

# Congestive Heart Failure in Dogs, Left-Sided

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## BASIC INFORMATION

### Description

Left heart failure occurs when the left side of the heart is no longer working properly and cannot pump blood effectively to the body. Blood accumulates in the lungs and interferes with the ability of oxygen to enter the bloodstream. If left heart failure is not treated or if your dog does not respond to treatment, then death may occur from this accumulation of blood.

### Causes

A number of diseases can cause left heart failure in dogs (see also the handouts on each of these conditions):

- Atrioventricular valve degeneration of the left atrioventricular (mitral) valve
- Bacterial endocarditis, an infection of either the aortic or the mitral valve
- Dilated cardiomyopathy, a disease of heart muscle in large-breed dogs that results in a big, flabby heart
- Congenital heart defects, particularly a patent ductus arteriosus (PDA) and sometimes a ventricular septal defect or mitral valve dysplasia
- Systemic hypertension (high blood pressure), an uncommon cause

### Clinical Signs

Dogs with left heart failure cannot exercise; they cough when lying down, and they may get up and pace after lying down. As signs worsen, they eventually start breathing faster (more than 50 times per minute) and with more effort. A loud heart murmur that can be heard with a stethoscope is a common finding on physical examination.

### Diagnostic Tests

Dogs in severe distress may require stabilization before many tests can be performed to evaluate the heart and other organs that depend on normal heart function. Tests may include the following:

- Chest and possibly abdominal x-rays
- Echocardiogram (heart ultrasound)
- Electrocardiogram (ECG), especially if an irregular rhythm is detected
- Laboratory tests

## TREATMENT AND FOLLOW-UP

### Treatment Options

If the dog has moderate to severe left heart failure, it may be hospitalized for stabilization with injectable diuretics (such as furosemide), vasodilator drugs (such as nitroglycerin ointment, hydralazine, or

sodium nitroprusside), and oxygen therapy. If the dog has mild heart failure, it may be managed on an outpatient basis. Dogs with left heart failure are very fragile and need aggressive treatment, with as little stress as possible. Once the dog is stable and breathing is improved, long-term oral medications are started, such as the following:

- Furosemide (*Lasix*) diuretic is usually continued indefinitely and may be combined with other diuretics, such as spironolactone. Dosages are adjusted to the lowest ones that keep the dog out of heart failure.
- Angiotensin-converting enzyme (ACE) inhibitors, such as enalapril, benazepril, or ramipril, may be used to improve the quality of your dog's life and help reduce fluid retention by the body. Their effects are not immediate, but they exert modest positive effects over weeks to months.
- Pimobendan is a newer drug that acts as a vasodilator to relieve the workload of the heart and to increase the force of contractions. Pimobendan is commonly used with other medications, such as diuretics and ACE inhibitors.
- Digoxin is used in some dogs that have moderate to severe heart failure and very fast heart rates secondary to abnormal rhythms, such as atrial fibrillation.
- Beta-blockers, such as carvedilol, are being investigated to determine whether they can improve the quality of life in dogs with atrioventricular valve degeneration. Beta-blockers are also used to slow the heart rate secondary to atrial fibrillation.
- Occasionally, other classes of drugs, such as calcium channel blockers, may be needed to control the high heart rate caused by atrial fibrillation.

In addition to drug therapy, dogs with heart failure should not be fed salty foods, and low-salt diets may be used to limit salt intake. Although strenuous exercise should be avoided, mild exercise may be done based on guidelines from our veterinarians.

### Follow-up Care

Intensive monitoring is often needed during hospitalization. Laboratory tests, chest x-rays, and other tests are often repeated until the dog is stable. Follow-up visits are usually scheduled within 7-14 days after discharge. Recheck visits may include chest x-rays and laboratory tests. The interval between visits and further testing depends on the underlying disease and how your dog responds to medications. Periodic monitoring is needed for the life of your dog. Notify our veterinarians if any signs of heart failure return while the dog is on therapy.

### Prognosis

Dogs with left-sided heart failure can live from days to years, with the prognosis depending on the cause and severity of the heart failure.