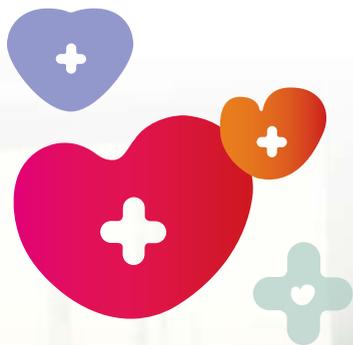
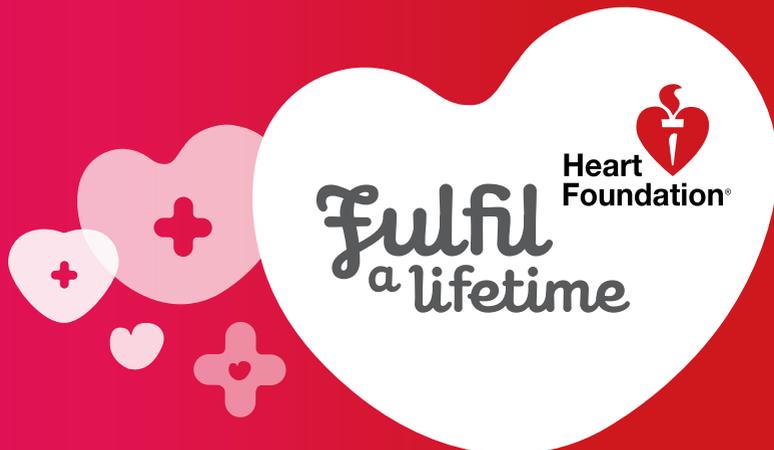


# A guide to coronary artery bypass graft surgery





## Introduction

This booklet has been written to help you and your family/whānau learn more about coronary artery bypass graft (CABG) surgery.

It may not contain all the answers to all your questions; however, do remember that you are not alone. Talk to your doctor, nurse or other health professionals if there are things you want to ask or things you do not understand. They are there to help you recover both physically and emotionally.

**This booklet has been divided into three sections:**

### Section 1

Preparing for  
your surgery

### Section 2

Your stay  
in hospital

### Section 3

Life after  
surgery

In each section we answer questions you might have about coronary artery bypass graft surgery. Read through each section at your leisure and please do remember to ask if you are unsure about anything.

### Want to be informed and connected?

- Register for our Lifetime heart health newsletter for the latest heart health research, news and events in your region. Email: [CardiacCommunity@heartfoundation.org.nz](mailto:CardiacCommunity@heartfoundation.org.nz)
- Join our Heart Health feedback group and help us to develop resources that meet the needs of you, your whānau and your community. Email: [Feedbackgroup@heartfoundation.org.nz](mailto:Feedbackgroup@heartfoundation.org.nz)

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# Preparing for your surgery

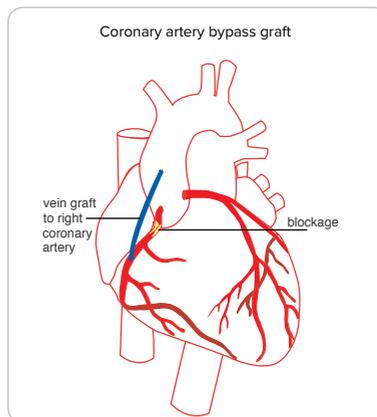
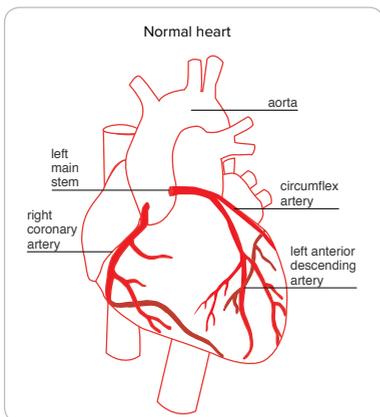
Coronary artery bypass graft surgery is performed mainly to relieve angina symptoms. Surgery improves the blood flow to the heart muscle. This can result in a better quality of life with less or no angina.

