



University Hospitals Birmingham
NHS Foundation Trust



Transcatheter Aortic Valve Implantation

Building healthier lives

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What is aortic stenosis?

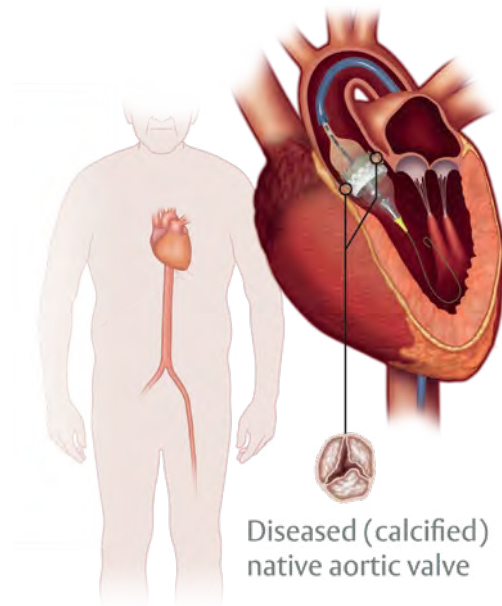
The aortic valve controls the flow of blood leaving the heart. In some people, the leaflets of the valve become calcified (like limescale) and the valve becomes narrowed (this is also known as aortic stenosis). Aortic Stenosis reduces the flow of blood leaving the heart and causes the main pumping chamber (the left ventricle) to work harder. Around 6–8% of people aged 80 and over have symptoms of aortic stenosis. These symptoms may be very limiting and include breathlessness, chest pain, light-headedness, blackouts, breathlessness in bed and ankle swelling. Aortic stenosis can be present for some time before it causes symptoms.

Once aortic stenosis begins to cause symptoms (even if mild) the condition will progress. In addition to reducing a patient's quality of life aortic stenosis significantly reduces life expectancy. Medications are only partially able to relieve symptoms and do not stop the valve narrowing even more. In the past, the only treatment available was open heart surgery to replace the narrowed valve. There is now an alternative treatment called TAVI.

What is TAVI and why have I been referred for this?

TAVI stands for **T**ranscatheter **A**ortic **V**alve **I**plantation. It is still a relatively new treatment for severe aortic stenosis and is an alternative to open heart surgery. TAVI is much less invasive than open heart surgery. You have been referred to the TAVI team at the Queen Elizabeth Hospital Birmingham because it is felt that you may benefit from TAVI rather than conventional open heart surgery. TAVI involves implanting a new biological aortic valve, into the narrowed aortic valve. Usually, this can be undertaken via a small procedure through the top of the leg (transfemoral TAVI). However, if leg arteries are unsuitable, the new valve may require implant via a small procedure through the chest wall (transaxillary TAVI) or via a vein in the groin (transcaval TAVI). TAVI is currently reserved for patients who are considered unsuitable to have open heart surgery.

Transfemoral approach



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What tests will I undergo to assess whether I am suitable for TAVI?

To determine your suitability for TAVI, you will need to undergo a few tests. These will include:

- 1) Echocardiogram
- 2) Coronary angiogram
- 3) CT aortogram

I: Echocardiogram – in this test an ultrasound probe is passed over the chest wall to look at the heart and its valves. The test uses sound waves like sonar, is painless and harmless. Occasionally a transoesophageal echocardiogram will be needed to give more information. This test uses the same technology but this time the probe is passed down the food pipe (the oesophagus). This allows a better view of the aortic valve and is done under light sedation.

II: Coronary angiogram – this involves placing of a small tube into either the wrist or the artery at the top of the leg, to look at the arteries supplying the heart in more detail.

III: CT aortogram – this test looks at all of the vessels leading from the artery at the top of the leg right up to the aortic valve. It allows us to decide the size and type of valve that will be best for you.

The tests above will usually be done as an outpatient.

What are the risks and benefits of TAVI?

TAVI leads to an improvement in the symptoms caused by aortic stenosis and also prolongs life expectancy, compared with no treatment.

The benefits of TAVI over open heart surgery (when surgery is possible) are a shortened length of stay, a less invasive procedure, faster recovery, less atrial fibrillation (a common arrhythmia) and a lower need for blood transfusion.

In most cases TAVI is felt to be the best choice when the risks of surgery are felt to be too high.

