Pre-admission information

TAVI procedure

(Transcatheter Aortic Valve Implant)

BAV procedure

(Balloon Aortic Valvuloplasty)

ST VINCENT'S PRIVATE HOSPITAL
NORTHSIDE

A FACILITY OF ST VINCENT'S HEALTH AUSTRALIA

Heart Team Clinical Nurse Consultant
Phone: 07 **3326 3270**

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Cardiac Catheter Lab
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Cardiovascular and Thoracic Services Manager
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Sections of this booklet have been adapted from documentation kindly provided by The Prince Charles Hospital, Queensland Health.

St Vincent's Private Hospital Northside Cardiac Services

St Vincent's Private Hospital Northside is one of the largest private cardiac surgical and medical providers in Queensland.

Our Hospital is well-equipped with the latest technologies to deliver the most innovative and comprehensive care for patients with complex diseases of the heart.

We have the most comprehensive team of cardiac experts including Cardiologists, Cardiothoracic Surgeons, Cardiac Anaesthetists, Intensive Care Doctors, Cardiovascular Nurses and other health care professionals, who work as a team to bring the most advanced cardiac care to our patients.

Our Cardiac Surgeons

Our highly experienced Cardiac Surgeons perform all forms of adult cardiac surgery. These include all valve repair and replacement, cardiac bypass, arrhythmia surgery and adult congenital surgery.

Our Cardiologists

Our Cardiologists perform a wide range of interventional, electrophysiological and diagnostic cardiac procedures. They also offer exhaustive assessment and management of all forms of valvular heart disease.

St Vincent's Private Hospital Northside

Heart Valve Team

Our Hospital's Heart Valve Team is a multidisciplinary collaboration of Cardiothoracic Surgeons, Cardiologists, Cardiac Anaesthetists, Intensivists, Geriatricians, Renal Physicians and Respiratory Physicians, who assess patients with complex heart valve disease.

This team approach is an Australian first for this standard of medical collaboration and innovation. St Vincent's Private Hospital Northside is one of the first private hospitals to establish and maintain this program.

The Heart Valve Team's role is to assess, diagnose and recommend the preferable treatment options for patients with complex heart disease to achieve the very best surgical and medical outcomes possible.

Why do we need this Team?

Cardiac disease is becoming a very complex condition to treat with many and varied options becoming available.

As we live longer, doctors encounter patients not only with a cardiac condition, but with many other complicated and associated conditions.

In this era of modern cardiac therapies, there is an emerging range of invasive and non-invasive techniques and procedures that can now be performed.

The Heart Valve Team can assist in determining which of these procedures will be the most effective option for each patient's specific condition by weighing up the risks and benefits.

Your Clinical Nurse Consultant

One of the Team members who you will meet is the Clinical Nurse Consultant, who will be your contact point to the Heart Valve Team.

Their role is to explain the process to you, gather your medical information for presentation and then contact you after the meeting to advise you of the next step.

At your initial meeting with the Clinical Nurse Consultant you will discuss in detail the purpose of the Heart Valve Team. You will also be asked to give your consent to have your information collected and presented at the meeting. This presentation is at no cost to you and you are not required to attend the meeting.

Referral to the Heart Valve Team for assessment

If you are coming into our Hospital for a 'work-up' and referral to the Heart Valve Team, it means you have been diagnosed with some form of valvular heart disease, or you are considered a complex cardiac patient needing consideration for surgery.

Relevant members of the Heart Valve Team will visit you while you are in our Hospital after which you will be discharged.

Your case will be discussed at the next available Heart Valve Team meeting. This comprehensive discussion about your case can only be held once all relevant medical information has been collected. Due to consultant scheduling and test results becoming available, this may be several weeks after your hospital visit.

The Heart Valve Team meeting

During each Heart Valve Team meeting the patient's test results and information gathered from the various Specialists will be brought together for consideration.

There may also be Specialists attending the meeting who have not met the patient but are present to assess the case based on the information provided and to provide their unbiased opinion.

After the Heart Valve Team has considered your case and made its recommendation, your Specialist will speak with you and let you know the decision about your care going forward. You may also be contacted by the Heart Team Clinical Nurse Consultant who will discuss the outcome and if you are going ahead with the TAVI, when it is scheduled and what you will need to do before then. (Some of these things will be discussed later in this booklet.)

