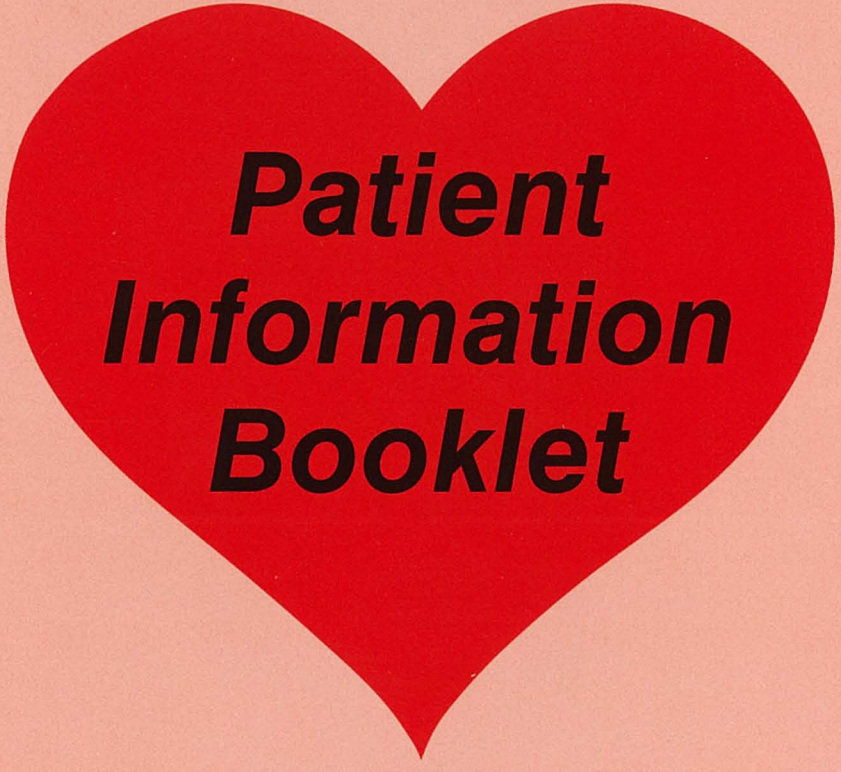
ST. VINCENT'S HOSPITAL (MELBOURNE)

CARDIOTHORACIC CARE CENTRE



Special thank you to all those who have contributed in any way to the completion of this booklet.

David Clark
Nurse Unit Manager - Cardiothoracics Care Centre

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Part A: General information about the surgery and associated postoperative considerations.

Part B: General overview of risks associated with this surgery

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"Process of Care": General information as to what to expect on a daily basis while you are in hospital.

"Physical Activity following Cardiac Surgery": Physiotherapist information following your cardiac operation.

PART A

INTRODUCTION

The Cardiothoracic Care Centre at St. Vincent's Hospital Melbourne is designed to manage a wide range of cardiac and thoracic procedures both surgical and medical. The hospital has excellent diagnostic equipment and has specialised surgical equipment available for the management of cardiac and thoracic surgical procedures.

The purpose of open heart surgery is to improve the quality of your life. This cannot simply be achieved by surgery alone and needs a positive attitude and input by you in order to achieve a beneficial change in lifestyle both pre and post surgery.

Changes such as stopping smoking, losing weight, reducing your cholesterol level if needed, take time, motivation and will-power. You should avoid excessive alcohol intake, as the sudden deprivation may make the post-operative period more difficult. However, it is very important to modify these and other risk factors if your operation is going to enable you to get the best out of your life.

Prior to any operation on the heart or major arteries, a knowledge of the anatomy and function of these structures is essential. This is achieved by a combination of internal heart investigations and angiographic studies (special x-rays) involving insertion of a catheter or tube inside the heart, together with non-invasive investigations such as echocardiograms.

Once surgery has been decided and discussed with you, arrangements will be made for your admission to hospital.

As part of this process a Pre-Admission Clinic is run on twice a week in the Cardiothoracic Care Centre. You will be advised of the date and time for you to attend this Clinic.

In the Clinic you will have x-rays and other investigations, as required. Some of these investigations include: blood examination - blood count, blood group, antibody levels and testing for previous exposure to hepatitis. Swabs are also taken looking for abnormal bacteria on skin surfaces.

With patients undergoing valvular surgery special attention is taken to ensure a recent dental examination has been attended.

The aim of the Pre-Admission Clinic is to ensure you to be fully prepared for your operation. At the clinic you will be seen by several members of the Health Care Team. They will be able to discuss with you details of your expected surgery and hospital stay.

