Trans-Catheter Aortic Valve Implantation (TAVI)

Cardiology

Introduction:

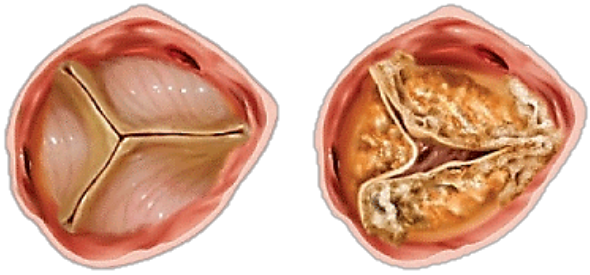
You have been diagnosed with a condition called Aortic Stenosis; narrowing of the aortic valve. Your Cardiologist has decided that you may benefit from having your valve replaced. A team of Doctors and Surgeons think that you may be suitable for Trans-Catheter Aortic Valve Implantation (TAVI) rather than traditional (standard) open heart surgery.

The aim of this booklet:

- To describe the nature of aortic stenosis and the procedure of TAVI
- To help you to understand the process
- To explain the possible risks and benefits of the TAVI procedure
- To explain the alternatives if you do not wish to go ahead with this procedure
- To understand what will happen after the procedure.

What is Aortic Stenosis?

The aortic valve is one of the main valves through which blood is pumped around the body. Aortic Stenosis is a condition where the aortic valve becomes thickened (often hardened with a lime scale like substance) and this results in the valve becoming narrowed. This narrowing puts strain on the heart muscle by making it harder to pump blood through the valve and out to the rest of the body.



Normal Aortic valve Aortic Stenosis

The prevention of infection is a major priority in all healthcare and everyone has a part to play.

- **Please decontaminate your hands frequently for 20 seconds using soap and water or alcohol gel if available**
- **If you have symptoms of diarrhoea and/or vomiting, cough or other respiratory symptoms, a temperature or any loss of taste or smell please do not visit the hospital or any other care facility and seek advice from 111**
- **Keep the environment clean and tidy**
- **Let's work together to keep infections out of our hospitals and care homes.**

If you have Aortic Stenosis you may not notice symptoms at first. Over time, as the condition progresses you may experience:

- Chest pain (angina) – usually during physical activity, caused by your heart having to work harder and the heart muscle not getting enough oxygen
- Shortness of breath – at first you may only notice this when you exercise but later you may experience it when resting
- Dizziness, light-headedness, loss of consciousness, or fainting – caused by reduced flow from your heart
- Tiredness and leg swelling

Unfortunately, medications seldom relieve the symptoms and do not change the progression of the narrowing. Untreated, you may develop heart failure (reduced pumping action of the heart) and have recurrent admissions to hospital with a poor quality of life. Severe Aortic Stenosis can lead to death.

What is Trans-Catheter Aortic Valve Implantation (TAVI)?

TAVI is a procedure which treats aortic valve disease without the need for open heart surgery.

In this procedure a new valve is inserted via a tube into the heart. The valve is made up of a metal frame and animal tissue.

This is an example of one of the valves used for TAVI:

TAVI is mainly performed through your main artery at the top of your leg (trans-femoral). This is usually performed with local anaesthetic and sedation.

A CT scan before the procedure will check that it is possible to perform the procedure via this route. If your leg arteries are unsuitable, you may be able to have a TAVI through an artery near your collar bone, through the chest wall or through the neck (trans-subclavian, trans-aortic or trans-carotid) under general anaesthetic.

A tube that contains the new valve is then passed up your artery, across the aortic valve and expanded, pushing your old valve out of the way. This new valve will then start working immediately.

Consent

We must seek your consent for any procedure or treatment beforehand. Your Doctor will explain the risks, benefits and alternatives where relevant before they ask for your consent. If you are unsure about any aspect of the procedure or treatment proposed, please do not hesitate to ask for more information.

