



A lifetime of specialist care

Royal Brompton & Harefield **NHS**
NHS Foundation Trust

Your transcatheter aortic valve implantation (TAVI)





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This leaflet explains what happens when you have a transcatheter aortic valve implantation (TAVI), and the risks and benefits. It does not replace personal advice from a healthcare professional. If you have any questions please ask your doctor or nurse.

What is transcatheter aortic valve implantation (TAVI)?

A TAVI involves fitting a valve in the heart to treat aortic stenosis (see below). The new valve is fitted on top of the old, damaged valve.

The new valve is made of natural tissue from the heart of a cow or pig. Your doctor will talk to you about the best type of valve for you.

A TAVI takes one to two hours, and is usually carried out under a local anaesthetic (you are awake but you do not feel pain). A TAVI can also be carried out under a general anaesthetic, depending on what is best for you. Your doctor will discuss this with you.

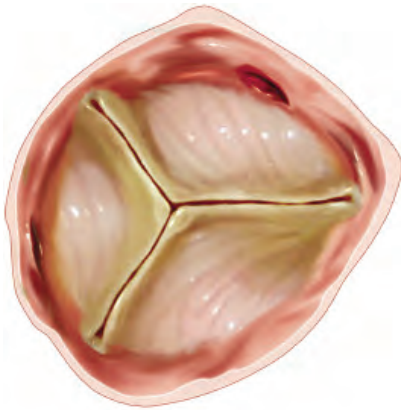
Most people come into hospital the day before, or on the day of their TAVI, and stay for between two to five days.

Aortic stenosis

Aortic stenosis is a narrowing of the aortic valve. The aortic valve is one of four heart valves that control the flow of blood out of the heart.

The flaps of the valve thicken, stiffen, or fuse together, so the valve cannot open properly. This is called a stenotic valve. The heart has to work harder and the blood flow is reduced, so there is less oxygen in the body.

Aortic stenosis may make you feel breathless and faint, with heart palpitations and chest pain.



Normal valve



Stenotic valve

Benefits of a TAVI

A TAVI can reduce symptoms such as shortness of breath, chest pain or fainting, and reduce the risk of heart failure and death.

A TAVI is a non-surgical alternative to open heart surgery. Your doctor may refer you for a TAVI if open heart surgery involves too many risks because of your age or health.

Risks of a TAVI

Every procedure carries some risk and risks are different for each person. Your doctor will discuss the risks with you before you decide to go ahead with a TAVI.

The risks of having a TAVI include:

- **Stroke:** 3 in 100 people (3%) have a stroke following a TAVI. Strokes can be treated with 'clot-busting' drugs.
- **Open heart surgery:** fewer than 1 in 100 people (<1%) need open heart surgery to correct complications occurring during a TAVI. Complications that may require open heart surgery include rupture of an artery, perforations of the chambers of the heart and displacement of the TAVI valve.

- **Heart attack:** 7 in 1,000 people (0.7%) have a heart attack during a TAVI. A heart attack can occur when an artery that supplies the heart (coronary artery) gets blocked. The doctor will try to open the blocked artery by stretching it with a balloon. A small metal tube, called a stent, is put in place to keep the artery open. This is called coronary angioplasty.
- **Bruising, bleeding and/or pain:** 1 in 20 people (5%) have major bleeding caused by damage to the artery. The artery may get damaged where the catheter is inserted or where the valve is implanted. Damage to the heart wall can cause blood to collect around the heart.
- **Femoral/iliac artery complications:** 4 to 5 in 100 people (4–5%) have major femoral artery complications. Damage to the femoral (groin) or iliac artery may need to be repaired through a further keyhole procedure through the groin, or surgery.
- **Irregular heart rhythm:** 10 to 20 in 100 people (10–20%) need a permanent pacemaker fitted to regulate their heart rhythm, because the heart rhythm does not return to normal after the TAVI.
- **Leaking of the aortic valve:** fewer than 5 in 100 people (<5%) have moderate to severe leaking of the aortic valve (aortic regurgitation), allowing some blood to flow in the wrong direction. Severe leaks are repaired by stretching the valve with a balloon, a second TAVI or open heart surgery.
- **Kidney function damage:** 5 in 200 people (2.5%) have kidney function damage.