During your stay in hospital you will be nursed in the Cardiothoracic Care Centre. You will go to theatre after which you will go to the Intensive Care Unit for the first 24 hours. You will be transferred back to the Cardiothoracic Care Centre the day after surgery. All the staff will be working towards your recovery and will be anxious to hear from you regarding any difficulties you are experiencing at any time.

Your estimated length of stay in hospital will be 5-6 days following the operation. On discharge from hospital, it is advisable that you have someone at home to lend support if you require it.

Please see the "Process of Care for your stay" which will provide you with specific details of this time

ANAESTHESIA

Prior to leaving the ward for the operating theatre, the nurse will give you a premedication injection and/or tablets as prescribed by your anaesthetist. This will help you feel relaxed on arrival in the operating suite.

Immediately before the operation the anaesthetist will insert a fine tube (a catheter) into an artery in the wrist to monitor your blood pressure during and after the operation. A catheter is also inserted into a vein in the neck which is used for monitoring pressures in the heart during surgery and for giving fluids or drugs as required. These will be inserted under local anaesthetic.

Once the general anaesthetic is given, you will have a tube placed in the bladder to drain urine. The anaesthetist will place a plastic breathing tube via your mouth into your windpipe to control your breathing during the operation.

During the operation, your anaesthetist constantly manages your heart's condition and your anaesthetic.

CARDIAC SURGICAL OPERATIONS

The heart is approximately the size of your fist and lies behind the breastbone with the lungs on either side. The best and most common surgical approach to the heart is by dividing the breastbone. The bone is rewired at the end of the operation to restore its stability.

BYPASS

For almost all operations on the heart, there is a need to have a still, empty heart. Obviously the circulation must be supported artificially during this period. Normally, at the start of the operation, a large tube is placed into the right side of the heart to collect blood returning to the heart from the body. Instead of being passed to the lungs, this blood is diverted to the heart lung machine.

This will do the work of both the heart and the lungs during the actual operation on the heart. Blood, rich in oxygen is returned to the body by a second large tube usually placed in the main artery (aorta).

Blood is also collected from inside the heart and around the operation field and returned to the machine to minimize any losses. During this period, a drug (Heparin) is given to prevent any clotting in the machine.

The heart is also protected by giving a special solution into its own circulation (cardioplegia). It will be relaxed, inactivated temporarily by this solution. At the end of the operation on the heart, blood is restored to the heart and it will begin to gradually take over the machine.

Finally, the effects of Heparin are reversed, the large tubes are removed, and the surgical wounds are then repaired in the normal way.

BLOOD USAGE

Most of the simpler cardiac procedures can be done with little or no requirement for blood transfusion. Obviously, occasionally, a patient will require a large transfusion under life-threatening situations.

Most patients will receive their own blood that is collected intra-operatively and returned to them in theatre. The blood that is lost post-operatively via the drain tubes is collected in a special system and returned to the circulation.

If you desire to donate your own blood pre-operatively, this should be discussed with your surgeon. It is not always appropriate to donate blood beforehand.

BLOOD DONATION

As you will probably be using blood donated by other people during your operation, it is suggested that you might care to suggest to your relatives and friends that the Red Cross Blood Bank welcomes donors. Such donations will not be used for you, but would help others.

OPERATIONS

The two most common procedures are coronary artery bypass surgery or valve replacement.

CORONARY ARTERY BYPASS SURGERY

This is the most commonly performed major operation in the Western World. When performed as an elective procedure, it has a very low risk.

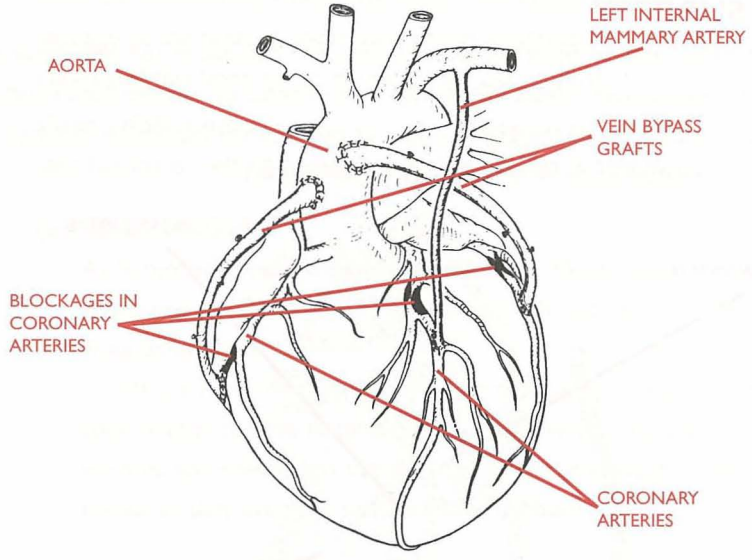
The aorta, the largest blood vessel in the body, takes oxygenated blood to all tissues of the body. The first branches of the aorta are the right and left coronary arteries which supply blood to the heart muscle.

