

# **Heart Valve** Disease

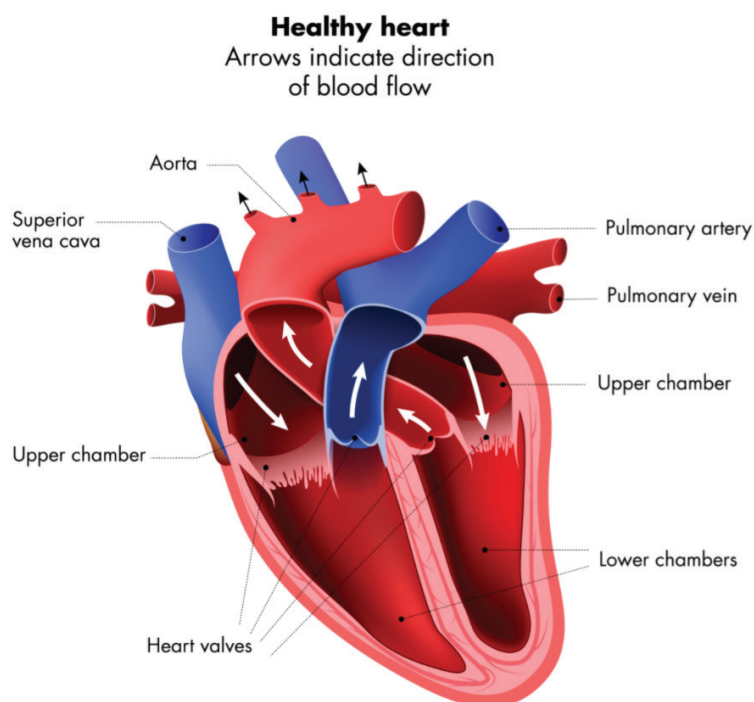


## How your heart works

The heart is a muscle that works like a pump, sending blood around your body to keep you alive. It pumps blood to deliver oxygen and nutrients to other parts of your body, allowing your organs and muscles work properly.

The heart has four chambers. The two chambers on the right side work to pump blood that is low on oxygen back into the lungs, where the blood collects a new supply of oxygen. This oxygen-rich blood is then transferred to the left side of the heart, which pumps blood around the entire body.

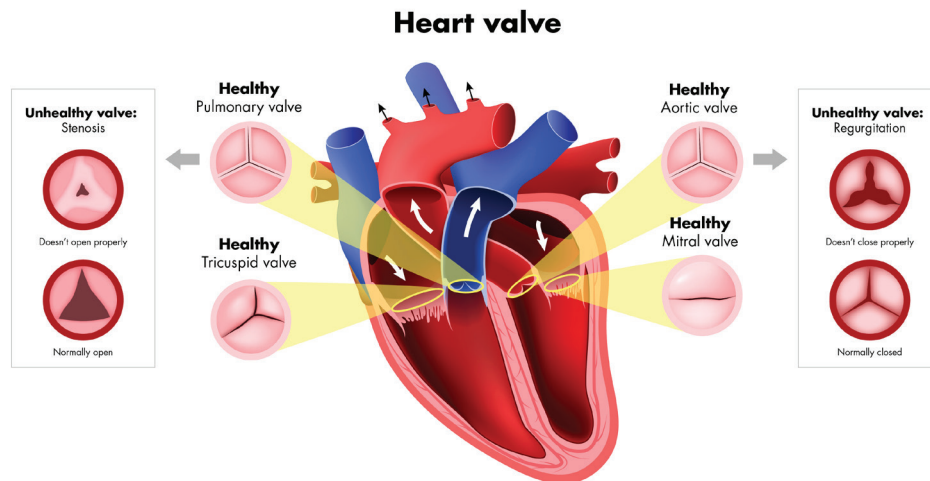
The heart has four valves, one for each chamber of the heart. These valves open and close to keep blood moving through the heart in the right direction between its four chambers. When the heart beats, the valves open to let blood flow from the chambers, and close to prevent blood from flowing backwards.