This risk is higher if you have poor kidney function before your TAVI. Usually the kidneys get back to normal without treatment. 1 to 2 in 100 people (1–2%) need haemodialysis, a procedure where a machine is used to do the kidneys' job of cleaning the blood.

- **Death:** 1 to 4 in 100 people (1–4%) die within 30 days of having a TAVI.



Alternative treatments

A doctor or nurse will discuss alternative treatments with you before you decide whether to have a TAVI.

Aortic valve replacement

Aortic valve replacement is open heart surgical treatment for aortic stenosis and is an effective, life-saving option for many people, but is not suitable for everyone.

Balloon valvuloplasty (BAV)

A BAV can temporarily open up the narrowed valve. In a BAV, a catheter with a balloon on the tip is guided to the diseased aortic valve. The balloon inflates to open up the valve. A BAV is not a long-term solution, as the valve can become narrowed again. See the patient information leaflet *Balloon aortic valvuloplasty (BAV)*.

Medication

Medication may control your symptoms, but cannot treat the narrowing of the aortic valve.

Palliative treatment

Sometimes a TAVI and alternative treatments are not suitable, or you may decide not to have treatment. In this case, your doctor may refer you to the palliative care team to help you manage your symptoms and maintain a good quality of life.

Imaging during a TAVI

Your doctor may use X-rays, fluoroscopy or transoesophageal echo (TOE) to fit the new valve correctly.

Fluoroscopy is similar to a small X-ray film of your heart.

TOE is an ultrasound scan that uses sound waves to show moving pictures of your heart. A flexible tube (a probe) is passed down your throat, to send sound waves to your heart, and collect echoes that bounce back.

Risks of imaging

If you have a TOE, your doctor will put a small tube into your food pipe (oesophagus) while you are under general anaesthetic. Fewer than 1 in 10,000 people (<0.01%) have complications from a TOE, such as damage to their teeth, throat or gullet.

If you have any complications, you may need to stay on the intensive therapy unit (ITU)/recovery unit or adult intensive care unit (AICU) a few days longer than usual.

If you have any questions, please talk to your doctor.

Before your TAVI

If a TAVI may be right for you, your doctor will refer you to a consultant cardiologist. You may also have some tests to make sure that a TAVI is the right procedure for you, as not everyone is suitable.

Tests you may have before a TAVI include:

Blood tests

Blood tests check your general health. Your nurse can tell you what we are checking for.

Electrocardiogram (ECG)

For an ECG, electrodes (small sticky patches with leads) are put on your arms, legs and chest. The electrodes are connected to a monitor that records the rhythm and electrical activity of your heart. The test takes about 10 minutes.

Echocardiogram (echo)

An echocardiogram uses sound waves to build up a moving picture of your heart. It helps doctors learn more about the structure and function of your heart valves and heart chambers. An echocardiogram takes around 30 minutes.



Computed tomography (CT) scans

A CT scan is an X-ray that produces three-dimensional images of your body. A radiographer will give you an injection containing a special dye so that your blood vessels and heart show clearly on the scan. A CT scan takes about an hour.

Cardiac magnetic resonance (CMR) scans

A CMR scan uses a magnetic field and radio waves to take pictures inside the body. The scan helps doctors see the structure of your heart and blood vessels, and how well they are working. A CMR scan takes about an hour.

Coronary angiogram (cardiac catheterisation)

A coronary angiogram is a procedure that uses a series of X-rays to allow doctors to look at the main arteries that supply your heart muscle – the coronary arteries. A thin plastic tube (catheter) is guided through an artery in your groin or wrist to your heart. Then a special dye is injected through the catheter so your arteries show clearly. A coronary angiogram takes about 30 minutes.

