Heart valve disease

BEATING HEART DISEASE TOGETHER

British Heart Foundation

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Contents

About this booklet

This booklet is for people who have a problem with one or more of their heart valves. It explains:

- what heart valve disease is
- what types of treatment are available, and
- what you can do to help yourself.

This booklet does not replace the advice your doctor or cardiologist (heart specialist) may give you, but it should help you to understand what they tell you.

If you need to have heart valve surgery, you can find more information on what will happen in hospital, both before and after your operation, in our booklet *Having heart surgery*.

What is heart valve disease?

Your heart is a muscle that acts as a pump. It has four chambers: the left atrium, the right atrium and the left and right ventricles. See the diagram on the next page.

There are four valves in your heart. These valves guard the exits of all four heart chambers to make sure that the blood cannot leak backwards and that it flows onward in the correct direction. We explain more about the four heart valves on page 18.

A diseased or damaged valve can affect the flow of blood in two ways.

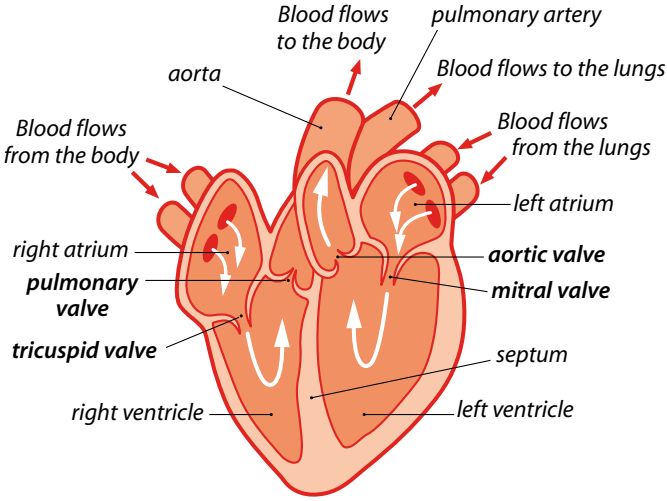
- If the valve doesn't open fully or becomes stiff, it can obstruct the flow of blood. This is called **valve stenosis**. (A 'stenosed valve' means a valve that has become stiff and therefore narrow, causing an obstruction to the flow of blood.)
- If the valve does not close properly, it will allow blood to leak backwards. This is called **regurgitation** or **valve incompetence**.

Both stenosis and regurgitation can put an extra strain on the heart. If you have stenosis, the valve can obstruct the flow of blood, so your heart will have to pump harder to force the blood past the obstruction. If you have

regurgitation, your heart has to do extra work to pump enough blood forwards against the blood flowing backwards through the leaking valve.

As well as your heart having to work harder, the blood behind the affected valve will be under increased pressure, which is called 'back pressure'. This can result in a build-up of fluid either in your lungs or in your ankles or legs, depending on which valve is affected.

The heart



What are the symptoms of heart valve disease?

The symptoms of heart valve disease vary, depending on which valve is affected and how badly it is affected. People with mild heart valve disease may not notice any symptoms or may have very few symptoms. However, increasing strain on the heart caused by heart valve disease can cause **tiredness**, or an uncomfortable pounding in the chest known as **palpitations**. The back pressure can cause a build-up of fluid in the lungs which can lead to **shortness of breath.** It can also cause **swelling of the ankles and legs**.

People with heart valve disease may also get **chest pains** because there is not enough blood flowing through the coronary arteries – the arteries that supply oxygen-containing blood to the heart muscle.

If the forward flow of blood is severely obstructed, the person may have spells of **dizziness** and **fainting** because less blood is reaching the brain.

How is heart valve disease diagnosed?

Abnormalities of the heart valves are often picked up at a routine examination when the doctor listens to the heart with a stethoscope and hears an extra noise called a 'murmur'. (However, sometimes, murmurs are also heard in hearts that are otherwise completely normal.) The doctor will usually be able to tell from the type of murmur he or she hears whether you need to have further tests.

Even after a valve condition has been diagnosed, it can sometimes be 10 or even 20 years before you have any symptoms. Important changes can happen to your heart muscle even if you don't have any significant changes in your symptoms. This is why it's important to have your heart function checked regularly. Your doctor or cardiologist will tell you how often.

