

Cardiothoracic Service

What you need to know about your cardiac surgery



Te Whatu Ora
Health New Zealand

**This booklet has been designed
to give you information about
your cardiac surgery and what
to expect during your stay at
Wellington Hospital**

We encourage you and your family to read this booklet so that you will have an idea of what to expect during your stay with us.

If you have any questions, please contact the cardiac liaison nurse on **(04) 918 6177**.

What to bring

- This booklet.
- Your medications.
- Eyeglasses, hearing aids, dentures.
- Mobility aids such as frame, stick, prosthesis.
- Health passport or advance care plan (if you have one).
- No more than three sets of nightwear.
- Dressing gown and slippers (optional).
- Underwear.
- Personal toiletries – toothbrush and toothpaste, shampoo, razor, deodorant, hair brush/comb.
- A set of loose comfortable clothing to go home in.
- Contact details for your next of kin.
- Your General Practitioner (GP)'s name and practice details.

Valuables

Please **do not** bring large amounts of money, jewellery, or other valuables to the hospital. The hospital is unable to take responsibility for these items.

You may wish to bring money for a TV card. This costs \$6 per day. Alternatively, there is also a patient lounge with a TV.

Please remove jewellery such as rings or bracelets, as these may get stuck/become too tight which could end up cutting off circulation with post-operative swelling. Taonga, such as pounamu may remain. Please let us know so that we can make a plan with you.

Maximising your health before your operation is very important

Doing things like quitting smoking, getting some exercise, eating a well-balanced diet, and managing other health issues such as diabetes will all have a really positive impact on your health and wellbeing from here on.

This will not only help to reduce risks or complications from your surgery itself, but can also help you recover faster.

Smoking and vaping

If you smoke cigarettes/tobacco or use vaping products containing nicotine, quitting is one of the best things you can do for your health. Smoking carries a higher risk of serious complications during and after surgery.

For the greatest benefit, you should try to aim to quit smoking/vaping at least eight weeks prior to surgery. Quitting completely is the best way to reduce harm from smoking. Cutting down may make a difference, but will not significantly reduce the risks of lung or wound complications.

Where to get help:

- Quitline **0800 778 778**
- Takiri Mai Te Ata Regional Stop Smoking Service (Hutt Valley, Wellington, Porirua, Kāpiti Coast) **0800 926257**

These services are free and available Monday-Friday. Your local pharmacy may also supply nicotine patches, lozenges and gum for free/very low cost and without a prescription - depending on where you live. The ward can also provide nicotine replacement therapy and assistance with referrals whilst you are an inpatient.

Why is quitting smoking so important?

Below is an explanation of risks or complications smoking could have in relation to your heart surgery.

Reduced oxygen supply to your heart and body

The nicotine in cigarette smoke causes narrowing of your blood vessels (vasoconstriction) and increases your heart rate and blood pressure every time you smoke. Carbon monoxide in cigarette smoke reduces the oxygen levels in your blood.

If you smoke, you can have up to 10 times more carbon monoxide in your blood than non-smokers.

This makes it harder for your heart and body to get the oxygen it needs. High levels of carbon monoxide can also disturb the rhythm of your heart.

The combined effects of carbon monoxide and nicotine can be dangerous.

It may result in you needing to be given extra oxygen to prevent damage to vital organs, such as your brain. If you have heart disease – where your supply of blood and oxygen is already reduced – it is very important that you stop smoking at least 24 hours prior to surgery.

Blood clots

Chemicals in cigarette smoke cause changes in your blood, making it thicker, stickier, and more likely to clot. Blood clots can go on to cause a heart attack, stroke, or other serious medical problems.

Immune system

Smoking increases your risk of infection.

Healing of bones, skin, and wounds

Smoking can slow down and interfere with the healing of bones, skin, and other body tissues. Smokers are more likely to suffer from wound infections, longer healing times, and problems with scarring, compared to other people who have stopped smoking.

Weight management

Following a 'heart healthy diet' involves healthy eating, maintaining a healthy body weight, enjoying regular physical activity and not smoking.

The Heart Foundation has information online about what foods to try and eat more of, as well as which foods to try and avoid or eat less of.

If weight loss is something that you may struggle with, your GP may be able to support you and/or make referrals.

You may be entitled to a 'Green Prescription', which can be organized through your GP/Practice Nurse. This will entitle you to support and subsidised gyms/recreation/activities.

