



Your Guide to Heart Surgery

Contents

Guide to heart surgery	1	Self-recovery at home	10
Emotions and heart surgery	1	Incisions	
Preparing for your surgery	2	Signs of infection	11
Medication		Sternal precautions for first 3 months after your surgery	
Smoking		Bathing	
Other preparations		Leg swelling	12
Preparing for your hospital stay	3	Driving	
What to bring		Sleep	
Admission procedure		When to resume usual activities	
Cancellation or postponement of surgery		Lifestyle and diet modifications	13
On the day of your surgery	4	Exercise	15
What kind of incisions will I have?		Drink in moderation	
After the surgery	5	Stop smoking	
Managing pain/ discomfort		Diet	16
Fluid retention	6	Return to work	
Nutrition management		Sexual Activity	17
Activity level		Medications	
Monitoring your progress	7	Risk factors for heart disease	18
Rest and sleep		What are the different types of medications for the heart?	
Hospital stay			
Preparing for discharge	8		
Follow-up appointments			

Guide to heart surgery

Many patients waiting for surgery have questions and concerns about their surgery, hospital stay and post-surgery recovery process. This booklet will help to address these concerns and prepare you for your upcoming surgery.



Emotions and heart surgery

Most patients have fears about having surgery. It may help to talk about these feelings with your family or a close friend, or to clarify concerns with your doctor.

Doing something that you enjoy, e.g. listening to music, going for walks or chatting with friends, can distract you from negative thoughts and help you feel better.



Preparing for your surgery

Medication

- ♥ Continue taking all medications prescribed by your doctor unless you were advised to stop.
- ♥ To prevent bleeding complications, your doctor / nurse counsellor will usually advise you to stop taking:
 - Aspirin or Ticlid or Plavix, 7-10 days before operation
 - Warfarin, 3-5 days before operation
 - Alternative medicine e.g. traditional chinese medicine, 2 weeks before operation



Smoking

- ♥ Stop smoking completely for at least 4 weeks before the surgery.
- ♥ Smoking causes more mucus to be produced in the lungs, making it more difficult for you to clear your lungs after the surgery.

Other preparations include:

- ♥ Showering with a special disinfectant soap 3 days before the surgery.
- ♥ A laxative the evening before day of surgery.
- ♥ Abstain from eating or drinking at least 6 hours before the surgery.
- ♥ Pass your personal items such as your valuables, spectacles, dentures and watches to your family members for safekeeping.



Preparing for your hospital stay

What to bring

- ♥ All the medications you are currently taking in their original packaging
- ♥ NRIC or passport
- ♥ Personal Toiletries
- ♥ Your incentive spirometer (given during pre-admission)
- ♥ Loose comfortable clothes to wear when you go home
- ♥ 2 boxes of tissue paper



Admission procedure

- ♥ Proceed to the Patient Service Centre for admission registration with your NRIC or passport. You will be admitted to the ward before the surgery.

Cancellation or postponement of surgery

Your surgery may be postponed if:

- Your blood results are not normal
- You feel unwell
- There is an emergency, life-saving surgery to be done
- Insufficient blood in the blood bank
- ICU bed not available

Your doctor will inform you should any of the above occur.



On the day of your surgery

- ♥ Your family members may visit you in the ward before you go into the operating room. They should come about two hours before the scheduled time of surgery.

What kind of incisions will I have?

- ♥ For open chest surgeries, the surgeon usually makes an incision at the centre of the chest, from below the neck to the end of your breastbone.



*If you are undergoing bypass surgery, you will also have an incision in the leg or arm where the blood vessel is removed.

After the surgery

- ♥ You will be transferred to the Cardio Thoracic Intensive Care Unit (CTICU) - Ward 20. You will remain there for 2-3 days for close monitoring.
- ♥ When you wake up from surgery, you may feel groggy, thirsty or cold. These are common after effects of the surgery. Warm blankets will be provided for your comfort.
- ♥ You will be connected to a heart monitor and other intravenous lines in your neck and arms.
- ♥ Your breathing tube will be removed once you are able to breathe on your own without assistance. Use a note pad or sign language to communicate your needs to the nurses.
- ♥ You will usually have two or more chest tubes inserted into your chest and a urinary catheter to drain urine from your bladder.



Managing pain/discomfort

- ♥ Everyone experiences pain and discomfort differently after surgery.
- ♥ You should expect to experience:
 - Some discomfort in and around your incisions
 - Stiffness and aching in your back, arms, neck and/or shoulders.
- ♥ Please ask your nurse for pain medication. Increased comfort will make it easier for you to do exercises and activities which will aid your recovery.
- ♥ Hold the small pillow provided firmly against your chest to minimise pain.