Tests

If you have symptoms that may be caused by a faulty valve, or if you have a murmur that is suspicious, your doctor will arrange for you to have the following tests:

- an **electrocardiogram** (an ECG), which records the rhythm and electrical activity of your heart

- a **chest X-ray**, and
- an **echocardiogram**, which produces an ultrasound picture of the heart and valves.

For more information about these tests, see our booklet *Tests for heart conditions*.

Cardiac catheterisation

There is another test called cardiac catheterisation, which is also known as a **coronary angiogram**. This test is used to provide important information on the condition of your heart.

A catheter (a long, hollow plastic tube) is passed into the artery in the groin, or sometimes into the arm. Using X-ray screening, the operator then directs the catheter through the blood vessels and into the heart. A special dye is then injected and a series of X-ray pictures is taken. The dye makes all the coronary arteries show up on the X-rays. For more information about cardiac catheterisation, see our booklet *Tests for heart conditions*.

Having a cardiac catheterisation test can also find out how good the blood supply to your heart muscle is, and whether there is any narrowing of your coronary arteries. The coronary arteries supply your heart muscle with blood and oxygen. If the cardiac catheterisation test shows that the blood supply is not good, and if you need

valve surgery, the doctors may do both the valve surgery and bypass surgery (to improve the blood supply to the heart muscle) at the same time. We explain more about valve surgery on page 21.

Mild, moderate and severe heart valve disease

Your doctor may tell you if your condition is mild, moderate or severe. These are ways of describing how serious the disease is, but each person can be affected differently. For example, one person may have moderate disease of a valve but have few symptoms, while another person who also has moderate heart valve disease may get more severe symptoms. So, while your symptoms are a guide for your specialist, he or she may recommend that you have treatment for your heart valve disease – including surgery – even if you have very few or no symptoms. For more information on treatment, see page 15.

What causes heart valve disease?

The main causes of heart valve disease are:

- being born with an abnormal valve or valves (congenital heart disease)
- rheumatic fever
- ageing of the heart
- cardiomyopathy
- coronary heart disease, or
- a previous infection with endocarditis.

Congenital heart disease

Some people are born with an abnormal valve or valves. Fortunately, most of these people never experience any symptoms. However, in some people the condition can get worse over the years, causing stenosis or regurgitation, or both.

Rheumatic fever

A very small number of people in the UK still get rheumatic fever. Also, some people may have been affected by rheumatic fever when they were children, and may develop symptoms of heart valve disease as adults. Rheumatic fever can affect one, two or three valves,

causing stenosis or regurgitation, or both. The most commonly affected valves are the aortic and mitral valves.

Ageing of the heart

As we get older, the heart valves – commonly the aortic valve – may thicken as a result of wear and tear, or uncontrolled high blood pressure. This means that the space through which the blood flows becomes narrower. How severe this narrowing is can determine how severe the symptoms are. The aortic valve, in particular, can become stiffer as calcium deposits from the blood settle on it, causing it to harden. In many people this doesn't cause a problem, but others may get symptoms.

Cardiomyopathy

Cardiomyopathy is a disease of the heart muscle. Sometimes this disease causes the heart not to contract properly because the muscle has become stretched. This may cause problems with one or more valves. The most common problem is that the mitral valve is affected by regurgitation because the valve opening has become stretched and the valve can no longer close properly (see page 6).

Coronary heart disease

In people with coronary heart disease, the heart muscle

does not always get a good supply of blood. This can make the heart muscle pump less efficiently and cause the mitral valve to leak because it has become floppy.

A previous infection with endocarditis

Endocarditis is an infection of the lining of the heart. If you have previously had endocarditis, this may have damaged one of your heart valves. This means that, at some stage, you may need to have the affected valve replaced or repaired.

Treatment for heart valve disease

Many people with heart valve disease need little or no treatment and can live a good-quality or normal life for many years.

Everyone who has heart valve disease benefits from having regular check-ups, which includes having an echocardiogram. See *Check-ups* on page 47.

The decision on what sort of treatment you need for your heart valve disease will depend on:

- which valve is affected
- how badly the valve is affected
- how many valves are affected
- how badly the heart's ventricles are affected
- your symptoms, and
- your general health.