What are the benefits of having a TAVI?

The replacement of your heart valve should give you both short and long term relief of your symptoms and increase your life expectancy. This may improve your quality of life and enable you to do things that you have been unable to do due to your symptoms.

What are the risks of having a TAVI?

It is important to remember that Aortic Stenosis is a serious condition and without treatment there is a high risk of progressive symptoms or death. The risks for each individual are different and your Cardiologist or Cardiac Surgeon will discuss these with you and only proceed if they feel the benefit outweighs the risks.

- The risk of serious complications during the procedure is 2-3% (2 or 3 in every 100). These risks include heart attack, stroke, bleeding, kidney failure, complications related to the valve insertion site and leaking around the new aortic valve
- 1 in 20 patients will need an operation to fix the insertion site in the leg
- The aortic valve is near the natural pacemaker of your heart. Sometimes the procedure can affect your heart rhythm and 10-15 % (10-15 in every 100) of patients require a permanent pacemaker after valve implantation
- The overall risk of death within a month of the procedure is 2-3% (2 or 3 in every 100).

In rare cases (1 in 400) it may be necessary to carry out immediate surgery to replace the aortic valve. The surgical team and all emergency equipment are always available.

What alternatives are there if I choose not to have this procedure?

The alternatives for the treatment of symptomatic aortic valve disease are:

- Continuing with medication - this is very limited and will not treat the aortic stenosis
- Valve replacement (the risk of open surgery vs TAVI will be discussed with you by your doctor)
- A balloon aortic valvuloplasty which will stretch the aortic valve opening but this is only a temporary treatment.

What tests will I need to undergo?

There are a number of tests that you may undergo whilst being investigated for your Aortic Stenosis and assessing your suitability for TAVI. The most important of these are:

- Transthoracic Echocardiogram (Echo) - this is where some gel and a probe are put on your chest to take some ultrasound pictures of your heart. This will give us some information on how severe the Aortic Stenosis is and how well the heart is working
- CT scan - a sophisticated X-ray providing more detailed pictures and measurements of the aortic valve and the blood vessels to the heart.

If your Doctor wishes to do any other tests they will discuss these with you.

Pre-Assessment Clinic

This is a nurse led clinic which you may be asked to attend a week or two before your procedure. The TAVI Nurse Specialist who sees you will carry out a review to check whether things have changed since you were put onto the waiting list.

You will have a number of tests to prepare you for your procedure:

- Chest X-ray
- ECG-recording of your heart trace
- Blood tests
- Swabs - to look for certain types of bugs that are sometimes carried by people on their skin such as MRSA (Methicillin-Resistant *Staphylococcus Aureus*) and CPE (Carbepenase-Producing Organism).

Do not worry if you are unable to attend the pre-operative assessment clinic, as these tests can be carried out when you are admitted to the ward.

What should I bring into hospital?

You will be asked to bring your medication in their original boxes, toiletries, well fitting slippers, night and day clothes, a charger if bringing in a mobile phone, and books or magazines.

What happens before you have your TAVI procedure?

- Admission is usually the day before the procedure.
- You will be seen by a Nurse and the medical team who will complete the admission documentation. This will include questions relating to next of kin, living arrangements and support you have post discharge. If you have any concerns regarding any social support you require, please discuss them with the Nurse looking after you as soon as possible
- You will be instructed when you need to be nil by mouth
- You will be given some special shower gel and may possibly have a fluid by a drip to use the night before and on the morning of the procedure. This helps to reduce the chance of infection from the procedure.

What do I do if I take Warfarin or alternatives such as Rivaroxaban, Apixaban, Dabigatran or Edoxaban?

You will need to stop these medications prior to your TAVI, you will be instructed when to do this. Patients with an artificial metal mitral valve will be admitted 2-3 days before the planned procedure and given intravenous heparin instead.

What happens during the procedure?

