

Heart Disease

Little has been written about heart disease in rabbits. It is thought that the sudden death of many outdoor hutch rabbits is the result of a heart attack brought on by fear of danger — either real or perceived. However, owners who keep their rabbits outdoors rarely have a necropsy (the veterinary equivalent of an autopsy) done.

With rabbits living to an older age and rabbit caretakers becoming more educated about various diseases and what to watch for, veterinarians across the country are beginning to see and treat more rabbits with heart disease. Today we are breaking new ground, but as more cases are treated, more will be learned and hopefully heart disease in rabbits will become as treatable as it has become in humans.

Types of Heart Disease

Heart disease, in humans as well as animals, is most often thought of as a disease of the elderly, something that happens when the heart simply begins to “wear out.” However, it is important to remember that there are congenital heart problems resulting from improper development before birth. Heart disease can also be caused by infection (bacterial, viral, parasite, or fungal) which can strike at any age. If you notice the symptoms described in this section, consult your veterinarian immediately. Don’t assume your rabbit is too young to have heart disease.

The following are some of the heart conditions veterinarians are already seeing and treating with some success:

- **Cardiomyopathy.** Any disease that affects the **myocardium** (muscle of the heart wall), usually resulting in an enlarged and less efficient heart.
- **Pulmonary Congestion.** Excessive accumulation of fluid in the lungs.
- **Congestive Heart Failure (CHF).** Abnormal condition that reflects impaired cardiac pumping caused by an MI, ischemic heart disease, or cardiomyopathy. Symptoms may include pulmonary congestion or peripheral edema (swelling).
- **Tachycardia.** Rapid heart beat.
- **Arrhythmia.** Irregular heart beat.

In a few cases, autopsies have identified heart attack or heart failure as a likely cause of death. Because rabbits are herbivores, they **may** be less likely than humans to suffer from some heart ailments such as high blood pressure and hardening of the arteries, which are thought to be partially related, in humans, to the amount of fat in our diets (especially meat and dairy products).

Symptoms

The first symptoms of heart disease that will be visible to a rabbit caretaker will probably be decreased activity, breathing difficulties and changes in eating habits (which may be a result of breathing difficulties). Initially, there may be subtle, almost unnoticeable, changes in habits that suggest breathing problems. These may include:

- **Changes in activity patterns.** A rabbit who usually tears through the house may run less or stop to rest more frequently.
- **Heavier than normal breathing (almost panting) after exercise.**

- **Panting for no apparent reason while resting.**
- **Changes in eating habits.** Sudden reluctance to eat food directly from the floor (or difficulty eating when the head is angled down) may be a sign that your rabbit is having trouble breathing when the head is in certain positions.
- **Sudden reluctance to lie flat.** If a rabbit who normally spends a lot of time in a flopped position (on stomach or side) suddenly appears to have trouble getting comfortable when lying flat, this may be a sign that he is having trouble breathing in this position.
- **Obvious difficulty breathing when held in certain positions (e.g., on his back).**

If you notice one or more of the above symptoms, ask your veterinarian to do a thorough exam to rule out heart problems.

Diagnosis

If your veterinarian suspects heart disease, she will probably suggest doing a chest x-ray as the first diagnostic step. An x-ray will show problems such as an enlarged heart and/or fluid in the chest cavity that may indicate heart disease. In some cases, the first indication of possible heart disease may be seen in an x-ray taken to examine the GI system. Note that lung abnormalities don't always indicate heart disease. They can also result from other causes including but not limited to cancer, infections, or trauma. Your veterinarian will probably suggest additional tests — minimally a thorough physical examination and blood work, including electrolyte levels — to narrow the diagnosis.

If heart disease is strongly suspected, your veterinarian will probably suggest additional tests to help determine the type and extent of damage to the heart. These tests may include:

- **Electrocardiogram (ECG or EKG).** A record of the electrical activity generated by the heart muscles. A paper printout of the results is normally generated. An ECG is used to diagnose specific heart problems including arrhythmia.
- **Echocardiogram.** Graphic outline of the movements of the heart structures compiled from ultrasound vibrations echoed from the heart structures. The results of this test can be captured on videotape. An echocardiogram provides information on the size of the heart chambers, the thickness of the walls, and contractility, which are all indicators of how well the heart is actually functioning.

Note that both of the above tests are not frequently performed on rabbits, and the veterinarians who perform them may have no experience with rabbits. Before having these tests performed, make sure your veterinarian has located someone who can interpret the results **for a rabbit!** Since results of both tests can be captured in a permanent format, the person interpreting the results need not be local.

Treatments

Antibiotics. If your veterinarian suspects heart disease that is caused by a bacterial infection in the heart muscle or valves, she will probably start antibiotic therapy. Although you can't culture heart bacteria, your veterinarian may suggest a blood and/or urine culture. As with most bacterial infections, she may prescribe an antibiotic after taking a sample for culture/sensitivity but before the results are back. If the culture/sensitivity suggests a different antibiotic would be more effective, therapy can be changed. If the culture/sensitivity comes back negative, your veterinarian will decide whether to continue therapy based on how your rabbit is responding clinically. Recent experience also suggests that **persistent** infections

elsewhere in the body, or their associated inflammation, might be releasing heart muscle irritants which can result in arrhythmias. Appropriate antibiotics appear effective in eliminating these arrhythmias.