The Heart foundation has more about 'Eating for a Healthy Heart' available on their website

www.heartfoundation.org.nz This is also available on the ward. Please ask one of our staff if you would like a copy.



Cholesterol

Cholesterol has an important role, but balancing the 'good' with the 'bad' is important. There are two main types:

High-density lipoprotein (HDL)

Known as the 'good' cholesterol.

This carries 'bad' cholesterol back to the liver, where it is broken down and removed.

Low Density Lipoprotein (LDL)

Known as 'bad' cholesterol.

Excess amounts of this build up in the walls of arteries, forming plaques/narrowing which makes it difficult for blood to flow through. This increases the risk of heart attack and stroke.

Lowering cholesterol levels can help control the risk of this from occurring. It is important that you have your cholesterol checked regularly by your GP.

High levels of cholesterol do not have a single cause, but there are certain risk factors, some of these can be controlled and some cannot.

Controllable risk factors include smoking, lack of physical activity, being overweight and a diet of foods high in cholesterol and saturated fat.

Age, family history, medical conditions and medications can also have an impact on cholesterol levels, so speak to your medical team/GP about what is right for you.

Blood Pressure

High blood pressure (hypertension) is one of the most important risk factors for cardiovascular disease. Over time, high blood pressure damages the inner lining of arteries, increasing your risk of heart disease and stroke.

For most people, there isn't a single cause of hypertension. There are a number of risk factors:

- Smoking (or vaping with nicotine).
- Eating excess processed foods and salt (too much salt makes your body store extra water which will increase your blood pressure).
- Alcohol (alcohol temporarily increases blood pressure). Over time, drinking too much on a regular basis can lead to long-term increases in your blood pressure.
- Are overweight.
- Aren't active enough (moving more and sitting less will lower your blood pressure).
- Are stressed (the hormones released in your body when you're stressed increase your blood pressure).

It is important to check your blood pressure regularly, as in most cases you won't feel any different if it is high. If you are taking medications to lower your blood pressure, take these as prescribed.

Even if you haven't been diagnosed with hypertension, following these tips will be good for your blood pressure and your overall health going forward for surgery

Diabetes

If you have been diagnosed with diabetes, or are 'pre-diabetic', it is important to make diet and lifestyle changes to manage this.

Going forward for surgery, if you have diabetes, you have an increased risk of complications. These include high/low blood sugar, poor wound healing, infection, and electrolyte imbalances.

We will ensure that care is made to make things as safe as possible throughout your stay.

Nurses will check blood sugar levels pre-meals, and may also need to do checks in-between. You may find that this is more frequent than at home and this is because stress, major surgery, and changes to your usual diet can all impact your body's control of blood sugars (high or low).

Your GP will check your HbA1c levels – This is the amount of glucose that has built up in your blood over a three-month period.

A result of 40 mmol or lower is normal for people without diabetes.

A result between 41-49 indicates you have pre-diabetes, which means you are at much greater risk of getting type 2 diabetes and heart disease.

Making lifestyle changes recommended in this booklet will contribute to lowering your risk if you are pre-diabetic.

Discharge from hospital - plan early

Work with your family/whānau to discuss plans for your return home following surgery.

Transport home after surgery:

In most cases, you will need to make your own arrangements for transport home after surgery, even if you are from another part of the country.

If you require ongoing medical care in the hospital, but no longer need specialist Cardiothoracic treatment, you may be transferred in a land or air ambulance back to your local hospital.

If you require additional support at home, you may also be transferred as an inpatient.

For more information on transport assistance and cost reimbursement, please contact the transport assistance office at your local hospital. Hospital staff can provide further guidance and answer any questions you may have. You will need someone at home with you for the first one to two weeks.

This person will need to be able to help you with things around the house such as cleaning and preparing meals and taking you to appointments.

Ask your spouse/partner, children, friends or neighbours whether they can help you when you get home.

- Plan to lower your activity for a while. If you are a primary caregiver who takes care of another person, you will not be able to take care of someone whilst you are in hospital or during your early recovery period. Make plans for someone to take over for you before you go to the hospital.

- Organise your house so you don't need to do this right when you get home
- Make some meals beforehand and freeze them ahead of time
- If you have any pets, make plans for someone to look after them whilst you are in hospital.
- Make an appointment to see your GP one week after surgery.

Work: Depending on the type of work you do, you will need to take approximately 6 to 8 weeks off while you are recovering. If your job is physically demanding, you may need to arrange light duties, sick leave, or a benefit.