Narrowing, or total blockage of a major coronary artery may result in angina, heart attack, rhythm irregularities, cardiac failure and in some instances, sudden death.

While some relief of symptoms can be obtained by medication, this will not cure the underlying narrowing of the coronary vessels. Coronary artery bypass surgery aims to restore the blood flow to the heart muscle by bypassing (the stenosis) the narrowing of the coronary artery. This surgery is successful in about 90% of patients who will be rendered painfree. The remaining 10% of patients are usually improved, although not totally cured of their symptoms.

In the surgical procedure, a long vein is removed from the leg. Removal of this vein may cause some swelling in the lower limbs and some patients have tingling or numbness on the side of the leg for a while.

Commonly, a large artery (the internal mammary artery) will be removed from behind the breastbone and also used as a graft. With the use of the internal mammary artery and segments of the long veins from the leg, it is possible to bypass one or more diseased coronary arteries by joining one end to the coronary artery below the obstruction and, in the case of the vein grafts, joining the other end onto the aorta. (The mammary artery is already connected to the arterial system at one end) see diagram.



Double Coronary Bypass Grafts to the Right Coronary Artery (RCA) and Left Anterior Descending (LAD) together with, for diagrammation purposes, Internal Mammary graft to the LAD.

If the coronary artery is found at operation to be diseased making joining of the vein to the coronary artery impossible, removal of the diseased lining or tissue - endarterectomy - is occasionally carried out.

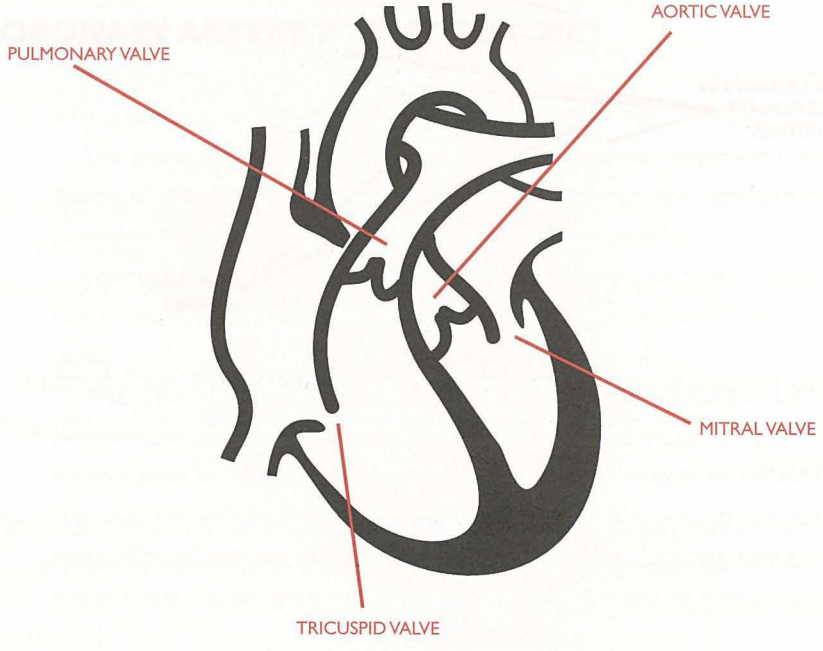
Large numbers of coronary artery bypass procedures have now been performed and the technology has been refined so that the risk of this procedure is now very low, and in most centres is under 1% for elective operations.

PACING WIRES

Occasionally after the operation the heart beat may be very slow or irregular, so during the operation it is occasionally necessary to attach small pacing wires to the heart. These are connected to a pacemaker to control the heart rhythm. They exit through two small incisions in the skin and stay in for 2-5 days. They are removed by a nurse on the ward, between Day 3 - Day 5.

VALVE SURGERY

The mitral and aortic valves direct blood into and out of the left chamber of the heart respectively. These valves may be narrowed or incompetent which results in backward flow of the blood. Most of these valves cannot be repaired and have to be replaced using an artificial valve (see below).