## Coronary artery bypass graft (CABG) surgery

Coronary artery bypass graft surgery is an operation that bypasses a narrowed or blocked part of a coronary artery using a graft. A graft is a length of vein or artery that is usually taken from the leg (saphenous vein), the chest wall (internal mammary artery) or the forearm (radial artery). It is quite normal to need two to four grafts, otherwise known as a double, triple or quadruple bypass.

One end of the graft is connected to the aorta, with the other end attached to the coronary artery. This bypasses the blockage or narrowing, providing a new channel that allows blood to flow to the heart muscle.

If the internal mammary artery is used as a graft, it remains attached to its own blood supply in the chest wall with the free end sewn onto the coronary artery, bypassing the blockage or narrowing.



## Preparing yourself for surgery

Making appropriate lifestyle changes before your operation and maintaining them long-term will mean that you get the most from your surgery. Preparing yourself emotionally is also important. You will probably have a number of questions about your operation. You may find it helpful to write these down so you can discuss your concerns with your doctor or nurse.

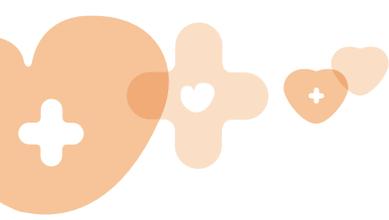
**Smoking:** To improve the likelihood of a better recovery, it is advised that if you smoke, you stop now. Surgeons and anaesthetists are very reluctant to operate if you continue smoking. This is because smoking causes breathing complications after surgery and increases the risk of your new grafts becoming blocked.

Talk to your doctor, nurse, call **Quitline** on **0800 778 778** or visit **[www.quit.org.nz](http://www.quit.org.nz)** for support on quitting

**Work and legal issues:** Following surgery, your recovery will take two to three months. So, it is best to tidy up any business or legal issues that could worry you while you are recovering. Let your employer know that you intend to return to work within six to twelve weeks and arrange any sick leave entitlement.

If financial assistance is required, ask your doctor about a referral to Work and Income.

**Travel arrangements:** If you need to be transferred to another centre for surgery, your referring hospital may meet the costs of your travelling expenses. Please talk to your doctor or nurse for more information.



**Accommodation for relatives:** Cardiac surgery units try to help with accommodation and/or social, emotional or practical problems that may arise when you have major surgery away from your home town. If you need help, talk to your doctor or nurse.

**Waiting for your surgery:** Your doctor or hospital will advise you when your surgery will take place. Understanding what will happen during the operation, your stay in hospital and your recovery may help you feel less anxious.

Even when you are given a date and time, or when you have been admitted for surgery, your operation may be postponed until another day. This only happens when absolutely necessary, generally because of emergency cases which cannot be avoided.

Making positive lifestyle changes can significantly reduce your risk of further heart health problems (see the 'Life after surgery' section).



# Your stay in hospital

## The day before surgery

You are usually admitted to a hospital ward the day before your surgery. The surgeon and anaesthetist will explain the operation to you and record your medical history (including any allergies). They will also answer any questions you may have and ask you to sign a consent form agreeing to the operation and anaesthetic.

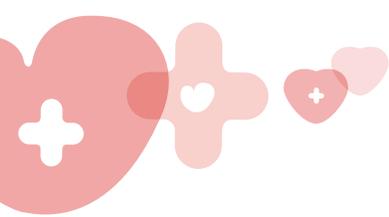
Bring loose-fitting sleepwear and clothes to the hospital. Ideally, women should have a wire-free, soft cotton, front-fastening bra that is one size bigger than usual. After surgery, your wounds and muscles will be sensitive and comfortable clothing is less likely to irritate them.

**Important** – If you are taking medication(s), especially blood thinning medication such as aspirin, warfarin, clopidogrel, dabigatran or ticagrelor, your doctor will advise you on whether to continue taking them. If in doubt ask your doctor, nurse or cardiologist. You should also bring all your medications to hospital.

Before your surgery you will have some tests e.g. blood tests, chest X-ray and an electrocardiogram (ECG). An IV line may be placed in a vein on the back of your hand or arm. This is used to give your medications during surgery.

The hair around the operation site will be clipped/shaved, including your chest, legs and possibly arms. You may also need to have a shower using antibacterial solutions; a nurse will tell you when to do this.