Driving: You will not be able to drive for 4 weeks after your surgery. This is for the safety of yourself and others on the road and is an NZTA requirement. You will need to make arrangements with someone to drive you to appointments. In some cases you may need specialist assessment before you can drive again – if this is the case your medical team will inform you.

Your hospital stay

Length of stay

Following cardiac surgery, you will usually be in hospital for five to seven days.

Clinical pathway

While you are in hospital, your care will follow what is called a clinical pathway. This is in place so that you receive the best care possible while you are here and things happen for you as they should.

Occasionally, things will happen that mean your stay with us is either longer or shorter than anticipated. Your care will be modified to fit in with this.

The doctors and nurses will keep you updated with your progress.

Each day, you will be seen by the Cardiothoracic ward round in the morning and the plan for the day/progress you have made will be discussed here.

Please ask staff on the ward if you have questions at any stage.

Theatre lists/postponements

There are usually between two to four operations performed each day. Several factors influence whether these go ahead on the day.

You will be told the night before your surgery whether you are first (7am) or second (11.30am to 1pm) on the list.

Unfortunately there is always the possibility of a last minute postponement or change to your scheduled surgery. This may be due to shortage of beds or staff in Intensive Care Unit (ICU) or theatres, or the need to perform emergency surgery on other patients.

We are aware that this is a stressful time for you.

Should there be a delay, we will do everything we can to ensure you have your surgery as soon as possible.

The night before surgery

Where will I go?

The main ward for the Cardiothoracic service is **ward 6 South**. This is located in the **orange lifts**, on **level 6**.

You may also stay in the in the Transit Lounge. This is located on level 2, and is accessible via near the ED entrance off Riddiford Street.

As we are a regional hospital, from time to time, you may be placed in another ward due to a limited supply of beds.

If elective (coming in from home), you will usually be asked to arrive at the hospital the day before surgery at 1pm. From there you will be asked to report to the ward or Transit Lounge and will be directed from there. You may have appointments booked for a chest X-ray or blood tests and the ward clerk will direct you to these. Otherwise, we will get you settled in to your room/bed space.

You will be seen by the cardiothoracic surgeon and registrars. They will go through the consent and discuss the plan with you.

The anesthetist will also visit you and discuss aspects such as having a general anaesthesia (GA), and pain relief.

Your nurse will prepare you for surgery. This will involve gathering your documents, starting the pathway, completing your theatre checklist, doing an ECG, shaving your skin and getting you set up for the following day.

Cultural/pastoral support is available for

- Māori patients through the Whānau Care service.
- Pacifica patients through the Pacific Health Unit.
- Chaplains available (for all faiths and none) on request with a Chapel and Muslim prayer room available.

Whānau Care Services

Assist by providing whakawhānaungatanga, manaaki and Manaakitanga; practical help and information for you and your whānau. Connection, bridging the gap between you, your whānau and the medical team.

They are able to assist with cultural needs, acting as a patient advocate, helping patients and their whānau understand care/treatment, provide health information and education, and help with engaging in community and social support services.

Getting in contact with Whānau Care Services:

- Ask your health professional to make a referral.
- Email **wcs@ccdhb.org.nz** or phone **04 806 0948**.
- Your whānau can also make a referral on your behalf.
- Visit the **Cultural Care Centre** on **Level 2** of Wellington Regional Hospital.

Pacific Health Unit

Assist by providing advocacy to patients and family, helping patients and their family understand treatment/care, providing health information and education, support and info linking with community and social services, linking patients to other providers, providing cultural support and providing support with complex cultural or social dynamics.

Getting in contact:

- Ask your health professional to make a referral
- Email PHUreferral@ccdhb.org.nz
- Your family can also make a referral on your behalf
- Visit the Cultural Care Centre on Level 2 of Wellington Regional Hospital

Chaplaincy

Ecumenical chaplains, chaplaincy assistants and kaumatua are available to patients upon request.

If you have your own minister/pastor/priest you would like to see instead, they are welcome to provide spiritual care during your stay.

Chaplains are available for prayer, sacrament, support, and pastoral care. Chaplains are available for prayers and support during the week. The chaplaincy team are available through the Call Centre.

Weekday hours

Catholic Chaplain 8am-4pm.

Māori Chaplain Monday and Tuesday 8am-12pm.