Respiratory (lung) function test

A respiratory function test measures how well your lungs are working. You will blow into a machine through a tube.

Walking test

A walking test helps doctors see how far you can walk in six minutes. We will only ask you to take this test if it is comfortable for you.

Carotid dopplers

This is a painless ultrasound scan of the blood vessels in your neck. The test takes about 15 to 30 minutes.

Test results

After your tests, a specialist healthcare team will discuss your results, and decide which treatment may be best for you.

The specialist team includes heart surgeons, cardiologists, radiologists (imaging specialists), anaesthetists and specialist nurses. If the team agrees that a TAVI is the right treatment for you, a member of the TAVI team will call you to arrange a convenient date for you to have the procedure.

Improving your health before your TAVI

Improving your health before your TAVI can reduce the risks and help ensure your TAVI is successful.

Stop smoking

If you smoke, try to stop completely, several weeks before your TAVI. Stopping smoking reduces the risk of breathing problems and makes your procedure safer.

There is support to help you give up smoking. You can:

- talk to your GP or pharmacist
- call SMOKEFREE (free NHS helpline) on **0800 022 4332**, or visit **www.nhs.uk/smokefree**.

Control your weight


If you are overweight, losing weight will reduce the risk associated with having a TAVI. Help to lose weight is available from your GP or practice nurse.

Visit your dentist

Visit your dentist to make sure your teeth and gums are healthy, to avoid damage and reduce the risk of infection.

Germs (bacteria) can enter the bloodstream from your teeth and gums, and get into the heart, causing an infection known as endocarditis.

Endocarditis can damage the heart valves and cause other serious complications.



If you have loose teeth or crowns, dental treatment may reduce the risk of tooth damage if the anaesthetist inserts a tube to help you breathe. Please ask your TAVI nurse for advice.

Visit your GP

Ask your GP for a check-up if you have ongoing medical problems such as diabetes, asthma, bronchitis, thyroid problems or high blood pressure.

Pre-admission assessment

You will receive an appointment to attend a pre admission clinic approximately two weeks before you are due to be admitted. We will check your general health and fitness, do some blood tests and a test for MRSA (methicillin resistant staphylococcus aureus). MRSA is a common infection. If you have MRSA we need to treat it before your TAVI. If we need to delay your TAVI for any reason, we will explain what happens next.

Before coming to hospital

You will come into hospital either on the day or the day before your procedure. If you feel unwell before your TAVI, please telephone the TAVI clinical nurse specialist. The telephone number is at the end of this leaflet.

On the morning of your admission to hospital, please contact the ward you are due to be admitted to before you leave home to make sure that a bed is available.

What to bring to hospital

Remember to bring:

- all your medication
- your completed hospital forms
- a dressing gown
- slippers that fit well and have good grip.

In hospital – before the TAVI

Arriving at hospital

At Royal Brompton Hospital, when you arrive, please go to the main reception where the receptionist will direct you to your ward.

At Harefield Hospital, please go to the main reception and ask for the admissions office. An admissions officer will process your paperwork and direct you to the ward.

On the ward

When you get to the ward, a nurse will show you your bed. Male and female patients may share the same ward, but will have separate bays and bathrooms. There are exceptions; for example, in intensive care and high-dependency areas, male and female patients may be cared for in the same bay.

We cannot guarantee a time that your TAVI will take place. Unfortunately there may be delays if other patients need to be seen in an emergency.

Staff on the unit will keep you informed.

Hygiene

We will give you an antiseptic body wash to use before your TAVI.

It is very important that you have a thorough shower or bath the night before, and the morning of, your TAVI. Please pay special attention to washing under skin folds such as under the breasts, the groin and genital area.

Do not shave or remove hair from your chest, arms, legs or groin before your TAVI. If needed, shaving will be done in hospital just before your TAVI.