## The day of surgery

The nurse or anaesthetist will tell you when to stop eating and drinking before your operation. You will also need to remove any jewellery and/or glasses (you can give them to a relative or nurse for safekeeping). If you have dentures or plates the anaesthetist will tell you when you need to remove them.

Shortly before going to theatre, you will need to change into a hospital gown. You will then be given medications, which will help you to relax and may make you feel a little drowsy. When you arrive at the operating theatre, you will receive an anaesthetic to keep you asleep during the operation.



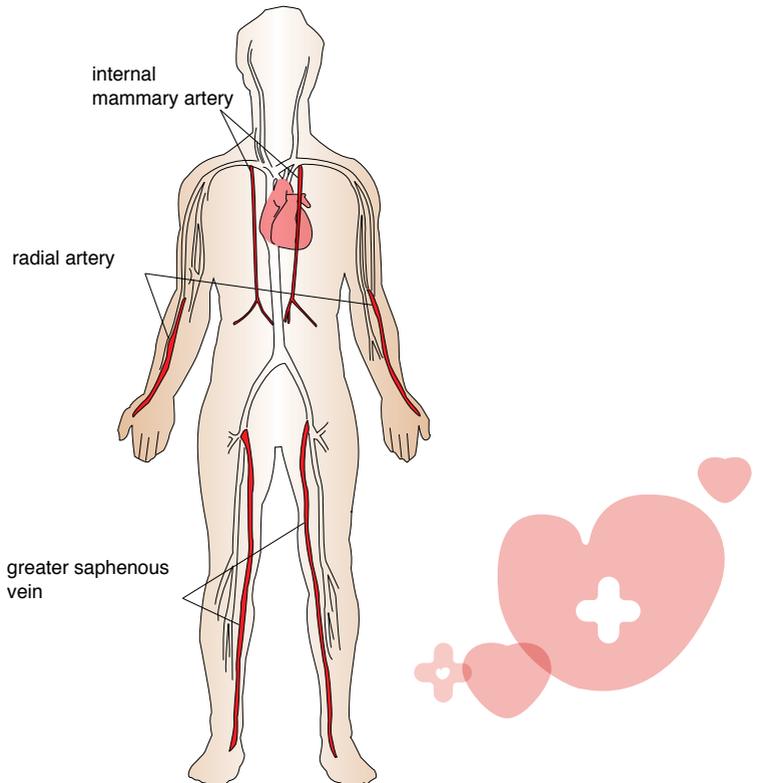
## During the operation

The surgeon will make a cut (incision) down the middle of your chest, through the breastbone (sternum) to reach your heart. While your heart is being operated on, it may be temporarily stopped. During this time, the flow of blood to the heart and lungs is re-routed through a heart/lung bypass machine. The bypass machine takes over the heart's job of pumping and the lungs' job of breathing. Alternatively, they may perform off-pump bypass surgery, where a heart/lung bypass machine is not used. Coronary artery bypass graft surgery usually takes between three to six hours, depending on what is required.

You may have an incision in either your leg or arm, depending on where the graft has been taken from. For the first few days following your operation, these will be bandaged or covered by a dressing.

You may have endoscopic vein harvesting, where the vein from the leg is collected using up to three small incisions, which reduces scarring.

### Coronary artery bypass graft collection sites



## After the operation

After your operation, you will wake up in the Intensive Care Unit (ICU) or High Dependency Unit (HDU). You will be monitored closely for 12–24 hours, until you have regained consciousness.

It is normal to wake up with a breathing tube in your throat. As soon as you start waking up the tube will be removed and you will be given oxygen via a mask or nasal prongs to improve your breathing. Most people do not remember having a breathing tube and it is common to feel a bit disorientated, but this will pass.

It can be noisy in the ICU/HDU as machines are monitoring your heart and body's condition. You may notice tubes in your neck, arms, chest and bladder. Do not be alarmed, as this is usual following surgery.

The tube in your neck (central line) gives medication and fluids, monitors blood pressure and allows for blood samples to be taken. The tubes in your arms may also be used for medications and fluids. The tubes in your chest drain any excess fluid as a result of your surgery (you may see some blood in these tubes, which is normal). The tube in your bladder (catheter) drains your urine away.