Anglican and Presbyterian Chaplains 8am-4.30pm.

After hours

A Chaplain and Catholic Priest are available for critical situations via the operator - dial 0. The Chapel and Muslim Prayer room are open at all times. They are in the hospital atrium, opposite outpatients and alongside the chaplains office.

If you would like a chaplain to visit please ask a staff member to phone the one you want.

The Chapel and Muslim prayer room are open 24 hours and can be used by all hospital patients, relatives and staff.

About your Surgery

Cardiac surgery performed here at Wellington Regional Hospital includes Coronary Artery Bypass Grafting (CABG), heart valve repair or replacement, and treatments for irregular heart rhythms (MAZE procedure, Left atrial appendage closure). Cardiac surgery is usually performed using a midline approach (sternotomy).

Sternal incision

To operate on your heart, the surgeon makes an incision down the centre of your chest.

The breastbone (sternum) is divided. At the end of the operation, the bone is wired back together to prevent movement and help it heal back together. These wires do not need to be removed.

You will be advised to undertake sternal precautions (avoiding heavy lifting, pushing or pulling) to make sure your sternum heals well.

Cardiopulmonary bypass

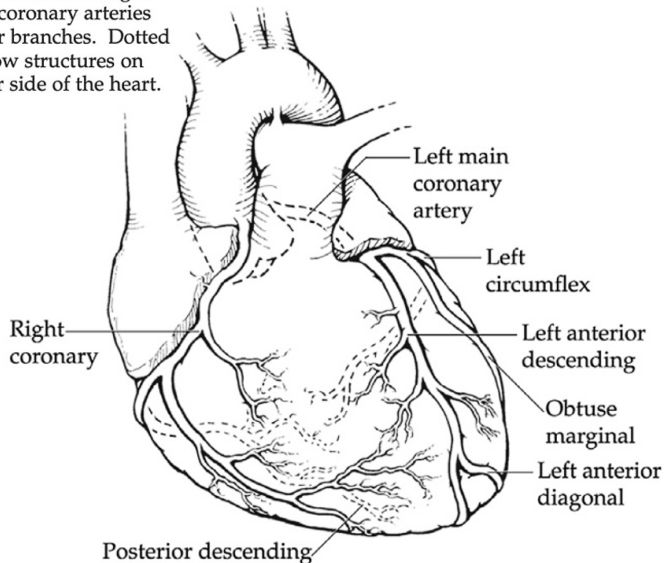
A heart-lung bypass machine will be used to do the work of your heart and lungs during your operation. The blood is sent to a chamber where oxygen is added before it is returned to your body. This is necessary so that the surgeon can work on your heart while it rests.

Once everything is complete, you'll be taken off the bypass machine and the heart will take over again.

Coronary Artery Bypass Grafting

The heart muscle gets blood from your coronary arteries. These arteries branch off from your aorta just as it leaves the heart. The right coronary artery sends blood to the bottom and back of the heart, the left coronary artery which has two major branches sends blood to the top, front, side, and back of the heart (*see figure 1*).

Figure 1. The heart muscle gets blood from the right and left coronary arteries and their branches. Dotted lines show structures on the other side of the heart.

