YOUR GUIDE TO

Transcatheter Aortic Valve Implantation (TAVI)

IntraCare
Interventional Cardiology

IntraCare's angiography suite

Contents

About this procedure

This guide provides information about a Transcatheter Aortic Valve Implantation (TAVI) or sometimes referred to as Transcatheter Aortic Valve Replacement (TAVR) procedure. It includes details about what is involved, how to prepare and what to expect during and after the procedure. Please use this in addition to information from your doctor and nurse.

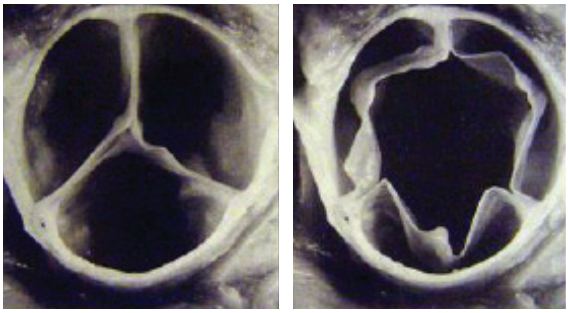
A TAVI procedure is performed in an angiography suite at IntraCare in Epsom. Your cardiologist will be assisted by our team of nurses and other highly skilled personnel.

Both IntraCare and Allevia Hospital will be involved with your care for this procedure. Allevia Hospital is responsible for your admission, preparation and aftercare in the Cardiac Investigation Unit (CIU).

What is aortic stenosis?

Aortic stenosis is a disease resulting from calcium deposits building up on the heart's aortic valve leaflets. This causes narrowing and rigidity and can obstruct blood flow from the heart to the rest of the body. This condition makes your heart work harder to pump blood to your body.

The aortic valve lies between the left ventricle and the aorta and functions by allowing blood to flow in one direction without obstruction.



Normal aortic valve with thin supple leaflets

In calcific aortic stenosis, leaflets are thick and rigid. They do not open properly.

Left untreated, aortic valve stenosis can lead to serious medical problems:

- Shortness of breath due to heart failure with build-up of fluid in the lungs.
- Angina due to insufficient blood reaching the heart muscle.
- Blackouts due to insufficient blood reaching the brain.
- Sudden death.

Between 50–80% of patients with severe aortic stenosis who have symptoms and do not have a valve replacement will typically not survive beyond two years.

Traditionally, open-heart surgery was the only option to replace the aortic valve. Nowadays, the preferred treatment is often the minimally invasive approach called TAVI.

What is Transcatheter Aortic Valve Implantation (TAVI)?

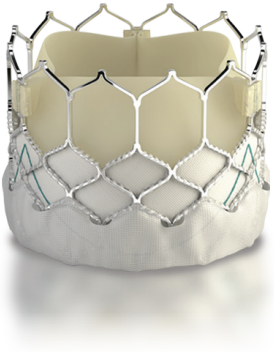
A TAVI is the implantation of an aortic valve without removing the diseased valve, performed under local anaesthesia and heavy sedation.

The TAVI approach is X-ray guided and delivers a fully expandable replacement valve through a catheter. Once the new valve is expanded, it pushes the old valve leaflets out of the way and the tissue in the replacement valve takes over the normal function of the valve.

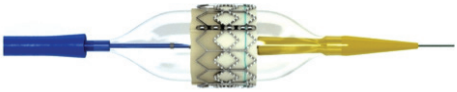
You will be assessed to confirm whether TAVI is the preferred treatment for your aortic stenosis. This will include several diagnostic tests such as coronary angiogram, echocardiography, CT Angiogram, etc. to assess the condition of your heart, and plan the valve procedure.

The photos below are examples of the different mechanical valves that may be used. Your doctor will decide which valve will suit you best.

Edwards Sapien Valve



The valve is crimped on the delivery system



The valve is deployed by balloon expansion

Key features of the Edwards Sapien valve:

- Cobalt chromium steel frame.
- Leaflets made from bovine (cow) pericardium – the strong but thin membrane that surrounds a cow's heart.
- Deployed by expanding a balloon.
- A "skirt" limits leakage around valve.