You will also feel very sleepy and it is usual to sleep a lot in the first few days. You may not remember your stay in ICU, which is normal.



## Returning to the ward

Once fully awake, you will be transferred from ICU/HDU to the ward, where the nurses and doctors will continue to care for you.

For the first few days, your medications will be changed as your body adjusts to the operation. You will be on several standard medications, each of which has a different job to do.

### **Some common after-effects from surgery are listed below:**

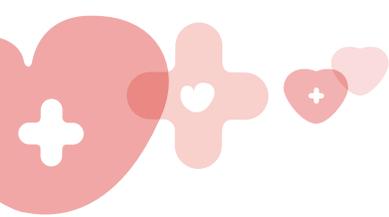
**Pain:** You will feel a bit sore after the operation and will need to take regular pain-relief. You may be given a device used to administer pain medication intravenously called Patient Controlled Analgesia (PCA). A staff member will show you how to use the PCA properly, so you can give yourself pain relief when needed. Having the appropriate pain relief will help you recover more quickly. Ideally, you should be able to breathe and cough comfortably with little discomfort. Remember, it is important to let the nurses know if you are in pain.

You may feel sore in your arms and shoulders for sometime after your operation. This is due to the position you were placed in during the operation – on your back with your arms extended. This will improve in time.

**Heart rhythms:** Irregular heart rhythms (heartbeats) can occur after surgery, which can be treated.

**Altered perception:** You may experience vivid dreams, visual disturbances and occasional disorientation during the first few nights following your operation. Tell your doctor or nurse if you experience these.

**Feeling sick (nausea):** It is common to experience nausea for several days after your surgery. Nursing staff can provide you with medication to ease this.



**Sleeping patterns:** Many people do not sleep as well as usual for the first few weeks after surgery. If you are experiencing pain, taking regular pain relief may help you sleep better.

**Memory loss:** You may also be affected by some memory loss after surgery. This is usually temporary and improves within six months after surgery.

**Constipation:** You may get constipated after surgery. Tell your nurse if this happens.

**Altered taste:** You may experience a metallic taste in your mouth for a time after surgery. This will pass.

**Depression:** You may experience the “cardiac blues” a few days or weeks after your surgery. Tears are not unusual and you may experience mood swings. It may help to talk to other patients who have had surgery or to staff. If these feelings persist, seek help from your doctor or nurse.

## Physiotherapy

To aid your recovery, physiotherapists will visit soon after your surgery. They will help get you back on your feet within one to two days following your surgery. You can help your recovery by practicing the exercises your physiotherapist has given you.



Physiotherapists help you with:

- Mobilising, breathing exercises and supported coughing to improve lung function. This may help prevent chest infections and problems with blood clots
- The best ways to move to minimise wound discomfort
- Advice on an exercise programme to improve your fitness at home
- Advice on your gradual return to normal work and leisure activities.

As the muscles, bones and joints of the chest wall need time to heal, avoid lifting heavy objects and doing movements that place stress on your chest area.

It is important to discuss a home exercise plan with the physiotherapist or nurse prior to discharge. Your physiotherapist or nurse can advise you and answer any questions.



## Returning home

You will usually stay in hospital for five to seven days following your surgery. Your doctors and nurses will advise you when you can go home. Please discuss any concerns/questions you have with one of them prior to discharge.

You may have to wear supportive stockings in hospital and possibly for a short time when you are home, as advised by your doctor or nurse. This is to reduce the risk of blood clots.

Before returning home, make sure someone can look after you for between seven – ten days after discharge. **You are advised not to go home alone.** If there is no one to take care of you, tell the doctors and nurses and they will arrange for someone to talk to you about care options.

To reduce discomfort caused by a seatbelt to your chest, it is advisable to ask the person collecting you to bring a small pillow or soft towel. Place this between your chest and the seatbelt. You may be given a Heart Foundation cushion by your nurse.