The main options for treatment are:

- medicines
- valve surgery, which could involve replacing or repairing the valve
- a procedure called transcatheter aortic valve implantation
- a procedure called percutaneous mitral valve

leaflet repair
- a procedure called valvuloplasty, or
- a combination of medicines with either surgery or one of the procedures mentioned above.

We explain all these treatments in more detail on pages 21 to 36.

Your specialist may recommend that you have surgery, or one of the other procedures mentioned above, even if your symptoms seem mild or if you don't have any symptoms. If he or she does recommend one of these treatments, it may be because your heart muscle is showing signs of strain. The treatment aims to make sure that the faulty valve doesn't cause any further damage to the heart muscle.

Medicines

Most people will need to take medicines to control their symptoms. Often, if your heart valve disease has been found while it is still in the early stages, it can be well managed for many years just by taking medicines. The medicines commonly used for people with heart valve disease include diuretics, ACE inhibitors and digoxin.

- **Diuretics** encourage the body to produce urine, and can relieve the build-up of fluid in the lungs and in the ankles and legs (see page 8).

- **ACE inhibitors** reduce the amount of work the heart has to do.
- **Digoxin** slows the heart rate, stabilises the heart rhythm and helps the heart's pumping action.
- You may also need to take **anticoagulants**. We explain more about these on pages 27 and 37.

The four valves in the heart

The mitral valve

This valve has two 'leaflets' – which are like very small flaps. The mitral valve regulates the flow of blood between the left atrium (one of the four chambers in the heart) and the left ventricle. See the diagram on page 7. The mitral valve leaflets can stretch and become 'floppy', and this can lead to regurgitation, which is the most common problem with this valve. Rheumatic fever, which is rarer now than it used to be, can cause the valve leaflets to become stenosed (narrow and stiff), making it difficult for the valve to open. Also, infection of the valve (endocarditis) can cause damage to the leaflets (see pages 14 and 41).

If it is possible, the mitral valve is usually repaired, but otherwise it is replaced. The tendons that hold the valve in place can also be affected, leading to regurgitation. These can also be repaired or replaced.

The aortic valve

This valve is made up of three 'cusps' (small flaps). It controls the blood flowing out of the left ventricle, into the aorta and around the body. The most common problem with the aortic valve is that it becomes stiff and

narrow, making it difficult for the blood to leave the heart. This is most often due to calcium deposits on the valve that happen with old age. Congenital defects (defects you are born with) can also affect the aortic valve. For example, the cusps of the valve may not separate properly, or the valve may have only two cusps instead of three. This is called a bicuspid valve. This valve can also be affected by endocarditis (see page 14).

Because the aortic valve is under the greatest pressure of all the valves, it is normally replaced rather than repaired, but in some cases it is possible to repair it.

The tricuspid valve

This valve has three 'leaflets' (like small flaps). It controls the flow of blood between the right atrium and the right ventricle. Problems associated with the tricuspid valve are less common, and are usually due to problems on the left side of the heart, causing the valve to leak (regurgitate). Occasionally it is associated with congenital defects or stenosis.

This valve is usually repaired, but it can be replaced if necessary.

The pulmonary valve

This valve is made up of three 'cusps' (small flaps). It controls the flow of blood from the right ventricle into the pulmonary artery and on to the lungs. Generally, problems with the pulmonary valve are due to congenital defects and are rare.

The pulmonary valve is usually replaced but it can be repaired if necessary.

The pulmonary valve can also be used to replace the aortic valve (see page 26).

Valve surgery

If any valve is severely affected, you may be advised to have valve surgery. This can get rid of or greatly improve your symptoms, and it can significantly improve the quality of life for many people. If your doctor or cardiologist finds that your heart muscle has been affected by the faulty valve, they may recommend that you have surgery even if you don't have any symptoms. This can prevent other serious heart problems happening in the future.

Repairing and replacing valves

There are two main types of valve surgery – **valve repair** and **valve replacement**.

- **Valve repair** is most often used for leaking mitral valves. Other valves can also be repaired.
- **Valve replacement** is when the diseased valve – most commonly the aortic valve – is replaced with another valve. There are two main types of replacement valves – **mechanical valves** (which are usually made of special ultra-smooth carbon), and **tissue valves** (human valves, animal valves, or valves made from animal tissue). For more information on the different types of valves, see page 25.

