



## Kingsbrook Animal Hospital

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## 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 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, while 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 (in cardiac terminology, this is called a 'thrill').

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.

### What is an innocent or physiologic heart murmur?

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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. 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.

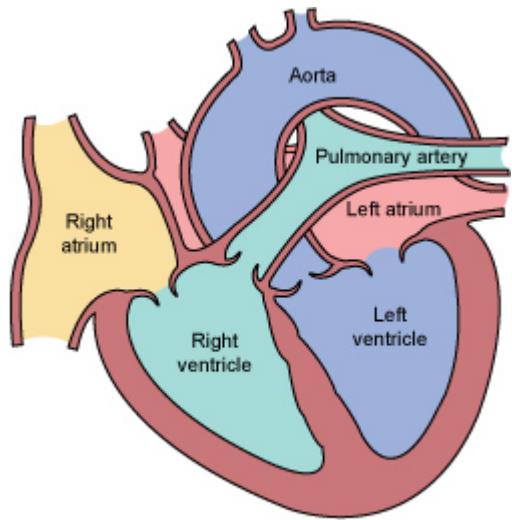
In general, a physiologic or innocent heart murmur will have a low intensity (usually Grade I-II out of VI), and does not cause any symptoms or clinical signs.

## 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 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 (a structural heart problem develops 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 our separate handouts "Cardiomyopathy in Cats" and "Heart Disease in Cats").



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## 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, or by conditions such as 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 our handout "Anemia in Cats").

**"With young kittens, anemia and/or hypoproteinemia can be caused by a heavy infestation of parasites..."**

Some other extracardiac heart murmurs are 'secondary', or 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 our 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 auscultates or examines your cat's heart with a stethoscope.

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

Most murmurs are detected with a stethoscope during a routine veterinary examination.

If your pet is still a young kitten and the murmur is of low intensity, your veterinarian may recommend a re-examination in a few weeks time to track whether the murmur has changed in intensity or 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 the cat is calmer.

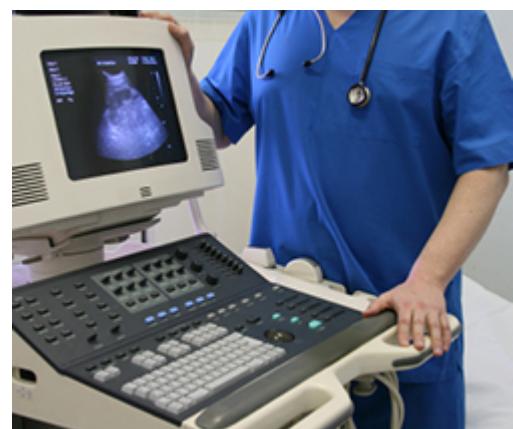
A cat with a heart murmur that is caused by a structural heart disease or an extracardiac problem may have some sort of symptoms or clinical signs that can be attributed to the disease. However, the clinical signs may be subtle and inapparent until the disease becomes advanced. The most common symptoms 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 will be 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, or an ultrasound examination of the heart (called an echocardiogram). If your veterinarian suspects that the heart murmur is secondary to another disease, blood tests or other extensive 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 heart is imaged while it is beating, allowing the examiner 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?

"Heart murmurs are simply abnormal heart sounds caused by turbulent blood flow, and treatment depends upon the underlying cause of the heart murmur or the turbulent blood flow."

Heart murmurs are simply abnormal heart sounds caused by turbulent blood flow, and 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 of a cat that has evidence of a physiologic murmur 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 extremely variable, depending on the specific type of cardiac disease that is present. Since each case is different, your veterinarian will discuss the available treatment options and prognosis for your cat with you.

*This client information sheet is based on material written by: Cheryl Yuill, DVM, MSc, CVH*

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