# Life after surgery

## Your recovery

It takes about three months for the sternum (breastbone) to heal, so during this time you should expect some discomfort in your chest. Regular paracetamol will reduce this. To improve your rate of recovery, plan to gradually increase your daily activities, especially walking. It is important to follow the activity guidelines given to you before leaving hospital. If you have any concerns about your recovery, please contact your doctor or nurse.

The scars on your arms and legs may need dressings until they are healed. If the scars swell, you should elevate the affected limb for an hour or two. To help with swelling, your doctor may advise you to wear support stockings. The tissue beneath your scars may feel hard and tender but it will eventually feel normal. You may experience some numbness and tingling around the scars, which will gradually disappear as the body heals.

Memory and concentration can be affected temporarily and because of this, it is not advised to return to work early. It is also advised to delay making decisions as you may feel differently in the future.

## Getting the most from your surgery

For about eight out of ten patients, surgery will be a success, providing immediate and lasting relief from angina. For others, the surgery will only **improve** their angina.

If your angina does return, tell your doctor. You may need more tests to assess the best course of treatment.

Surgery is a treatment of symptoms and **not a cure**. Some renarrowing of the arteries will occur over time. You'll start taking medications before leaving hospital, and will need to keep getting your prescription and taking them when you go home.

Heart pills are not just a one-off prescription. It is important that you keep taking these for the long term.

## Improving your heart health

There are a number of factors which are known to increase the risk of further heart events. These are called risk factors. The more risk factors you have, the greater your chance of developing further heart disease.

### Risk factors that you can change include:

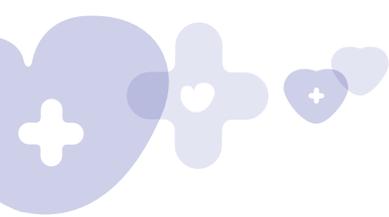
- Smoking
- High blood cholesterol
- High blood glucose (sugar)
- High blood pressure
- Being overweight
- Physical inactivity
- Eating pattern

### Risk factors that cannot be changed include:

- Age
- Ethnicity
- Gender
- Having a family history of heart attack or stroke

Every risk factor you reduce or remove can have a major effect on lowering your chances of having further heart disease problems such as angina or heart attack.

For more information about how to control your risk factors, visit [www.heartfoundation.org.nz](http://www.heartfoundation.org.nz) or discuss with your doctor or nurse.



## Cardiac rehabilitation

Cardiac rehabilitation programmes can help you to improve your heart health and reduce your chances of having another heart event. Attending cardiac rehabilitation is as important as your follow up visits to your doctor. It is part of your treatment and will provide you and your partner or a family/whānau member with information, tools and support for a faster recovery so you can fulfil your lifetime.

Programmes are delivered in different ways and usually have three phases:

**Phase 1:** While you are in hospital you may be invited to attend a cardiac rehabilitation programme. Here you may be given advice on lifestyle changes and the medications you are on.

**Phase 2:** Following discharge, this rehabilitation programme is an important part of your recovery. Health professionals are available to give you advice and support on exercise, healthy eating, becoming smokefree, stress management, medication and work. Ask your cardiac rehabilitation nurse what is available in your area.

**Phase 3:** Your local heart support group can offer you on-going support to maintain healthy lifestyle changes. These groups can offer education, exercise and emotional support for you and your family/whānau. You should also be visiting your doctor or nurse regularly for check-ups.

To find out about your nearest cardiac rehabilitation programme or heart support group, visit [www.heartfoundation.org.nz/ccod](http://www.heartfoundation.org.nz/ccod) or phone us on **(09) 571 9191**.



## Feelings and relationships

You and your partner/support person are likely to feel anxious about you leaving hospital to go home. This is quite normal after an operation. You might find it helpful to talk about your feelings with close family members or friends. Family and whānau may also experience similar concerns.

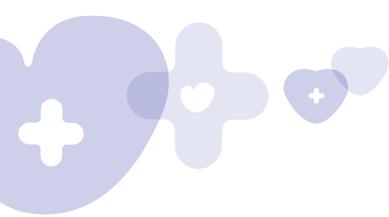
These feelings should ease as your life returns to normal. However for some, the anxiety may become more severe and it is important to seek help. Contact your cardiac rehabilitation nurse or family doctor to discuss your feelings with them.