Whether you have a repair or a replacement will depend on the type of valve affected, how badly it is affected, and the surgical expertise available in your area. Your surgeon will discuss your options with you.

Before your surgery

To reduce the risk of getting endocarditis (an infection of the lining of the heart – see page 41), it is essential that you have a full assessment of your teeth and gums **well before** you are due to have your surgery. This includes asking your dentist to check that:

- your teeth and gums are healthy
- there is no sign of infection, and
- any treatment needed is completed **before** your surgery.

Some hospitals will not carry out your valve surgery unless you have had this done.

What happens during surgery

In most heart valve operations, the surgeon reaches the heart by making an incision (cut) down the middle of the breast bone. A heart-lung machine is used to circulate the blood around the body while the surgeon operates on the heart.

For information on what happens if you have valve surgery

If you have been told that you need to have valve surgery, read our booklet *Having heart surgery*. This describes:

- what happens in hospital in the time before your operation
- who's who in the surgical team
- your recovery period in hospital
- how long you will need to stay in hospital for, and
- how to manage when you return home.

Minimal access surgery

*Also called **minimally invasive surgery**.*

In a small number of cases, minimal access surgery may be used instead of the traditional open-heart surgery described on page 23.

With minimal access surgery, the surgeon makes one or more small cuts in the skin on the chest. The cuts are smaller than the cuts needed for traditional surgery, so this may reduce the amount of discomfort after the operation. In some cases, specially designed telescopes are used so that the cuts can be even smaller.

The other difference between this type of surgery and traditional surgery is that with minimal access surgery either the breast bone is not cut at all, or only part of it is cut.

If you are offered this type of surgery, you can discuss with your surgeon the advantages and disadvantages of it. This approach is not suitable for everyone and needs to be carried out by highly skilled and experienced surgeons. At the moment, it is not used in all centres in the UK, but it is being used more and more.

What sort of replacement valves are used?

There are two main types of replacement valves – **mechanical valves** and **tissue valves**.

Mechanical valves

tilting disk valve

bi-leaflet valve

Mechanical valves are artificial valves. They are sometimes called 'metal valves' or 'plastic valves', although they are actually made of a special ultra-smooth carbon. There are many different types and all have been put through strict tests for function and wear. This is very important as the valves have to open and close about 40 million times a year!

Although these valves are made with high-quality materials and to a very high standard, there is a risk of a blood clot developing on the surface of the valve. To help prevent this, you will have to take medicines called

anticoagulants for the rest of your life. We explain more about anticoagulants on page 37.

Tissue valves

a tissue valve

There are different types of tissue valves. The type most commonly used are porcine valves, from pigs, which are naturally formed aortic valves. Bovine valves are made by hand, using the heart tissue of a cow. Preserved human valves (homografts) are also available. Because these valves are made from natural tissue, you don't need to take anticoagulants for life. However, anticoagulants may be recommended for the first few weeks after surgery, until the valve has settled in. (See *Anticoagulants* on page 37.) After that, you may need to take aspirin to reduce the risk of blood clots forming.

Pulmonary valves

Sometimes a person's own pulmonary valve may be used to replace an aortic valve. This is known as pulmonary autografting or the Ross procedure. Another form of

tissue valve (homograft) is then used to replace the pulmonary valve. This is often done in young people who have a congenital defect in their aortic valve.

Advantages and disadvantages of mechanical valves and tissue valves

There is little difference between mechanical and tissue valves in terms of people's long-term survival. However, each type of replacement valve has some advantages and disadvantages.

Mechanical valves

Mechanical valves don't wear out, so they will last a lifetime, which is why young people may choose them. However, if you have a mechanical valve, you will have to take warfarin (an anticoagulant medicine) for the rest of your life, to stop blood clots forming on the valve. This can be a disadvantage if you enjoy contact sports as it is not advisable for people who are taking warfarin to play this type of sport. Also, in most cases, it's not advisable for women to take warfarin while they are pregnant, as it can have a harmful effect on a developing baby. So, if you are a woman and are thinking about having a baby at some time in the future, it is very important that you discuss this with your doctor when deciding which type of valve to have.

Also, a mechanical valve can make a quiet clicking sound. You may find this disturbing at first, but most people soon get used it. Your partner may find that he or she is also aware of the clicking sound at night.

