



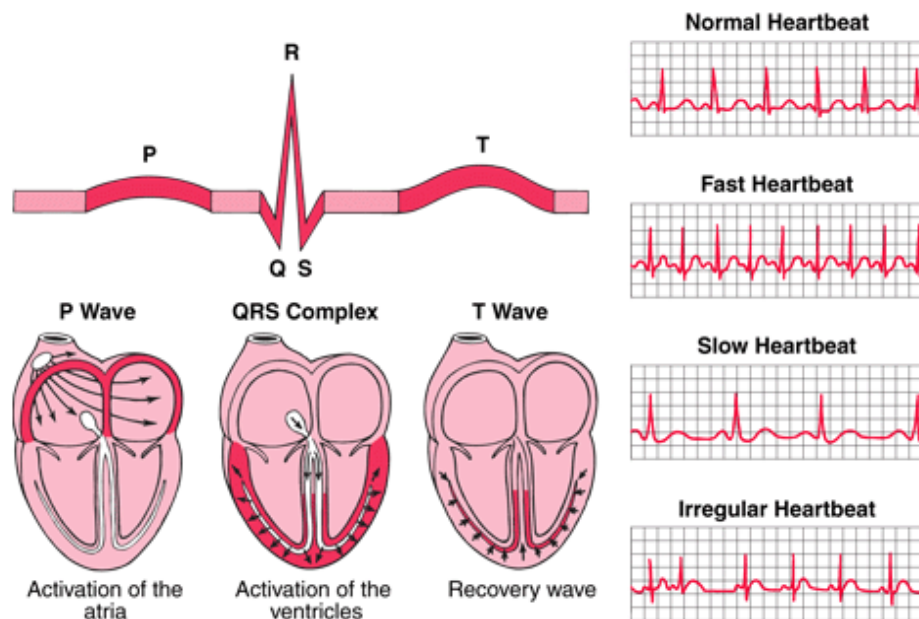
Atrial Fibrillation

BRIEFLY, HOW DOES THE HEART PUMP?

The heart has four chambers. The upper chambers are called atria. One chamber is called an atrium, and the lower chambers are called ventricles. In addition to the upper and lower chambers, the heart is also considered to have a right and left side.

Cardiac muscles contract via an electrical stimulus. In a normal functioning heart the stimulus comes from the sinoatrial (SA) node located in the right atrium muscle wall. All cells within the heart have the ability to generate their own electrical activity, but the SA node is the fastest to do so, and therefore, deemed the rate controller or the 'pacemaker'. The SA node initiates the electrical discharge for each cardiac cycle. This conduction 'depolarises' the two atria causing them to contract, before stimulating the two ventricles via the AV (atrioventricular) node.

The heart then 'repolarises' (or refills) in time for the next stimulus and contraction.





CARDIORESPIRATORY
PET REFERRALS
VICTORIA

WHAT IS ATRIAL FIBRILLATION?

Atrial fibrillation (AF) is the most common, abnormal rhythm of the heart. It is the rapid, uncoordinated firing of electrical impulses from multiple sites in the upper chambers (the atria), conducted or carried down through the AV node, and causing ineffective and irregular contractions in the lower chambers (ventricles).

Rapid or irregular heart rates do not allow the atria to pump blood effectively into the ventricles. It can also cause irregular rapid ventricular beats.

This rapid and irregular heart rate and rhythm can decrease the efficiency of the heart and cause lethargy.

WHY DOES ATRIAL FIBRILLATION OCCUR?

Atrial fibrillation is most often associated with atrial enlargement and stretch.

It is common for small breed dogs to develop cardiac valve disease in which progressive atrial enlargement, leading to atrial fibrillation, occurs over a period of time.

Valve disease refers to the thickening of the cardiac valves.

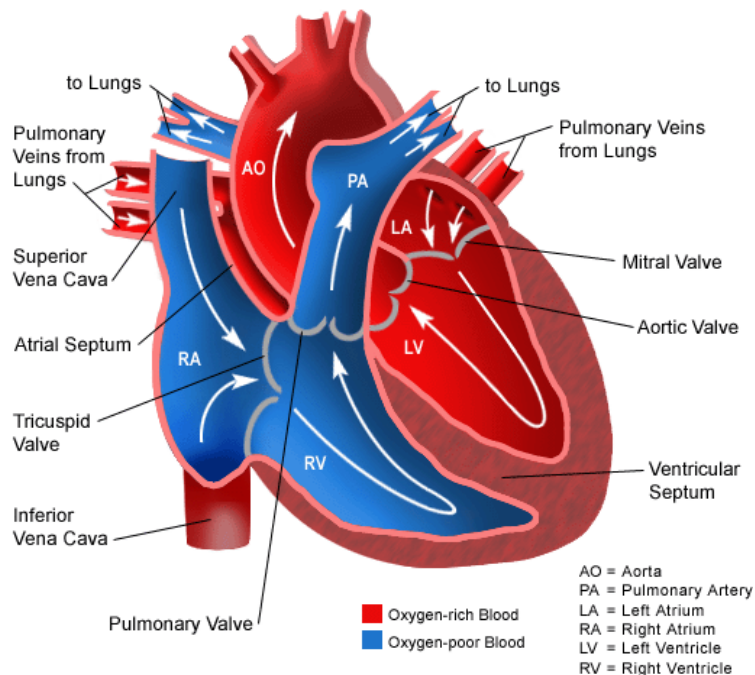
Each side of the heart has a valve to keep the blood from going backward from the ventricles to the atria. The valve between the left atrium and the left ventricle is called the mitral valve. The valve between the right atrium and the right ventricle is called the tricuspid valve. Because of the very large pressure created when the left ventricle contracts, the mitral valve wears out in many dogs. This wearing out process begins with a small leak that gradually becomes more severe. These valves can also develop a nodular appearance, which can impede the ability to form a tight seal between the atrium and ventricle during the contraction of the heart. As a result a leak occurs and causes the heart's chambers to enlarge.

