

Information for Patients & Families

Trans-catheter Aortic Valve Implantation (TAVI)



Alternative procedure to replace aortic valve when open heart surgery is high risk

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Introduction

This information booklet has been prepared for you and your family to understand more about the operation that is planned for you. It will give you general information about what to expect before coming into Liverpool Heart and Chest Hospital from your admission to discharge home or to another care setting. It will also give you information about what to expect when you go home and your recovery.

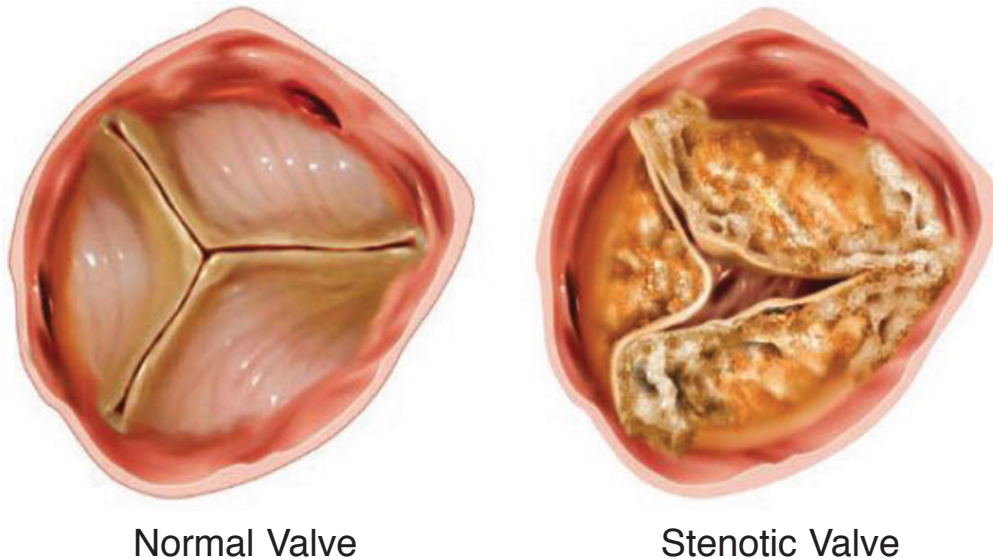
The Liverpool Heart and Chest Hospital is committed to providing patients and their families with an exceptional care experience. Patient and family centred care is at the heart of what we do. You may wish to involve your family members or carers in your care to assist and support you whilst in hospital. With your permission we are happy to share information about your care and condition with your family members. Please tell us with whom and how much information you would like us to share. Your experience is very important to us.

If you, your family or carers, have any concerns during your admission, it is important that you let us know immediately, at the time that they occur, in order for us to put things right.

The Liverpool Heart and Chest Hospital operates a no-smoking site. Please refrain from smoking in the hospital grounds.

What is Aortic Stenosis?

Aortic stenosis (AS) is a condition where the aortic valve in the heart develops a narrowing. When the narrowing becomes severe it may cause symptoms such as breathlessness, chest pain or fainting and result in a reduced life expectancy. The only way to relieve your symptoms, improve your quality of life and potentially increase your life expectancy is to replace your aortic valve.



Surgical Aortic Valve Replacement (SAVR)

A surgical aortic valve replacement (SAVR) is the traditional method of treating severe AS. It is performed by a specialist heart surgeon and involves a long incision down the breast-bone (sternotomy) and the use of a machine during surgery to perform the pumping function of the heart and lungs known as cardio-pulmonary bypass. In some patients the risk of developing serious complications, including death after open-heart surgery is felt to be very high. In these instances trans-catheter aortic valve implantation (TAVI) may be considered.

What is a Trans-catheter Aortic Valve Implantation (TAVI)?

Trans-catheter aortic valve implantation is commonly known as TAVI and is an alternative procedure for replacing a diseased aortic valve in patients who are considered high risk to undergo SAVR.

In the last 10 years, over 150,000 patients worldwide have had this procedure and there is strong evidence to show that the results for these patients are comparable to those who have undergone SAVR up to 5 years. One year following TAVI, approximately eight out of ten patients have recovered from the procedure with improved symptoms and quality of life.