## What is heart valve disease?

In 2021, there are around 500-600,000 Australians living with heart valve disease. Since it can be difficult to diagnose, it is estimated that there are another 254,000 Australians living with undiagnosed heart valve disease. It's a serious condition, but early treatment and management can help you get back to doing the things you love, like gardening, spending time with your grandchildren and family, or going for walks. Heart valve disease occurs when

one or more of your heart valves don't open or close properly. This can disrupt the blood flow through your heart to and from your body.



*There are two main types of heart valve disease:*



**1. Valve stenosis or obstruction**

This is often caused by age, and is where the valve becomes narrow (stenosis), or where there is a blockage which limits blood flow. Because of this, the heart doesn't pump like it should, and there can be high blood pressure in the lungs.



**2. Valve regurgitation or insufficiency**

Sometimes a valve may not close properly, or it can leak. This means blood can flow back through the valve. This is known as regurgitation, and means the heart cannot properly move blood to the next chamber. Any valves of the heart can be faulty, but the two most common are the aortic valve and the mitral valve.

## Common heart valve diseases

*Some of the more common diseases affecting the heart valves include:*

### Aortic stenosis (AS)

This is caused when the aortic valve hardens, making the valve narrower and reducing the flow of blood. This means that the heart needs to work harder to pump blood around the body. Due to this extra workload, the muscle of the lower left chamber of the heart thickens, and the chamber may eventually become enlarged. If not treated, this can lead to heart failure and other health problems.

### Mitral valve regurgitation (MR) or prolapse

This is where the mitral valve becomes weak and stretches out, which can mean blood flows in the wrong direction. Often the amount of blood that flows back is small, and so may not cause any symptoms. If the condition is more serious, blood can't move through your heart or to the rest of your body properly, which can make you feel tired or out of breath.

### Tricuspid valve disease (TS or TR)

The tricuspid valve can become diseased, causing blood flow to decrease or flow back in the wrong direction. Two types of tricuspid valve disease include:

- Tricuspid regurgitation, where the valve is leaky or doesn't close properly. This can allow blood to leak backwards through the valve.
- Tricuspid stenosis, where the valve becomes stiff and does not open enough. This can cause the flow of blood to decrease.

### Bicuspid aortic valve (BAV)

This is the most common congenital (ie. present from birth) heart abnormality. It affects 1-2% of the population. Some people may not experience any symptoms, while for others it can be a serious condition. Heart valves have flaps of tissue called cusps, which open and close when the heart beats. These ensure that the blood flows in the right direction. The aortic valve normally has three cusps, but a bicuspid valve has only two. A bicuspid aortic valve can cause problems including:

- Narrowing of the aortic valve (aortic valve stenosis)
- Backward flow of blood through the valve (aortic valve regurgitation)
- An enlarged aorta, which increases the risk of a tear in the lining of the aorta

### Endocarditis

This is an infection of the lining of the heart, which can lead to valve damage. It is usually caused by bacteria, but can also be caused by fungi or other germs. These can come from another part of the body, such as the mouth, travel through the bloodstream and attach to damaged areas of the heart. If not treated, endocarditis can damage the heart valves. People with heart valve disease, or with a replacement valve, may be at higher risk.



## Understanding symptoms of heart valve disease

The most common forms of heart valve disease are aortic stenosis and mitral regurgitation. Aortic valve disease occurs mostly in people over 65. Mitral valve disease can be caused by rheumatic heart disease, and in this case generally occurs in people in their 40s and 50s. It can also be caused by age-related changes, and so occurs in older people as well.

*Common symptoms to look out for include:*



1. **Shortness of breath:** You may find yourself becoming short of breath, particularly when you are active. This is because your heart is not filling and emptying properly, which causes increased pressure in the blood vessels around the lung.



2. **Chest tightness and/or pain:** You may feel discomfort, pressure or tightness along the front of your body, between your neck and upper abdomen.



3. **Extreme tiredness:** You may find it more difficult to do daily activities you once found easy, like walking to the shops, mowing the lawn, or baking. This can be because you're not getting the amount of oxygen you once did.



4. **Dizziness and fainting:** You may find yourself becoming lightheaded or even fainting. This happens when not enough blood flows to the brain.



5. **Difficulty exercising:** Sometimes you may find it difficult to do things you once found easier like exercising or walking up stairs. This can be because your heart is having to work harder to do its job.