When the muscle wall of the atrium stretches due to the chamber enlargement, it is no longer able to conduct the electrical stimulus or may conduct at irregular intervals causing atrial fibrillation or the 'flutter' effect of the atrium. This in turn does not allow the heart enough time to relax and refill before the next contraction, and therefore, not enough blood and oxygen gets pumped to the body.





CARDIORESPIRATORY
PET REFERRALS
VICTORIA



WHAT ARE THE SIGNS OF ATRIAL FIBRILLATION?

When the heart is not properly pumping blood, the blood moves more slowly through the lungs. This results in small amounts of fluid leaking out of the capillaries into the air passageways. This fluid collection produces the earliest signs of heart failure causing an increase in the animals breathing rate. Normally an animals breathing rate when sleeping is <30 breaths/min (see sleeping respiratory rate sheet).The animal may or lack stamina when exercising.

Signs to look out for may include;

- Change in heart rate or rhythm (heart murmur)
- Increased or laboured respiration at rest (normal sleeping respiratory rate is less than 30 breaths per minute)
- Increased coughing
- Decreased appetite
- Lethargy/weakness or fainting spells





CARDIORESPIRATORY
PET REFERRALS
VICTORIA

DOES THIS MEAN THAT HEART FAILURE WILL OCCUR SOON?

Congestive heart failure begins when the heart is not able to pump blood with adequate oxygen to the tissues. Without adequate oxygen, the body's cells become desperate and trigger a series of responses. Various hormones are released by several organs in an attempt to correct the problem. These hormones conserve fluid in an effort to increase blood volume and the output of oxygenated blood by the heart.

For a variable period, these compensatory responses help the situation. However, increased fluid retention eventually becomes harmful. More and more fluid leaks out of the capillaries, causing increased gagging and coughing, and reduced stamina. Fluid may collect in the abdominal cavity and body tissues. Fluid in the lungs is called pulmonary oedema, fluid below the skin is called peripheral or limb oedema, and fluid in the abdomen is called ascites (dropsy). Congestive heart failure is the common cause of these signs.

HOW IS ATRIAL FIBRILLATION DIAGNOSED?

The best way to diagnose atrial fibrillation is to perform an ECG (electrocardiogram). This gives us the best assessment of the electrical activity of the heart.

An echo (heart ultrasound) may also be required, as this will provide the most accurate determination of the size of each heart chamber, the thickness of heart walls, a visual on valves and a look at the direction and velocity of blood flow through the chambers.

Occasionally a chest xray may also be recommended. The combination of all of these tests gives us our best evaluation of the animal's heart function, however if cost considerations prohibit us performing all of them, two or three will provide much valuable information.





CARDIORESPIRATORY
PET REFERRALS
VICTORIA

IS THERE TREATMENT FOR ATRIAL FIBRILLATION AND A LEAKY VALVE?

If your pet has a sudden onset of heart failure, rapid administration of the proper medications is essential to survival.

There are several drugs that can help to relieve clinical signs of degenerative valve disease. The cardiologist may prescribe diuretics (furosemide) to help reabsorb fluid from the lungs. Other medications that may improve the ability of the heart to contract (pimobendin) may also be recommended. Some patients will need to have fluid physically removed from the abdomen or chest cavity.

Congestive heart failure will be treated first to see if it can also resolve the atrial fibrillation.

If congestive heart failure is not present, or the atrial fibrillation does not resolve when treating the congestive heart failure, we may prescribe digoxin or a calcium channel blocker to slow the heart rate and allow the heart more time to fill before being pumped around the body.

It is helpful to keep a record of your pet's sleeping resting respiratory rate so that your veterinarian can identify any changes in your pet's normal breathing pattern.

HOW MUCH LONGER WILL MY PET LIVE?

There are many factors that must be considered before this question can be answered. The results of the tests are important, and the response that occurs within the first few days is another indicator.

If response does not occur within a few hours to days, the prognosis is not good. However, most animals that stabilize quickly will live for a period of a few months to many months, but the long-term prognosis is not good. It can be difficult to generate an accurate estimate for life-expectancy when an animal has heart disease because many variables impact on survival, not least of which is the animal's activity levels.