The Heart Team

The specialist doctors and surgeons involved in TAVI at Liverpool Heart & Chest NHS Foundation Hospital Trust, have all undergone specific advanced training. They work together to determine whether the TAVI procedure is technically feasible and is likely to be successful in improving your health.

If you have been informed that you are being considered for a TAVI, you will need to have a number of investigations performed before the heart team can make a decision. It is important to note that at this stage you are only being considered if you are suitable for the surgery. Once these investigations are all complete your consultant will then discuss your case in a meeting with the TAVI multi-disciplinary heart team (MDT). The heart team includes cardiologists, cardiac surgeons, cardiac anaesthetists and experts in cardiac imaging. The specialists discuss each patient's individual case and assess their potential benefit versus the level of risk. A final decision is made by the heart team as to whether TAVI, SAVR or medical therapy is recommended. Once a final decision is made, you will be informed of the outcome.

If a decision has been made for TAVI or SAVR then you will be provided with a date for your procedure.

The TAVI assessment process is complex and can last several months. This is because patients require a number of investigations so that all the necessary information is available prior to their case being discussed at the MDT meeting in order for the heart team to make the right decision. The team

understand that it is a difficult and stressful time for you and your family waiting for this and will try to keep you informed as much as possible.

It is important to note that you are only accepted for TAVI after all the investigations are complete, you have been reviewed, and the MDT has made the decision. It is only at this stage that you will be placed on the waiting list for a date. Prior to this you are still under consideration for the procedure.

Investigations and Screening Tests

Listed below are the tests that may be required before you are considered for a TAVI procedure. Please note that not all patients require all of these investigations:

- A physical examination
- An electrical trace of your heart known as an ECG
- A chest x-ray
- Blood tests and pulmonary function tests (breathing tests)
- Trans-thoracic echocardiogram - An investigation when an ultrasound probe and gel is placed on the chest to obtain detailed images of the heart.
- A Trans-oesophageal echocardiogram (commonly known as a TOE) - This is required if clearer pictures are needed and involves the patient swallowing the probe under sedation.
- A coronary angiogram - An investigation to assess the coronary arteries in the heart. This is a day case procedure and can be done via an artery in your wrist or groin and involves passing a small tube known as a catheter into an artery to assess your blood vessels.
- A Cardiac CT – to investigate the suitability of being able to deliver a suitable sized valve into the heart. This involves the administration of a dye through a cannula (drip) and the taking of non-invasive x-ray images.

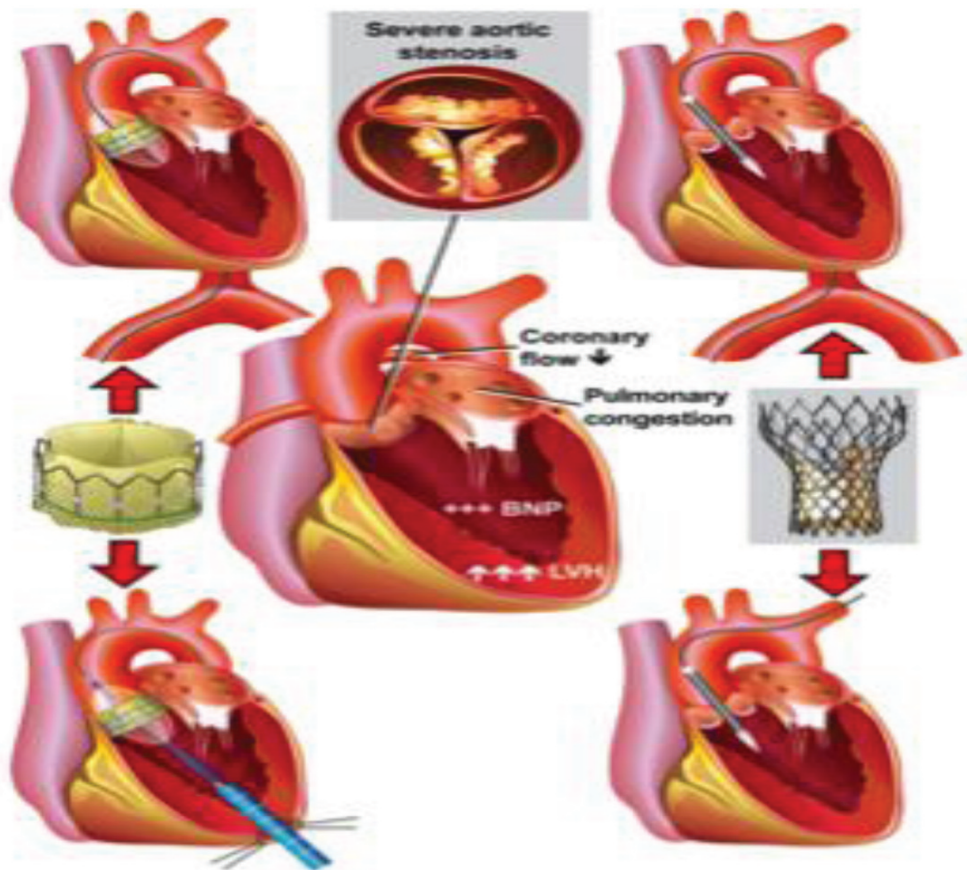
How is a TAVI Performed?