After the surgery

Fluid retention

- ♥ “Water Retention” is common after surgery and will cause your weight to increase. This sign is temporary. It is important that you do not drink more than what is advised by your doctor.
- ♥ Medications that help to promote the loss of excess fluid often cause individual to feel thirsty and consume more liquids. If you are given these medications, you may ask your family to bring candies or try some ice chips (without water) to help with the desire for water.



Nutrition management

- ♥ Your diet will progress gradually from soft diet to solids in the first 1-2 days after surgery.
- ♥ Your initial appetite might be poor but it will improve over time.

Activity level

- ♥ Fatigue and weakness are normal, as part of the recovery process. Your activity will progress daily according to your body’s tolerance. Progressive activity include sitting on the chair for increasing period of time and walking. You may feel better on some days than others.
- ♥ You will be able to sit out of bed the day after your surgery and are expected to walk 1-2 days after surgery, with the help of your physiotherapist.
- ♥ To help speed up your recovery:
 - Sit out of bed / in an armchair more frequently.
 - Elevate your feet and move your ankles up and down. Avoid crossing your legs.
 - Take frequent short walks spread out throughout the day / walk about in the general ward.
 - Pace yourself and space out activities to prevent excessive fatigue.
 - Maintain good standing and sitting posture.
 - Lie on your back and not sideways for the next 4 weeks to reduce the strain on your healing breastbone.

After the surgery

Monitoring your progress

- ♥ Your vital signs (heart rate, blood pressure, breathing rate, temperature) will be recorded regularly throughout your hospital stay.
- ♥ Blood tests, chest x-rays and Electrocardiograms (ECGs) will be done at varying intervals after the surgery. A heart scan may also be done.

Rest and sleep

- ♥ Adequate rest and sleep are important.
- ♥ You may experience some temporary disturbances of sleep pattern, which is common.
- ♥ If you experience difficulty sleeping or have strange dreams, please let your nurse or doctor know.

Hospital stay

- ♥ Most patients are ready for discharge 5-6 days after surgery.
- ♥ Your stay may be extended if there are complications.
- ♥ Patients who live alone or who do not have caregivers at home may need to be transferred to the community hospital for rehabilitation.
- ♥ Please let your doctor know before your surgery if you anticipate problems after your ward discharge.



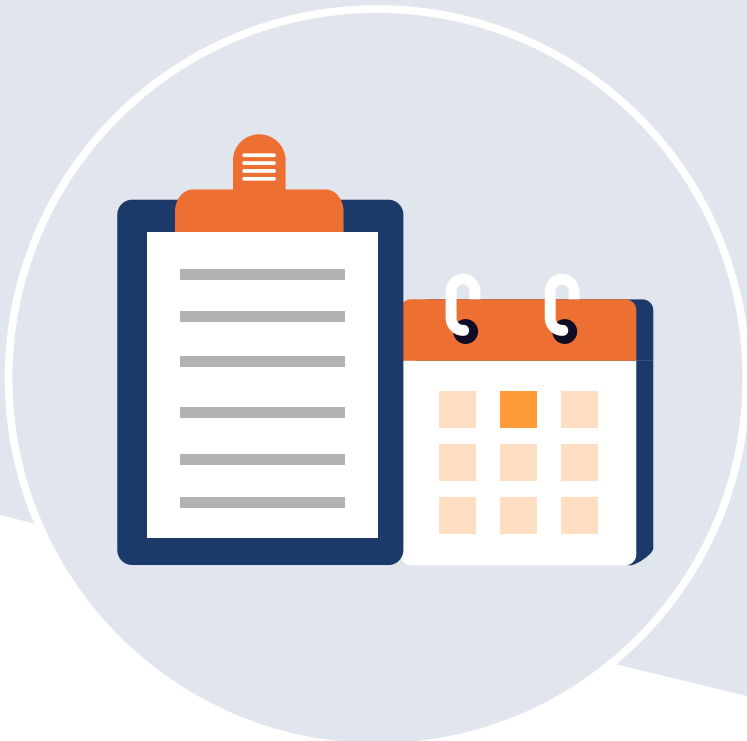
Preparing for discharge



- ♥ It usually takes 6-12 weeks to recover after a heart surgery. However, every individual recovers differently, depending on factors such as age and how active they were before surgery.
- ♥ Your doctor, nurse, dietitian or physiotherapist will talk to you about your medication, nutritional guidelines and activities, for a safe recovery at home.
- ♥ You may need help when you first arrive home. Try to arrange for a family member or friend to stay with you for the first 1-2 weeks.

