Translation and interpreting services

If you do not speak English as a first language, use sign language (BSL) or have a learning difficulty, our in-house Bilingual Health Advocacy and Interpreting Service can help.

St Bartholomew's, Mile End and The Royal London Hospitals
Telephone: **020 7377 7000**

Newham University Hospital
Telephone: **020 7476 4000**

Whipps Cross University Hospital
Telephone: **020 8539 5522**

Text Relay service for Deaf people
Our dedicated number is **18002** and then **add in the number** you are wanting to phone**.** It is available 24/7 for deaf people to access emergency services through interpreters across our hospitals.

Please scan the QR code below to access our patient information library and for translation of leaflets

Patient Advice and Liaison Service (PALS)

Please contact us if you need general information or advice about Trust services: www.bartshealth.nhs.uk/pals

Switchboard: 020 3416 5000
www.bartshealth.nhs.uk

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Our vision, values and behaviours

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Mitral and Tricuspid Valve Percutaneous (Keyhole) Interventions

Information leaflet for patients and their families

What are the Mitral and Tricuspid valves?

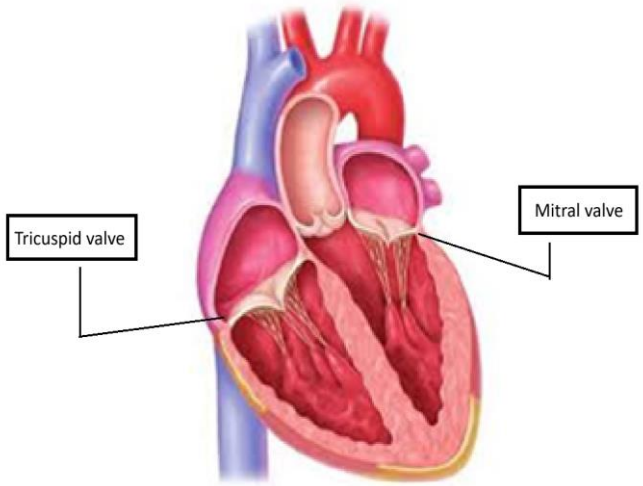


Image courtesy of Abbott Laboratories

Heart valves are the 'doorways' between the chambers of your heart. They open to let blood pass from one chamber to the next, closing quickly with each heart beat so blood does not flow backwards.

The heart has four chambers; the upper two chambers are called the right atrium and left atrium, and the lower two are called the right ventricle and left ventricle. **The mitral valve** is located between your heart's two left sided chambers whereas the **tricuspid valve** is located between your heart's two right sided chambers.

Useful contacts

- **Clinical Nurse Specialist (CNS) Team: 0203 765 8627** (Mon- Fri 8am-4pm)
- **For clinic appointment queries: 0203 765 8638** (Mon- Fri 8am-5pm)
- **To book Barts Hospital transport: 0207 767 3344** (please arrange your transport at least 3 days prior to your appointment/ admission date).
- **For Diagnostic test appointments: Mon- Fri 8am-5pm**

Cardiac CT scan	0203 465 6114/ 56117
Echocardiogram/ TOE	0207 377 7000 Ext: 58154
Clinic 1	0207 377 7000 Ext: 56457

Research Opportunities:

All members of the cardiology team are involved in heart valve research and are continuously developing new treatments. You may be offered the opportunity to take part in studies where you receive advanced treatments that are not routinely available. Your doctors or the research nurses will contact you during the time you are preparing for your procedure to tell you about the studies and explain how you can take part. Please ask any of the team if you are interested in taking part.

More information on the current research studies can be found on the British Heart Foundation webpage or **contact the research nurses on 0203 765 8740** who will be able to provide you with more information.

https://www.bhf.org.uk/what-we-do/our-research/heart-conditions-research/heart-valve-disease-research

Useful links

- **British Heart Foundation** www.bhf.org.uk
  The website contains helpful information on all aspects of heart disease including the conditions, tests, treatments, and rehabilitation.
- **Heart Valve Voice** www.heartvalvevoice.com
  This charity provides information and support for people with heart valve disease.