Contact with the anaesthetist

On admission you will see the anaesthetist or doctor/nurse responsible for your sedation during the procedure.

Your anaesthetist/doctor/nurse will discuss your general health, the medicines you are taking, any allergies you have and any past anaesthetics you have had.

Please let your anaesthetist/doctor/nurse know if you are taking:

- anticoagulants (medicines to prevent blood clots)
- diabetes medication
- antidepressants.

The anaesthetist/doctor/nurse will also plan your care for immediately after your TAVI, including pain relief and recovery.

If you have any questions, please ask the anaesthetist/doctor/nurse, or you can contact the TAVI nurse at the hospital.

Food and drink

Do not eat anything on the morning of your TAVI. You can drink water, black tea or black coffee up until the procedure.

Medication

Continue to take your medicines as usual, unless your TAVI nurse or cardiologist has asked you not to.

Smoking

To reduce the risk of breathing problems during your procedure, do not smoke on the days leading up to your TAVI.

Pre-meds

Pre-medication (also called pre-meds) are drugs sometimes given before your anaesthetic. Some pre-meds prepare your body for the anaesthetic, and others help you to relax.

If you are very anxious about the procedure and feel you may need medication to help you relax, please ask your anaesthetist/doctor/nurse.

Preparing for your TAVI

Remove all jewellery, dentures and hearing aids. You will need to undress and put on a hospital gown.

The anaesthetist/nurse will put a cannula (small flexible tube) in a vein in your hand.

You will have your TAVI in the cardiac catheterisation laboratory (cath lab). When you are ready for your TAVI, a member of staff will take you to the cath lab on a bed or chair.

Cath lab staff will check your identification and confirm your treatment. If you are having a general anaesthetic you will have a ventilator (artificial breathing machine) to help you breathe.

Machines will monitor your heart rate, blood pressure and oxygen levels during your TAVI.

Inserting the valve

The doctors will make a small cut (incision) in your groin (Figure 1, a), or the top of your shoulder (b). Occasionally other routes may be used for the operation. Small tubes, called catheters, will be inserted in the artery and vein at the site of the incision. The tubes help the doctors see where to insert the new valve and allow them to access the heart. The tubes also provide a safe way for the doctors to give drugs during the procedure and allow a temporary pacemaker to be fitted, if needed.

Your new valve is put into a catheter. The doctor then guides the catheter through the artery to your damaged aortic valve (Figure 2).

Once the catheter is in place, your new valve is expanded, and pushes your damaged valve out of the way.

The new valve (Figure 3) is stitched to a stent (a small metal mesh tube) to hold it in place.

Your doctor will check that the new valve is working well, then remove the catheter and close the cut in your groin, chest or shoulder.

The new valve and stent will stay in place for the rest of your life.

After your TAVI

After your TAVI you will go to the recovery unit for observation. You will have a drip (intravenous line) in your arm so you can have antibiotics and fluids. A heart monitor will continue to measure your heart rate and rhythm.