Follow up appointments

- ♥ You will be given an appointment to see your surgeon, cardiologist and physiotherapist upon discharge to monitor your recovery.
- ♥ You are encouraged to sign up for the Cardiac Rehabilitation Programme available at NUHCS. A team comprising of a physiotherapist, cardiac rehab nurse, dietitian, pharmacist and social worker will guide you on a prescribed exercise training, health education and risk factor modification. You should be able to attend classes about 3-4 weeks after your surgery.



Self recovery at home

Incisions

- ♥ You may continue to experience itchiness or tingling sensations and pain in the chest around the incision area for about 3 months. It may take up to 1 year for the itchiness/tingling sensation to be reduced.
 - Soreness and numbness may occur on your incisions, back and shoulders. In the first 4-6 weeks, changes in the weather, lying in one position too long or not getting enough exercise may cause you to feel more stiff and sore.
 - Bruising (especially along your leg incision), will fade and eventually disappear.
 - The lump or swelling at the top of your incision will gradually reduce over the next 3 months.

- ♥ If your surgeon used an artery in your chest (internal mammary artery) for a bypass, you may occasionally experience:
 - A burning discomfort in your chest wall on the side in which the artery was used (usually the left side).
 - Sharp, shooting pains that last momentarily. These sensations may take up to 6 months to disappear.

- ♥ Maintain good posture and move your head and neck normally to prevent further stiffness.

- ♥ During the 6-12 weeks healing period of your breastbone (sternum), you may notice a slight clicking of the breast bone when you move or take a deep breath.

- ♥ You may occasionally notice some clear yellow or slightly blood-tinged drainage from your incisions or chest tube sites.

Signs of infection



Increasing or persistent pain at the wound site



Fever above 38°C.



A red, tender area in your incision that is warm



Thick yellow-green discharge from your wound



Excessive swelling/bleeding

Sternal (breastbone) precautions for first 3 months after your surgery

- ♥ No pulling or pushing of heavy items e.g. chair or door.
- ♥ No lifting of more than 3kg in weight for 6-8 weeks.
- ♥ No heavy lifting for 3 months.
- ♥ No driving for at least 6 weeks.

Bathing

- ♥ Shower with non-perfumed soap and water.
- ♥ Ensure surgical wound is thoroughly rinsed.
- ♥ Keep wound dry by dabbing with clean towel.
- ♥ Do not rub or scratch wound.
- ♥ Avoid any cream/ointment/powder on the wound for the first 3-4 weeks.

Leg swelling

- ♥ This may last for 10-12 weeks. To minimize swelling and improve circulation, you are advised to:
 - Elevate your legs when you sit down.
 - Avoid prolonged standing in one position.
 - Avoid crossing your legs when you sit down because pressure on the area behind your knees can decrease the blood flow.

Driving

- ♥ Avoid driving for at least 6 weeks after surgery as your reaction time may be slow due to tiredness, weakness of limbs and medication's side effect.
- ♥ When you resume driving, have someone with you and drive in light traffic with good weather. Do also take familiar routes to decrease stress.
- ♥ To prevent the seatbelt strap from rubbing against your incision, place a small pillow or folded towel beneath the strap.
- ♥ For the first few weeks, you should avoid long trips. Consult your doctor if you must go for long trips.

Sleep

- ♥ Rest is an important part of the post-surgical recovery period.
 - Try to get eight hours of sleep every night.
 - Plan two 30-60 minutes rest periods (i.e taking a short nap or relaxing in a chair) each day during the first week at home.



When to resume usual activities

Possible activities:

🕒 Week 1 - 6

Dusting
Setting the table
Washing dishes
Folding clothes
Potting plants
Trimming flowers
Shopping
Climbing stairs

🕒 After 6 weeks

Vacuuming
Sweeping
Laundry
Travelling
Fishing
Driving
Walking dog on leash

🕒 After 3 months

Scrubbing floor
Soccer
Jogging

Lifestyle and diet modifications

Exercise

- ♥ Walking is the easiest and best exercise for you to do after a heart surgery.



♥ Increase your activity gradually. For example:

Week	Duration in Minutes	Approximate Distance (Metres)	Times Daily	Pace
1	5-10	250 (1 Bus stop)	2	Comfortable
2	10-15	500 (2 Bus stops)	2	Comfortable
3	15-20	1000 (4 Bus stops)	2	Comfortable
4	20-25	1500 (6 Bus stops)	1-2	Comfortable / Brisk
5	25-30	1500 (6 Bus stops)	1-2	Comfortable / Brisk
6	30	2000 (8 Bus stops)	1-2	Comfortable / Brisk



♥ **REMEMBER**, listen to your body because it will tell you when to stop what you are doing or when you are ready to do more strenuous activities.