Conditions associated with the Mitral/Tricuspid valve:

1. Valve regurgitation ('valve leak')

This refers to a heart valve leaking because its 'flaps' don't close completely. Blood leaks backwards across the valve and if the leak is severe, this causes the heart to work harder, which in turn results in heart enlargement. The long-term effects of a leaking valve may eventually lead to heart failure if timely treatment is not done.

Causes of valve regurgitation:

- Deterioration of valve tissue
- Congenital valve abnormalities (present at birth)
- When the heart valve becomes infected called 'Endocarditis'
- Heart disease, such as heart attack or other causes of weakening of the heart muscle.

2. Valve stenosis ('valve narrowing')

This refers to the abnormal narrowing of the heart valve. This limits the blood flow between the heart chambers and if the narrowing is severe, this in turn restricts the flow of blood into the rest of the body. A narrowed heart valve can also make your heart work harder. Over time, this can also cause heart failure, stroke, and sudden cardiac death if you don't receive timely treatment.

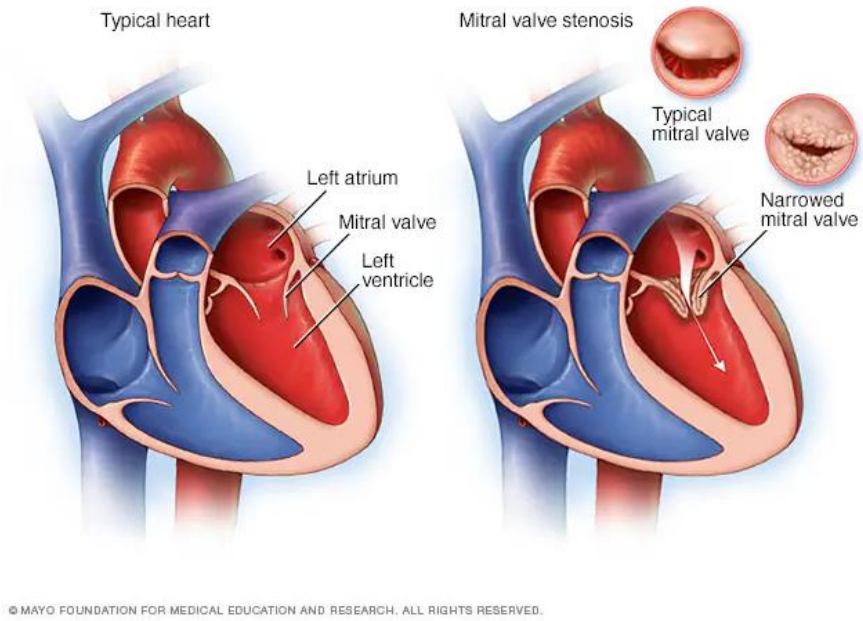


Image courtesy of Mayo Clinic

Causes of Valve stenosis:

- **Rheumatic fever** (a complication of a Streptococcus infection such as a 'Strep throat')
- Degenerative disease as calcium deposits around the valve due to older age
- Congenital defect/abnormalities of the valve
- Previous radiation therapy to the chest or metastatic tumours

Signs and Symptoms of Mitral/ Tricuspid valve disease:

- Shortness of breath and fatigue
- Chest pain or discomfort
- Heart murmurs
- Swelling in legs, feet, or ankle
- Rapid heartbeats (palpitations) and/ or abnormal heart rhythms (Arrhythmias)

It is essential for you to inform your dentist about any previous valve surgery including keyhole procedures whenever you are scheduled for any invasive dental procedures which can cause bleeding, such as having a tooth extracted, as you may need antibiotics prescribed prior to these. These procedures may increase the chances of bacteria entering your bloodstream causing an infection.

For further information on this, please refer to: https://www.nice.org.uk/guidance/cg64/ifp/chapter/About-this-information.

When can I fly or travel abroad after?

You may wish to wait until after your first follow up appointment to discuss with the doctor before you make any plans to travel abroad. You must also inform your holiday insurance company about the procedure that you had.

When can I return to work?