You should have been given a business card with the contact information for the Heart Team Clinical Nurse Consultant, who is available to answer any questions so do not hesitate to call.

Overview of the heart

The heart is separated into the left and the right side by a wall called the septum.

The right side collects the return blood from the body and helps transport it to the lungs to be replenished with oxygen.

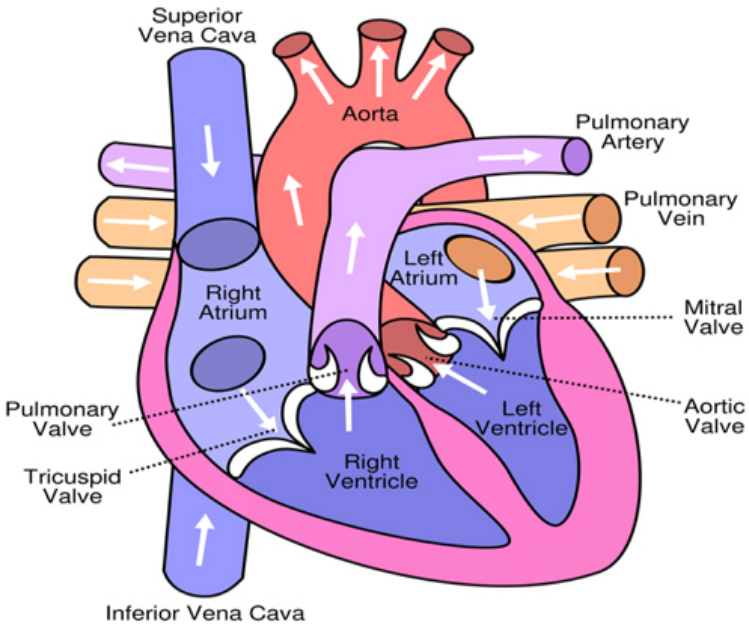
This oxygen-rich blood is then returned to the left side of the heart, which pumps this blood around the body.

Oxygen is removed from the blood and used by vital organs, muscles and tissue around the body and then this blood returns to the right side of the heart to begin the process all over again.

Each side of the heart has a small chamber at the top called the Atrium, which then empties into a large pumping chamber on each side of the heart called the Ventricle.

The left side of the heart is larger than the right side, because of the effort it takes to pump blood around the entire body.

To make sure the blood flows in the correct direction, one-way valves are positioned throughout the chambers of the heart.



Valvular Heart Disease

Normally, the valves in the heart open to allow blood flow through and out of the heart and then shut again to stop the blood from flowing backwards.

If the valve is diseased or damaged this can affect the flow of blood in the heart in two ways:

1. If the valve does not open completely, it will restrict the flow of blood into or out of the chamber, this is called *Valve Stenosis*.
2. If the valve does not close properly, it will allow blood to leak backwards. This is called *Valve Incompetence* or regurgitation.

Symptoms

The symptoms of Valvular Heart Disease can vary depending on which valve is affected, and may include tiredness, breathlessness, palpitations, chest pain, dizziness or fainting. The back-flow pressure can also cause shortness of breath and swelling of the ankles and legs.

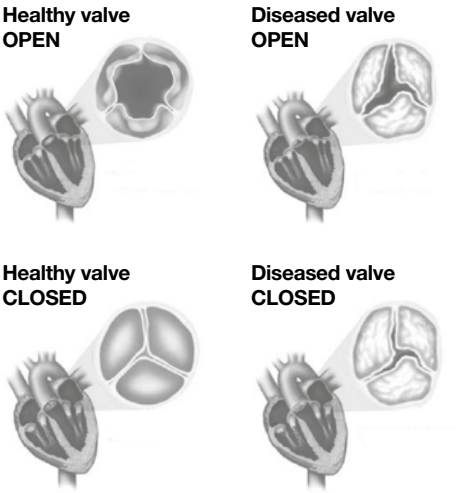
Disease of the aortic valve is the reason why patients are considered for the BAV and TAVI procedures. Patients require the valve to be corrected but with other disease processes present, they are not a good candidate for open heart surgery.

Aortic Stenosis

Aortic Stenosis is the progressive narrowing of the original aortic valve opening resulting in the obstruction of blood flow. As the aortic valve becomes more restricted, blood cannot flow through it easily. As the aortic valve is on the left side of the heart and allows blood out to the rest of the body it has an effect on the whole body leading to the symptoms described earlier.