Several types of valves are used. Most artificial valves require life-long use of anticoagulants. These agents slow the clotting of blood and thus prevent any abnormal clotting of blood around the valve. In some patients where blood thinning is contra-indicated, biological materials or tissue valves are used. Hancock, Carpentier Edwards and Ionescu Shiley valves are examples of this latter type.

POST-OPERATIVE CONSIDERATIONS

1. Chest Pains

Every patient suffers from some discomfort from the chest. Pains may arise from the breastbone, which may move very slightly despite being firmly secured at the time of operation. This is indicated by a sensation of clicking. Healing of this bone is not complete for 2-3 months.

2. Care Of Wounds

Skin healing is well advanced by the time you leave hospital.

(a) Chest Wound

At home, no special treatment is required. Wash wounds with soap and water and pat them dry. Normally, you will not need to have your wounds dressed.

If there is any oozing, throbbing or reddening of the wound, contact your doctor (or the hospital). In the first twelve months, if your wounds are exposed to the sun, ensure that you wear sunblock 15+ cream, as they are very susceptible to sunburn.

(b) Drain Tube Wounds

These small wounds usually present no problem. Slight weeping may be managed with a gauze dressing and should not prevent showering or bathing.

(c) Leg Wounds / Arm Wounds

(Coronary artery bypass grafts only.) Because a major vein/artery has been removed from the limb, swelling tends to occur for the first few weeks. When sitting it is desirable to elevate the legs on a stool. [A nerve runs with the vein and as the wound heals, numbness or tingling may occur for a while.]

Whilst in hospital, it is important that you wear well fitting slippers or slip-on for your protection.

3. Emotional Changes

Most people who are going to have open heart surgery have had time to prepare themselves for their surgery. While you are in hospital, however, there is a lot of stress put on you and your family.

Your family not only have to experience the fear of a family member having major surgery, but they have to visit regularly and also manage the home.

Some patients experience a great deal of tiredness which is often underestimated by yourself and other family members.

After your surgery, you may experience mood changes and find that your concentration span is reduced. This can be frustrating, however it is a common occurrence following heart surgery and you can rest assured that it usually only lasts about six weeks. If you find your mood changes are causing you concern, you may wish to consult your doctor for some professional advice.

Major surgery causes stress, high emotions, physical tiredness and sometimes loss of confidence. Mild depression is very common following discharge home and may occur quite unexpectedly. You may also have strange or disturbing dreams whilst in hospital and after discharge. These will pass.

It is a good idea to discuss your feelings with someone, as this can help to ease any anxiety you might be feeling. You will have your good days, but you will also have your bad days when you will have to take it easy. This is normal during your recovery. Find activities which are enjoyable and relaxing - reading, listening to music, gardening, walking - anything that gives you an emotional lift.

4. Decisions

Because of post-operative mood changes and the influence of medications, it is wise to avoid far reaching decisions about changes in lifestyle such as retirement, change of job and so on, until convalescence is well advanced.

Often you will find that your thought processes are a bit muddled for a while. Your concentration span may be very short and your ability to do simple mental problems such as adding up columns of figures, etc. may also suffer. These problems gradually pass after a few months.

5. Visual Changes

Blurring of the vision may occur while in hospital and is quite common. It should improve in a few weeks. Do not have new spectacles prescribed for at least two months.

6. Sex After Open Heart Surgery

Sexual relationships after open heart surgery can take a little while to get back to normal.

It is important that you discuss your emotional and sexual needs with your partner, and re-establish your sexual relationship when you feel comfortable.

It is best not to leave it too long as anxiety can build up.

Be relaxed and rested before sex, if you are tired or tense - wait until you feel better.

People tend to worry about sex after having heart surgery, but in fact it is as safe as any other light exercise.

Like any other activity, return to your normal relationship with common sense and care.

Certain positions may be uncomfortable - ensure that you are positioned so that you are comfortable.

Avoid positions where your weight is resting on your arms, so that you don't place undue strain on your sternum (breast bone).

Please do not feel embarrassed about seeking advice concerning sexual activity from anyone in the health care team.

7. Smoking

It is very strongly advised that smoking should be completely avoided after cardiac surgery. It is extremely harmful to the lungs, heart and blood vessels and will cause your grafts to block if you continue.

Family members that smoke should be encouraged to do so outside or in an area away from you.

8. Palpitations

You will probably be a little more aware of your heart beat than usual for the first week or two at home. Occasionally, patients who have had insertion of artificial heart valves, may be aware of their action; this awareness quickly subsides and is never a great problem.