This will be different for each person and will depend on many factors, such as the overall state of your health and the type of work that you do. Please discuss this with your nurse specialists or doctor.

What should I do if I have a problem at home?

We recommend that there is someone with you in the first 24 hours after the discharge.

do not have a bath for one week. We use specialised stiches to close the top of the groin wound. These help to keep the puncture site together and are dissolvable. It can take a few months for the stitches and plug to dissolve.

You may be discharged home with dressings (plasters) on your groin. After 24hrs of being at home, you can take the dressings off and leave the wound open to the air. If you notice any signs of infection such as: pain, redness, swelling, oozing from the site, fever, loss of sensation in the foot/leg please contact your GP or our team for further advice.

If your groin starts to bleed, apply firm pressure with your fingers above the bleeding point, and call for help by dialling 999. Do not drive yourself to the GP or A&E.

Will I have a follow-up appointment?

Your follow-up will depend on what procedure you had, and you will be given this information before going home. We may carry out an echocardiogram (an ultrasound of the heart) to check the function of the new valve and your heart.

What medication will I need to take?

You will need to take a medication to prevent blood clots forming on the valve. We will inform your GP about the duration, which is usually for life. We may change other medications, as necessary. The Pharmacist will ensure that you have enough supply of your regular medications before you are discharged from hospital.

Infection risk and Dental care

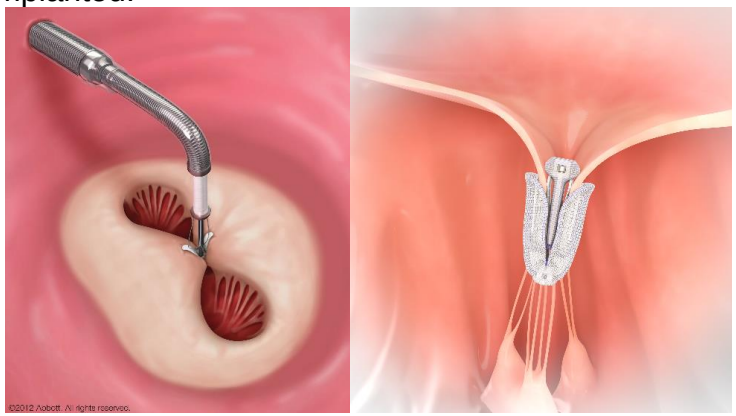
In order to minimise the serious risk of complications after heart operations, such as infective endocarditis (‘heart valve infection’), we strongly recommend that your teeth and gums are checked by your dentist regularly.

Percutaneous (Keyhole) Intervention for Mitral/Tricuspid Regurgitation

1. Transcatheter Edge to Edge Repair (TEER)

This is a minimally invasive procedure wherein a small incision (cut) is made in your groin through which a tube is guided into your heart using x-ray and advanced ultrasound imaging. Once in position, we deliver a small implantable device which we call a “clip” into position to repair the leak of the valve. The clip holds the two edges of the valve leaflets in position to help it close more completely. The result is a valve with two openings improving the flow of blood to move forward thereby reducing the severity of the leak. Sometimes, more than one clip is required.

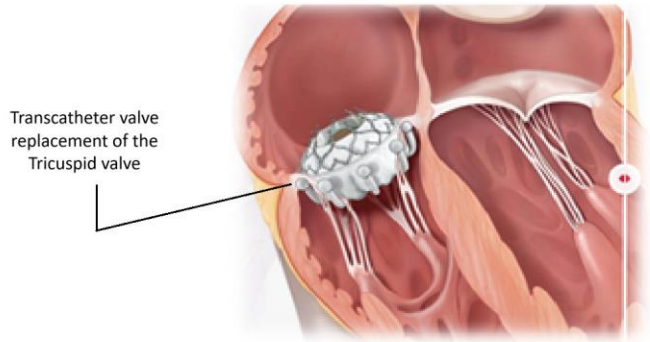
The clip (images below) is made of metal covered in polyester fabric which becomes a permanent part of your heart once it has been implanted.