There are two approaches that are used for TAVI (Transfemoral and Transapical) and your consultant will discuss these with you and advise you which is the most suitable for you and the reasons for their decision.

In both of the techniques used, the TAVI procedure usually involves the following:

- A catheter (plastic tube) will be inserted from your groin or the wrist into the main blood vessel leading to the aorta which is the main blood vessel to allow imaging of your aortic valve.
- A temporary pacemaker lead is inserted to manage your heart rate and rhythm.
- The new aortic valve is put into position either by using a special catheter inserted in the large blood vessels in the femoral artery via your groin. This is known as, the **trans-femoral approach**, or if a small incision is made in the left side of the chest and direct access to the front of your heart, this is known as the **trans-apical approach**. The trans-femoral approach requires a local anaesthetic where the trans-apical approach requires general anaesthesia.
- The delivery catheter allows a balloon to be placed into your narrowed valve and the balloon is inflated to stretch the valve open and fix the narrowing caused by aortic stenosis. When the valve is in the correct position your heart rate will be increased using the temporary pacing wire for a few seconds. This reduces the blood pressure and the motion of the heart, making the procedure safer. The balloon is then expanded, opening up the new valve into a permanent position. The balloon is deflated and removed leaving the new valve to function.

The diagram below shows how the new valve is placed inside the heart:



- Following TAVI you will be transferred to the Post-operative Critical Care Unit (POCCU) or the Coronary Care Unit (CCU). When it is safe to do so, you will then be transferred to the ward for your on-going recovery. This is usually after approximately 24 hours; however, this time can vary depending on each individual's recovery and condition. You will only be transferred to the ward when a medical decision is made that it is safe to do so.

Risks and Serious Complications

Serious complications can occur either at the time of surgery or usually within the first month. The risks will be discussed with you in detail during the consenting process and the doctor/surgeon will tell you of your approximate risk in a percentage, that is, how many patients in 100 that they feel the risk would apply to. For example a 20% risk would mean, 20 in 100 patients.

The most common (5-10% risk) complications are as follows:

- Death
- Heart attack
- Stroke
- Bleeding
- Injury to the veins or arteries at the access site
- Requirement for the insertion of a permanent pacemaker
- Tear in the aorta – the main blood vessel

A small number of patients may require surgical open-heart operation at the time of performing the TAVI. This may be required if a patient has an emergency complication, such as a tear in the aorta, which is the largest blood vessel in the body or if they experience severe problems with the blood supply to the heart or displacement of the trans-catheter valve. This usually occurs in less than 1 in 100 patients. In rare circumstances, the TAVI may be abandoned during surgery. This can occur, for example, if your blood pressure remains low, even with support, or if there are abnormal structures to the heart.

Medication

Following a successful TAVI procedure and before you are discharged from hospital, the team will review your medication. You will be required to take both Aspirin and an additional blood thinning drug called Clopidogrel.