Diuretics. If there appears to be excess fluid in the chest cavity, a diuretic such as Lasix® (furosemide) may be prescribed. Be aware that with a diuretic, your rabbit will urinate more frequently and more profusely — and he may not be as good about using the litter-box. Be patient with him and be prepared for extra cleanup. Depending on how severe the problem is, you may consider diapers and/or wee-wee pads to help keep your rabbit dry.

Fluids. If your rabbit is on a diuretic, it is important to ensure that sufficient fluids are being consumed (either orally or subcutaneously) to keep your rabbit from becoming dehydrated. Depending on the health of your rabbit's kidneys and any antibiotic therapy being used, your veterinarian may suggest subcutaneous fluids. It may take some time — and close monitoring by both you and your veterinarian — to find the right fluid/diuretic balance.

Oxygen. If your rabbit's breathing is particularly labored, your veterinarian may want to hospitalize your rabbit for a short period (usually one to three days) and place him in an oxygenated incubator. Normally, oxygen is required only until the diuretic has time to clear out excess fluids and the fluid/diuretic balance has been adjusted.

ACE Inhibitors are often the first type of heart medication a veterinarian will try when a rabbit is diagnosed with heart disease, especially cardiomyopathy and CHF. Ace inhibitors such as Enalapril relax the blood vessels, allowing more oxygen-rich blood to reach the heart and may also help prevent damage to the heart muscle. The most common side effect of this class of drug in humans is a dry cough. ACE Inhibitors can be given alone or in conjunction with a diuretic and/or beta blocker.

Most rabbits who have been treated with Enalapril have tolerated it well. However, when Murray was diagnosed with an enlarged heart and cardiomyopathy, we started him on the dose of Enalapril that Dr. Allan had used on other rabbits. Within a couple of hours of his first dose, Murray, who has shown sensitivity to other medications, specifically opiates, was extremely lethargic and “zoned out.” Rather than discontinue the treatment, we lowered the dose and he is both tolerating and responding well to a dose that is half of the original dose.

Beta Blockers (also known as Class II Anti-arrhythmics) slow the nerve impulse to the heart, making it work less hard, and also block the impulses that can cause arrhythmia. **Selective** beta blockers such as Atenolol target only the beta-1 receptors which are responsible for heart rate and strength of heartbeat. The primary side-effects of beta-blockers are fatigue and cold extremities. Murray is able to tolerate a significantly higher total daily dose of Atenolol by giving a smaller amount twice a day rather than a higher once-a-day dose. Beta blockers can be given alone or in conjunction with an ACE Inhibitor and/or diuretic.

Calcium Channel Blockers (also know as Class IV Anti-arrhythmics) such as Diltiazem slow the rate at which calcium passes into the heart muscles and into the vessel walls, causing the vessels to relax.

CoQ10 is a vitamin-like substance whose actions resemble those of Vitamin E. It is a powerful antioxidant, which prevents the formation of free radicals which can damage cells, and plays a critical role in the body's ability to produce energy. CoQ10 aids circulation, lowers blood pressure, enhances immunity, and allows more oxygen to be carried to the cells. Research in humans has shown that CoQ10 has increased the function and strength of the heart muscle and improved dilation of the veins.

Vitamin E is an antioxidant which reduces blood pressure, strengthens capillary walls, and improves the usage of oxygen in the heart. When giving Vitamin E to your rabbit, be sure it is **natural** Vitamin E.

Garlic contains many sulfur compounds which it uses to heal. It lowers blood pressure, improves circulation, and lowers cholesterol, triglyceride, and fat levels in the blood. It is effective in preventing blood clots in the vascular system and reduces atherosclerosis, which reduces the chance of stroke or heart attack.

Hawthorn is an herb that is often described as a “tonic for the heart.” It has been effective in the treatment of chest pain, congestive heart failure (CHF), arrhythmia, and blood pressure (whether high or low). It increases coronary and myocardial blood flow by dilating and relaxing coronary blood vessels, thus increasing blood flow without increasing pressure. In addition, it has a mild diuretic effect. Its mechanism of action is believed to be similar to that of Class III Anti-arrhythmics which slow electrical impulses in the heart by blocking the heart’s potassium channels. Hawthorn may be given **cautiously** along with other medications described above. **Lower** doses of ACE inhibitors may be appropriate with hawthorn since hawthorn has similar effects. **Hypertension** has been reported when hawthorn has been used with some beta-blockers. According to the PDR for Herbs, **should not be given with Propulsid®** (see the discussion of Hawthorn in the Herbal Remedies section for more detail). Also, be aware that, like other herbal remedies, the benefits of hawthorn may not be seen for a number of weeks; thus, the traditional heart medications may be necessary for initial treatment of life-threatening heart conditions.



Sasha (left) was diagnosed with heart arrhythmia and was treated with enalapril, giving her an extra 18 months with her loving family. Hazy (right) was diagnosed with a heart murmur and structural heart defects at age 5. Except for minor behavior changes, she functioned normally without medication for another two years before becoming extremely sensitive to heat. (Photo by Suzanne Trayhan)



Murray was diagnosed with cardiomyopathy at age 6 and with an arrhythmia three months later. He is being treated with enalapril, atenolol, Lasix®, and antibiotics. (Photo by Kathy Smith)