If your heart rhythm on discharge from hospital is different from your normal (pre-operative) rhythm, you will be on medications for it. A plan for future management will be made with your doctor. If you develop frequent or persistent palpitations after you leave hospital, contact your doctor (or the hospital).

9. Constipation

This is not unusual, especially if your are taking pain relieving tablets frequently. A high fibre diet and exercise will usually help. However, a mild laxative may be necessary.

10. Sweats

Excessive perspiration, especially at night, may be experienced. This is due to the effects of bypass on your body's temperature control centre, or may be due to your pain medication. If this is severe or persists more than a week, contact your doctor.

11. Driving

It is recommended that you refrain from driving for at least six weeks. During this time your reactions are still slow and your chest will still be a little sore. You should discuss this with your surgeon at your follow-up appointment. He/she will advise if you are well enough to recommence to drive. In some instances car insurance coverage during this time may also prevent patients from driving for six (6) weeks after surgery.

12. Swimming

Is not advisable in the first six weeks.

MEDICATIONS

Pain Relieving Tablets

You have been given analgesics at the time of discharge from hospital and these should be taken whenever pain troubles you. It is wise to take them at least before you retire to bed, particularly in the first week, reducing them as pain decreases.

Laxatives

As constipation is caused by some of the pain relieving drugs, some patients are given laxatives. Use them whenever necessary to maintain a regular bowel habit. It is important to avoid straining because straining can cause pain in your chest incision. High fibre/fruit especially figs, prunes and cereals etc. are very helpful and healthy. Gradually increasing the amount of exercise will also help prevent constipation.

Anticoagulants

Patients who have had **valve replacement surgery** may be given Warfarin (a blood thinning medication or anticoagulant) to prevent unwanted clotting in the blood stream.

At the time of your discharge from hospital the blood level of Warfarin may not be fully stabilised. Further adjustments will be required over the next month or two until your particular body's requirement is reached.

You will be advised to make an appointment with your doctor for a blood test within a few days of discharge. At that time you will receive further instructions regarding the dosage of anticoagulant tablets and future blood tests. If at any time prior to this appointment you experience any abnormal bruising or bleeding, contact your doctor (or the hospital) at once.

Many drugs and some foods interfere with anticoagulant therapy, so you should remember:-

1. to avoid Aspirin, either alone or in combination with other drugs and,
2. to consult your doctor or pharmacist before taking **ANY** new tablets or medicines.

You will be given a small booklet (Handbook for patients taking Anticoagulants) to guide you in the safe use of your Warfarin; you should study this book carefully and carry it with you permanently.

DIETARY GUIDELINES

Population studies have shown there are certain factors that increase our chances of developing heart disease.

These factors are often known as RISKS.

If you have RISK FACTORS associated with FOOD - these include diabetes, hypertension, trouble with high cholesterol levels and are overweight, it is essential that you have proper dietary advice and stick to it.

Reducing these risk factors is beneficial for lessening the risk of future cardiac events.

Your cardiologist, local doctor and dietitian can help you.

It is the role of the Dietitian to provide you with information and encourage you to develop the skills you need to modify your dietary and lifestyle habits.

HOW CAN I GET DIETARY ADVICE WHILE IN HOSPITAL?

During your stay at St. Vincent's Hospital, you will have the opportunity to see the Dietitian, during a group education session. These are held twice a week - Monday and Friday 11:30am. Relatives and friends are most welcome to attend the session. Written dietary information will be available to take home with you.

You may also see the Dietitian on an individual basis. This way the advice can be tailor-made to suit your particular needs.

If you need ongoing dietary advice there is an outpatient service provided by the Dietitian.

The Dietitian visits most patients in hospital. If your diet has not been discussed with you by the Dietitian and you would like some advice, ask your primary nurse or any member of the Health Care Team for a referral.

WHAT TYPE OF MEALS CAN I EXPECT WHILE I AM IN HOSPITAL?

In hospital you will be selecting meals from a menu with mostly low fat, reduced salt items. Unsuitable items are marked *

The type of meals you will be receiving are a good example of what healthy eating for the heart involves.

WHY SHOULD I EAT LESS FAT?

Eating less fat, especially fats which are firm at room temperature (e.g. butter, fat on meat, coconut oil - these are called saturated fats), can help reduce your cholesterol levels which can reduce the risk of heart disease. It also helps keep your weight under control.

Being overweight is a risk factor for heart disease, hypertension and diabetes.

The dietitian will explain all about how to have a healthy diet in the group education session.

WHAT ABOUT SALT?