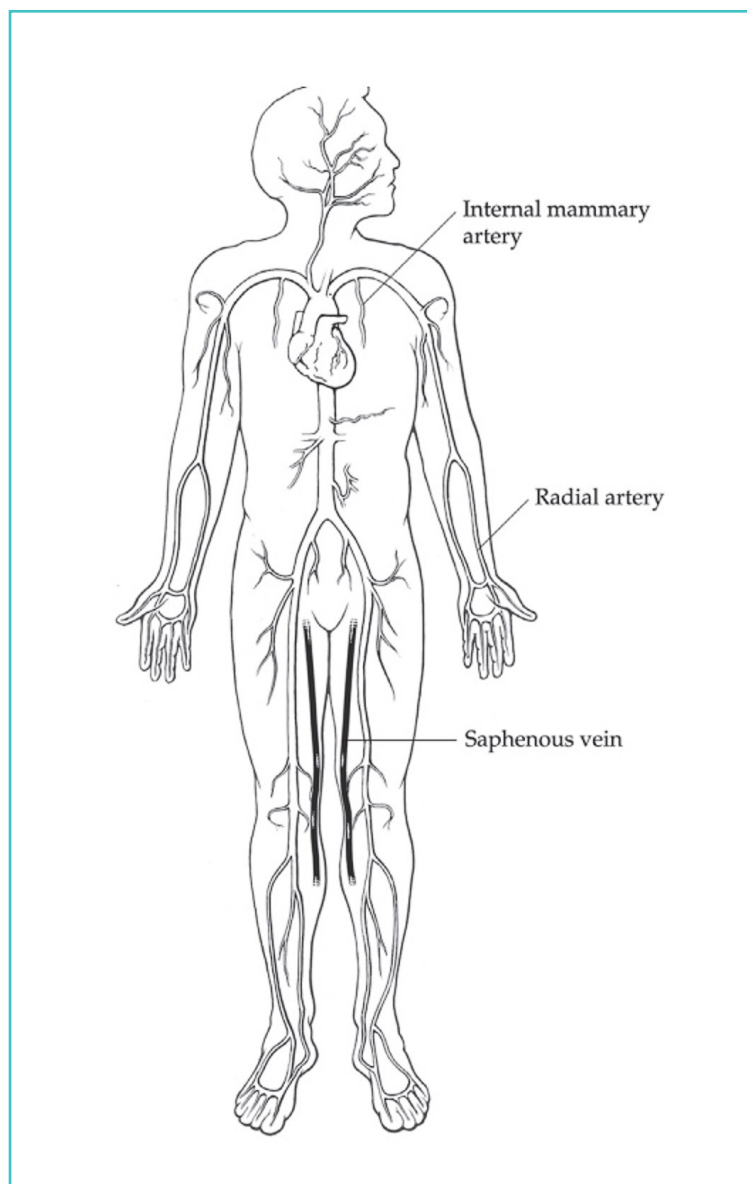


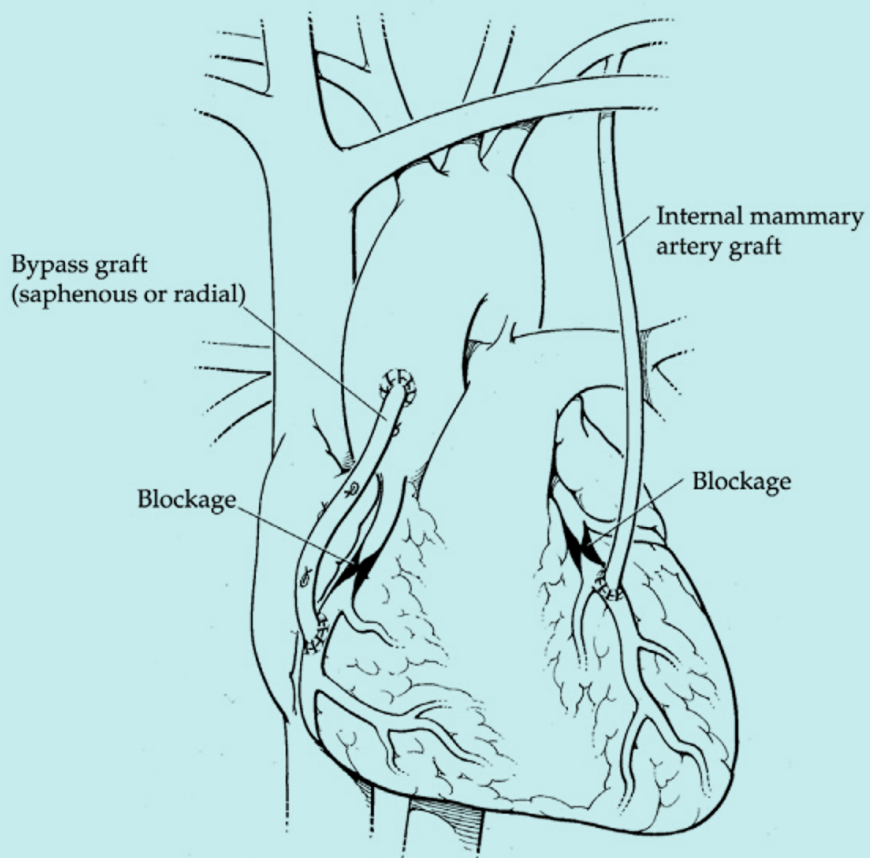
Coronary artery disease is a disease of the arteries which causes them to become blocked, narrowed or hardened through the formation of plaque. This narrowing through the vessel means that less blood and oxygen is able to get to your heart muscle. This may cause chest pain (angina), particularly when oxygen demand increases, such as through exercise.