Although TAVI is much less invasive than open heart surgery, it nevertheless involves risks. The most important risks that you should be aware are listed below:

Over the last four years (2016-2019) more than 600 procedures have been performed at QEHB. The risks quoted below are based on the experience of these procedures:

1. The risk of not surviving TAVI at Queen Elizabeth Hospital Birmingham is 1.5% (1–2 in 100)
2. There is a small risk (0.5%) of having a stroke during or shortly after a TAVI
3. There is a 5–30% risk that you may need to have a pacemaker implanted as a result of the TAVI procedure. This would usually be undertaken immediately after the procedure and before discharge. The chances of needing this depends on the type of valve implanted and whether you have any pre-existing abnormalities

4. There is a 3% risk of complications related to the site where the valve is inserted into the body. This may mean that a stent or a small operation is required to repair the damage
5. There is a less than 1% risk that you may require temporary kidney dialysis after the procedure. The risk of this is increased if your kidney function is very abnormal or if a significant complication occurs
6. There is around a 1% risk of an emergency open heart operation being performed should a serious complication occur

How will my TAVI procedure be performed?

Most TAVIs (around 95%) at QEHB are undertaken via the artery at the top of the leg (transfemoral TAVI). Nearly all TAVI procedures done via the leg are undertaken with **conscious sedation**. This means you will be awake but relaxed during the procedure.

Sometimes the leg arteries are unsuitable and a transaxillary or transcaval procedure may be necessary. This will usually require a **general anaesthetic** but is still much less invasive than an open heart operation.

How long can I expect to be in hospital for the procedure?

You will usually come in the evening before your procedure. Patients who undergo a transfemoral TAVI with conscious sedation are usually able to go home the day after the procedure. This means you will usually be in hospital for two nights only.

If the TAVI is undertaken via the artery under the collarbone (transaxillary) or through a vein in the leg (transcaval), the recovery period is a little longer but in an uncomplicated procedure you can expect to go home around 2–3 days after the procedure.

Other frequently asked questions:

Will I need warfarin?

No. All the TAVI valves consist of a metal frame within which is suspended a valve made from animal (usually cow) tissue. This type of valve does not require you to take Warfarin. You will normally be advised to take Clopidogrel or Aspirin indefinitely after the procedure.

Will I need to take any anti-rejection treatments?

No. TAVI valves do not require any anti-rejection treatment.

What type of valve will I have?

The team will choose a TAVI valve best suited to your particular situation. Currently, two different types of valve are mainly used at QEHB (see figures)



Edwards
Sapien 3 Ultra™



Medtronic
Evolut Pro™

Will I definitely be a candidate for TAVI?

The final decision on whether TAVI is appropriate for you will depend on a number of factors. A multi-disciplinary team meeting will be held in order to discuss your case in detail and to work out the best treatment for you. This will be attended by a variety of specialists, including interventional cardiologists, cardiothoracic surgeons, cardiac anaesthetists, cardiologists with specialist imaging expertise and a geriatrician. All the information we have obtained about you will be assessed. In the end, some patients will be recommended to undergo conventional open heart surgery and others who are considered high risk for conventional surgery will be offered TAVI. Some patients will continue to have medical treatment. For some people, TAVI is not an appropriate procedure.

Am I too old for TAVI?

TAVI is generally undertaken in patients who are elderly and considered high risk for conventional open heart surgery. The average age of patients treated in the UK is about 84, and to date the oldest patient successfully treated at QEHB was 96 years old.

How long will my TAVI valve last?

Because this is still a relatively new development, there is no definitive data on how long your new valve will last. Our best estimates at this stage are that its longevity will be similar to surgically implanted biological valves, which we know is up to 20 years. If valve deterioration does occur this can usually be dealt with by a further TAVI procedure.

How many TAVIs have been performed at the QEHB?

At the time of writing of this information leaflet (March 2020), the TAVI team at the QEHB have undertaken just under 1000 procedures and are considered an experienced centre.

How long does the TAVI operation take?

The TAVI procedure normally takes around 60–90 minutes.

What happens after the procedure?

Most patients go to the coronary care unit (CCU) after the procedure. A few may need recovery on critical care unit (ITU). After a transfemoral TAVI you will usually be able to walk four hours after the procedure and go home the next day.

How mobile will I be at discharge?

TAVI is less invasive than open heart surgery, most patients are self-caring at discharge and able to return to their homes without special care arrangements.

How soon can I drive after TAVI?

The DVLA stipulate that you may resume driving one month after the TAVI procedure.

What happens next?

After you have been referred we will normally wish to see you in clinic. It is a good idea if someone close to you comes along. If you are keen to be considered and if the doctor feels TAVI is the right treatment for you, then we will arrange the investigations mentioned above. After all the test results are known, we will discuss you in a TAVI multidisciplinary meeting. All the information will be looked at and the team will decide if TAVI is the right treatment for you. We will write to you after this with the opinion of the team. If the decision is to perform TAVI, we will undertake this as quickly as possible.

Who should I contact if I have further questions?

If you have further questions, please contact **Mrs Anne Morris (secretary to Dr SN Doshi) on 0121 371 4613** or **Mrs Ewa Lawton (TAVI nurse practitioner) on 07464 908049**.



The Trust provides free monthly health talks on a variety of medical conditions and treatments. For more information visit www.uhb.nhs.uk/health-talks.htm or call 0121 371 4957.

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