Medtronic Evolut Pro Valve

Valve delivery system

Key features of the Metronic Evolut Pro valve:

- Self-expandable valve
- Nitinol steel frame
- Leaflets made from porcine (pig) pericardium – the strong but thin membrane that surrounds a pig's heart

Before your procedure

Pre-procedure phone call

A nurse from IntraCare will call you 24–48 hours prior to your procedure to discuss the following information:

- Your admission time.
- When you should stop eating and drinking.
- Medication instructions.
- Allergies (including medications, contrast dye, dressings/plasters and food).
- Answer any further questions.

Anticoagulation (blood thinner)

If you are taking a blood thinner e.g. Dabigatran (Pradaxa), Rivaroxaban, Warfarin or Clexane, your cardiologist will advise if you need to stop this medication temporarily for a few days before the procedure.

Warfarin

If you are currently taking Warfarin, please inform IntraCare via email or phone as soon as possible. Our nurses will review your INR levels and advise any medication changes if necessary.

Other regular medications

Please continue to take these unless advised otherwise by your cardiologist. If you are taking a diuretic or water pills (e.g. frusemide, spironolactone), you may need to withhold this on the morning of the procedure.

Reminders for the day of your procedure

- If you are on regular medication, please bring this with you in its original packaging.
- Please leave all your jewellery and valuables at home. You are welcome to bring your mobile phone in with you.
- We recommend wearing loose-fitting clothing and shoes that are easy to slip on/off.
- You are encouraged to bring a friend or a family member as a support person before and after your procedure.

- Please bring an overnight bag with you as you are required to stay overnight after the procedure.
- The planned procedure time is an estimate only and may vary. We will keep you informed of any unexpected delays on the day.

Informed consent

As with any procedure, there are potential risks involved. Your cardiologist and anaesthetist will explain the procedure, discuss possible risks and answer any questions you may have. Your whānau or support person are welcome to be part of this discussion. You will then be asked to sign the consent form. This will occur either at an earlier appointment, or on the day of your procedure.

Your procedure

A TAVI is performed under heavy sedation and local anaesthetic and usually takes 1.5–2 hours.

Preparation

Once you are in the lab, the staff will perform a safety check-in, where we will confirm your name, date of birth and the procedure you are having. A small intravenous (IV) line will be inserted into a vein in your arm for medication to be injected. We may need to remove hair with clippers at the access site for sterile preparation. Please avoid shaving the area yourself as this may cause minor abrasions to the skin, increasing the risk of infection.

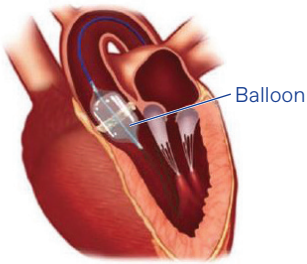
Several adhesive patches, small and large will be placed on your back and chest for monitoring and defibrillation if required. Other devices for monitoring blood pressure, heart rate and oxygen levels will be fitted to ensure your safety during the procedure. Following this, sedation will be delivered by an anaesthetist. We will carefully position and tuck your arms at your sides to ensure sterility and safety is maintained.

The procedure

Your groin and right wrist will be cleaned with an antiseptic solution, and you will then be covered with a large sterile drape. The groin and wrist will be completely numbed with local anaesthetic. This will sting for about thirty seconds. You may feel pressure but you should not feel any pain for the duration of the procedure. If at any time you feel pain or are uncomfortable, please let your doctor know and more local anaesthetic or medication to help you relax can be given.

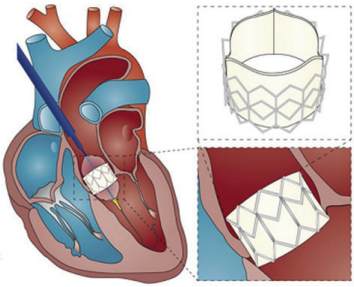
Small hollow tubes (sheaths) will be inserted into the femoral vein and artery, and into the artery of your right wrist. These are access sites for the valve and for catheters (thin flexible long tubes) used for taking images and pressure measurements of the heart.

