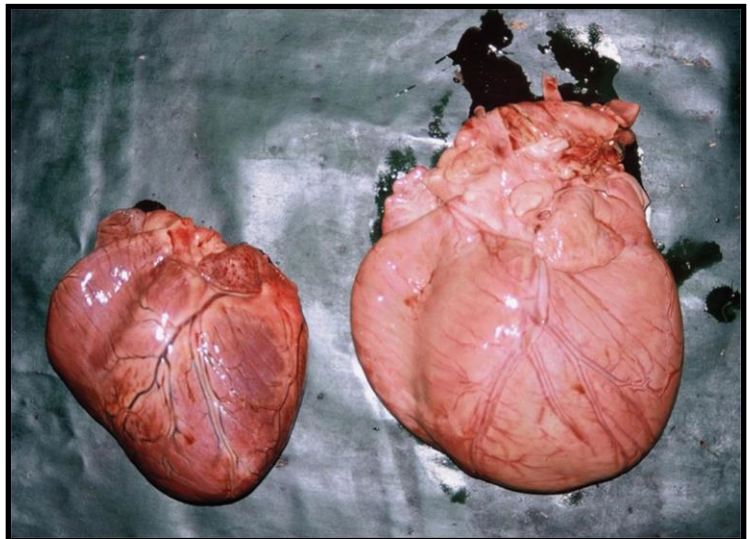
We have many medications for heart disease but we first have to recognize that a problem exists. A **ProBNP** blood test makes screening for occult (hidden) heart disease easier. Other heart disease tests are the electrocardiogram, or **ECG**, and the **echocardiogram**, commonly called an echo. **Chest x-rays** are also used to both diagnose heart disease and to monitor disease progression.

There are many types of heart disease in dogs

The most common types of heart disease in dogs are mitral valve insufficiency (MVI), where a valve inside the heart wears out; and dilatative cardiomyopathy (DCM), where the heart becomes dilated and flabby. Smaller breeds of dogs are more prone to valve disease and larger breeds are more likely to get DCM. Valve disease causes a heart murmur we can hear with a stethoscope but DCM does not, making it harder to diagnose.

This picture shows a normal heart on the left and a heart with DCM on the right. The DCM heart is becoming larger and rounder while the thickness of the heart walls is decreasing. It is becoming a flabby, inefficient pump. DCM

It can sometimes be difficult to tell whether symptoms such as coughing and shortness of breath are coming from heart or respiratory disease. Many small dogs with heart disease also have respiratory problems such as collapsing trachea. The ProBNP test is especially useful for these dogs, because it helps us to determine whether cardiac disease is present. Chest x-rays look at both the heart and the respiratory system, so chronic coughing usually prompts us to do both ProBNP testing and chest x-rays.



Testing recommended for your dog:

- ProBNP blood test
- Electrocardiogram (ECG)
- Chest x-rays
- Echocardiogram ("echo")

Testing for Dilatative Cardiomyopathy

There are several different tests we can do to look for DCM. Which ones we choose as our screening tests will depend on the breed of dog and the dog's diet.

DNA testing is available for boxers, who are prone to a particularly deadly form of cardiomyopathy. Boxers can die of DCM at a very young age, especially if they inherit two copies of the defective gene that causes the disease. **DNA testing is recommended in boxer puppies** if the parent dogs have not been screened or if one or both parents is a carrier. Boxers with two copies of the gene have more severe disease and usually die at a young age. If they have one copy of the gene DCM is usually more mild and starts later in life.

Doberman pinschers also have a genetic form of DCM that can start early. 5% of Dobermans die of DCM every year. This is another breed where careful screening is recommended, including both ProBNP and ECG.

Cavalier King Charles spaniels, American and English cocker spaniels and English springer spaniels are also at high risk. These breeds are more likely to have a heart murmur associated with their DCM, which makes it easier to detect.

Many large breeds, such as boxers, Dobermans, Dalmatians and all types of retrievers, tend to have abnormal heart rhythm associated with their DCM. Most giant breeds do not. We are much more likely to recommend ProBNP screening in giant breeds, whereas we can use either test in large breed dogs.

Bulldogs may have both DCM and other types of irregular heart rhythm as well, so doing both tests is especially important in this breed.

The ProBNP test measures the level of cardiac enzymes in the bloodstream. It can help to diagnose DCM and evaluate the severity of the heart problem so we can deliver appropriate treatment.

It is highly recommended to do ProBNP testing annually for the specific breeds of dog that are prone to DCM, often along with an electrocardiogram (ECG). We also consider proBNP when blood test screening is already being done, because it's relatively inexpensive to do it along with wellness bloodwork panels. We will usually recommend it be done with any wellness, pre-anesthetic or senior screen, especially for at-risk breeds.

Diet-related heart disease

Breed risk is one factor that can cause heart disease. Another is a dog's diet. Grain-free diets cause heart disease in dogs. We recommend not feeding your dog a diet without grain unless it's a

Breeds at high risk for DCM:

- Boxer
- Bulldog
- Cavalier King Charles spaniel
- Doberman pinscher
- English cocker spaniel
- English springer spaniel
- All the giant breeds

It is estimated that 90% of DCM cases seen by veterinary cardiologists nowadays are being caused by the dog's diet!

prescription diet made to treat a specific disease problem. Prescription or therapeutic diets are required by the FDA to have been tested through feeding trials to show they are both safe and effective.