Early detection is important, and regular checkups and yearly stethoscope checks can help in early diagnosis of heart valve disease. A stethoscope lets the doctor listen to your heart and check for a heart 'murmur' or 'click-murmur', which is often the first sign of a heart valve disorder.



## When should you call 000?

Call an ambulance or get someone to take you to the closest hospital emergency department if you notice any of the following physical signs:



- Pain in your chest, arm, jaw or back pain that is not stopping



- Very severe shortness of breath



- Going in and out of consciousness or collapsing

If you experience milder symptoms, make an appointment with your doctor. Mild symptoms of heart valve disease can still require treatment.

## A proper diagnosis is important when living with heart valve disease

Heart valve disease is a condition that can be treated if discovered early, helping you to get back to a good quality of life. If you're over 65 and experience any symptoms of heart valve disease, it's important to see your doctor.

It's a good idea to try to keep a record of any symptoms you might have. This can help you to remember to tell your doctor how you've been feeling. Also record the exercise you've been doing if you've been feeling unusually tired, or breathless. Your doctor will look at the following to check for a possible heart valve disorder:



- Pulse rate and rhythm: The doctor will feel your pulse in order to check how fast it is, and whether it has a regular rhythm.



- Blood pressure: Your blood pressure is measured using a gauge with an inflatable cuff that goes around your arm. This measures the force or pressure that your heart needs to use to pump blood around your body.



- A stethoscope check: The doctor will place a stethoscope against your chest to listen to your heart.

The stethoscope is one of the most important checks to listen for a heart murmur or 'click-murmur' – normally the first sign of heart valve disorder.

## Follow up tests

If your doctor finds a heart murmur, they will most likely recommend some follow up tests for a more accurate diagnosis. The following tests may be performed:



- **Doppler echocardiogram:** This is an ultrasound of the heart which can show if you've had previous heart attacks, or if your heart valves are damaged or leaky. It also measures the amount of blood that can be pumped out of your heart every time it beats.
- **Chest X-ray:** This shows the size and shape of the heart to identify anything abnormal.
- **Electrocardiogram (ECG):** This test is used to check your heart rhythm or determine if you have an enlarged heart muscle. This is done by measuring the electrical activity of your heart.
- **Radionuclide ventriculography (RNVG, RNA or MUGA scan):** This test is where a small amount of radiation is injected into a vein. A scan is then done which allows the doctor to see the performance of heart muscle, blood flow, and size and shape of the heart's chambers, while you rest and exercise.
- **Transoesophageal echo (TOE):** This is where a probe is placed down the oesophagus to see an image from behind the heart.
- **Cardiac catheterisation:** This is where catheters (small, flexible hollow tubes) are inserted into a vein and an artery to see how well your heart valves and arteries are working.

## Treating heart valve disease

If diagnosed early, heart valve disease is treatable and you can live a full, happy life. Treatments for heart valve disease can include medicines and surgery.

### *Medicines*

It's not possible to reverse heart valve disease with medicine alone. Sometimes medicines may be recommended instead of surgery if your symptoms are mild, or if valve repair or replacement is not possible.



Medicines may be prescribed to reduce symptoms, maintain the heart's rhythm, or lower the risk of blood clotting and stroke.

Some medicines that could be prescribed include:



- **Angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARBs):** These manage high blood pressure and in turn, help blood pump around the body.
- **Anti-arrhythmic medication:** These help maintain or restore a normal heart rhythm.
- **Antibiotics:** These help to prevent infection after surgery.
- **Anticoagulants:** These can reduce the risk of blood clots because of poorly circulating blood around faulty heart valves. Anticoagulants are often prescribed for patients with a mechanical heart valve, and can help prevent stroke.
- **Beta-blocker:** These work by slowing your heart rate and reducing blood pressure, and can help against heart damage.
- **Diuretics:** These can help lower the burden on your heart by reducing fluid in the tissues and bloodstream.
- **Vasodilators:** These can help open and relax the blood vessels, reducing the workload of your heart and reducing pressure on leaky valves.

## Surgery

Depending on your symptoms and the overall condition of your heart, your doctor may decide to repair existing heart valves or replace them entirely. An affected valve could be repaired with a ring to support the damaged valve, or it may be replaced with an artificial valve.

