

## What are the potential risks/complications of the procedure?

Like any other kind of operations, there are risks associated with this procedure. However, the long-term risk to your life and your quality of life may be higher if severe Aortic Stenosis is not treated.

The risks of TAVI include the following:

- Death (1 – 10%)
- Heart or blood vessel injury, such as perforation or damage of blood vessels, heart muscle valve structures that may require emergency surgery (1 – 10%)
- Heart attack (1 – 10%)
- Stroke (1 – 10%)
- Clot (1 – 10%)
- Hemorrhage (bleeding) requiring transfusion (0.1 – 5%)
- Hematoma (1 – 10%)
- Hypertension (high blood pressure) / Hypotension (low blood pressure) (0.1 – 5%)
- Kidney failure needing dialysis (0.1 – 10%)
- Kidney dysfunction (0.1 – 25%)
- Allergic dye reaction (0.1 – 1%)
- Anesthesia reaction (1 – 10%)
- Abnormal heart rhythms (0.1 – 25%)
- Heart conduction system injury, which may require a permanent pacemaker (1 – 10%)
- Fever (0.01 – 1%)
- Infection including valve infection (0.01 – 1%)
- Pericardial effusion / cardiac tamponade (bleeding into the heart sac) (0.1 – 1%)
- Nerve injury (0.01 – 0.1%)
- Arteriovenous (AV) fistula (an abnormal passageway between an artery and a vein) (0.01 – 0.1%)
- Short term use of intra-aortic balloon pump to assist heart function (1%)
- Lower limb ischemia / limb loss (0.5%)
- Emergency aortic valve surgery by conventional method (1 – 3%)

## Contact information

### NUH Angiography Centre

Main Building 1, Level 2

**Opening Hours:** 8.30 am - 5.30 pm (Mondays - Fridays)  
Closed on Saturdays, Sundays & Public Holidays

### For appointments, please contact

Tel: (65) 6772 2002

Email: [appointment@nuh.com.sg](mailto:appointment@nuh.com.sg)

### For International Patients And Visitors

The International Patients Liaison Centre (IPLC) is a one-stop service centre to support all the medical needs of our foreign patients

Tel : (65) 6779 2777 (24-Hours Helpline)

Fax : (65) 6777 8065

Website : [www.nuh.com.sg/iplc.html](http://www.nuh.com.sg/iplc.html)

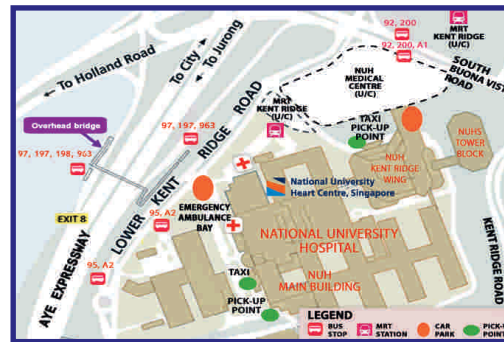


### National University Hospital

5 Lower Kent Ridge Road, Singapore 119074

Tel: 6779 5555 Fax: 6779 5678 Website: [www.nuh.com.sg](http://www.nuh.com.sg)

## Location



## Free Shuttle Bus Service

Free Shuttle Bus Service from Dover MRT Station to NUH

**Operation hours :** 8.00 am – 8.30 pm (Mondays – Fridays)  
8.00 am – 2.00 pm (Saturdays)  
Not available on Sundays and Public Holidays

**Dover/NUH passenger pickup/ drop off point**

1. Dover MRT Station (opposite Singapore Polytechnic)
2. Main Building, Lobby Entrance (near roundabout)
3. Kent Ridge Wing, Level 3, South Entrance

For more information on Shuttle Bus schedule, log on to [www.nuh.com.sg](http://www.nuh.com.sg)

Information in this brochure is given as a guide only and does not replace medical advice from your doctor. Please seek the advice of your doctor if you have any questions related to the surgery, your health or medical condition.

Information is correct at time of printing (June 2011) and subject to revision without notice.

# Transcatheter Aortic Valve Implantation

Adult Congenital and Structural Heart Disease Programme

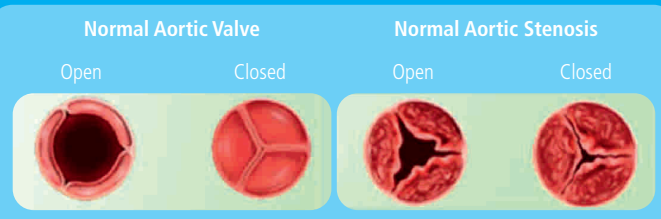


## Why is Transcatheter Aortic Valve Implantation (TAVI) needed?

Transcatheter Aortic Valve Implantation (TAVI) is used to treat severe Aortic Stenosis, a condition in which the aortic valve becomes narrowed, obstructing the outflow of blood from the heart and thereby requiring the heart to work harder to pump blood around the body.