Tissue valves

The disadvantage of a tissue valve is that, in younger people who do a lot of physical activity, the stresses placed on the tissue valve may cause the valve to wear out more quickly, and they might then need a second replacement. In older people, a tissue valve will often last a lifetime. However, the number of younger people receiving a tissue valve has increased significantly in recent years, because modern tissue valves last longer than the older-style ones.

People who have a tissue valve don't usually need to take warfarin long term. For some people this may be an important factor when making the decision on which type of valve to have. Younger people often choose a tissue valve to avoid having to take warfarin, accepting the possibility that they may need to have a second valve-replacement operation in the future.

Deciding which type of valve to have

If you need a replacement valve, you can discuss with your surgeon which type of valve would be most suitable for you, taking into account your views and preferences, your lifestyle and your condition.

What are the risks of valve surgery?

Valve surgery is generally very successful but, like any other surgery, it is not risk-free. There is a small risk of having a heart attack or stroke, or dying, either during or soon after the operation. Your risk will depend on:

- your age
- your current state of health
- the degree of valve disease
- which type of valve is affected
- whether you are having a valve replaced or repaired, and
- whether you are also having coronary artery bypass graft surgery at the same time as the valve surgery.

Having a valve replacement carries a greater risk than valve repair. Before you have your surgery, you should discuss with your cardiologist or surgeon the risks of the surgery for you, as he or she will be able to take account of all the factors.

Once you have recovered from your operation, problems are rare. However, having a 'foreign' valve in the circulation can sometimes cause the following problems.

Unfortunately, there is a small risk of both mechanical and tissue valves becoming infected. (See *Guarding*

against infection on page 41.) Also, blood clots may form, particularly on mechanical valves, and especially if it has been difficult to control anticoagulation. (See page 37 for more on this.)

Any type of replacement valve can become damaged – for example, because of uncontrolled high blood pressure or previous endocarditis. Damage is more likely to happen with tissue valves than mechanical valves.

Other techniques for valve replacement or repair

In some cases, treatment for heart valve disease may be carried out using a different technique from the traditional surgery described on page 23. These different techniques are:

- transcatheter aortic valve implantation
- percutaneous mitral valve leaflet repair, and
- valvuloplasty.

We explain more about these below. However, open-heart surgery – as described on page 23 – is still the most common treatment for repairing or replacing heart valves.

Transcatheter aortic valve implantation

*Also called **TAVI**.*

In recent years, researchers have explored the possibility of inserting aortic valves using a technique called **transcatheter aortic valve implantation** – or 'TAVI' for short. So far, this procedure is used only in adults who need an aortic valve replacement, but who are not well enough to have traditional surgery.

The technique used for this procedure is similar to the

technique used for doing a cardiac catheterisation (see page 10). However, it is important to realise that the risk is the same as if you were having aortic valve surgery. The good news is that recovery should be quicker than with surgery.

This procedure may be performed under general or local anaesthetic. A catheter (a hollow tube) with a balloon at its tip is inserted into an artery either in the groin or under the collarbone. The catheter is passed up through the aorta and into the heart, and is positioned within the opening of the aortic valve. The balloon is then gently inflated. This squashes the narrowed valve, to make room for the new valve. The new valve is placed in position. The new valve then either expands by itself or is expanded using the balloon, depending on which type of valve is used. The balloon is then let down and the balloon and catheter are removed. So, the new valve sits inside the squashed valve.

Another way to perform this procedure is to make a cut between two of your ribs and insert a catheter, with a balloon at the tip, directly into your left ventricle and across the narrowed valve. This is called a transapical approach.

The new valve that is implanted is a tissue valve, so you would not need warfarin over the long term but you

would need to take a blood-thinning medicine such as aspirin or clopidogrel for the rest of your life.

If this procedure is an option for you, you can discuss its risks and benefits with your cardiologist. As it is still a new procedure, its long-term benefits are not known. At the moment, if you need to have an aortic valve replacement, you are still more likely to be offered valve surgery.

Percutaneous mitral valve leaflet repair

This is an alternative procedure for people who are too ill to have mitral valve surgery. It is a new procedure, so at the moment it is only offered to patients in a small number of specialist cardiac units.