Aspirin and Clopidogrel are required to reduce the risk of blood clots forming within the new heart valve and most patients are asked to take Aspirin for life. Clopidogrel should be taken for up to six months following the surgery. If you are already taking Warfarin, which is another blood thinning agent, then these other drugs may not be required. This will be discussed with you in full prior to discharge.

There is also a small increase in the risk of bleeding complications (bleeding from the stomach or bowel, bleeding from cuts, internal bleeding after trauma/falls) particularly whilst taking both of these drugs.

Your Hospital Stay

We believe that relatives or carers should be involved in your care and treatment whenever possible, if you are in agreement with this. We operate a 'Partners in Care' programme whereby your relative or carer can be involved in your care. It is particularly important to let us know if you have a specific requirement or a disability in order for us to provide you with any extra support you may require.

If you have any special needs or learning disabilities we may need to complete a document called a 'Hospital Passport' which will detail all your requirements and this document will accompany you during your stay. We will hopefully have been informed of your needs before your admission so that any arrangements for extra support can be put in place. If we have not been informed please let us know as soon as possible.

If English is not your first language or if you have any religious requirements please let us know and we will do all we can to help.

Single Sex Accommodation

Sharing a sleeping area with members of the opposite sex will only happen based on clinical need, for example where patients need specialist care or equipment such as in our Post-Operative Critical Care Unit. Privacy and dignity is maintained at all times.

Arrival on the ward

You will be admitted and reviewed by the nursing and medical staff. Several up-to-date tests will be performed including blood tests and an ECG. A member of the TAVI heart team will come to discuss and complete your consent form, if this has not already been completed at your clinic visit. During the consent process the doctor will discuss in full the risks and benefits involved in your operation and you will be asked to sign the consent form to show that you have understood this. If you have any questions please do not hesitate to ask.

Teaching and further training

Medical students and other healthcare professionals cannot learn all they need to know from textbooks and lectures. During the period of your treatment, you may be asked to consent to having students present or taking part in your examination or treatment, under the guidance of a qualified person. You have the right to refuse without affecting our standard of care to you in any way. Your co-operation in helping students will benefit other patients in the future.

What to bring when coming into hospital

You will receive a letter detailing the date and time to come in for your operation. You can eat and drink as usual on the day of your admission unless you are specifically informed otherwise in your letter.

Please bring the following items with you when you come into hospital:

- Your tablets in their original bottles or packets, which you will be asked to hand to the nurse on the ward
- Nightwear, dressing gown and underwear
- Flat comfortable shoes or full slippers
- A book or some magazines
- A separate wash bag containing toothbrush, toothpaste, denture box, brush/comb, glasses in their case, if you wear them, and shaving equipment. You may also wish to bring a towel and soap/shower gel. This bag will be labelled and will be sent to the post-operative intensive care unit (POCCU) for you to use following your surgery.



It would be helpful if you could label your denture box and glasses case with your name and date of birth before you come into hospital.

Jewellery and Money

A small amount of money can be brought into hospital. However, we would advise that valuable jewellery or large amounts of money be kept at home. Any jewellery, including wedding rings, will need to be removed before your operation so please leave these at home. If it is necessary for money or valuables to be brought into hospital with you, we would advise you to discuss the safe storage of your valuables with the nursing staff.

Please note the Trust cannot be liable for any loss of personal belongings or valuables during your stay with us.

Preparing for Your Operation in Hospital

Hair removal

Before the operation it will be necessary to remove hair from around the operation sites. The nurses on the ward will tell you how to do this and assist you, if necessary. Please do not do this by yourself at home as shaving increases the risk of infection.

Showering

It will be necessary for you to have a shower the night before and immediately prior to your operation. The nursing staff will advise you when the best time is for you to do this. They will also provide you with the use of an antiseptic skin wash. This will help to prevent any infection occurring in your wounds. If you need assistance when showering please inform the nursing staff.

Following Your Operation

The time it takes for each operation is different as this depends on your condition and the type of operation you require. Every

patient's recovery rate depends upon their general health and any pre-existing conditions they may have.