2. Transcatheter Mitral/ Tricuspid valve Implantation

This is a minimally invasive procedure wherein a flexible tube (‘catheter’) is inserted through a blood vessel in your groin to reach

the heart and replace the narrowed valve without the need for open heart surgery. These valves are 'human-made valves' which are made from animal derived (cow or pig) heart tissue.



3. **Balloon Mitral Valvuloplasty (BMV) This** is a procedure where a hollow, flexible tube ('catheter') is introduced via a small incision in the groin to insert a balloon into the narrowed heart valve. Once in position, the balloon is inflated to widen the valve area and increase blood flow. The results of a balloon valvuloplasty can last for a long time, but the procedure doesn't cure valve stenosis. If your heart valve narrows again, your cardiologist will discuss your options.

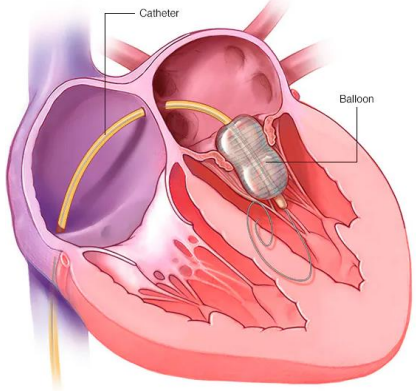


Image courtesy of Mayo Clinic

- Begin walking at a comfortable pace on a level surface. Do not include any stairs in your walking programme. Aim to improve approximately one level per week. If the suggested progression is too tiring, or if you miss one day, stay on the same level for another one or two days.

Step 1 (Week 1)	Walk around your home. Go slowly on stairs.
Step 2 (Week 2)	These walks should feel 'light' or 'easy'. Walk for 5 to 10 minutes at a time once or twice a day (like a morning and an afternoon walk).
Step 3 (Week 3)	Stay close to home; avoid hills. These walks should feel 'easy'. Continue to walk once or twice a day. Over several days, make your walks longer. For example, add 5 minutes every day or two.
Step 4 (Week 4)	When a 15-minute walk feels easy, you can increase your walking speed to a level that feels 'moderate'. Continue to lengthen your walks until you are walking a total of 30 to 60 minutes every day.

How should I care for my wound?

It is normal for your groin to be tender for a few days after the procedure. It is also common for a small bruise to develop but this should get better in a few weeks, otherwise, please do let us know. You can shower when you get home but please avoid rubbing the wound site, putting creams, powder, or soap for one week. Please

- Stairs are safe to use, but not as exercise. Limit use of stairs to once or twice a day for the first 1 to 2 weeks. Take your time, go slow, and pause to rest if you feel tired. Hold onto the handrail.
- **You are not allowed to drive for four weeks after your procedure.** You do not need to inform the DVLA about your procedure unless you hold a commercial license. If this is the case, you will need to call them for further advice. Drivers Medical Group, DVLA, Swansea, SA99 1TU, Tel: 0300 790 6806.
- You can take a shower as soon as you get home however, please avoid baths for 1 week after the procedure or until your groin incision is healed. Avoid extreme temperatures in the bath or shower. Lukewarm water is best and use mild unscented soap.
- Avoid sexual activity until your follow-up appointment with the TAVI team. Upon returning to sexual activity, listen to your body, take your time, and stop and rest if you feel pain or pressure in your chest.

Exercise Guide

Each person will progress at different rates, and that is okay. Remember to listen to your body and know when it needs rest. **If you would like to be referred to your local cardiac rehabilitation service, please contact your nurse specialist or the Barts Cardiac rehabilitation team on 02034656593 to take this forward.**

Here is an exercise programme that you can follow after a few days of being home:

Walking programme

- Walking is the best form of exercise you can take following your procedure. You may find that the amount you can manage varies from day to day.

What are the benefits of these interventions?

Without treatment, valve diseases usually worsen with time. Although medicines can slow the disease progression, the effects of long-term valve disease can result in signs and symptoms of heart failure despite optimal medical treatment. This procedure should treat the narrowing or reduce the leak in your valve, relieving you of limiting cardiac symptoms which will hopefully improve your quality of life.

What are the risks of these interventions?