The procedure is performed under general anaesthetic. Percutaneous means 'through the skin'. The procedure is performed using the same method as cardiac catheterisation (see page 10). A catheter containing a special clip is guided from a vein in the groin up into the heart, to the right atrium and then through the septum into the left atrium and to the mitral valve. (The septum divides the left and right sides of the heart from each other – see the diagram on page 7.) The two leaflets of the mitral valve are then held together using the special clip. This reduces the amount of regurgitation (where the blood flows backwards).

Not everyone is suitable for this procedure and selected patients will have a detailed assessment. As it is a new procedure, the long-term benefits are not yet known. Your cardiologist will discuss with you in full the risks of undergoing this procedure.

Valvuloplasty

*Also called **balloon treatment** or **balloon angioplasty.***

Although valvuloplasty is not as commonly used as in the past, some people with stenosis of their valves may be advised to have this procedure instead of surgery. Valvuloplasty is most often used for the mitral valve. It is sometimes used for other valves but this is less common.

Valvuloplasty involves putting two catheters (thin, hollow tubes) into either an artery or a vein in the groin, depending on which valve is affected. One of the catheters is then passed through the other and into the heart, until the tip of the catheter reaches the narrowed valve. A small, sausage-shaped 'balloon' on the end of this catheter is then gently inflated to stretch the valve. The balloon catheter is then removed and the other catheter remains in place for a few hours until the doctors have confirmed that the procedure has been successful. This procedure is carried out during cardiac catheterisation (see page 10).

The main advantage of this procedure is that it avoids having to have an operation. However, in some people who have valvuloplasty, the valve may become narrow or start leaking again in the future, and they may need to have further treatment.

What are the risks of valvuloplasty?

Valvuloplasties have a high success rate, but all medical procedures carry a small risk. With valvuloplasty there is a risk that, if there are complications during the procedure, you may need emergency surgery. Before you have the valvuloplasty, you should discuss with your cardiologist the risk of having complications.

Anticoagulants

Anticoagulants are medicines that change the clotting mechanism of the blood, to reduce the chances of a clot forming. The most common anticoagulant is called **warfarin**.

If you have a mechanical valve replacement, you will need to take anticoagulants for the rest of your life. This is because, if a blood clot forms on a mechanical valve, it can block the valve and stop it working properly. Also, a blood clot can break away into the circulation and cause a stroke. By taking warfarin, both of these problems can be prevented.

If you have a tissue valve replacement, you may need to take anticoagulants for the first few weeks after surgery.

Blood tests

People who take anticoagulants need to have regular blood tests to make sure the dose is right. This means going to the local anticoagulant clinic for a blood test. Or, in some cases, your GP may be able to do the test. The blood test is a way of measuring your INR – the time it takes for your blood to clot, or in other words, how thin your blood is. The clinic, or your GP, will be able to adjust your anticoagulants to keep your INR at the right level.

You will need to have these blood tests once or twice a week at first. As your condition becomes more stable, you will only need to have these tests once every six to eight weeks. If it is difficult to control your INR, and your GP prescribes your warfarin, you may need to go back to the anticoagulation clinic at the local hospital, where it can be closely monitored.

These visits and tests are vital to check that you have the right level of warfarin in your blood. This is because too much warfarin can lead to bleeding, and having too little could increase the risk of blood clots forming.

Taking other medicines

If you are taking anticoagulants, you should check with your doctor or pharmacist before you take any other medicines – including over-the-counter medicines, prescription medicines and homeopathic preparations. This is because oral anticoagulants can interact with many medicines.

Food and drink

If you are taking anticoagulants, you should avoid drinking cranberry juice. You should also avoid having large amounts of vegetables and fruit containing vitamin K – such as green leafy vegetables – although normal everyday portions will not affect your INR. Your clinic can

give you more detailed advice on this.

Anticoagulant card

If you're taking anticoagulants, you should always carry an anticoagulant card or booklet, which gives all the details of your anticoagulation treatment. Your anticoagulation clinic will give you this card or booklet, or you may be given one when you are discharged from hospital. Or, you can wear a 'medical alert' bracelet or necklace stating that you are taking warfarin and the reason why. Remember to tell any doctors and nurses who are treating you that you are taking anticoagulants, and show them your anticoagulant card or booklet.

