

# Common Heart Conditions That Affect Dogs

Drs. Foster & Smith Educational Staff



While older dogs are at risk for heart disease, there are certain heart conditions that may be lying in wait for puppies or younger adults, diseases that may have been caused by a congenital (from birth) defect.

Some of these defects are genetic (inherited), some are not, some can be fixed, some cannot, and some may cause no symptoms throughout the dog's life except for the presence of a heart murmur. Murmurs are the result of turbulent or abnormal blood flow created by narrowed vessels, valves, or abnormal openings between heart chambers.

**ALL PUPPIES SHOULD HAVE THEIR INITIAL VETERINARY EXAM** by twelve weeks of age so heart functions can be monitored. Most congenital heart defects can be detected at this early age. Know the signs so you can get early treatment from your veterinarian. Some common signs of a heart problem include weakness, reduced exercise tolerance, irregular or rapid breathing, a bluish color of the gums, coughing, lack of appetite, weight loss (or poor weight gain), abdominal swelling, or a fainting episode.



PDA (Patent Ductus Arteriosus)	SYMPTOMS AND TREATMENT
Before birth, the lungs are not yet needed for breathing, so blood simply flows from the pulmonary artery through a vessel called the "ductus arteriosus" to the aorta. At birth, due to pressure changes within the bloodstream, the ductus normally closes permanently, forcing blood to enter the lungs where oxygen can be exchanged. In the case of PDA, the vessel fails to close completely, so some blood continues to bypass the lungs. When	Inactivity is one of the initial signs of PDA. In periods of excitement, puppies with PDA may become short of breath and collapse. As the blood flows through the abnormal ductus arteriosus, a murmur can sometimes be heard without a stethoscope. Many affected puppies will not grow at a normal rate and will be smaller than their littermates. Without treatment, almost all dogs with PDA will live a shorter than normal

this happens, even though the puppy is breathing, the proper amount of blood is not flowing to the lungs, and therefore, the puppy is not receiving enough oxygen.

life. Depending on severity, some will live only a few weeks, others can survive longer. Treatment of PDA requires surgery, which is quite successful and is best if done early before growth is affected.

### PULMONIC STENOSIS

### SYMPTOMS AND TREATMENT

The pulmonary artery carries blood from the right ventricle to the lungs. If a congenital narrowing of this vessel or its valves is present, normal blood flow will be impeded. Without normal pressure, not enough blood can pass through the artery and enter the lungs. To compensate, the right side of the heart must pump harder. This enlarges its muscles and size. The right side of the heart becomes overworked and prone to failure.

Most affected dogs initially show no symptoms even though a heart murmur will be present. These types of murmurs are typically noted on routine veterinary examinations with a stethoscope. Later in the syndrome, as the right side of the heart fails, it is unable to accommodate all of the blood returning from the body. This leads to edema, or fluid buildup, within the abdomen and limbs. Minor cases are generally not treated. In severely affected dogs, surgery can be performed to remove the narrowing and improve blood flow.

### VENTRICULAR SEPTAL DEFECT

### SYMPTOMS AND TREATMENT

In the developing embryo, the heart initially has four chambers that are not separated from one another. As the fetal heart develops, walls called septums form to divide the heart into the four separate chambers. Occasionally, the walls separating the heart chambers will develop incompletely, not properly dividing the chambers from each other. Most commonly, this septal defect occurs between the right and left ventricles.

Puppies may not have any outward signs and in mild cases a veterinarian may hear the heart murmur. However, in severe cases, a decrease in stamina and retarded growth rates occur. In minor septal defects, treatment is generally not recommended. In severe cases, heart surgery to correct the defect can be performed.

Because the left ventricle is stronger than the right, when the muscles of the left ventricle contract, blood is forced backward into the right ventricle. With any backward flow of blood, additional stress is placed on the heart and can lead to heart failure. Additionally, with VSD, the body tissues receive an inadequate

quantity of oxygenated blood.

## AORTIC STENOSIS

Aortic stenosis (also known as subaortic stenosis or SAS) affects the left side of the heart. First, the left ventricle pumps blood to the body through the aorta. This huge artery then branches into smaller ones. With SAS, the opening between the left ventricle and aorta is narrowed, causing the left ventricle to work harder to force the required amount of blood through the restricted area into the aorta and on to the rest of the body.

## SYMPTOMS AND TREATMENT

Animals affected with this disorder are weak, lethargic, prone to fainting, and may have poor growth rates. All of these signs are due to inadequate perfusion of the tissues with nutrient- and oxygen-rich blood. These animals typically have much shortened life spans and death finally results from left-sided heart failure. Even though the left ventricle is extra strong, it cannot maintain this workload over time. Only surgical opening of the stenotic area of the aorta provides a true cure.

## CIRCULATORY SYSTEM IN A NUTSHELL

- ➔ 1. blood low in oxygen/high in carbon dioxide travels from the body through the **vena cava**
- ➔ 2. into the **right atrium**
- ➔ 3. through the **right atrioventricular valve** into the **right ventricle**
- ➔ 4. forced to the lungs through the **pulmonary arteries**, where the  $\text{CO}_2$  in the blood is replaced by  $\text{O}_2$
- ➔ 5. back to the heart via the **pulmonary veins**
- ➔ 6. into the **left atrium**
- ➔ 7. through the **left atrioventricular (mitral) valve** into the **left ventricle**
- ➔ 8. into the **aorta**
- ➔ 9. back to the body