For the first 6 weeks following your surgery you should cut down your salt intake. This is important because surgery causes fluid and salt to be retained in the body. So, to avoid any excessive fluid retention, you need to avoid adding salt to your meals at the table and cut down or eliminate salt used in cooking. You should also use a minimum of salty and processed foods and takeaways.

Check with your doctor to see if it is necessary to continue this salt restriction after 6 weeks.

WILL I FEEL LIKE EATING AFTER MY SURGERY?

Following surgery you may lose your taste for food. This is a side effect of the medication and the surgery. Your appetite will return when the medication is stopped.

After the surgery you will need to eat a wide variety of foods including lean meat and low fat dairy products to help your body heal.

ALCOHOL

Unless your doctor has specifically advised you to the contrary, small amounts of alcohol may be taken (e.g. 1-2 standard drinks/day).

A standard drink is equal to 250ml beer, 100ml wine, 30ml spirits.

REMEMBER!

If you have any questions that you have always wanted to have answered about food, bring them along and ask the Dietitian!

SOCIAL ASPECTS OF HOSPITAL ADMISSION

The social work service in this hospital is designed to assist you with making your admission and return home from hospital as comfortable as possible. The social workers are experienced in helping people who undergo major surgery and are making significant changes to their lifestyle.

If you feel this service may be of assistance to you, please don't hesitate to ask your nurse at Pre-admission Clinic to contact the social worker to come and meet you to discuss your concerns

The Cardiothoracic Care Centre Social Worker is available to help you with any concerns you and your family may have regarding your stay in hospital or with any problems you may encounter during your stay. These could include the following:

1. General Emotional/Psychological and Social Concerns:

Being diagnosed with a medical condition that requires surgery will often impact on a person's relationships and lifestyle. Many people will have concerns related to such issues. You may also have concerns about ongoing responsibilities that you will be unable to meet while in hospital and recovering from your surgery and admission.

The social worker may be able to assist by providing a counselling and support service to you and your family during the hospital admission, as well as assessing your needs and referring you to a suitable service for assistance where appropriate.

2. Financial matters:

Patients who are employees, who are in receipt of Government benefits or are self-employed may have concerns about sick-leave entitlements and/or benefit payments while they are unable to work. The social worker will be able to advise patients and/or their families about their entitlements and where necessary will be able to liaise with employers, insurers or Government departments.

3. Veterans' Affairs Card Holders:

Patients who are in receipt of a Veterans' Affairs pension may be eligible for a range of benefits from the Department of Veteran's Affairs - including a period of convalescence following your hospitalisation, physical rehabilitation treatment, transport to and from hospital and home help on your return home. The social worker will be able to advise on what services you may be eligible for and will be happy to contact the Department on your behalf.

4. Returning Home Following Your Operation:

Your doctor will explain to you how you are likely to feel and how much you will be able to do for yourself by the time you are ready to leave hospital and return home. Most, but not all, Local Councils are able to provide assistance with basic cooking, cleaning and shopping tasks to people at home. The Cardiac Unit Social Worker will be happy confirm for you if you are eligible for these services in your local area and to make any arrangements you may require.

However, as well as provision of any home services for which you may be eligible, it is usually reassuring and helpful for most people to be able to have someone close to them home with them all day, at least initially, on return home from hospital.

5. Patients And Their Families Who Live More Than 100 km Distance From St. Vincent's Hospital:

If you are required to attend a hospital more than 100 km distant from your place of residence for medical treatment, both you and the person who accompanies you as escort may be eligible for the government Patient Transport Assistance Scheme which provides a small subsidy to assist with recompense of travel and accommodation costs at these times. Application forms are available from the reception desk on the fourth floor of the new St. Vincent's Hospital.

If you believe you may be eligible for this subsidy, please ask for a copy of the application form at reception on arrival for your pre-admission appointment. **Remember to mention if you are from Victoria or New South Wales, as the forms are different for residents of each state.** Also, don't forget to keep any tickets you may have for your travel and always ask for a receipt for any accommodation costs to send in with your application. Proof of costs is required to obtain the subsidy.

The forms also have sections which must be filled in by both the doctor who looks after you here at St. Vincent's and your local doctor, confirming that you needed to be treated here. Ask your doctors to fill these in for you when you see them.

If you have any further difficulties, please discuss these with your nurse.

PART B

INTRODUCTION

Following on recent decisions in the High Court of Australia, a doctor has a duty to warn a patient of a material risk of proposed treatment. A material risk is one to which a reasonable person in the patient's position would be likely to attach significance. There must be an over riding concern for the patient's best interest in the provision of information.