Drinking alcohol in moderation

- ♥ No drinking of alcohol during the first 3 - 4 weeks after surgery.
- ♥ If you wish to drink after the first 3 - 4 weeks, please consult your doctor.

Stop smoking

After Stopping	Benefits
< 30 minutes	Heart rate & blood pressure returns to normal.
8 Hours	Carbon monoxide level in blood returns to normal.
24 Hours	Risk of heart attack decreases.
72 Hours	Breathing becomes easier.
3 Months	Sperm count returns to normal.
1 Year	Risk of heart attack reduces by half.
5 Years	Stroke risk reduces.
10 Years	Risk of heart attack becomes the same as that of non-smokers and risk of cancers decreases.



Diet

- ♥ Balanced nutrition speeds up healing and lessens fatigue.
- ♥ Consume fruits, vegetables, whole grain breads and cereals on a daily basis to achieve a balanced diet.
- ♥ Consume smaller portions of meat and opt for lean meat choices.
- ♥ Remove visible fat and skin on poultry meat before cooking and eating.
- ♥ Choose low-fat dairy products such as skimmed milk and low-fat cheese.
- ♥ Opt for polyunsaturated oils like corn oil, sunflower oil and soft tub margarines.
- ♥ Limit egg consumption to 3 per week (or less).
- ♥ Eliminate foods high in salt such as canned soup, processed and cured meats.

You may request to see a dietician for more information.



Return to work

- ♥ How soon you can return to work depends on the type of work you do, job demands and the level of physical exertion involved. You should discuss this with your cardiologist.
- ♥ The usual duration of hospitalisation leave is about 6 weeks. Following this would be outpatient sick leave depending on individual patient's needs and the doctor's discretion.

Sexual activity

Open communication with your partner is important.

Some patients may find that their sex drive (libido) have decreased in the early recovery period after heart surgery. This is usually temporary and should not cause undue anxiety. Hugging and kissing can be a sensual experience and a way to bring couples closer together.

The amount of energy required for sexual intercourse is equal to climbing 2 storeys of stairs. If you can climb 2 storeys without being too tired or short of breath, you may resume sexual intercourse.

- ♥ Avoid making love after a large meal or after completing a considerable physical exercise. If you are tired or tense, wait until you feel better.
- ♥ Avoid taking the weight of your body on your arm for at least 6 weeks after surgery. If certain positions cause discomfort, try different ones.



Medications

- ♥ Take your medication as prescribed.
- ♥ Ensure that the medications can last till the next follow-up appointment with your doctor.
- ♥ Do not offer your prescription medication to other people nor should you take their pills.
- ♥ Keep all medication in its original container, labelled with the name of the drug and the dosage. Check the expiry date for your medications before you take them.
- ♥ Seek medical help if there are side effects such as rash, fever, nausea, vomiting, diarrhoea, jaundice or severe bruising.



Risk factors for heart disease

- ♥ Coronary Artery Disease can still progress after surgery. New blockages or blockages of bypass graft may occur over time. It is your responsibility to keep healthy after your bypass surgery.



Major risk factors for heart disease:

- High blood pressure
- High cholesterol levels
- Smoking
- Diabetes

Other risk factors:

- Stress/lifestyle
- Lack of exercise
- Obesity



- ♥ To maintain a healthy lifestyle:
 - Avoid smoking.
 - Control your weight.
 - Exercise regularly.
 - Develop methods to reduce emotional tension and stress.
- ♥ Continue taking your medications for high blood pressure or high cholesterol levels if your doctor advised you to do so.

Risk factors for heart disease can be controlled with improved lifestyle options. If you have any questions about the above risk factors, and how to modify them, you may seek help from your nurse, surgeon or cardiologist, or request to see a Health Coach at NUHCS for more information.

What are the different types of medications for the heart?