Coronary artery bypass grafting (CABG) is an operation in which the surgeon places grafts around blocked or narrowed vessels to restore blood flow past the blocked area and get to your heart muscle.

The bypass is formed by taking a vessel from your leg, arm, or in your chest, attaching it from above and below the narrowing. If the harvest is taken from your arm, this wound will extend from the wrist along the forearm; if from the leg this may vary in size but can go from ankle to knee, or up into the groin.

Some people may have a combination of grafts. These are 'extra' blood vessels that your body does not need.





Valve surgery

Within the heart, there are four chambers - left and right atrium, and the left and right ventricles. Valves control blood flow to and from these chambers.

The right atrium gets blood from the body, while the left atrium gets oxygen-filled blood from the lungs.

The right and left ventricles pump blood out of the heart.

Within these four chambers, there are also four valves: Aortic, Pulmonary, Tricuspid and Mitral.

For the heart to pump efficiently, these valves must be able to open freely to let blood flow forward.

If the valves do not open properly, the heart has to work harder to pump enough blood through. If valves leak or are partly open, this makes the heart work harder as well.

Valves may require repair or replacement if they have become narrowed, or do not open and close as they should.

There are several types of replacement valves available, including different types of tissue or mechanical (metal) valves. Your surgeon will discuss the right option for you.



Mechanical Valve



Tissue Valve

After your Operation

The Intensive Care Unit (ICU)

Once you have had your surgery, you will be transferred to the ICU.

This is a busy place and the lights may be on day and night, so you may become a bit confused as to the time of day. Don't worry, this is common. Once you are stable, you will be transferred back to Ward 6 South. This is generally 1-2 days following surgery.

There is a lot of different equipment used to monitor you after your operation. These all have an important role in monitoring or managing things in the immediate post-operative phase, and are removed once you no longer need them.

For friends and family visiting you in ICU or in the Step Down Unit (SDU) in 6 south, this may be quite confronting/scary because you will look very different.

The main attachments are:

Breathing tube/Ventilator

This is a tube which passes through your mouth and vocal cords, to the top of your lungs and is put in place in theatre when you are asleep. It is connected to a ventilator which does the breathing for you while you are asleep. This will be removed when you are awake and breathing on your own.

Arterial line

A small line is placed in your wrist to connect to the monitor. This allows us to monitor your blood pressure closely and also allows easy access for blood sampling. This is usually removed the day following surgery.

Cardiac Monitor

ECG leads are connected to your chest which are connected to a monitor. This allows us to continuously monitor your heart rate and rhythm.

The length of time this stays on for varies but usually for the first four days post-op.

Intravenous (IV) line and central venous line (CVL)

These are inserted to allow administration of fluids and medications.

An IV line is a small plastic/silicone tube placed into one of the veins in your arm.

A CVL is just a bigger version of this with different ports, and is inserted into your neck when you're asleep. The CVL allows multiple medications to go through at once, as well as blood sampling.

These are removed when no-longer required.

Usually on day three or four following surgery.

Urinary Catheter

This is a tube which goes up the urethra into the bladder to drain urine into a bag whilst you're asleep/not very mobile. This allows us to monitor input and output and is put in whilst you are asleep as well.

This is usually removed post-op day two when you are awake and able to walk up to the toilet.

Chest drains

You may have two, three or four, tubes placed in theatre to drain unwanted blood, fluid and air from around your heart and lungs. If you have had a bypass using a vein from your leg, you may also have a small drain there too.

These are removed once drainage is minimal and there is no air leak - usually on day two.

Pacing wires

These are thin wires attached to the outside of your heart muscle (myocardium) during your surgery which will come out of your abdomen and connect to leads and an external pacing box. This is a temporary pacemaker used as a backup in-case your heart isn't beating as it should, or your heart rate needs to be increased.

The electrical amplitude required to help your heart is very small, so you won't feel a thing.

This is usually a very short-term measure and these wires are removed on the fourth day post-op.

Other things to note

Pain relief

Everyone experiences pain after surgery, although everyone's experiences are all different.

It is very important for your recovery that you have regular pain relief to enable deep breathing, coughing, and mobilisation. This enables you to recover faster from surgery and prevent complications such as getting a chest infection (pneumonia).

You will usually receive regular paracetamol tablets, as well as morphine or Fentanyl intravenously for your pain. A machine (PCA) will be set up in ICU, so that you can push a button when you need pain relief.