Types of surgery for heart valve repair or replacement include:







- **Open heart surgery:** This is a highly successful procedure that has traditionally been used to replace or repair heart valves. The procedure usually takes a few hours: a large opening is made in the chest, and the heart is temporarily stopped so that the surgeon can insert a new valve or repair an existing one. Patients usually stay in hospital for a week or more after surgery. The recovery period from this type of surgery is around two to three months, and it leaves a noticeable scar.



- **Minimally invasive valve disease surgery:** This is where a camera is inserted through a small opening on the side of the chest, so the surgeon can see the heart and repair or replace the valve. It's a procedure with a shorter hospital stay than open heart surgery, usually involving a stay of around 4 or 5 days. This form of surgery also involves less risk of infection and scarring, and faster recovery than open heart surgery. Most aortic and mitral valve surgery can be done using this technique, but open heart surgery may be more suitable for people who need more complex valve repairs, or those who have some other health conditions as well as heart valve disease.



- **Transcatheter aortic valve implantation (TAVI):** This is a procedure where a long, flexible tube is inserted through an artery. The tube has a replacement valve attached to one end. Imaging equipment is used to guide the tube, positioning the replacement valve inside the natural valve. Once it is in the right position the replacement valve expands into place, pushing the faulty valve away. The replacement valve starts to work immediately. This is less invasive than open heart surgery, and generally has a shorter recovery time. The procedure usually takes around 1 hour, with a typical hospital stay of 3 to 5 days. It can also be an option for patients where open heart surgery is too risky.
- **Transcatheter mitral valve repair (MitraClip™):** This is a procedure where a long, flexible tube is inserted through a vein in the groin. The tube has a specialized clip attached to one end. Imaging equipment is used to guide the tube, positioning the device inside the natural valve. Once it is in the right position the clip grasps the leaky valve leaflets and reduces the leakiness of the valve. This is less invasive than open heart surgery, and generally has a shorter recovery time. The procedure usually takes around 2 hours, with a typical hospital stay of 3 to 5 days. It can also be an option for patients where open heart surgery is too risky.

### There are two types of artificial valves:



1. **Mechanical valves:** These valves last for the rest your life. People with this type of replacement valve usually need to take anticoagulant medicine (warfarin) for the rest of their life to prevent blood from clotting around the valve.



2. **Tissue valves:** These valves are made from animal tissues. People with this kind of replacement valve don't need to take anticoagulant medicine long-term. These valves don't last as long as mechanical valves, so another surgery may be needed later in life.

## Shared decision making

Decisions about ongoing care for heart valve disease should be based on an individual's needs. That's why shared decision making is so important. Shared decision-making means you have all the information you need to make decisions about the management of your condition with your health care professionals and your family.

You should discuss with your doctors which valve and surgery is most suitable for you so a well thought out decision can be made. A multidisciplinary team (MDT) or 'structural heart team' will be available. This is a team of heart valve disease experts who all have different skills, and they will help make sure you receive care that considers your needs, as well as other factors in your life that affect your health and wellbeing.



## Moving forward: what to expect after surgery

### *What to expect immediately after surgery*

Straight after surgery, patients are usually focusing on basic personal care. You're encouraged to start the process of getting back to basic things, like getting up, eating and drinking.

### *Weeks after surgery*

A few weeks after surgery, you can expect to gradually return to your normal activity levels. After around three weeks you may be able to walk for up to 10 minutes a few times a day, and by week six you should be able to walk for around 30 minutes.

### *Follow-up care*

Four to six weeks after surgery you'll generally have what's called a postoperative visit to check everything is on track. Moving forward, it's important to have regular check ins with your GP or heart specialist. Check with your medical team about which symptoms mean you should contact your doctor for an extra checkup.

### *Other things to consider after surgery:*

- Depending on how physically demanding your job is, you will need to take 6-12 weeks off work
- You will not be able to drive for around 6 weeks. If you have a commercial licence, you will not be able to drive for 3 months and testing will be needed before you can start driving again
- You can resume sexual activity once you are comfortable enough to do so
- If you drink alcohol, you can consume small amounts in moderation, but you will need to be careful if you are taking the anticoagulant medicine warfarin. Alcohol can affect the way that warfarin works. Speak to your doctor about safe alcohol consumption if you are taking warfarin.