Class of medications	Members of class	Uses of medication
Antiplatelets	Aspirin	Helps prevent the formation of blood clots and reduces the risk of heart attack or stroke
	Clopidogrel, Ticlopidine	
Beta-blockers	Atenolol, Bisoprolol, Carvedilol, Labetolol, Metoprolol, Propranolol	Reduces workload and oxygen demands of the heart to cope with reduced blood supply Also helps to control blood pressure, chest pain and heart rate to prevent a second heart attack
ACE inhibitors	Captopril, Enalapril, Lisinopril, Perindopril, Ramipril	Prevents heart from weakening further
Angiotensin II antagonists	Candesartan, Irbesartan, Losartan, Valsartan	Also helps control blood pressure, to prevent heart attack, stroke and kidney failure
Lipid-lowering agents	Atorvastatin, Lovastatin, Pravastatin, Simvastatin	Decreases production of cholesterol
	Bezafibrate, Fenofibrate, Gemfibrozil	Reduces fat formation
Diuretics	Bumetanide Frusemide	Removes excess water in the body by increasing urination
Warfarin	Anticoagulant	To thin the blood in patients with artificial heart valve(s), or with Atrial Fibrillation condition
Calcium channel blockers	Amlodipine, Diltiazem, Felodipine, Lacidipine, Nifedipine	Reduces oxygen demand and workload of the heart Relaxes blood vessels and helps control blood pressure and chest pain
Vasodilators	Glyceryl Trinitrate, Isosorbide Dinitrate, Isosorbide Mononitrate	Relaxes blood vessels Increases blood and oxygen supply to the heart
	Hydralazine	Nitrates reduce occurrence of chest pain
Cardiac glycosides	Digoxin	Improves the strength and pumping of the heart, to improve blood circulation
Aldosterone antagonist	Spironolactone	Removes excess fluid in the body

Common side effects	Precautions and advice
Gastric irritation, gastric bleed	Stop taking at least 5 days before any surgery, including dental surgery unless otherwise advised
Unexplained sore throat, fever, mouth ulcers, bruising or bleeding (to contact doctor immediately)	See a doctor if you are experiencing gastric discomfort or passing of black tarry stools
Tiredness, dizziness, cold hands and feet, shortness of breath, nightmares	See a doctor if shortness of breath becomes severe, or if you experience persistent dizziness Inform your doctor if you are impotence, asthmatic or are having circulatory problems
Dry cough, changes in taste, dizziness, tiredness	Do not take additional potassium supplements other than those prescribed
Changes in taste, dizziness, tiredness	Avoid using salt substitutes
Constipation, flatulence, abdominal pain, muscle pain or stiffness	Observe proper dietary instructions to optimise treatment
Nausea, rash, itchiness, muscle pain or stiffness	See a doctor if muscle pain, severe nausea, vomiting or yellowing of skin occurs
Nausea, muscle cramp, muscle weakness, dizziness	Take during the day to avoid waking up in the night to visit to the toilet Contact doctor if severe nausea, vomiting or diarrhoea occurs
Bleeding (both internal and external) which can be life-threatening in serious cases (1-2%)	Many drugs, most TCM, and some food, may interact with Warfarin to increase or decrease its effect. The pharmacist will speak to patients before discharge and provide an information booklet to reinforce certain precautions. Patients must be monitored closely via the Anti-Coagulation Clinic (ACC) run in NUHCS, to prevent potential life-threatening consequences of inadequate or excessive Warfarin dosing.
Headache, flushing, swelling of feet, changes in heart rate	See a doctor if swelling of feet or fast heart rate persist
Headache, flushing, dizziness	Get up slowly from lying or sitting position to prevent dizziness See a doctor if you experience joint pain
Palpitations	
Nausea and vomiting, diarrhoea, unusual tiredness, visual changes	Contact doctor if any side effect occurs
Weight gain, breast tenderness	

National University Heart Centre, Singapore (NUHCS)

NUHCS Heart Clinic @ National University Hospital (NUH)

NUH Main Building Zone F

5 Lower Kent Ridge Road, S(119074)

Opening Hours: 8.00 am - 5.30 pm (Monday - Friday)

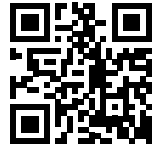
Closed on Weekends & Public Holidays

OneNUHS Hotline: (65) 6908 2222

OneNUHS Appointments: appointment@nuhs.edu.sg

OneNUHS General Enquiries: contactus@nuhs.edu.sg

www.nuhcs.com.sg



Scan for
more information

Take charge of your health and
access health information and
services across NUHS institutions.

Download the OneNUHS App now!



Scan to download



Every day, we impact lives by providing assistance to
financially disadvantaged patients.

Make a donation and help us continue the fight for every heartbeat!



Scan here to donate

The information in this brochure is meant for educational purposes and should not be used as a substitute for medical diagnosis or treatment. Please seek your doctor's advice before starting any treatment, or if you have any questions related to your health, physical fitness or medical condition.

© 2023, National University Hospital (Singapore) Pte. Ltd. All rights reserved. No part of this publication may be reproduced or shared without prior permission from National University Hospital (Singapore) Pte. Ltd.

Information is correct at time of printing (Jun 2023) and subject to revision without prior notice.