The PCA is usually replaced with the tablet form once your chest drains are out. You will be offered pain relief regularly, but may also need to ask if you need some more.

Surgery and lung function

Cardiac surgery can affect how well your lungs work. There are many reasons for this.

During surgery, the work of the heart and lungs is taken over by the bypass machine, which may cause a collapse of the airways and build up secretions.

For a short time after the operation, your chest will be sore and affect your ability to breathe deeply and cough.

Pain relief will be given to control any discomfort stopping you from doing these things. These and other factors mean that following heart surgery, you are at risk of developing complications such as partial collapse of the lungs (atelectasis) or a chest infection. To minimise this risk, you will be encouraged to take regular pain relief, sit up and get out of bed, move around and perform deep breathing exercises.

Blood transfusions

Blood and blood products are used only when absolutely necessary during and after surgery. You will be asked to sign a consent form for blood transfusions prior to surgery. Your blood type will be checked prior to surgery, and products are prepared in case they are needed. All products are carefully tested before being used. If you may not wish to receive blood or blood products (for example if you are Jehovah's Witness), please let us know.

The Step Down Unit (SDU)

Once you no-longer require intensive care, you will be transferred to the SDU in Ward 6 South. This is a six-bedded area where you will continue to be monitored closely. It is a good idea to limit the number of visitors in the first few days. We ask that you only have one to two visitors at a time in the SDU.

Rest is important, so there is a break from visiting hours in the afternoon (1-3pm). Each day you will gradually do more, from getting out of the bed, to mobilising around the unit and then eventually around the ward.

Ward 6 South

As you progress, you will transfer from the SDU to the ward beds.

The lines and tubes will be removed gradually, which will allow you to get around easier. You may require some help with mobilising and showering initially. It is important to continue taking pain relief regularly.

You will have blood tests taken daily and an ECG done once pacing wires are out/before you discharge home. On or before the day of discharge, the physiotherapist will assess your ability to mobilise, and will give you advice on what to do/expect when you exercise at home.

Your recovery – what to expect

Discharge information

Before you discharge, you will be given information from the nursing and medical staff. There is an additional booklet which will be given to you for when you go home which covers getting home, the first bits of recovery, what to look out for, follow-up and cardiac rehab.

Discharge Summary and Medications:

You'll receive a printed discharge summary of your hospital stay, follow-up plan, and medication details. Your GP and specialist will also receive a copy of this summary. You'll receive a pharmacy prescription with all your necessary medications, including any new or adjusted doses.

Don't take any old medications, and if you're unsure, bring them to the pharmacy along with your new prescription.

Concentration and memory

You may have difficulty concentrating, or feel 'foggy' within the weeks following surgery. This should improve.

Vision

Some visual disturbance, such as blurred vision may occur but should improve over the following weeks.

Tiredness

This occurs after all surgery, particularly cardiac surgery. Increase your activity slowly and ensure you get plenty of rest when needed.

Palpitations

It is common to feel more aware of your heartbeat following surgery. Occasionally people experience irregular rhythms post-op which is managed with medication.

Pain

The sternum is wired back together at the end of your surgery. Actions such as coughing or sneezing, as well as positional changes may cause some additional pain. Ensuring you keep up with regular pain relief and perform sternal precautions as shown will help minimise this pain or discomfort.

Wounds

These will be monitored every day whilst you are in hospital to observe for any signs and symptoms of infection or issues with healing. This should continue when you get home.

Dressings are removed usually on day five post-op.

Emotions

Mood swings are common in people following major surgery. You may feel great one day, and down or depressed the next. These feelings usually do not last.

Some days you may feel like you are not making progress at all – but consider where you are now compared to the weeks prior. If you feel this way, you may find it helpful to speak to your nurse or the doctors caring for you.

Your support people/family may also be feeling this way too. It is important to acknowledge this is a stressful time for everybody.

For family/whānau and friends

After your surgery, your next of kin will be called to let them know how the operation went.

You'll be taken from theatre to the ICU where you will be able to have visitors.

Nurses and doctors caring for you will need time to transfer you from theatre and ICU and get you set up. Your family/Whānau is welcome to wait in the waiting area outside ICU, and come in once you're ready.

Visitors are restricted in ICU to two at a time.

No visitors before 10.30pm, between 4pm to 5pm, 7pm to 8pm and 9pm to 10pm.



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