## Recovery after surgery

Part of recovery means keeping up good habits. Below are some suggestions of how you can help your recovery process:



- **Embrace a positive physical routine:** Exercise when your doctor suggests you can. Physical activity, even if gradual and slow, will help you recover after surgery. Regular exercise will also recharge your mental health and help keep you positive.



- **Keep track and weigh yourself every day:** You can expect to lose a little weight after your surgery, especially in the first few weeks. Look out for fast weight gain, as this might mean that you are retaining fluid. If you gain more than 2kg, talk to your doctor.



- **Congratulate yourself:** If you have been through surgery, you should be proud and congratulate yourself. Afterwards, make sure to track the improvements you are making, and be positive about how far you have come.

## It's important to maintain a healthy lifestyle



Incorporating a heart-healthy lifestyle will help your recovery, and help you both mentally physically. These changes could include:



- A healthy diet can lead to a healthier heart. Eat more vegetables, fruits and embrace whole grains, poultry and seafood whilst limiting salt, sugar and saturated fats.



- Aim to keep a healthy weight. If you are overweight or obese, your doctor may recommend losing weight.



- Physical activity is important. It only takes a small amount of physical activity every day to make a difference.



- Try to minimise stress by doing relaxing activities and spending quality time with friends and family.



- If you smoke, quitting is good for the health of your heart. Speak to your doctor or call Quitline on 13 7848 for support with giving up smoking.

## Try to maintain a healthy state of mind

The journey from diagnosis to treatment of heart valve disease can be a mental health challenge as much as a physical one. You need to do all that you can to support your mental health moving forward.

Talking to a professional can help with your mental health. Counselling or psychological therapy can be very useful for managing mental health and your condition. Your doctor can provide you with some options, and give you a referral to a psychologist.

Alternatively, to talk to someone at hearts4heart about any concerns you might have about your valve disease, email [info@hearts4heart.org.nz](mailto:info@hearts4heart.org.nz) We can provide you with answers to your questions from a clinician, or a member of the patient advocate group.

## Doctor consultation guide - preparing for an appointment

Your appointment is a good chance to discuss your ongoing condition with your doctor and discuss better ways of managing it. Here's how to make the most of every consult.

### Monitor your symptoms

It's important for your doctor to know about any changing symptoms. This will allow your doctor to better treat and manage your condition. Common signs include:

- Shortness of breath
- Chest tightness and/or pain
- Extreme tiredness
- Dizziness or fainting
- Difficulty with physical activity

It can also help to talk about your symptoms with family and friends, as they may notice changes you have missed.

### *Keep a list of current medicines and tests*

Keeping a list is important so all the doctors you see know which medicines you're taking and which medical tests you've had. Don't forget to include dosage of the medication, and any other supplements you take, like vitamins.

### *Write down your questions and concerns*

It can be hard to remember all the questions you want to ask your doctor. So, in the days leading up to the appointment, be prepared and make a list. These questions could be about side effects of medicines, ways to improve your condition, or practical questions about your care. Write everything down. It can also be helpful to bring a friend or family member to be part of the discussion. Don't forget to write down the doctor's advice. This is where a support person can help after the appointment in case you miss something.

### *Examples of things to talk to your doctor about include:*

1. Telling your doctor how you're feeling. Try to be as specific as you can about changes in your symptoms. Give examples of how heart failure affects you in your daily life, such as:

- I can't do activities I used to enjoy, like mowing the lawn or walking the dog, because I get tired easily
- When I walk up a flight of stairs, I get short of breath quickly
- I find that I get dizzy and lightheaded more often than I used to

2. Some examples of questions you might want to ask your doctor include:

- How do you think my heart valve disease will affect my daily activities, like walking to the shops, mowing the lawn, or baking?
- What can I expect with my heart valve disease over the next few months and years?
- What changes can I make in my life to help improve my condition?
- What are the possible side effects of my medicines or surgery?
- If my other health conditions affect my heart valve disease, what can I do?



## Make a plan

It's worthwhile to work with your doctor to plan one to three things to work on before your next appointment. It could be a medical or a lifestyle improvement, but setting small goals can make a big difference, build confidence and give you something to aim for.

## After your appointment

When you get home, look at your notes and update your family or friends about your appointment. The more they know about your health, the better they can support you.





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