Following your operation you will be transferred to the Coronary Care Unit (CCU) where you will remain until the doctors and nurses feel you are able to go to the ward to continue with your recovery.

Getting up and about following your operation

Following your operation you will need to get up and about as soon as possible. The nursing staff in CCU will assist you into a chair at the earliest opportunity, as the sooner you begin to start moving the better it is for your recovery. Mobility helps the heart and lungs to recover and may prevent constipation, stiffness and pressure ulcers (bedsores). You will be assessed and advised on how to reduce your risk of a slip, trip or fall. Each day as you recover following your operation, you should aim to be a little more active and the physiotherapist will visit, advise and assist you moving on the ward.

Once you have started walking on your own you should aim to take a short walk every hour or two. By the time you go home you should be walking freely around the ward and the nurse or physiotherapy staff will ensure you can comfortably climb one flight of stairs before you are safely discharged home.

If you have any problems with mobility, the physiotherapy staff will assess your needs and offer guidance and support. Rest and sleep are also an important part of your recovery and are just as important as exercise. Nurses will advise you on achieving a healthy balance between getting enough exercise and enough rest following your operation.

Personal hygiene

Initially the nurses will help you with washing and changing at the bedside until you are able to go to the bathroom where you will be advised to either have a strip wash at the sink or, if you

are able to manage, a shower. If you managed to shower yourself before your operation then, by the time you leave us, you should be able to do so again.

Wounds

Trans-femoral: There will be a small puncture wound in your groin from the procedure.

Trans-apical: There will be a small wound in your left chest wall, with the potential addition of a chest drainage tube and pacing wire.

Discharge from hospital

Your doctor will discuss with you and your family if they feel you are well enough to be discharged home. On some occasions patients may require rehabilitation and may be transferred to a rehabilitation centre nearer home or be transferred to intermediate care. This will be discussed with you and your family in full before you are discharged.

A Guide for the First Few Weeks at Home

Week one

Exercise is an important part of your recovery, but you should take things easy for your first few days at home. Aim to be as active as you were on your last day in hospital. Remember to carry on with the breathing exercises the physiotherapist taught you and slowly increase your activity each day.

Remember to have a sleep or a rest when you need it. Accept your limitations and don't overtire yourself. Do not do any heavy lifting or carrying for the first week. Take a walk with somebody each day and gradually build the distance up. You may still need some painkillers for this first week – you will find them more effective if you take them regularly, e.g. two 500mg Paracetamol 4 times a day. Do not drive yet.

Week 2-3

You should feel stronger and able to do more activities around the house.

Increase your walking and remember to try to do this each day. Do not get overtired and remember to rest when you need to. You can do light housework. You will find that you will be able to have short visits to the shops for light items.

You should be invited to attend cardiac rehabilitation class after approximately two weeks following discharge. Remember accept your limitations and do not overtire yourself.

Weeks 3-6

You should be able to manage most household tasks, but still avoid heavy gardening. Most patients feel they are back to normal activities at some point during this period but it is important to remember that you have had surgery. It is important that you continue with the exercises you were taught in hospital.

Weeks 4-6

You will be reviewed by the doctor in the outpatient department.

Driving

You cannot legally drive following heart valve surgery for 4 weeks from the time of surgery. You can recommence driving after 4 weeks, if you feel well enough to do so and can perform an emergency stop. Remember you must wear a seatbelt at all times, so it is important to ensure that this is comfortable before you recommence driving.

Provided you have no other disqualifying condition and you feel well enough to drive, if you hold a car or motorcycle licence, the DVLA need not be notified. **You must inform your insurance company of your heart surgery.** However, Holders of LGV and PSV licences who have had valve surgery cannot drive for 3

months and must inform the DVLA.

