

# Heart Murmurs in Cats

## What is a heart murmur?

A heart murmur is an abnormal heart sound, usually heard by listening to the heart with a stethoscope.

## What causes a heart murmur?

A heart murmur is caused by turbulent blood flow within the heart. Sometimes a murmur is determined to be “innocent” or “physiologic,” while other times the murmur is determined to be pathologic or caused by disease. Pathologic heart murmurs can be caused by a structural problem within the heart (i.e., cardiac disease), or can be due to a problem that is extracardiac (i.e., not caused by heart disease).

## Do all murmurs sound the same?

No. The loudness of a murmur reflects the amount of turbulence that is present in the heart. However, the loudness of a heart murmur does not always correlate directly with the severity of the disease.

Murmurs are graded by their intensity, usually on a scale of I-VI. A Grade I murmur is very soft or quiet, may only be heard intermittently, and is usually only heard in one location on the chest. A Grade VI murmur is very loud, heard everywhere that the heart can be heard, and can be felt when a person places their hand on the chest in the area of the heart.

## **"Most murmurs are also characterized by their location or where they are the loudest."**

Murmurs are also characterized by the time in which they occur during the heart cycle, and by whether they are long or short. Most murmurs are also characterized by their location or where they are the loudest. The vast majority of murmurs in the cat occur during systole, the phase of the heart cycle when the heart is contracting to pump blood out.

The specific characteristics of the murmur, along with any symptoms that your cat might be showing, will help your veterinarian to determine what is causing the murmur.

## What is an innocent or physiologic heart murmur?

## **"Some normal adult cats may have an intermittent heart murmur that shows up when their heart rate is increased due to stress."**

An innocent or physiologic heart murmur is a heart murmur that has no impact on the cat's health. One type of innocent heart murmur is often found in young growing kittens, particularly kittens that are growing rapidly. The murmur may first appear at 6-8 weeks of age, and a kitten with an innocent heart murmur will usually

outgrow it by about 4-5 months of age. This type of murmur is benign (not harmful). Some normal adult cats may have an intermittent heart murmur that shows up when their heart rate is increased due to stress. This type of physiologic murmur disappears when the heart rate is normal and has no impact on the cat's health. In general, a physiologic or innocent heart murmur will have a low intensity (usually Grade I-II ) and does not cause any symptoms or clinical signs.

## **What structural heart problems cause a heart murmur?**

The heart is composed of four chambers - the left atrium, the left ventricle, the right atrium, and the right ventricle. Blood flows from the right side of the heart through the pulmonary artery to the lungs where it is oxygenated, and then the oxygenated blood goes through the left side of the heart and into the aorta, where it is pumped to the rest of the body. Between each of the chambers and main blood vessels, there is a valve that functions to prevent blood from flowing back into the chamber as the heart pumps.

With structural heart disease, there is some sort of abnormal structure or defect that is disturbing the flow of blood, creating turbulence. The abnormality in the heart may be a leaky heart valve, a thickening or narrowing of a valve or large blood vessel, or an abnormal hole between the heart chambers.

Structural heart problems may be congenital (the cat is born with a defective heart) or acquired later in life. In cats, the most common congenital structural heart defects are a ventricular septal defect (VSD) or an atrial septal defect (ASD), although sometimes a cat may be born with a defective heart valve. The most common type of acquired heart disease in the cat is cardiomyopathy (see the handouts "Cardiomyopathy in Cats" and "Heart Disease in Cats").

## **What extracardiac problems cause a heart murmur?**

Some extracardiac problems can cause what is called a "functional heart murmur." A functional heart murmur may be due to anemia (low levels of red blood cells), hypoproteinemia (low protein levels in the blood), fever or infection, pregnancy, obesity, or emaciation. With young kittens, anemia and/or hypoproteinemia can be caused by a heavy infestation of parasites such as intestinal worms, blood parasites, fleas, or ticks. Adult cats that are anemic may have other underlying abnormalities (see the handout "Anemia in Cats").

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Some other extracardiac heart murmurs are secondary, caused by changes in the heart that occur because of some other disease. In cats, the most common cause of a secondary heart murmur is hyperthyroidism (see handout "Hyperthyroidism in Cats"), which causes a form of cardiomyopathy called hypertrophic cardiomyopathy.

## **How is a heart murmur detected?**

In most cases, a heart murmur is detected when your veterinarian listens to your cat's heart with a stethoscope.

## **How do we find out if a murmur is due to a significant problem?**

If your veterinarian detects a heart murmur, you will be asked a series of questions about your cat's health. Your veterinarian will assess your cat's general physical condition to determine whether there are symptoms or clinical signs that indicate the need for further diagnostic testing. If your cat is still a young kitten and the murmur is of low intensity, your veterinarian may recommend a re-evaluation in a few weeks to track whether the murmur has disappeared, indicating that it was likely an innocent murmur. Similarly, if your adult cat appears to be extremely stressed at the time of a routine health examination, your veterinarian may recommend a re-evaluation at a later time when your cat is calmer.

**“...the clinical signs may be subtle and not noticeable until the disease becomes advanced.”**

A cat with a heart murmur that is caused by a structural heart disease or an extracardiac problem will generally have some sort of symptoms or clinical signs that can be attributed to the disease. However, the clinical signs may be subtle and not noticeable until the disease becomes advanced. The most common symptoms that are observed with a cat that has a clinically significant heart murmur are poor appetite, weight loss (or stunted growth in a kitten), breathing problems, pale gums, lethargy, or weakness.

If your veterinarian detects an abnormal rhythm to the heartbeat or finds that your cat has weak pulses, it is more likely that the murmur is caused by an underlying problem. If your veterinarian determines or suspects that the heart murmur is caused by structural heart disease or an extracardiac problem, further diagnostic testing will be recommended. In the majority of these cases, further diagnostic testing should be performed immediately so that any treatment can be started as soon as possible.

## **What other tests may be recommended?**

Depending on what other clinical signs are present in your cat, your veterinarian may recommend X-rays, an electrocardiogram (ECG), or an ultrasound examination of the heart (echocardiogram). If your veterinarian suspects that the heart murmur is secondary to another disease, blood tests or other tests might be recommended.

An echocardiogram that includes a Doppler examination is the most useful test to determine the location of a heart murmur. With an echocardiogram, the beating heart is imaged, allowing the technician or veterinarian to evaluate the heart's size and movement. A Doppler examination is a specialized type of echocardiogram in which the speed and direction of blood flow can be measured across the heart valves and in the heart chambers. The Doppler examination will usually pinpoint the location of the turbulence that is causing the murmur.

## **How is a heart murmur treated?**

Treatment depends upon the underlying cause of the heart murmur or the turbulent blood flow. Physiologic heart murmurs do not require any treatment, however, regular monitoring is advised to ensure that no other problems develop. If the heart murmur is caused by an underlying problem, the treatment plan will be based on the diagnosis and may include a combination of specialized diets, medications, and supportive care.

## **What is the prognosis?**

The prognosis ranges from excellent to grave, depending on the cause of the murmur. If the murmur is physiologic, no treatment is required and the prognosis is generally good to excellent. If the murmur is caused by extracardiac disease or a functional problem that can be treated, the murmur may resolve over time. The long-term prognosis for a cat with a murmur caused by cardiac disease is variable, depending on the specific type of cardiac disease that is present. Since each case is different, your veterinarian will discuss available treatment options and the prognosis for your cat.