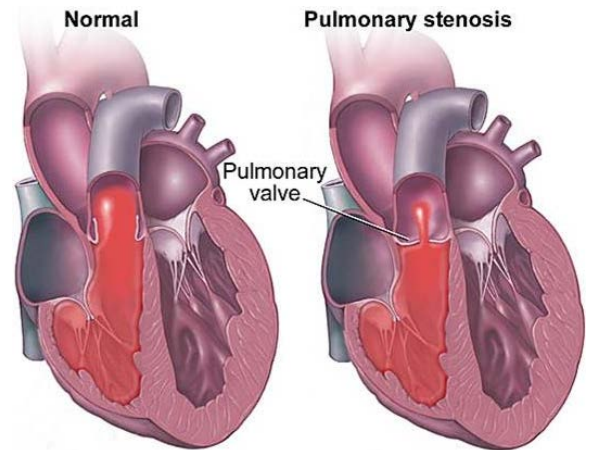


## Pulmonic stenosis

### Understanding pulmonic stenosis (PS)

- The pulmonary, or *pulmonic*, valve is located on the right side of the heart at the point of exit from which blood is pumped into the pulmonary artery and lungs. Pulmonic stenosis can occur below the valve (*subvalvular*), involve the valve itself (*valvular*), or occur above the valve (*supravalvular*).
- In dogs, *valvular* pulmonic stenosis is most common. With *valvular* pulmonic stenosis, the leaflets of the pulmonic valve have not developed normally and are either fused together (type A) or abnormally thickened (type B). The resulting *stenotic* valve limits the amount of blood flow into the pulmonary artery and places increased stress on the right ventricle.



Pulmonic stenosis is more common in the following breeds of dogs:

- Airedale Terrier
- Beagle
- Boykin Spaniel
- Boxer
- Chihuahua
- Cocker Spaniel
- English Bulldog
- Bull Mastiff
- Samoyed
- Schnauzer
- West Highland White Terrier



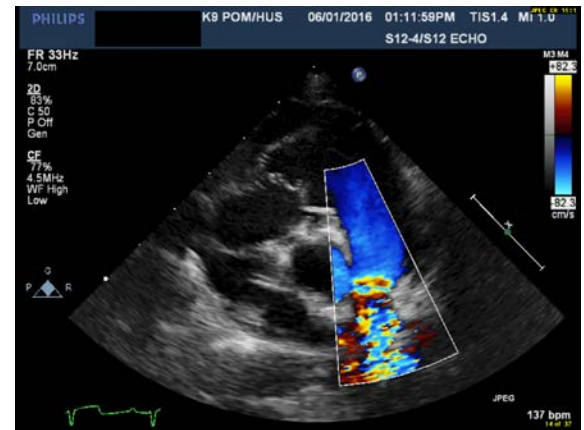
### How does pulmonic stenosis affect my pet's health?

The most common clinical signs (symptoms) of pulmonic stenosis include exercise intolerance and exertional syncope (fainting). Thickening, or *hypertrophy*, of the right ventricular muscle can cause electrical instability within the heart muscle, potentially causing cardiac arrhythmias (*abnormal heart rhythms*). Cardiac arrhythmias can increase the risk of sudden death. With time, failure of the right ventricle to fill and pump appropriately can lead to circulatory congestion and leakage of fluid into the abdomen (*ascites*), a syndrome known as *congestive heart failure (CHF)*.

*For more details see our information bulletin: Heart disease and congestive heart failure.*

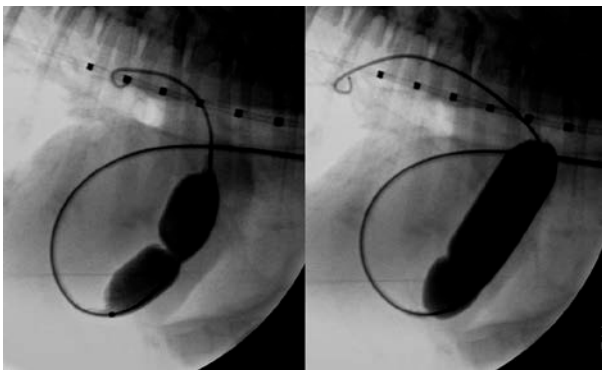
### How is pulmonic stenosis diagnosed?

- Pulmonic stenosis may be suspected on identification of a heart murmur on physical examination in a young dog or cat, but it cannot be differentiated from some other forms of heart disease based on the presence of the murmur alone.
- *Echocardiography* (cardiac ultrasound) performed by a board-certified veterinary cardiologist is the gold-standard method to confirm the diagnosis and characterize the severity of the disease as mild, moderate, or severe, as well as to determine if any other congenital heart disease is present.



*Echocardiogram indicating Pulmonic Stenosis in a dog*

### What is the treatment for pulmonic stenosis?



*Balloon Valvuloplasty in a dog with Pulmonic Stenosis*

Dogs with mild pulmonic stenosis often have no clinical signs and treatment is not usually warranted. The primary method of treatment for moderate or severe pulmonic stenosis in dogs is *balloon valvuloplasty*. In this *transcatheter* procedure, a balloon-tipped catheter is advanced into the heart and across the pulmonic valve via a small incision in the neck or groin. The balloon is inflated to stretch the stenotic valve leaflets. The success of the procedure is dependent on the type (*A or B*) of valvular stenosis and the age of the patient. The stenosis is often significantly improved following the procedure.

**In some dogs, particularly the English bulldog, pulmonic stenosis may be accompanied by a coronary artery abnormality that significantly limits the ability to safely perform balloon valvuloplasty.**

Medications to slow heart rate (e.g. beta-blockers) or aimed at reducing scar tissue formation (ACE inhibitors, aldosterone blockers) in the heart muscle are usually implemented with pulmonic stenosis.

### Should I restrict my pet's activity level if he/she has moderate or severe pulmonic stenosis?

Limiting intense or heavy exertion (particularly in warm weather) is likely to reduce the risk of exercise intolerance or fainting episodes. If your pet has mild stenosis or has had a successful balloon valvuloplasty procedure, these restrictions may not be necessary depending on the assessment of the cardiologist.

### Prognosis

- Dogs or cats with mild pulmonic stenosis are likely to experience minimal clinical signs from the disease and live a normal lifespan.
- Those with moderate or severe pulmonic stenosis carry a worse prognosis if balloon valvuloplasty is not performed or is not successful. Clinical signs will likely progress with age, and lifespan is shortened.

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