To serve this purpose Part B of this brochure explains in some detail the possible risks associated with the procedure.

You are invited to read this section if you so desire, so that you can discuss the risks involved with your surgeon or cardiologist.

THE OPERATIVE PROCEDURE

The operative procedure performed on the heart takes place through extensive surgical exposure and involves a high degree of technology and expertise on the part of highly trained surgeons, anaesthetists, perfusion specialists, nursing and ancillary staff. The entire process is extremely complex but is performed at a very low mortality and complication rate because it is performed frequently and therefore all members of the team are highly skilled and practised in every aspect of the performance of the procedure. Despite this there are some complications which may occur.

SPECIFIC MEASURES WHICH MAY BE TAKEN BY THE PATIENT TO MINIMISE RISK

Risk is minimised by cessation of smoking, weight control, appropriate adherence to prescribed medication and advice about activity.

BLOOD TRANSFUSION

Pre-operatively some patients express fears about blood transfusion. The average requirement for blood for cardiac surgery is one to two litres per patient, which means that many patients have no blood given at all. This process is assisted by the return to the patient of shed blood both during the operation and after it. Some patients will also be able to donate blood for themselves and have this kept for their operation. This is relatively difficult and somewhat dangerous in most cardiac patients because of the nature of their illness which makes blood donation relatively more risky for them.

However, patients who are having cardiac operations which are entirely elective and who are not suffering from serious symptomatic coronary artery disease or cardiac valvular disease may be able to avail themselves of this opportunity and so further reduce the possibility of the need for transfusion. In such circumstances your surgeon would be happy to make the appropriate arrangements and to decide on your fitness for such a procedure.

RELIGIOUS OBJECTIONS

Jehovah's Witnesses will not accept the transfusion of blood or blood products and will not accept their own blood if it is stored and administered to them at a later time. However, the majority of these patients are prepared to receive their own blood at the time of operation and in the immediate post-operative period provided that it is not separated from them and is returned immediately.

Both the BRAT machine, which permits the return of shed blood at operation, and the retransfusion devices used in the Intensive Care Unit fulfill the requirements of most of these patients provided that extra care is taken not to separate the reservoir from the patient at any time.

COMPLICATIONS

Heart Failure

This may relate to the operative procedure or following it. During the operation the most common problem that arises is an inability of the patient's heart to recover from bypass easily.

Sometimes this situation may be the result of technical problems associated with the surgery but this is rare and most often the problem arises because the heart has a degree of failure pre-operatively due to its poor blood supply. This can be diagnosed pre-operatively with the angiogram.

If there is heart failure post-operatively the patient may require special drugs to help the heart function more efficiently. Occasionally a special pump is required which can be inserted post-operatively, which helps the heart to deliver blood more effectively to the body.

If the problem persists into the post operative period it can result in a prolonged and difficult stay in the Intensive Care Unit with a need to continue support for the patient on the ventilator and with special drugs for a prolonged period.

Sometimes, particularly if infection supervenes, an eventual terminal event will result.

It is emphasised that this is uncommon and is usually foreseen by the treating team before the operative procedure because of the severity of the patient's illness.

Bleeding

Other problems include increased bleeding after the operation. This may occur because of the scope of the operation.

Heparin, a drug used to stop blood clotting is used during the procedure so that the blood will not clot when it is circulating through the heart-lung machine. Drugs which interfere with clotting such as Aspirin and the anti-arthritic agents if taken in the week prior to surgery will also increase the risk of bleeding. If this does occur and does not respond to treatment with drugs and blood products, it

may be necessary for the patient to be returned to theatre for a further examination to be made. Such an operation is not normally associated with an increase in risk and is best looked upon principally as an inconvenience accepting that any further operative procedure has some risk associated with it. Without such reoperation bleeding may continue uncontrolled.

STROKES

Rarely temporary loss of power and movement or other forms of stroke may occur. In very few instances do patients suffer from permanent impairment arising out of these.

ANAESTHETIC COMPLICATIONS

Anaesthetic complications during cardiac surgery are not much different from those associated with an anaesthetic for any other operation. Although very rare, they can occur, and include such things as reactions to drugs or blood products, damage to teeth, etc. It is stressed that these are extremely unusual. In addition there may be complications related to the monitoring lines inserted by the anaesthetist. Again the risks involved are very low.

GENERAL ILLNESSES

Bypass will also increase the severity of any other pre-existing illness. Any dysfunction of the kidneys is usually made worse as is any dysfunction of the liver. The management of diabetes increases in complexity for a time, but this is usually easily managed. In diabetic patients there is an increased risk of infection which causes a slight increase in the risks.