Immediately before the procedure, we will attach some equipment to monitor your blood pressure, ECG and oxygen levels. We will give fluid and medication through a cannula (a small tube in your hand or arm) during the procedure.

The TAVI procedure will be performed by a Cardiologist in the Cardiac Catheter Suite. Special X-rays using contrast dye, and Echocardiography (ultrasound of the heart) are used to guide the new valve into the correct position.

- If you are having a trans-femoral access, the Doctor will make a puncture (hole) into the femoral artery at the top of your leg and insert a catheter into the artery
- If you are having a subclavian or trans-apical (surgical) approach, the Surgeon will make a small cut to your chest so that they can access your heart

During the procedure a temporary pacing wire is put in through a vein in your groin and passed through to your heart, this is used to support your heart rate. The pacing wire is then removed as soon as it is not required, although in 10-15% (10-15 in every 100) a permanent pacemaker is required and the temporary wire may stay in until this is inserted.

The Doctor will repair the puncture sites in your groin or chest. Occasionally, a drain is put in at the wound site.

The whole procedure usually takes 1-2 hours, sometimes longer in more complex cases.

What happens after the procedure?

- In most cases you will return to the same ward directly after the procedure. If you remain too drowsy or require closer observation you may be transferred temporarily to the intensive care unit
- You will be closely observed after your procedure and attached to a machine to monitor your heart rhythm, blood pressure and oxygen levels. Your Nurse will also check your wound regularly and may need to apply pressure to the wound in your groin. They will also feel your feet regularly for pulses and check they are warm
- If you have a tube in one or both sides of your groin, the tube(s) will be removed at the earliest opportunity, usually within the first 24 hours
- Most patients will be able to sit in the chair the day after their procedure and then begin to

gently mobilise.

When can I leave hospital?

Although there is no set recovery time for patients, most are discharged 1-4 days but we may need to keep you longer if further monitoring is required. You will usually be advised to take blood thinning medication after the procedure.

If you have a stitch in your groin, your Nurse will remove this before you go home.

You will need to be accompanied by a friend or relative on discharge from the hospital. A discharge letter regarding your treatment will be sent to your GP and you will have a copy for yourself.

A follow up appointment will be arranged for you (approximately 6-8 weeks although there can be delays on this and we would recommend you get in touch with us if you have any concerns in the meantime).

Wound Care

Trans-femoral (groin) - There will be bruising to your groin after the procedure but it is important that you seek medical help if you have any of the following symptoms:

- Bleeding or swelling to the site- In the unlikely event you have bleeding you should lie down and apply firm pressure to the site, keeping that limb still. If after 10 minutes it is still bleeding you must seek immediate medical attention. Dial 999 immediately if there is a significant bleed
- Increased pain, swelling, redness and/or discharge to the groin site
- Raised temperature.

Subclavian / Direct aortic / Trans-apical - You will need to keep your wound clean and dry, you can shower and pat your wound dry but avoid laying in the bath for long periods. Check your wound daily, if it becomes red and inflamed, hot to touch, painful and/or there is discharge to the wound site, contact the Cardiology Ward.

When can I return to driving?

In most cases you can safely resume driving four weeks after your TAVI. Please note current DVLA guidelines state that if you have severe aortic stenosis (before your valve is treated) and symptoms, you must not drive and must inform the DVLA.

Cardiac Rehabilitation after the TAVI

The Cardiac Rehabilitation Team at The Royal Wolverhampton NHS Trust offer a comprehensive service, including structured exercise and patient education, with a goal of optimising patient's quality of life. Physical Activity (exercise) will improve the efficiency of your muscles in using oxygen. This puts less strain on the heart, as it will not have to beat as hard or as fast with activities of moderate intensity.

It is important to begin gradually, with just a few minutes of exercise initially. Aim to walk 5-10 minutes alongside activities around your home. This is a guide only; please adapt with a 'symptom-guided' approach. Always allow yourself time to warm up and cool down afterwards.