A temporary pacing cable will be positioned into the heart through one of the sheaths.

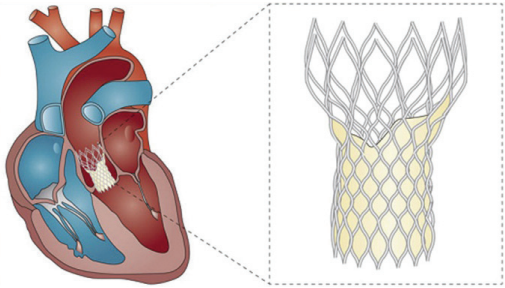


In preparation for the new valve, a balloon aortic valvuloplasty (BAV) may be performed to stretch and dilate the aortic valve and make room for the new one. Your heart will be stimulated to beat very fast using the pacing cable during each balloon inflation. Baseline pressure measurements will be recorded.

Different valves deployed in the heart



Balloon expandable Edwards valve



Self-expandable Medtronic valve

Several images are obtained by using x-rays during the injection of contrast dye. This technique helps to confirm that the valve is accurately positioned. Once safety and positioning checks are confirmed between the specialists, they will stimulate your heart again to beat fast via the temporary pacemaker and deploy the valve.

Pressure measurements with the new valve functioning will be recorded and specific checks are performed to ensure the new valve is sitting well and has no leaks. Final X-ray images and safety checks will be done before the catheters and sheaths are removed.

At this stage the sedation will start to wear off and you will become more awake. If your heart still requires back-up support, the pacing cable may be retained for a few hours while the two other sheaths are removed and covered with small sterile dressings. A plastic bracelet will be on your wrist to put pressure on the access site and manage any bleeding.

After your procedure

You will be transferred from IntraCare to CIU, where the Allevia Hospital team will look after you during your recovery. If appropriate, you will be discharged home usually the next day after your procedure, unless your doctor would want you to stay for another night for specific reasons which will be explained to you. Prior to your discharge, the nursing staff will give you advice about your medication, procedure site care and resuming your normal daily activities.

Recovery and discharge

- Following your procedure, it is important that you **do not drive for 4 weeks**. Specialist assessment is required before you return to driving.
- Please ensure you have a family member or friend to drive you home from the hospital, as you may still be under the effects of anaesthesia or sedation.
- You will need to arrange for someone to be at home with you on the day of your discharge and overnight to support you in your recovery.
- Due to the sedation, you may feel lethargic afterwards with reduced concentration. For this reason, for 24 hours after your procedure:
  - Do not do any activity requiring strength, concentration, or full alertness.
  - Do not make any legal decisions or sign legal documents.

Resuming travel and activities

- You will be able to return to work within a week of having the procedure unless your job involves heavy lifting (>5kg).
- You can begin light exercise after 1 week.
- If you have had a TAVI procedure, do not fly domestically for 48 hours, short international flights (e.g. Australia) for 2 weeks or long-haul international flights for 6 weeks.

Medication

Your cardiologist will discuss any medication changes with you, if necessary. If you have any questions regarding your medications after your procedure, please contact your cardiologist.

Follow up appointment

You will be seen in clinic at The Heart Group approximately 1-3 months following your TAVI procedure. If you have minor concerns prior to your follow up appointment, please arrange to see your general practitioner (GP) or contact IntraCare.

Radial (wrist) site care

If one of the puncture sites during the operation is through the wrist, it is normal to experience some minor bruising and/or feel a small pea-sized lump under the skin at the puncture site. This will disappear in time or remain as permanent scar tissue. This is nothing to be concerned about.

Please follow these instructions in CIU and the first few days at home:

- Keep the site clean and do not rub the wound. Until the site has healed, gently pat it dry after showering.
- If the site looks red, inflamed and/or infected please see your general practitioner (GP).
- You may take paracetamol if your arm is sore. Should your arm continue to be painful, please contact IntraCare.
- Do not lift with the affected arm or do any strenuous activity.