You can be fined up to £1,000 if you fail to tell DVLA about a medical condition that affects your driving. It is your responsibility. You may be prosecuted if you're involved in an accident as a result. The phone number is 0300 7906806 or www.dft.gov.uk/dvla/medical.aspx

Bathing and showering

Take a shower or a bath daily; do not be afraid to get your wounds wet, showering or bathing will keep your wounds clean and encourage them to heal. You may find it easier to use a shower rather than a bath, but if you do take a bath remember to:

- Empty the water before you get out and take your time
- Use a non-slip mat or a towel before attempting to stand up
- Get assistance to help you get out of the bath

Rest, Sleep and Relaxation

During the first few weeks at home you will find that you tire easily, so adequate rest and sleep are just as important for your recovery as exercising. Tell your family and friends when you are planning to rest; this will help cut down the amount of disturbance you get during this time. Try to get eight to ten hours sleep each night. You may find it difficult for the first week after leaving hospital, as your usual sleep pattern will have been disturbed. If you have discomfort ensure you are taking your pain relief. Remember to listen to your body and rest and sleep when you need to.

Moods and Emotions

Immediately after your operation you may have days when you feel down or depressed, this is known as the post-op blues and it is normal to feel this way, so do not worry. You may feel irritable or overly emotional and tearful. This can happen at any time, and without warning. It usually settles down within the first few months. Both you and your family will be affected

by these feelings, so it is important that you discuss with them how you are feeling. If you are still feeling this way after a couple of months, or you feel unusually depressed, lacking concentration or experiencing memory loss, then you should contact your General Practitioner.

Stress

When you are stressed your body reacts in certain ways: Your muscles become tense, your blood pressure rises, you breathe more rapidly, you sweat and you become anxious. You can produce more sugar, fatty acids, cholesterol and adrenaline. This in turn slows down your digestive system and your immune system. It is in your best interest to try to avoid something that you know is going to put you in a stressful situation.

Sexual Relations

Many patients that have undergone cardiac surgery experience anxiety about resuming sexual relationships. It is quite safe to have sex and/or sexual stimulation after the operation. However, we generally advise that you wait between 2 and 4 weeks, to give your wounds a chance to heal. You may resume whenever you feel ready.

Holidays and flying

You can holiday in this country whenever you feel well enough to travel. If you are thinking of going abroad, we advise you to wait until after your follow-up appointment. If you are thinking of a long haul flight, then you should leave it longer, but should discuss and agree the best time with your consultant. If you are taking Warfarin, you need to let your anti-coagulant clinic know, as they may need to adjust your dose.

It is important that you cover your scars with complete sun block when sunbathing for at least the first six months to avoid sunburn. You must also inform your holiday insurance company of the details of your surgery.

Medication

The nurse discharging you will give you a supply of tablets, which should last at least two weeks. This will give you time to get your prescription to your GP ready for your repeat prescription. The medication you will now be taking will almost certainly be different to what you took before your operation. Therefore, it is safer if you dispose of any previous drugs that you still have at home. They should be returned to your pharmacist for safe disposal.

Your GP will be sent a letter explaining what operation you have had, the medication you are now taking and that you have returned home. You will also be given a copy of this letter. You should keep an up-to-date list of your tablets with you at all times, and if you are taking Warfarin, then keep your dosage booklet with you.

Wounds

If your wound becomes red, suddenly becomes more painful or starts to discharge fluid, you should consult your GP or district nurse immediately for advice.

Who do I Contact if I have any Problems after Going Home?

We have a **Recovery Advice Line** for patients, relatives and carers. This provides advice following discharge and during your recovery. **This service is available 24 hours a day, 7 days a week.** A member of the senior nursing team will either take your call or if it is not possible at the time, there is an answerphone service and they will call you back as soon as they are able.

Recovery Advice Line – 0151 600 1056

IMPORTANT – If you are in need of immediate help, for example if you experience chest pain, breathlessness, palpitations or dizziness, please do not hesitate to contact your GP immediately or attend your local A&E Department. Remember – if in doubt ring 999.

General Information

Visiting Times

Post-Operative Critical Care – Coronary Care Unit (CCU)

At Liverpool Heart and Chest Hospital we have an open visiting policy so you are welcome to visit anytime.

- We recommend a two visitors at all times.
- No children are allowed to visit the unit. Arrangements for children over the age of 12 can be made at the discretion of the nurse in charge.
- In certain circumstances visiting hours can be tailored to the needs of individuals with prior arrangement with the nurse in charge.