It is normal to get comfortably short of breath in order to improve your fitness, but you should be able to hold a conversation whilst exercising. Be aware that exercise is harder in very hot or very cold weather. Do not exercise for at least one hour after a meal.

The Cardiac Rehabilitation Service can provide you with more individualised guidance and supervised exercise classes. They will assess you on the ward prior to discharge and arrange a follow-up.

The British Heart Foundation support the Cardiac Rehabilitation Team with 'Patient Information Booklets'. To access this information, you can go to the website for more information: https://www.bhf.org.uk/informationsupport

Alternatively, scan the QR Code:

Cardiac Rehabilitation Team:

Monday to Friday 8am - 5pm and Saturday 8am - 4pm (Excluding Bank Holidays)

Telephone: 01902 694226

rwh-tr.cardiacrehabteam@nhs.net

Research

The hospital has a dedicated research team that participates in worldwide research to improve clinical practices. You may be asked if you would like to participate in a trial. If you are asked to participate, the research team will send you information and discuss it in more detail with you when you are admitted.

Contact information

You will be admitted to the Cardiology Ward (B14) for your TAVI.

Telephone: 01902 694330 / 01902 694223

Visiting times 1pm-3pm and 5pm-7pm but these may change without notice; please check before visiting.

If you have any questions or feel your symptoms are worsening please contact: TAVI secretary on 01902 694213 or TAVI Nurses on 01902 694214, please leave a message and they will get back to you as soon as possible.

Please note this is not a 24 hour helpline, in an emergency please seek advice from GP / 111 / 999.

Visit the link or scan the QR code to watch the 'Cath Lab Tour' video:

https://youtu.be/gf6gmrkMSnI

English

If you need information in another way like easy read or a different language please let us know.

If you need an interpreter or assistance please let us know.

Lithuanian

Jeigu norėtumėte, kad informacija jums būtų pateikta kitu būdu, pavyzdžiui, supaprastinta forma ar kita kalba, prašome mums apie tai pranešti.

Jeigu jums reikia vertėjo ar kitos pagalbos, prašome mums apie tai pranešti.

Polish

Jeżeli chcieliby Państwo otrzymać te informacje w innej postaci, na przykład w wersji łatwej do czytania lub w innym języku, prosimy powiedzieć nam o tym.

Prosimy poinformować nas również, jeżeli potrzebowaliby Państwo usługi tłumaczenia ustnego lub innej pomocy.

Punjabi

ਜੇ ਤੁਹਾਨੂੰ ਇਹ ਜਾਣਕਾਰੀ ਕਿਸੇ ਹੋਰ ਰੂਪ ਵਿਚ, ਜਿਵੇਂ ਪੜ੍ਹਨ ਵਿਚ ਆਸਾਨ ਰੂਪ ਜਾਂ ਕਿਸੇ ਦੂਜੀ ਭਾਸ਼ਾ ਵਿਚ, ਚਾਹੀਦੀ ਹੈ ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਸਾਨੂੰ ਦੱਸੋ।

ਜੇ ਤੁਹਾਨੂੰ ਦੁਭਾਸ਼ੀਏ ਦੀ ਜਾਂ ਸਹਾਇਤਾ ਦੀ ਲੋੜ ਹੈ ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਸਾਨੂੰ ਦੱਸੋ।

Romanian

Dacă aveți nevoie de informații în alt format, ca de exemplu caractere ușor de citit sau altă limbă, vă rugăm să ne informați.

Dacă aveți nevoie de un interpret sau de asistență, vă rugăm să ne informați.

Traditional Chinese

如果您需要以其他方式了解信息，如易读或其他语种，请告诉我们。

如果您需要口译人员或帮助，请告诉我们。

Designed & Produced by the Department of Clinical Illustration,
New Cross Hospital, Wolverhampton, WV10 0QP Tel: 01902 695377.

Review Date 01/11/2026 Date Produced 2010 MI_282210_15.03.24_V_5