TAVI is a procedure performed using the Edwards Sapien Transcatheter Heart Valve (THV), an artificial heart valve designed to be inserted into your heart so that it holds open and replaces your diseased aortic valve. It consists of a metal stent (made of steel or cobalt-chromium) which secures the device in its intended position inside your own valve, and valve leaflets (made of biological material derived from cows) to direct the flow of blood out of your heart.

TAVI now offers effective treatment to patients who are at high risk for conventional open heart surgery. It is also intended to prevent further damage to the heart from Aortic Stenosis and to prolong life, which medical therapy cannot do.



## What can I expect before the procedure?

Before the procedure, you will undergo routine investigations to evaluate whether TAVI is possible and which of the two techniques for TAVI (Transfemoral or Transapical route) is most appropriate for you. The investigations will also and to identify any other considerations that need to be addressed for your treatment. The investigations include:

- A physical examination
- Angiogram
- Blood tests
- Chest X-ray
- CT Scans
- Electrocardiogram

Whether you are selected to undergo the transfemoral or the transapical approach, this procedure will be performed under general anesthesia. As the heart is not opened to expose the aortic valve, fluoroscopy (X-rays) and transesophageal echocardiography (ultrasound) are used to visualize the heart and THV, and to guide the insertion of the THV. The duration of X-ray exposure that you will receive will normally be not more than 30 minutes, the normal length of time it takes for a coronary artery procedure in the cardiac catheterization laboratory.

## Transfemoral TAVI

The transfemoral device is designed to be implanted through the blood vessel (femoral artery) in your leg. Due to the size of the catheter (hollow tube) being placed in your artery for this approach, your doctors will evaluate the angiograms and/or CT scans to ensure your blood vessels are big enough for this device. Prior to implantation, the THV is "crimped" (carefully compressed to a size that fits inside your femoral artery) using a specifically designed crimping device. The crimped THV is mounted onto a balloon delivery catheter, a special device which is used to carry the THV up to the heart and directly into your aortic valve. The valve is then expanded using a balloon to fit inside your stenotic aortic valve, holding your own valve open permanently. Once the valve is in position and the delivery system is removed from your femoral artery, the artery is closed using a special suture device designed for this purpose. After the procedure, you will be transferred to the Coronary Care Unit (CCU).

## Transapical TAVI

The transapical approach is used for patients whose arteries are too small or too diseased for the transfemoral approach.



Figure 1: Balloon inflation of the Transcatheter Valve

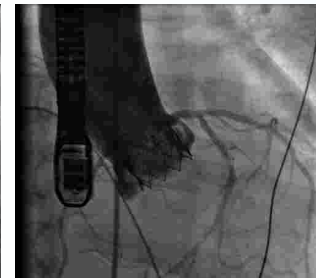


Figure 2: Final result.

The delivery system for this approach is designed for THV implantation through the tip (apex) of your heart, which is reached through a small incision made between the ribs just below the left nipple. The crimped THV and delivery system is inserted through the apex of your heart directly into your stenotic aortic valve. The valve is then expanded using a balloon to fit across your stenotic aortic valve, holding it open permanently. After the procedure you will be transferred to the Cardiothoracic Intensive Care Unit (CTICU).

## What happens after the procedure?

After the TAVI procedure, you will be transferred to either the CCU ward or the CTICU ward for close monitoring. When you are first transferred, you may be under sedation and on ventilatory support. Over the course of the next 24 hours, you will be awakened from the sedation and allowed to breathe on your own with the ventilation tube removed. You will remain in the CCU or CTICU ward until your doctor feels that you can be transferred to a regular hospital ward, where you will continue to be monitored until your discharge from the hospital, usually within 5 – 7 days.

You will be given blood thinning medications such as aspirin and clopidogrel (Plavix). You should continue taking these or other blood thinners for 6 months after the procedure and aspirin for life (as recommended for routine stenting of coronary blood vessels and any replacement heart valve). The following routine checks will be completed while you are in hospital:

- A physical examination
- Chest X-ray
- Daily electrocardiogram (ECG)
- Standard blood tests
- Transthoracic echocardiogram (TTE)

Thereafter, you will be required to see your doctor in the clinic after 30 days, 6 months, 12 months, and then once a year. The routine checks such as echocardiography are repeated at your first and subsequent outpatient follow-ups.