Symptoms to watch out for

Any of the following symptoms might suggest that your dose of anticoagulants is too high:

- prolonged bleeding from cuts
- bleeding that does not stop by itself
- nose bleeds that last for more than a few minutes
- bleeding gums
- red or dark-brown urine
- red or black stools
- for women, heavier bleeding during periods, or other vaginal bleeding.

If you are worried, contact your GP or anticoagulation clinic, or go to the accident and emergency department at your local hospital. Make sure that you have your anticoagulant card or booklet and any other medicines with you.

Sports

If you take part in contact sports or sports where there is a high risk of physical injury, even minor injury, you will need to discuss this with your doctor.

The future

At the moment, anticoagulants other than warfarin are not licensed for use after valve surgery. It is hoped that, in future, it will be possible to reduce the need for so many blood tests. Your clinic can update you on the research as it develops. They can also tell you if home-testing anticoagulation kits are available in your area.

Guarding against infection

Endocarditis

People who have an abnormal heart valve, and those who have had a heart valve replacement, or who have previously had endocarditis, are at risk of getting endocarditis. This is a rare but serious condition where there is an infection of the lining of the heart.

What causes it?

Any abnormal heart valve is at greater risk of becoming infected than a normal valve. This is because any bacteria that are being carried in the blood can stick to the uneven surface of the abnormal valve and stay there. Bacteria are also more likely to stick to the surface of a replacement valve than a normal valve. The bacteria then grow and the infection can spread to the lining of the heart. This can happen even when the abnormality is mild and is not otherwise causing any trouble.

What are the symptoms?

One of the reasons why endocarditis is so dangerous is that the early symptoms are often very subtle and non-specific. If you are at high risk of getting endocarditis and you have flu-like symptoms with

a **high temperature**, you should see your GP or cardiologist as soon as possible. Make sure that your GP and specialist know that you are at increased risk of getting endocarditis.

How is it treated?

Endocarditis can be life-threatening if it's not treated quickly. If the condition is diagnosed early, most people recover well with antibiotics.

If you develop endocarditis, you will need to go into hospital to have intravenous antibiotics (antibiotics given through a vein). How long you have to stay in hospital will depend on how severe the infection is and on the type of antibiotics needed to treat the infection. You will then need to take antibiotic tablets at home for another four to six weeks.

If the infection does not respond well to the antibiotics, or if a valve becomes badly damaged as a result of the infection, you may need to have surgery to repair or replace the valve.

What can you do to help prevent endocarditis?

It's not possible to prevent all bacteria from getting into the bloodstream, but there are some things you can do to reduce the risk of getting endocarditis.

- **Maintain good oral hygiene** (teeth and gums) and have regular check-ups with your dentist.
- **Avoid body piercing and tattooing.**
- **Don't inject any drugs that are not prescribed.**
- **If you have any infection, report it to your GP straight away so that you can have tests and treatment for it.**

In the past, the advice for people at risk of endocarditis was to take antibiotics before having dental treatment or certain other medical procedures. However, this advice has now changed. NICE (the National Institute for Health and Clinical Excellence) – the organisation that provides advice on promoting good health and preventing and treating illnesses – looked at all the latest research on this. They decided that it is very unlikely that there is any overall benefit from taking antibiotics before having dental treatment or other medical procedures. In other words, taking antibiotics before having dental treatment or other treatments or tests will not reduce your risk of developing endocarditis. Also, bacteria are becoming more resistant to antibiotics, making certain types of antibiotics less effective.

Endocarditis warning card

If you know that you are at increased risk of developing endocarditis, you should carry an *Endocarditis warning*

card to show to your GP and to any other health professionals who may need to give you treatment. You can get one from the BHF by calling the BHF Orderline on **0870 600 6566**.

Heart valve disease and pregnancy

Most women with mild to moderate heart valve disease do not have heart trouble during pregnancy, although very careful medical supervision is always advisable. However, if the valve disease is severe, the risk of pregnancy to both mother and baby is greater.

If you have severe heart valve disease and are planning to have a baby, your cardiologist may advise you to have valve surgery before you become pregnant.

Occasionally, valve disease only comes to light during pregnancy. If this happens, it is usually possible to continue with the pregnancy under strict medical supervision. If necessary, you can have a valvuloplasty or valve surgery while you are pregnant. (See pages 35 and 21.)

