

# A Patient and Family Guide to Cardiac Surgery



Please read this booklet before your surgery  
and bring it with you to the hospital.

I am having surgery at: \_\_\_\_\_

My surgeon is: \_\_\_\_\_

**This information does not replace medical advice.  
You are encouraged to speak with your primary care provider  
about your specific condition.**

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# Introduction

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Your doctor has informed you that you will be having cardiac surgery at St. Paul's Hospital (SPH) or Vancouver General Hospital (VGH). It can be stressful to learn that you need heart surgery. You may have many questions. This guide will help you through your cardiac surgery journey by explaining what happens before, during and after your procedure.

Being informed and planning ahead can make your surgery, recovery and rehabilitation much smoother. Remember that **you** are the most important person involved in your recovery.

Write down any questions that you may have in the space provided on page 41. Share your questions with your doctor, nurse, nurse practitioner or any other member of your health care team.

**If you are not feeling well call your primary care provider, HealthLink BC at 8-1-1, or 9-1-1 if it is an emergency.**

## Credits and Acknowledgements:

This booklet was developed by the SPH and VGH Cardiac Surgery Teams with the collaboration of patients and families.

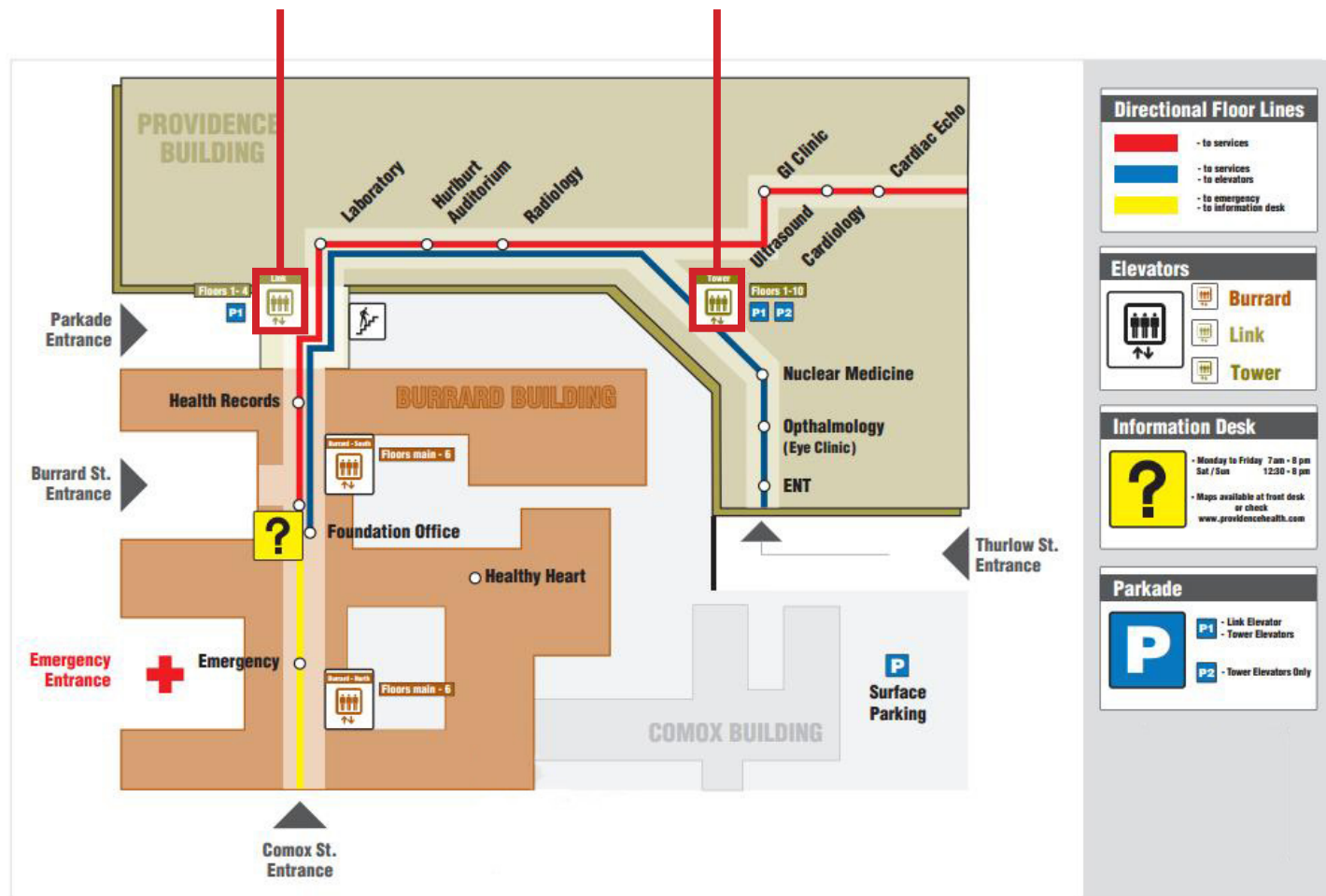
We would like to express our gratitude to the Pacific Open Heart Association for their continued support of our Cardiac Surgery Program.