Aortic Stenosis is the most common valvular disease in adults *(Yan T, Cao C, et al. 2010).*

You can also have a congenital malformation of the valve which results in Aortic Stenosis but this is more common in young adults *(Bonow R, Carabelto B et al 2008).*



(http://newheartvalve.com/what-is-aortic-stenosis)

Overview of Heart Valve procedures

Balloon Aortic Valvuloplasty (BAV)

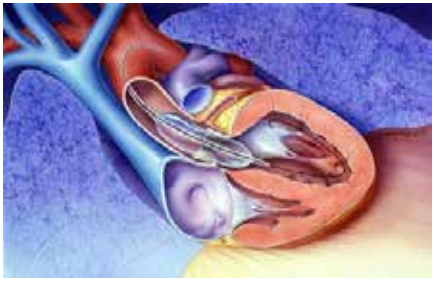
At the time of your evaluation for heart valve disease, you may also be scheduled for a procedure called a Balloon Aortic Valvuloplasty or BAV.

This is where a catheter is fed up through the femoral artery in your groin to sit across your aortic valve. This catheter has a balloon attached to it and this balloon is inflated to stretch the valve and allow for better blood flow across the valve.

This procedure may provide you with temporary relief from your symptoms but it may not be a very long-lasting fix. The balloon is deflated at the end of the procedure and removed from your body (it is not left up in the valve).

Some people have this procedure performed again at the same time as their TAVI and others do not. This is often left to the Cardiologist to decide.

The Heart Team Clinical Nurse Consultant will show you an animation to better describe how this procedure is performed.



Transcatheter Aortic Valve Implantation (TAVI)

The treatment for Aortic Stenosis is often open heart surgery. But for many people this is not an option as it is deemed too high-risk, especially in the older population who may also have many other medical problems to contend with, along with advanced age.

The TAVI procedure has been developed as an alternative to open heart surgery. It is a procedure where the valve can be put into place through a catheter inserted into your groin.

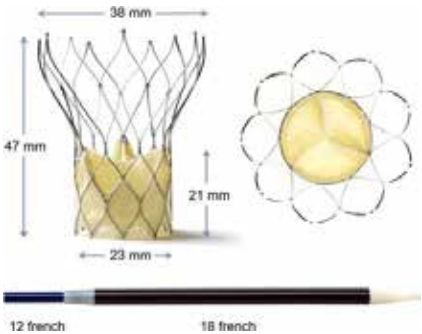
The advantage of this procedure is that it is less invasive, which reduces the recovery time compared with open heart surgery.

Terminology

Transcatheter: The new valve is guided into place with a catheter either through the groin or through the chest wall with a small cut. If you have had a coronary angiogram you may have had a puncture in the groin very similar to this procedure.

Transcatheter Aortic Valves: There are a variety of different valves on the market specifically designed to be implanted via a catheter. The decision about which valve you need will be made by your Cardiologist, and depends on many different factors including the size and height of your original valve.

The new valves are made of tissue from either a cow or pig or in some cases both. It is redesigned and attached by hand to a flexible expanding mesh frame/ metal stent. The valve, once in position, is either self-expanding or expanded using a balloon.



The TAVI catheter may be inserted via a few different ways. The best option will be determined by your Cardiologist after viewing your various scans.

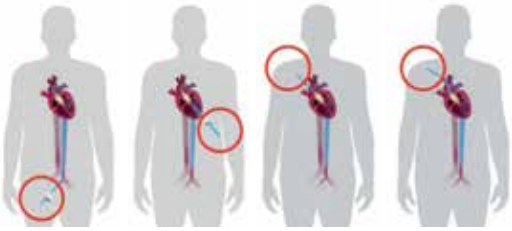
Options include:

Transfemoral: The valve is delivered via a purpose-designed catheter, through a small incision in the femoral artery in your groin.

Transapical: A similar, but much shorter, delivery system is used to implant a new valve through a cut between the ribs.

Transaortic: A cut in your chest (much smaller than open heart surgery) can also be used to gain access leading to the big arteries going into the heart to allow the valve to be implanted.

Transaxillary: A cut under the collar bone allows for access to the large artery that runs there to allow for the new valve to be delivered to the heart.



