

## Heart murmur

The familiar 'lub-dub' sound of the heartbeat is caused by the rhythmic closing of the heart valves as blood is pumped in and out of the chambers. A heart murmur is a sound caused by blood flow within the heart. Instead of 'lub-dub', the heartbeat may have an added sound like a hum, a whoosh or a rasp. The cause of the whooshing sound is the vibration of blood as it moves through the heart, which is normally undetectable by stethoscope.

Blood can flow abnormally through the heart for many reasons including defective valves, congenital heart disorders and anaemia. A 'noisy' heart isn't always a sign of disease or malfunction. Many children have 'innocent' heart murmurs that don't require any treatment or observation. However, medical tests are often needed to distinguish between a harmful heart murmur and an innocent one, as they can sound the same through a stethoscope.

### Symptoms

Heart murmurs are themselves often asymptomatic (have no symptoms). Commonly, they are innocent and are only detected during a routine medical examination.

Abnormal heart murmurs may be associated with various types of heart disease, particularly those affecting the heart valves. The presence of heart disease may be suggested by:

- Pains in the chest
- Tachycardia (accelerated heart rate)
- Heart palpitations
- Breathlessness
- Fatigue
- Cyanosis (blue tinge to the skin caused by lack of oxygen).

### Structure of the heart

The heart is a double pump consisting of four chambers, each sealed by valves that only permit blood to flow in one direction. The right upper chamber (right atrium) takes in deoxygenated blood from the body and squeezes it into the right lower chamber (right ventricle). From there, the blood is taken by an artery to the lungs where the carbon dioxide is replaced with oxygen. Oxygenated blood enters the left upper chamber (left atrium). It is then pumped into the lower left chamber (left ventricle) and then into the body's main artery (the aorta), where it starts its journey around the body again.

### A range of causes

A heart murmur is usually innocent, and generally does not mean there is an abnormality. The murmur may be heard only because the vibration in the blood travelling through the heart is greater than usual, or the heart is closer to the front of the chest and the stethoscope. However, a heart murmur may also be caused by faulty blood flow within the heart. This can be triggered by a range of conditions including:

- **Congenital heart disorders** - sometimes, during fetal development, the heart and blood vessels fail to grow properly. The passage of blood inside the heart or vessels may be blocked, or the blood travels abnormally through the heart valves, or the heart itself may be underdeveloped.

- **Mitral regurgitation** - the mitral valve separates the left atrium from the left ventricle. Mitral regurgitation means the mitral valve doesn't close properly, allowing blood to backtrack into the atrium. Some of the causes of mitral regurgitation include rheumatic heart disease, infection (endocarditis) of the mitral valve, hypertension (high blood pressure) and congenital defects of the heart.
- **Aortic regurgitation** - the aortic valve separates the aorta (main artery of the body) from the left ventricle. Aortic regurgitation means the aortic valve doesn't close properly, allowing blood to backtrack into the ventricle. Some of the causes include congenital defects of the heart, rheumatic heart disease, infection (endocarditis) of the aortic valve, Marfan's syndrome and hypertension.
- **Mitral stenosis** - the opening of the mitral valve is abnormally narrow, which impedes the passage of blood into the left ventricle.
- **Aortic stenosis** - the opening of the aortic valve is abnormally narrow, which impedes the passage of blood into the aorta.
- **Damage to the cardiac muscle** - may occur after a heart attack, heart infection (such as endocarditis or infection of the valve) or as a complication of coronary artery disease or hypertension.
- **Anaemia** - the blood's inability to deliver sufficient oxygen to the cells. Anaemia isn't a disease in itself, but a symptom of a malfunction somewhere else in the body. The heart pumps the blood around faster to supply the body's demand for oxygen and other substances.
- **Hyperthyroidism** - overactive thyroid gland. Excessive amounts of thyroid hormone affect heart function in a similar way to anaemia.
- **Stress** - emotional stress can sometimes interfere with the force of the heartbeat, increasing the blood flow (as happens with anaemia and hyperthyroidism).

## Innocent heart murmurs are common

It is thought that around half of all babies and young children have innocent heart murmurs. These murmurs are called 'innocent' because they are not linked to any type of disease or structural abnormality. In most cases, the murmur will resolve by adolescence. However, a doctor's stethoscope can't always distinguish an innocent murmur from a harmful one. Further medical tests are sometimes needed to make sure there is no underlying problem.

## Diagnosis methods

Diagnosis of the cause of a heart murmur may involve a number of tests including:

- Medical history
- Physical examination
- Chest x-ray
- Electrocardiograph test (ECG)
- Blood tests
- Echocardiogram (a type of ultrasound scan of the heart).

## Treatment options

Treatment depends on the cause but may include:

- **Innocent heart murmurs** - no treatment is necessary, as the heart structures and blood flow are normal - just noisy.
- **Heart surgery** - to repair leaking heart valves, or repair the structural abnormalities of congenital heart disorders. This may require open heart surgery.
- **Endocarditis or other infections** - antibiotics, and surgery in some cases.
- **Anaemia** - can often be treated with iron supplements and changes to diet. Depending on the cause, more serious cases of anaemia may need treatments including blood transfusions or removal of the spleen (splenectomy).
- **Hyperthyroidism** - medications or surgery to bring the thyroid hormone levels back to normal.

## Where to get help

- Your doctor

- Cardiologist
- Heartkids Victoria Tel. (03) 9513 9030

## Things to remember

- The familiar 'lub-dub' sound of the heartbeat is caused by the rhythmic closing of the heart valves as blood is pumped in and out of the chambers.
- A heart murmur is a whooshing, humming or rasping sound between the heartbeat sounds.
- This is caused by noisy blood flow within the heart.
- Blood can flow abnormally through the heart for many reasons, including defective valves, congenital heart disorders and anaemia.
- Treatment depends on the cause, but may include surgery or antibiotics.
- Most heart murmurs are innocent and require no treatment.

**This page has been produced in consultation with, and approved by:**

Heart Research Centre

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