Figure 1: Sites where the catheter can be inserted with the new valve

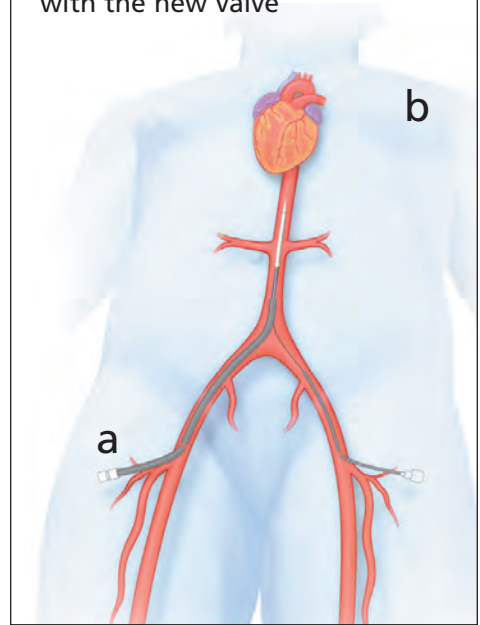


Figure 2: Inserting the catheter

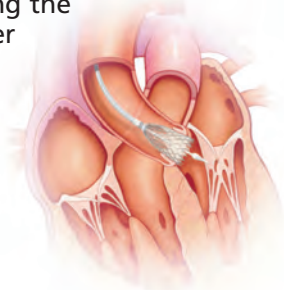
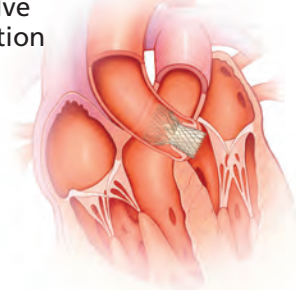


Figure 3: The valve in position



When you are well enough, we will transfer you to a ward. If you are not well enough to go to the ward, you may go to the intensive therapy unit/recovery unit.

Dressing

You will have a dressing on the site where the catheter was inserted. You may have some bruising in the area and it may feel a little tender. The dressing will be removed before you go home.

Going home after your TAVI

Most people go home two to five days after a TAVI. If there are any complications, you may need to stay in hospital a little longer.

When you leave hospital you will be given a patient information leaflet called 'Going home after trans-catheter aortic valve implantation (TAVI)'. We will also give you an ID card with the name and type of your valve. You will need the ID card if you have an MRI scan in the future.

Follow-up care

If you feel unwell after your TAVI and think you need treatment urgently, contact your TAVI nurse or go to the nearest accident and emergency (A&E) department.

You will have a follow-up appointment after your TAVI.

At the follow-up appointment you may have an echocardiogram to check how well your valve is working.

Please note that Royal Brompton and Harefield hospitals do not have A&E departments.



More information

If you have any questions, you can contact your TAVI nurse.

TAVI has been approved by the National Institute for Health and Care Excellence (NICE). You can find more details on their website: www.nice.org.uk/guidance/ipg421/informationforpublic.

General information on anaesthetics can be found online at: www.rcoa.ac.uk/node/3324

Useful contacts

Harefield Hospital

TAVI clinical nurse specialist	01895 823 737 extension 5023
Parkwood House visitor accommodation	01895 828 823
Outpatients	01895 828 695

Royal Brompton Hospital

TAVI clinical nurse specialist	020 7351 8110 or 0207 351 8371 and ask for bleep 1194
South Parade visitor accommodation	020 7351 8044
Outpatients	020 7351 8011

Visiting times at Harefield Hospital

Oak and Acorn Wards

We recommend that family and friends contact the ward directly to confirm visiting times before they come to the hospital. You can contact the ward through the main reception on **01895 823 737**.

Intensive therapy unit (ITU)/recovery unit

Visiting times are 11am–1pm and 3pm–7.30pm every day.

Only close family members can visit you on the ITU/recovery unit.

Visiting times at Royal Brompton Hospital

Adult intensive care unit (AICU)

Visiting times are 11am–12pm and 4pm–7pm every day. Only close family members can visit you on the AICU.

Wards

We recommend that family and friends contact the individual ward directly to confirm visiting times before they come to the hospital. The ward can be contacted through the main reception on **020 7352 8121**.



If you have any concerns about any aspect of the service you have received in hospital and feel unable to talk to those people responsible for your care, call Patient Advice and Liaison Service (PALS):

- Royal Brompton Hospital – 020 7349 7715
- Harefield Hospital – 01895 826 572

Alternatively email pals@rbht.nhs.uk. This is a confidential service.

Royal Brompton Hospital
Sydney Street
London
SW3 6NP
tel: 020 7352 8121
textphone: (18001) 020 7352 8121

Harefield Hospital
Hill End Road
Harefield
Middlesex
UB9 6JH
tel: 01895 823 737
textphone: (18001) 01895 823 737

Website: www.rbht.nhs.uk

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