Transfemoral Through an incision in the leg

Transapical Through an incision between the ribs

Transaortic Through an incision in the chest

Transaxillary Through an incision near the collar bone

Before your admission to our Hospital

There are a few things you will need to do before coming into our Hospital for your procedure.

The Clinical Nurse Consultant will also discuss these things with you.

Dental check-up

The Clinical Nurse Consultant will wish to know when you last saw a dentist.

This is important because bacteria and infections in your mouth from broken or infected teeth can cause infections that will land on your heart valves, particularly on your new prosthetic valve.

If you have not been to the dentist in the last six months the Clinical Nurse Consultant will ask you to arrange a visit before you come into hospital for your procedure.

Your dentist will need to provide a dental clearance for you before you proceed with the new valve implantation.

After your hospital procedure, it is also important to advise your dentist that you have had a valve implanted. This is so they can administer antibiotics before performing any major dental work to help avoid issues of bacteria migrating to your new valve.

Advanced Care Directive

You will be asked if you already have an Advanced Care Directive in place. This is a document that indicates what treatment path you would like people to follow in case you are unable to speak for yourself.

Even though you may feel your family members know what you want to happen – it is important to have your wishes documented.

Please make an appointment with your GP to complete the Advanced Care Directive and discuss your upcoming procedure.

Once completed, this Advanced Care Directive must also be witnessed by another person.

We recommend that you keep the original documentation somewhere safe, and provide copies to the Hospital on admission, to your GP, and to your solicitor (if required).

If you have any outstanding health issues or infections you need to discuss this with your GP before the procedure to ensure you are well enough to proceed on.

If your GP is at all concerned about any of your health issues they should speak with your Cardiologist before your admission date.

Discussion with your surgeon

You will also need to speak with the surgeon involved in your case to make your wishes known to them.

If during the procedure something does not go to plan, the surgeon needs to know how you feel about having your chest opened, and being put onto cardiac bypass.

If this is something you do not want to happen, they must know before they begin the procedure.

Your admission to our Hospital

Arriving in the Ward

You will be met by your nurse and shown around your room. You may have been here before and know how everything works but it is our way of making sure you know where everything is.

Our Clinical Nurse Consultant will visit you to check-in and review with you your upcoming procedure. There will also be some paperwork to complete.

You will have blood taken and an ECG done. The staff will shave appropriate areas for your procedure and then ask you to have a shower with a surgical sponge.

Medication

Please be sure to bring all your current medications with you.

Please be aware that our nursing staff cannot dispense medication from a Webster pack or a Dosette box.

Therefore you must bring the actual tablets in their boxes with you or we will need to order them from the pharmacy at a cost to you.

Please also bring all over-the-counter medications that you are currently taking.

If you are on *Aspirin* or *Plavix* (Clopidogrel) you will need to continue taking this medication up until the procedure.

If you are taking *Warfarin*, you will need to be admitted to the Hospital to stop this medication and be put onto a drip which can be stopped before your procedure.

If you are taking *Eliquis, Pradaxa, Xarelto* (blood thinners), you will need to stop this medication 3-4 days before the procedure. The Clinical Nurse Consultant will contact you about which medications you need to stop taking before your procedure.

If you have any questions regarding any of your medication and if you should continue taking them or stop them, please speak with your Cardiologist before the procedure.

Clothing and personal belongings

If you are coming in for a TAVI you will need to bring enough belongings for a stay of between 5-7 days.

Please be aware that it is often cool in our Hospital even in summer – so you may wish to bring a warmer dressing gown or jacket.

When you are transferred to the Intensive Care Unit (ICU) your belongings will not go with you. They will be locked-up on the Ward until you return to a ward bed. We therefore encourage you not to bring large sums of money into the Hospital. If you do, please inform our nursing staff so we can arrange to keep it secured in the Hospital's safe.

We also discourage you from wearing excessive amounts of jewellery, as it may be removed for your procedure.

If you wish to bring a mobile phone, laptop, tablet or other electrical devices please remember to also bring the charger. Once again, when you are transferred into the ICU you will not be able to take these things with you, so they should fit into your bag and be secured on the Ward.

When you are moved to ICU we will transfer any medication, toiletries, personal belongings such as glasses that you require.

If you use a CPAP machine to sleep, please bring that in and we will ensure that it is also transferred with you to ICU.