The ProBNP enzyme is released from heart muscle cells in response to “wall stress.” The cells are stretched or damaged as the heart enlarges and they start leaking muscle enzymes. The more stressed or damaged the muscle, the higher the levels will be. Test results will be normal, mildly high or high.

HEART DISEASE =

The heart has structural abnormalities, but it still maintains its ability to pump blood adequately.

HEART FAILURE =

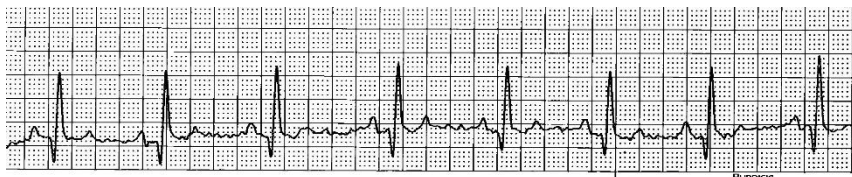
The diseased heart can no longer compensate and symptoms are appearing, such as trouble breathing and exercise intolerance.

What happens if my dog tests positive?

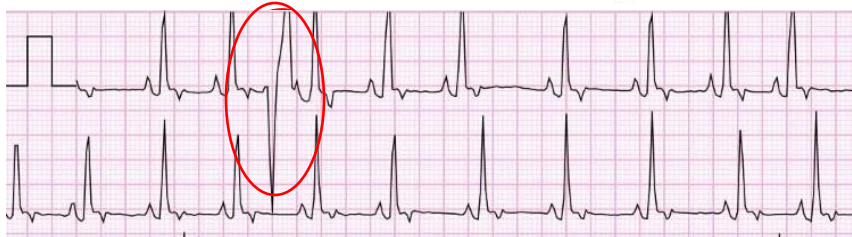
If a dog seems normal but the proBNP level is in the mildly high range we will wait three months and test it again. If anesthesia is needed more urgently we may recommend further testing sooner.

If the level is high or we have other signs such as a heart murmur or abnormal heart beats on ECG, we will recommend an echocardiogram (an ultrasound of the heart performed by an ultrasonographer, radiologist, veterinary internist or cardiologist, about \$450) and chest x-rays, to confirm whether heart disease exists. If heart failure is present, we will see fluid build-up in the chest or abdomen on the x-rays.

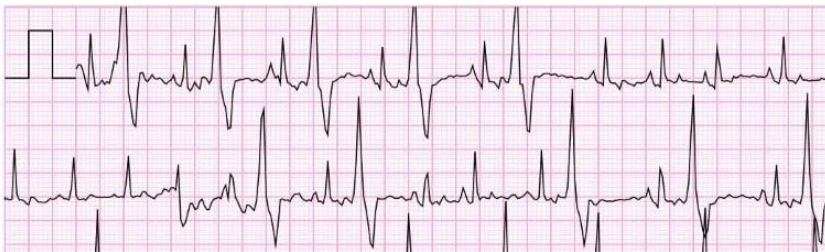
The electrocardiogram (ECG)



This is a normal ECG



This ECG shows a single abnormal beat called a VPC. Occasional abnormal beats are not always dangerous. Further testing would be recommended.



In this one, there are almost as many VPCs as there are normal beats. An echocardiogram and medication is needed on an urgent basis.

There are several types of heart disease that are abnormalities in the electrical signal as it travels through the heart. Some of these can have genetic causes but we don't have DNA tests to screen for them. The ECG test screens for both DCM and these other types of problems, which are referred to as arrhythmias.

The echocardiogram (“echo”)

We are currently offering echocardiograms once a month. They are done by a traveling ultrasonographer. The images are sent to a cardiologist for interpretation and we receive a detailed report and treatment plan within hours. In an emergency we can request a special visit from our regular ultrasonographer or we can send you and your pet to an emergency clinic.

If the echocardiogram shows an enlarged heart with heart muscle thinning, the pet has DCM. Valvular disease, such as mitral valve insufficiency (MVI), causes heart enlargement because blood is leaking back around the damaged valve, causing back pressure. The echo can show how much blood flow is going in the wrong direction and how enlarged the various chambers in the heart are. The specialist will recommend medications and tell us whether it is likely to be safe to perform anesthesia. Medication and rechecks will be needed regularly afterwards.

If the heart looks normal on echocardiogram now, we will continue to monitor the ECG or proBNP in the future and will recommend an echocardiogram again if it changes significantly later on. Heart disease is progressive and can start very mild but become more serious later on.

Is heart disease treatable?

Valvular heart disease is very common and very treatable. If diagnosed early and treated properly, most affected dogs will have normal life expectancies. DCM can be a deadly disease but it is treatable if we can find it. The prognosis is poor with a late diagnosis and with some of the severe genetic forms of DCM.

Heart failure progresses and begins with mild signs. Not all disease will progress to failure but most will worsen with time. Symptoms to watch for include panting or open mouth breathing, tiring quickly and inactivity. Severe signs include sudden death, respiratory distress (open mouth breathing/panting) and painful blood clots that may be fatal. Symptoms may be so mild the pet owner doesn't notice them, but when stressed with heat, heavy exercise or anesthesia the pet may die suddenly.

Early detection and treatment can prevent/slow disease progression and of course could save your dog's life. It's so much better to find out there is a problem and manage it! We are looking for subclinical disease prior to onset of signs so we can intervene with treatment. If we diagnose DCM in its early stages we can prolong life expectancy by several years in many cases.