Wards

All wards have open visiting and we recommend a maximum of 2 visitors per bed as patients can tire easily. In consideration of other patients we also request that noise levels within the ward areas are kept to a minimum. Visitors are asked not to eat or drink on the ward and asked not to sit on the beds or use the patient's toilets.

Accommodation for Relatives

The Robert Owen House provides accommodation for the relatives of patients undergoing treatment at the hospital. The hotel style accommodation is built to a very high standard with a mixture of family, twin and single rooms. The house is funded through charitable fundraising and a charge is made to guests for the accommodation.

To make a booking telephone 0151 600 1688.

Religious Beliefs

If you wish to have a visit from the minister of your faith, let the nursing staff know and they will do their utmost to arrange this for you.

Patient & Family Support Team

We know that being a patient, relative or carer can be worrying and confusing at times, our Patient & Family Support Team are available to:

- Help provide advice and support
- Signpost you to the right people you need to speak to
- Listen to your concerns or suggestions
- Support you with any concerns you may have or advise you how to make a complaint.

You can contact the Patient & Family Support Team directly on 0151 600 1257/1517 during office hours.

Volunteers

We have a dedicated team of kind volunteers who you may come across during your appointments or admission. We understand that not all of our patients live locally and if you would like a visit from one of our volunteers during our admission please contact the Patient & Family Support Team on 0151 600 1639 who will make arrangements for you to receive a visit.

Finally – Compliments, Concerns and Feedback

Your experience and views are very valuable to us as we use your feedback to improve the care and services we provide. During your stay you will be asked to complete an inpatient satisfaction survey. You can use this to tell us if you have had a good experience or if you feel there are any improvements we need to make.

If you would like to share your story with us, we would like to hear about your experiences on all aspects of the service and care you received.

Patient and family stories are read at the beginning of all our committee meetings to ensure we hear things from your point of view. All stories are anonymised. Please contact the Patient & Family Support Team on 0151 600 1517.

Contacts

TAVI co-ordinator:

Faye Barnes - faye.barnes@lhch.nhs.uk	0151 600 1301
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TAVI Nurse:

Joanne Crowe - joanne.crowe@lhch.nhs.uk	0151 600 1301
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Hospital Switchboard number	0151 600 1616
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Clinical Nurse Practitioners Helpline	0151 600 1298
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Coronary Care Unit	0151 600 1173
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Recovery Advice Line	0151 600 1056
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Patient & Family Support Team	0151 600 1517
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Notes

For further information visit:

www.lhch.nhs.uk

National Institute for Health and Clinical Excellence (NICE)

Trans-catheter aortic valve implantation (TAVI) for aortic stenosis: Guidelines

www.nice.org.uk

www.nhsdirect.nhs.uk

If you require a copy of this leaflet in any other format or language please contact us quoting the leaflet code and the language or format you require.

إذا لديك الرغبة في الحصول على نسخة من هذه المعلومات بأي لغة أخرى أو بشكل آخر (على سبيل المثال بخطوط كبيرة) ، الرجاء الاتصال علينا على الرقم 0151 600 1257 موضحاً الشكل أو اللغة التي ترغب فيها.
如果您想索取一份以其他語文或形式（如大字體）編印成的資料傳單，請致電 0151 600 1257向我們查詢，並說明您所需要的形式和語文。
ئەگەر ئەم زانیاریانەت بەھەر زمانیکی تر یاخود شیوازیکی تر دەوئیت (بۆ نموونە بە چاپی گەورە) ئەوا تکایە بە ژمارە تەلەفۆنی 0151 600 1257 پەیوەندیمان پێوە بکە و ئاماژە بدە بەو زمانە ی یاخود شیوەیەکی کە دەتەوئیت
W celu uzyskania niniejszej informacji w innym języku lub formacie (np. dużym drukiem), prosimy o kontakt z nami pod numerem 0151 600 1257 podając wymagany format lub język.
Haddii aad u baahan tahay koobiga wargelintan oo luqad ama qaab kale (sida far waaweyn) fadlan nagala soo xiriir 0151 600 1257 adiga oo noo sheegaya luqadda ama qaabka aad wax ku rabtid.

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