Mitral valve prolapse

The mitral valve can become slightly deformed, causing it to leak. This is called mitral valve prolapse. This causes a heart murmur but only very rarely leads to problems. For more information on heart murmurs, see page 9.

Check-ups

Most patients with heart valve disease will be seen by a cardiologist. You will probably have regular check-ups with a cardiologist or your GP. How often you need a check-up depends on your condition and your symptoms.

These check-ups are very important, even if you feel completely well. The aim is to start taking medicine or to have surgery or another treatment at the right time for you.

The check-up usually includes having an **echocardiogram** (see page 10) to find out if there have been any changes in your condition. In many cases, treatment will not be needed for many years, if ever. However, keeping a careful, regular watch on your condition will make sure that you get any treatment you need.

How your support can help

The BHF has played a crucial role in developing and improving procedures for replacing heart valves. One of the first BHF research grants in the 1960s went to Donald Ross and Professor Maurice Lessof at Guy's Hospital to develop their approach for heart valve replacement. Further BHF research has helped improve the safety of the surgical techniques for replacing the valves.

With the development of new techniques and medicines we are now seeing more and more people surviving to live with the often debilitating consequences of their heart disease, in particular heart failure. The next big challenge is to discover how to help the heart repair itself, so that heart failure can be cured rather than treated. Visit the *Research* pages on our website **bhf.org.uk** to see how your support can make a difference.

For more information

British Heart Foundation website

bhf.org.uk

For up-to-date information on heart disease, the BHF and its services.

Heart Helpline

0300 330 3311 (a similar cost to 01 and 02 numbers)

For information and support on anything heart-related.

Genetic Information Service

0300 456 8383 (a similar cost to 01 and 02 numbers)

For information and support on inherited heart conditions.

Booklets and DVDs

To order our booklets or DVDs:

- call the BHF Orderline on **0870 600 6566**, or
- email **orderline@bhf.org.uk** or
- visit **bhf.org.uk/publications**

You can also download many of our publications from our website. For a list of resources available from the BHF, ask for a copy of *Our heart health catalogue*. Our booklets are free of charge, but we would welcome a donation. (See page 2 for how to make a donation.)

Heart Information Series

This booklet is one of the booklets in the *Heart Information Series*. The other titles in the series are as follows.

Angina
Atrial fibrillation
Blood pressure
Cardiac rehabilitation
Caring for someone with a heart condition
Coronary angioplasty
Diabetes and your heart
Having heart surgery
Heart attack
Heart rhythms
Heart transplantation
Heart valve disease
Implantable cardioverter defibrillators (ICDs)
Keep your heart healthy
Living with heart failure
Medicines for your heart
Pacemakers
Peripheral arterial disease
Physical activity and your heart
Primary angioplasty for a heart attack
Reducing your blood cholesterol
Returning to work with a heart condition
Tests for heart conditions

Heart Matters

Heart Matters is the BHF's **free**, personalised service to help you live with a healthy heart. Join today and enjoy the benefits, including *heart matters* magazine, a Heart Helpline and an online members' area with articles, recipes and lifestyle tips. You can join online at **bhf.org.uk/heartmatters** or call **0300 330 3300** (a similar cost to 01 and 02 numbers).

Emergency life-support skills

Heartstart

For information about a free, two-hour course in emergency life-support skills, contact **Heartstart** at the British Heart Foundation. The course teaches you to:

- recognise the warning signs and symptoms of a heart attack
- help someone who is choking or bleeding
- deal with someone who is unconscious
- know what to do if someone collapses, and
- perform cardiopulmonary resuscitation (CPR) if someone has stopped breathing and his or her heart has stopped pumping.

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Have your say

We would welcome your comments to help us produce the best information for you. Why not let us know what you think? Contact us through our website **bhf.org.uk/contact**. Or, write to us at the address on the back cover.

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We are the nation's heart charity, dedicated to saving lives through pioneering research, patient care, campaigning for change and by providing vital information. But we urgently need your help. We rely on your donations of time and money to continue our life-saving work. Because together we can beat heart disease.

Crystal Mark 11421
Clarity approved by Plain English Campaign

bhf.org.uk

Heart Helpline
0300 330 3311
bhf.org.uk

Information & support on anything heart-related. Phone lines open 9am to 5pm Monday to Friday.
Similar cost to 01 or 02 numbers.

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