# St. Paul's Hospital (SPH)

1081 Burrard St  
Vancouver, BC  
V6Z 1Y6

Link elevator to:  
**Surgical Unit and CSICU**  
Level 3

Tower elevator to:  
**Surgical and CSICU**  
Level 3  
**Heart Centre**  
Level 5



## Important Numbers

**St. Paul's Hospital Switchboard: 604-682-2344**

### **Cardiac Surgeons:**

Dr. J. Abel	604-806-8503	Dr. S. Kim	604-806-9416
Dr. M. Al Aklabi	604-875-2120	Dr. A. Lee	604-806-9915
Dr. J. Bashir	604-806-9668	Dr. K. Lichtenstein	604-806-9919
Dr. P. Bui	604-806-9389	Dr. S. Lichtenstein	604-806-8501
Dr. A. Campbell	604-806-9259	Dr. J. Ye	604-806-9349
Dr. A. Cheung	604-806-8282		

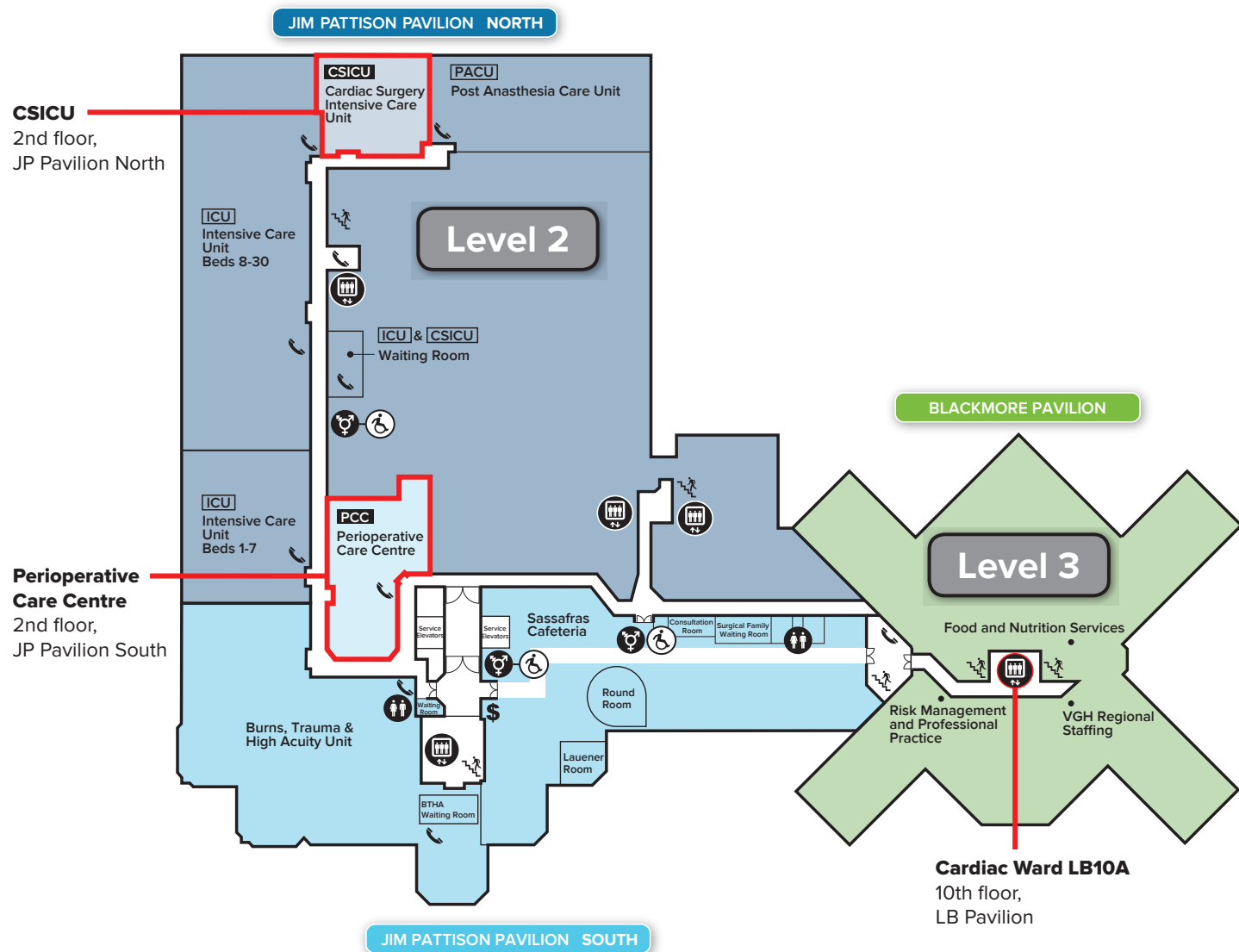
Cardiac Surgery Patient Educator	Ext. 68859
Cardiac Surgery Intensive Care Unit (CSICU)	Ext. 62117
Cardiac Unit 5A	Ext. 62304
Cardiac Unit 5B	Ext. 62646
Cardiac Social Worker	Ext. 68241
SPH Pastoral Services	Ext. 68163
SPH Indigenous Wellness Liaison	Ext. 62937