We will encourage you to be up and out of bed as much as possible. However there will be times when you will need to rest in bed. You may therefore wish to bring a book or some form of entertainment with you.

Your hospital stay

- Doctors visit patients each day. Patients, family and carers can be involved in this conversation if invited by the patient. The Doctor's visiting times are not set. If a meeting is necessary we can coordinate this with the Doctor.
- Part of your admission is also planning for discharge. During your stay, your doctors, nurses and allied health providers will answer your questions regarding discharge. This will enable a successful transition.

  We acknowledge that this discharge process may be complex, and if extra assistance is needed, we have discharge planners on staff who are able to assist you.
- The Communication Whiteboard at the foot of your bed is a useful means by which our staff can monitor your condition and ensure everyone is kept informed of your progress. We encourage you, your family and carers to use this board to ask any questions.
- Sharing of information and open communication with families and carers optimises the best possible care for our patients.

  Information that would be helpful to us includes:

  – what the patient's home situation is like (e.g. lives alone, carer for someone else, and availability of help/support)

  – medications, including alternative preparations the patient may be taking

  – the patient's preferences and needs about care, including cultural considerations

  – the primary contact person, or persons, regarding the care of the patient. This is especially useful information when the support network has many members.

On the day of your procedure

Depending on the timing of your procedure you may be asked to have nothing to eat or drink including water, from midnight.

If your procedure is scheduled for later in the day, your anaesthetist may advise your nursing staff that you can have an early breakfast and they will let you know this.

It is very important that you adhere to the fasting time given to you. Failure to do so may result in your procedure being cancelled.

You will be taken to the Cardiac Catheter Laboratory where your procedure will take place, and the team will be waiting for you. It may seem as though there are a lot of people in the room but they all have a purpose.

You will be under the control of the anaesthetist and their anaesthetic team until you are asleep and then the Cardiology Team will take over.

When you wake up you will be in the Intensive Care Unit (ICU). Your family will not be there at that time but the ICU staff and the Cardiac Catheter Lab staff will be there, along with the Clinical Nurse Consultant. It will take you a little time to wake up properly but your ICU nurse will be with you the whole time.

While you are in the ICU you will still have many wires and tubes attached to you. These will gradually be removed as you no longer need them. You will be able to sit up, eat and drink when the ICU nurse feels you are awake enough. You may even be able to get up out of bed on the same day as your procedure.

On the days following your procedure

After the Doctors' rounds in the ICU, if they are happy with your progress you will be moved out of the ICU back to into one of the cardiac wards. Here you will be encouraged to mobilise, sit out of bed and begin returning to normal activities.

You will be followed-up by the Clinical Nurse Consultant who will begin to discuss your discharge plan, ensuring any support services you may require are in place. You will be seen by our Hospital Physiotherapists and encouraged to mobilise. Please let your Physiotherapist know if you have stairs at home, so we can ensure you are able to manage them when you return home.

Monitoring

A cardiac monitor will be attached to you which will stay on until your Cardiologist directs the nursing staff to remove it. This monitor should remain on for the majority of the time including when you shower (waterproof bags will be provided to ensure the monitor is kept dry).

Wound care

Depending on the procedural approach you may have puncture sites in both groins, or an incision in the chest wall or a cut near your collar bone.

It is important to keep these areas clean and to watch for any signs of infection. The information our staff will give you on discharge will cover this more closely.

One very important thing to remember though particularly with groin wounds is that straining by lifting heavy objects or by straining on the toilet could cause major problems. It is important that you try not to become constipated. If you think you may need something for this – please ask your nurses (pear or prune juice may also be beneficial).

Medications

You will be given medication to take when you are discharged. If any medications have been added or removed the nursing staff will request the Hospital pharmacy supply you with a new medication list. Please ask your nurse for a copy of this list.

It is also good to take this list with you when you go to your follow-up appointments with your GP and your Cardiologist. If you were previously on blood thinners these will be recommenced when your Cardiologist feels it is appropriate.

Exercise

You should begin gentle exercise once you return home. A more comprehensive guide will be provided to you with your discharge information. At time of discharge, our Clinical Nurse Consultant will also discuss with you a referral to attend a cardiac rehabilitation program as an outpatient. Participating in this type of program is highly recommended.