## Sex after your surgery

A healthy sex life is part of returning to normal life after heart surgery. It can be very beneficial for your relationship, helping you feel secure and happy. While it may take a little while for you to feel like having sex, the desire should soon return. Try to take things slowly, making an effort to discuss your feelings and concerns with your partner.

The amount of energy needed for sexual intercourse is about the same as walking up two normal flights of stairs briskly, so it will not unduly affect your heart. Find a position that is comfortable and doesn't place any stress on your chest or restrict your breathing and avoid positions where your arms are supporting your body weight.

If you would like more information on anxiety, depression or other emotional issues contact **The Mental Health Foundation** on **(09) 300 7030** or visit their website **[www.mentalhealth.org.nz](http://www.mentalhealth.org.nz)**



## Getting behind the wheel

NZ Transport Agency's (NZTA) guidelines state that you must not drive for at least four weeks following your surgery. You will need to have an assessment by a specialist before returning to driving.

If you hold a vocational licence and drive passenger vehicles, trucks, fork lifts, courier vans or fly aeroplanes, different rules apply. Generally, you can apply to start driving three months after your surgery. Your licence needs to be approved by a cardiologist or specialist who has examined you and ensured you are safe to drive. It also pays to check with your insurance company to ensure that you are fully covered.

For more information, contact the **NZ Transport Agency** phone **0800 822 422** or visit **[www.nzta.govt.nz](http://www.nzta.govt.nz)**

## Travelling by air

It is best to discuss air travel plans with your doctor first. Usually you will need to wait at least ten days after your surgery before considering air travel. Each airline has a different policy for air travel following surgery.

It is recommended you contact your airline prior to booking your flight. If you are going overseas, you will also need travel insurance, including a policy that will cover you for pre-existing conditions.

If you are travelling overseas to a country with a time difference, discuss your medication regime with your doctor or pharmacist.

# Angina action plan

If you think you are having angina, and usually take GTN spray or tablets:

- Stop what you are doing. Sit down and take 1 puff of your GTN spray or 1 GTN tablet, under your tongue
- If your angina is relieved by rest or your GTN spray or tablet, you can resume your activities gently
- If your angina persists, you can take 1 more puff of your GTN spray or 1 GTN tablet after 5 minutes
- **If your angina is not relieved after a further 5 minutes, treat as a heart attack – call an ambulance. Dial 111 immediately.**

If your angina becomes more frequent, severe, lasts longer or happens when you are doing very little or resting, see your doctor in the next 24 hours.

# Heart attack warning signs

Symptoms of a heart attack vary considerably from person to person. You may experience the following symptoms:

- Heavy pressure, tightness, crushing pain or unusual discomfort in the centre of the chest, lasting more than 10 minutes
- Typically the pain may spread to the neck, jaw, shoulders and arms

This may be accompanied by sweating, a sick feeling in the stomach, dizziness, fatigue or shortness of breath

**When it's a heart attack, minutes do matter.**

# Heart attack action plan

- Dial 111, ask for the ambulance service and tell them you are having a possible heart attack
- If available, chew one aspirin unless you have been previously advised not to take aspirin
- Rest quietly and wait for the ambulance



# WE NEED

your help to keep

## Kiwi hearts beating

When you support the Heart Foundation you make a difference to the lives of thousands of New Zealanders.

There are 15 people today who will lose the fight against heart disease. People you may even know. And worse, many of these deaths are premature and preventable. For every one of these people, many more are affected – husbands, daughters, brothers, friends, me, you. So much lost potential, so many lost dreams.

Help us fight the disease that cuts short too many lives and too many stories before they're told.

As an independent charity, we rely on the generosity of New Zealanders. Your donations are crucial to our ongoing work – funding vital life-saving research, helping people make healthy living choices, and continue running community programmes that encourage Kiwi heart health.

Every dollar you give helps another Kiwi live out and fulfil their lifetime.

*Please take a moment to donate*



[www.heartfoundation.org.nz/donate](http://www.heartfoundation.org.nz/donate)



Phone us on 0800 830 100

Thank you for your support.

Heart Foundation, PO Box 17160, Greenlane, Auckland 1546

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