Every procedure carries risks, and they are different for each person. The following risks associated with this procedure are:

Most common risks:

- **Vascular complications such as bruising, bleeding and/or pain:** The blood vessel may get damaged where the catheter is inserted or when the valve or clip is being implanted.
- **Failure of the valve repair to work satisfactorily:** despite optimal imaging, each person's heart anatomy is different which can pose technical difficulties and complexity of the procedure leading to marginal results.
- **Abnormal heart rhythms**

Infrequent risks:

- **Stroke:** This can sometimes be treated with 'clot- dissolving' drugs or further catheter-based treatments. This would require a transfer to another hospital within the Trust which specialises in the treatment of strokes.

Damage to the kidneys. The risk is higher if you have poor kidney function before your procedure. Usually, the kidneys get back to normal without treatment. Rarely, you may need

haemodialysis', a procedure where a machine is used to do the kidneys' function of cleaning the blood.

- **Leak around the new implanted valve** which can be repaired by stretching the valve with a balloon, a second valve or open-heart surgery.
- There is a **small risk of infection on the valve** leading to a condition called **"Endocarditis"** which may require antibiotics or rarely surgery.
- **Procedure induced ('iatrogenic') atrial septal defect**: this refers to a hole in the wall of the upper heart chambers which can happen following the "Transseptal puncture" that we make to gain access to your mitral valve. We don't routinely close this hole, but in some cases, we may need to implant a plug/ closure device to seal this off.

Rare but life-threatening risks:
Overall, the risk of major complication is low.

- **Partial detachment and or device embolization:** this is an extremely rare risk which can result from a technically difficult procedure.
- **Bleeding around the heart** which may need a drain to be inserted or the **need to change to conventional open-heart surgery** in an emergency, which can extend your stay in hospital.
- **Death**. There is a <2% of death from the procedure itself or due to an associated complication surrounding the procedure.

What are the alternative treatment options for mitral/tricuspid valve disease?

Your doctor will discuss with you on what is the best treatment option based on your individual circumstances. Alternative treatments are as follows:
Open heart surgery: This involves opening the chest, stopping the heart, and supporting the patient on a heart-lung machine. The following will be done depending on the surgical approach:

Going home after the procedure

When can I leave hospital?

Normally, you can expect to be in hospital for approximately two nights. Before you go home, the medical team will check your wound and overall well-being. We recommend that you are accompanied by a relative or friend on your journey home. If this is not possible and you need to use our patient transport service, please let us know during your telephone pre-assessment. We can then highlight this to the ward team who can arrange this for you upon your discharge.

When can I return to normal activities and what exercises can I do?

Everyone is different so recovery times do vary. As soon as you are walking comfortably around your home, you can carry out light housework and gradually build up your strength.
Walking is the best form of exercise you can take following your procedure. You may find that the amount you can manage varies from day to day.

Activity Guide

On your discharge from hospital, it is fine to return to your normal daily activities with the following precautions:

- Do not lift anything heavier than 5 pounds for example: laundry baskets, grocery bags, telephone, luggage, pets, children, or infants. Do not push or pull heavy objects such as furniture or appliances for 1 week post procedure.
- Housework or yard work: Do not do strenuous housework such as sweeping, mopping, scrubbing, hoovering, or gardening for the first 1-2 weeks.

tube. The tube allows the doctor to reach your heart through x-ray and advanced imaging guidance.

Will I feel anything during the procedure?

The majority of these procedures are done under general anaesthesia which means that you will be fully asleep during the entire duration of the procedure. After the procedure, when you wake up from the anaesthesia you may have a sore throat due to the ultrasound probe and/ or a sore groin. Both subside in a few hours, and you will also be given pain-relieving medications to help with this.

Recovery and Discharge:

After the procedure you will be taken to a recovery ward for close observation. Once you are well enough, you will be moved back to the cardiology ward where you were first admitted. As you recover, you will be closely monitored. You will have to stay in bed for about 4-6 hours after the procedure to allow the blood vessels to heal and close appropriately. After this, you will be gradually sat up and encouraged to walk around the ward to see how you get on.