Leaving our Hospital

We strongly encourage you to have someone stay with you for at least the first week you are home as you may still need some assistance and you will not be allowed to drive yourself anywhere.

If you have no one to stay with you or you feel that you are not fit enough to go straight home from the Hospital, we can arrange for you to attend a physical rehabilitation unit.

If you live locally we recommend you transfer to our sister hospital St Vincent's Brisbane at Kangaroo Point. If this is not acceptable to you we can advise you of other facilities. It is best that we start this planning early to get you on the road to home as quickly as possible.

Please inform the Clinical Nurse Consultant if you are considering this rehabilitation service.

Considerations after discharge

Fast heart rates

Occasionally an uneven heart beat may occur and some people become very aware of their heart racing or pounding in their chest (palpitations). It can be quite normal to be aware of your heart like this and it is most often noticeable when you are lying down. This is generally not serious but you should contact your local doctor if it persists or if you start to feel faint with it.

Sweats

This is common especially at night, and you may feel like you are hot all over. If the sweats persists longer than a few days after you leave hospital, or if you notice any redness around any of your wound sites then you should contact your local GP.

Pains

It is normal to experience some discomfort or tenderness around your wound sites. However if you experience excessive chest pain, especially if followed by light-headedness, excessive shortness of breath, nausea or fatigue – stop what you are doing and rest. If the symptoms continue, you need to **call 000** and have the ambulance take you to hospital.

Follow-up after discharge

It is necessary to follow-up with your local GP one week after discharge, and then you will either need to follow-up with the Cardiologist who performed your procedure, or if you are from a regional area, the Cardiologist who referred you.

You must have regular follow-up appointments with your doctors and you should have regular ECHOs to check on the functioning of the valve.

Depending on your capability, you may be referred to a cardiac rehab program but you will discuss this when you speak with the Clinical Nurse Consultant. There will also be phone follow-up with the Clinical Nurse Consultant several times post-procedure to check on your progress.

Please do not hesitate to call our Hospital's Heart Team Clinical Nurse Consultant if you have any questions or do not understand something you have read.

Heart Team Clinical Nurse Consultant
Phone: 07 **3326 3270**

Nurse Unit Manager
Cardiac Catheter Lab
Phone: 07 **3326 3618**

Nurse Unit Manager
Cardiovascular and Thoracic Services Manager
Phone: 07 **3326 3142**

Definition of terms

Angina: chest pain that occurs when an area of the heart muscle does not receive enough oxygen-rich blood.

Aorta: the largest artery in the body. It receives blood from the heart that has been oxygenated in the lungs, and delivers it to the body.

Aortic Stenosis: a progressive disease that affects the aortic valve of the heart.

Aortic valve: the heart valve that regulates the one-way flow of blood from the left ventricle to the aorta.

Arteries: the blood vessels that carry oxygen-rich blood away from the heart and lungs.

Atria: the two upper chambers of the heart that receive blood from the body.

Balloon Aortic Valvuloplasty (BAV): a procedure performed to open a narrow heart valve using a thin tube called a catheter with a small balloon at its tip. The catheter is inserted through a small incision in the groin and then threaded up to the opening of the narrowed heart valve. The balloon is then inflated to stretch the valve open and relieve the valve obstruction.

Bi-leaflet: a valve that has two leaflets that regulate the flow of blood. A normal aortic valve has three leaflets.

Calcification: a disease state in which calcium from the blood collects in the body tissues. When this occurs on the leaflets of the heart's valve, it causes them to harden and reduces their ability to open and close properly.

Cardiopulmonary bypass: bypass of the heart and lungs. During this technique which is often used during heart surgery, a heart-lung machine temporarily takes over the function of the heart and lungs.

Catheterisation: a procedure in which a thin tube called a catheter is inserted into the body.

Congestive heart failure: a condition in which the heart cannot pump enough blood to the body's organs.

Coronary artery disease: a narrowing of the small blood vessels that supply blood and oxygen to the heart.

Echocardiography: diagnostic test in which ultrasonic waves are used to produce images of the position and motion of the heart and its internal structures.

Ejection fraction: the percentage of blood pumped out of the right and left ventricles with each heartbeat.

Endocarditis: inflammation of the lining of the heart and valve leaflets.

Definition of terms *(continued…)*

Femoral artery: a large artery in the thigh that connects to the aorta.