Infection

Infection in general is a remote possibility. It may cause a particular problem if it involves the breastbone and structures in the chest. Further surgery for this may be required. Sometimes prolonged and difficult hospitalisation occurs. Minor infections involving the superficial parts of the wound on either the chest or the leg incision are usually mainly a nuisance but at times may require readmission to hospital if they flare up after the patient returns home.

The intravenous drips and other lines which are placed by the anaesthetist and in the post-operative period may become infected and may cause bruises or swellings, usually of a minor nature.

Patients sitting up in the Intensive Care after cardiac operations, may compress the sciatic nerves and develop painful soles of the feet. This can be quite a difficult problem and is managed by keeping the patient as flat as possible until their body tissues have warmed.

Many patients have temporary dysfunction of the nerve supply of the diaphragm usually on the left side where the internal mammary artery is taken. The diaphragm may take some time to return to normal function with breathlessness occurring on effort during that time. If the pleural (lung) cavities are opened during the operative procedure fluid may collect in the chest and this may require drainage afterwards.

Bladder Problems

Placement of the urinary catheter may be difficult in older men and at times a suprapubic catheter passed above the pelvic bone into the bladder is required. It is possible for injury to occur to the urethra in the attempts to pass the urinary catheter in difficult circumstances but every care is taken to avoid this.

Disorders of Heart Rhythm

Thirty percent of patients after heart operations develop a rapid irregular heart beat rate in hospital called atrial fibrillation. This requires treatment usually with drugs, occasionally by electrical shock treatment under anaesthetic. Sometimes the problem is quite difficult to manage and may take a much longer time than is usually the case.

Sometimes this irregular heart rhythm may continue, despite medication. However, many patients are discharged home with this, and are followed up by their Cardiologist post-operatively.

Other rhythm disturbances arise in the basic pumping chambers of the heart, ventricular arrhythmias. These also require specific medication, occasionally DCR, and are the principal reason for the monitoring which is performed in the early post-operative period.

Pericarditis - Inflammation of the Lining of the Heart

Many patients develop a noise over the heart which can be heard by the doctor in the post-operative period. this is a rubbing creaking noise and is due to inflammation of the sac around the heart as a direct result of the operation. Usually this does not cause the patient any inconvenience but at times the patient does become aware of a dull ache in the chest which passes through to the back and into the shoulders.

This is usually treated with Aspirin with rapid success but sometimes with other anti-inflammatory agents. Occasionally patients develop post-pericardotomy syndrome, a syndrome similar to that which occurs at times after heart attacks were the body retains fluid in the pleural (lung) cavities in particular and may cause some inconvenience for the period of time.

Clots on Lung

After any major operation it is possible for clots to form in the great veins and to pass rapidly and suddenly into the lungs where they may cause significant compromise to the circulation and require an immediate emergency operation.

If this occurs it is likely to occur a number of days after the surgery and is usually found in those who have been bedridden prior to the operative procedure. Administration of Heparin in the post-operative period is intended to minimise the occurrence of this serious complication.

Death

In the Unit at St.Vincent's Melbourne, as in most Units throughout the world, the death rate is slightly over 3%. This figure includes not only all those patients having booked cardiac operations but all the emergencies that come to the hospital from many parts of the State, from interstate and from overseas.

The death rate for those having standard operations such as coronary graft operations is about 1% but some sub-groups of patients who are extremely ill at the time of their surgery may carry a much greater risk. Some operations involve emergency procedures for tear in the main artery of the body or emergency operations on those who have already had cardiac surgery and such operations may have higher risks associated with them. In these circumstances it is usual to take special care to make sure that the patient and the relatives are aware of these extra risks.

IN CONCLUSION

This form of treatment is highly complex and technically demanding. It is not undertaken lightly by those responsible for your advice and treatment, and this is important to recall that:

1. The risks associated with the surgical procedure are very small, particularly when compared with the risks run by those who are suffering from the diseases for which the treatment is offered.
2. The procedures are commonly performed and therefore the team is accustomed to and practised in all aspects of the procedures.
3. The vast proportion of patients are very pleased by their treatment and are left with relief of their initial symptoms and free of new symptoms as a consequence of their operation.
4. A large proportion of patients are returned to a symptom free effective working life.
5. Many patients who are now presenting for cardiac surgery are elderly. NO form of medical or surgical treatment provides immortality and despite the best and most careful attention of the team occasionally patients suffer complications.