The length of stay in hospital following the procedure is different for everyone. As a general guide, for uncomplicated procedures the majority of the patients are usually ready to go home the **day after their procedure** after having some blood test and a repeat ultrasound scan of their heart.

- **Valve replacement**- The diseased valve is removed, and a new valve is sewn into place.
- **Valve repair-** The flaps of the valve are partially sewn together reducing the leak around the valve.

Minimally invasive mitral valve repair is another surgical approach to fix your diseased valve. Compared to traditional open-heart surgery, the surgeon performs the valve repair through one or more small chest incisions.

Medical therapy: The aim of giving medication is to reduce both the blood pressure and the force of contraction of the heart in order to manage the symptoms associated with the valve disease. Giving medication is aimed at those patients whose valves are not narrow/ leaking enough to require intervention or are too unwell for an invasive procedure.

The assessment/ work-up process

Before you have your key-hole valve procedure, your doctors will carry out a number of tests so that they can find out more about your heart and blood vessels.

Along with routine blood tests, you will have an echocardiogram (an ultrasound scan of your heart to assess your heart pump function and the severity of your valve disease). A transoesophageal echocardiogram (TOE) is usually a requirement prior to the procedure. This involves passing a flexible probe/ camera down your food pipe (‘oesophagus’) to look at your heart chambers and valves in more detail. The test may feel uncomfortable when the probe is passed into your oesophagus. You will usually stay awake during the procedure and usually receive a sedative to help you relax.

In some cases, a CT scan (an X-ray that produces three-dimensional images of your body) is required to assess the size and shape of your valve and blood vessels.

Once these investigations have been completed you will be listed for discussion by the **multi-disciplinary team (MDT**). This is where a team of specialists will discuss the best treatment options for you using the data from your assessment. A clinical nurse specialist will be in touch with you following the discussion. They will inform you of the outcome and if appropriate, agree a date with you for your procedure. A letter will also be sent out to you by post to confirm your admission details.

Dental care prior

It is important to maintain a good oral health especially if you have a heart valve disease. Poor dental health increases the risk of a bacterial infection in the blood stream, which can affect the heart valves and may lead to a heart infection called **'Infective Endocarditis'**. Hence, it is essential that you have regular dental checks. Please register with a local dental practice if you do not see a dentist regularly.

Prior to hospital admission

A clinical nurse specialist will conduct a pre-assessment with you which normally takes place by telephone around **two weeks before your admission date**.

However, if necessary, you may need to attend the hospital for blood tests and a face-to-face pre-assessment. The nurse will review your medical history, current medications and briefly explain the procedure and answer any questions or concerns you may have. If you are admitted to another hospital, the medical team will organise everything for your transfer here to Barts Hospital. We will also contact your family or next of kin accordingly should you wish for us to do so.

Patients usually come to hospital the day before their procedure to allow time for preparation. Since you are coming in the day prior to your procedure, you can eat and drink water as normal and continue taking your medications as usual. Some of your medications may be stopped at a certain period of time prior to your admission and this will be discussed with you during the nursing pre-assessment.

What to bring to hospital?

- A list of all the medications you take, including those bought without prescriptions
- Glasses, hearing aids or dentures
- Personal care items if preferred, such as a brush or comb, toothbrush, etc.
- Loose-fitting, comfortable clothing
- Mobile phone, if you have one, to provide ease of communication between you and your family
- Items that may help you relax (e.g., book, magazine), as there can sometimes be a wait whilst in hospital.

How are these procedures performed?

The preparation
You will be taken to the cardiac catheterization lab ('Cath lab') for this procedure. When you arrive, the nurses will check your details, and you will be transferred onto the operating table or the anesthetic room. You will be attached to a heart monitor to continuously check your heart rate and rhythm, blood pressure and oxygen levels throughout the entire procedure.

Once you are asleep, we will also pass an ultrasound probe into your gullet (also known as your oesophagus or "food pipe"). This allows a doctor to use "transoesophageal echo" (TOE) which will help us guide the catheters and clip/ valve orientation.

The procedure- Your groin will be cleaned, and local anaesthesia will be injected to numb the area. A small incision (cut) is then made in your groin through which your doctor will insert a flexible