Inoperable: unsuitable for a surgical procedure.

Mitral valve: the only bi-leaflet valve in the heart, which regulates the flow of blood from the left ventricle to the left atrium.

Myocardial infarction: otherwise known as a heart attack, which occurs when blood vessels that supply blood to the heart are blocked, preventing enough oxygen from getting to the heart. The heart muscle dies and becomes permanently damaged.

Myocardium: the fibrous muscle tissue of the heart.

Palpitations: rapid or irregular heartbeat.

Pericardial tissue: the tough, protective sac surrounding the heart.

Pulmonary valve: the valve that regulates the flow of blood from the pulmonary artery to the right ventricle.

Regurgitation: the backwards flow of blood (in the opposite direction than it would normally flow).

Stenosis: the narrowing of an opening.

Syncope: a loss of consciousness, or fainting, caused by a temporary lack of oxygen to the brain.

Transcatheter Aortic Valve Replacement (TAVR) or also referred to as Transcatheter Aortic Valve Implantation (TAVI): a treatment option for inoperable and high-risk patients that allows doctors to replace a heart valve using a catheter inserted into a small cut in the thigh or between the ribs – avoiding the need for open heart surgery.

Transoesophageal Echocardiogram (TOE): a type of ECHO test that provides a closer look at the heart's valves and chambers, without interference from the ribs or lungs. During a TOE an ultrasonic transducer positioned on an endoscope is guided down a patient's throat into the oesophagus.

Tricuspid valve: the heart valve that regulates the flow of blood from the right ventricle to the right atrium.

Tri-leaflet: a valve with three leaflets. A normal aortic valve is a tri-leaflet valve.

Valve leaflets: flaps of tissue that open and close to help regulate the flow of blood in one direction through the valve.

Veins: the blood vessels that return de-oxygenated blood to the heart and lungs.

Ventricles: the large lower blood-pumping chambers of the heart.

Notes

Please use this page to write down any questions or thoughts you may wish to discuss with your Doctor or nurses.

Notes

References

Bonow R, Carabello B, et al. (2008) Focused update incorporated into the ACC/AHA 2006 guidelines for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task for on Practice Guidelines (Writing Committee to Revise the 1998 Guidelines for the management of the Patients with Valvular Heart Disease); endorsed by the Society of Cardiovascular Anaesthesiologists, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. Circulation 118(15):e523-e661.

Yan T, Cao C, et al. (2010). Transcatheter aortic valve implantation for high-risk patients with severe aortic stenosis: A systematic review. The Journal of Thoracic and Cardiovascular Surgery 139(6): 1519-1528.

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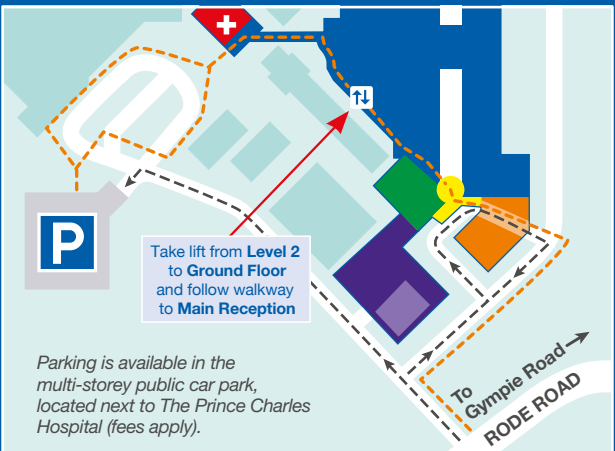

- St Vincent's Private Hospital Northside
- Main Reception/drop-off zone
- St Vincent's Northside Medical Centre
- Mary Aikenhead Building
- St Vincent's Northside Breast Health Centre
- St Vincent's Northside Education Centre
  - *Level 1*
    - Breast Health Centre
    - Consulting Suites
  - *Ground Floor*
    - Education Training Centre
  - *Lower Ground Floor*
    - Executive Suites
- Brisbane Northside Private Emergency
- The Prince Charles Hospital
- Multi-storey public carpark
- Vehicular route
- Pedestrian route

Developed in consultation with our consumers (July 2017)

UNDER THE STEWARDSHIP OF MARY AIKENHEAD MINISTRIES

J3444 V3 11/20