Femoral (groin) site care

It is normal to experience some bruising at the puncture site. During the first few days after your procedure:

- Do not do any heavy lifting (>5kg) or strenuous exercise.
- Try not to excessively cough, sneeze, or strain as this puts pressure on the puncture site which may cause it to bleed.
- Do not sit in a bath, hot tub or spa until the skin has healed.
- Do not cross your legs while sitting.
- You may resume walking if your puncture site is not painful.
- Remove the dressing on your groin once the skin has healed (approximately 3 days).

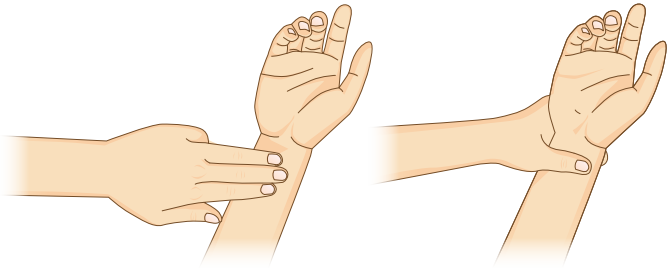
Haematoma

It is common for a haematoma to develop after this procedure. A haematoma is a collection of blood under the skin that is sometimes painful. A small hard lump (similar in size to a pea) may also be felt under the skin and remain for several weeks:

- If a large lump (haematoma) occurs, lie down, and get another person to press down firmly on the centre of the haematoma for approximately 10 minutes.
- If after releasing pressure the haematoma reoccurs, keep applying the pressure and go to your local accident and emergency department.

Bleeding

- It is common for there to be a small amount of ooze from the puncture sites. If this occurs, re-apply a sticking plaster and lightly press for a few minutes.
- If there is significant bleeding, you should lie flat, and another person will need to apply firm pressure for 10 minutes. If this does not stop the bleeding, call an ambulance.



Example of how to manage a haematoma or bleeding at the radial site.

Seek immediate medical attention (dial 111 for an ambulance) if there is excessive bleeding from the puncture site or if you are experiencing severe chest pain.

Please take this booklet and your discharge summary with you if visiting the GP, afterhours or hospital.

If you have any concerns after your procedure, please contact IntraCare:
Monday to Friday: 09 630 1961 (between 6:30am and 6:00pm).
For after-hours, weekends, and public holidays, contact 027 482 0763.

How to find us

IntraCare Epsom

Both IntraCare and Allevia Hospital will be involved with your care for this procedure. **When you arrive, please report to the Allevia Hospital reception desk (number 1 on the map).**

First Floor, Allevia Hospital Reception
98 Mountain Rd, Epsom, Auckland 1023

P: +64 9 630 1961 (Monday to Friday 6:30am–6:00pm)
P: +64 27 482 0763 (after hours, weekends and public holidays)
E: admin@intracare.co.nz
W: intracare.co.nz

Where to park

A 10 minute patient 'drop off zone' is available on the level 1 carpark. Head up the ramp as you enter into the carpark from the Main Entrance on Mountain Road.

The first 30 minutes are free and apply only once the vehicle licence plate number has been entered into a payment terminal. Patient parking is available on all levels of the car park. Parking limits apply, and parking spaces are marked (P90, P180, and All Day Parking).

The Allevia Hospital parking is managed by a separate company, and a fine may be issued if your vehicle breaches any of the parking terms and conditions.

There is free 120 minute parking available nearby on Mountain Road, Gilgit Road and Almorah Road after 9am.

Main entrance to patient and visitor car park
– 250 spaces

Walkway to main reception
Pedestrian access to main reception from car park

1. Allevia Hospital reception and Allevia Radiology 1 reception
2. Canopy Cancer Care
3. ARO (Auckland Radiation Oncology)
4. Allevia Café and outdoor dining courtyard
5. Allevia Pharmacy
6. IntraCare
7. Awanui Labs (blood tests)
8. Allevia Radiology 2 (CT, ultrasound)
9. The Heart Group
10. Allevia Radiology PET-CT
    Canopy Cancer Care
11. Allevia Specialist Centre
12. Allevia Radiology 1 (MRI/X-ray)

A B C D E Allevia Specialist Centre entrances

IntraCare

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