# Vancouver General Hospital (VGH)

899 West 12th Ave  
Vancouver, BC  
V5Z 1M9

Please note:

**Check in:** VGH Admitting Area 1st floor, JP Pavillion South



## Important Numbers

**Vancouver General Hospital Switchboard: 604-875-4111**

### **Cardiac Surgeons:**

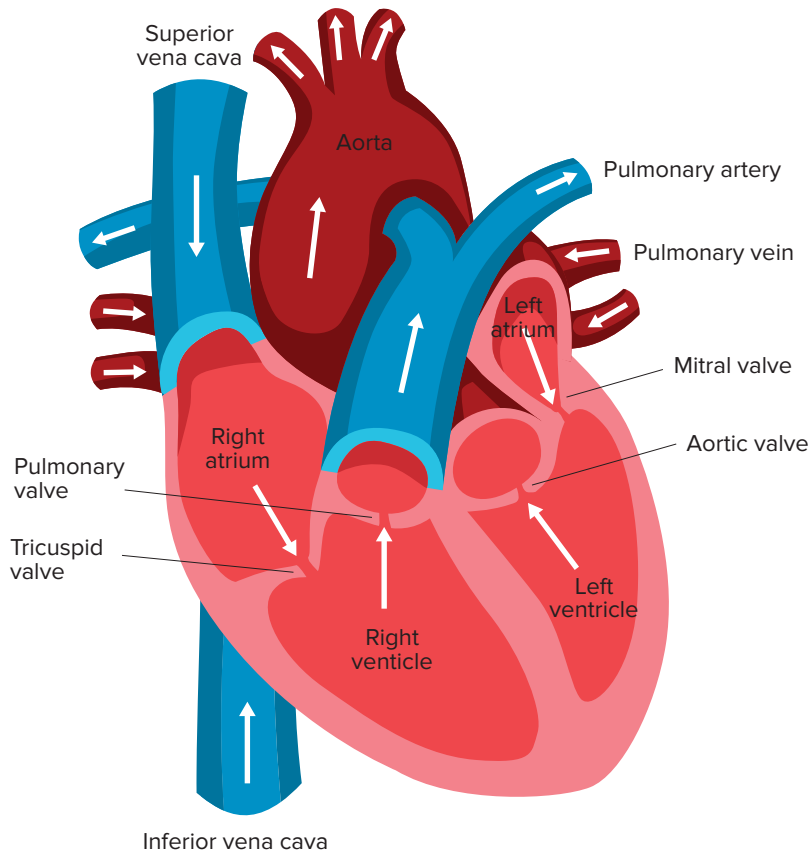
Dr. R. Cook	604-806-9601	Dr. E. Percy	604-806-9014
Dr. J.M. Kim	604-806-9416	Dr. J. Price	604-806-9914
Dr. P. Skarsgard	604-806-9320		

Cardiac Surgery Intensive Care Unit (CSICU)	604-875-4277
Cardiac Sciences Unit (LB10A)	604-875-4364
Cardiac Social Worker	Ext. 64161
VGH Spiritual Care	604-875-4151
Indigenous Patient Navigators	1-877-875-1131



# Section 1: Preparing For Your Surgery

## Your Heart and How It Works



**Figure 1: Heart anatomy**

Your heart is the organ responsible for pumping blood through your body. It is the size of your fist and is located behind the breastbone or “sternum.”

The heart is divided into four chambers. The two chambers at the top are called atria (right and left) and the two chambers at the bottom are called ventricles (right and left).

The right side of the heart receives blood from the body after its oxygen has been used by the tissue and then pumps the blood to the lungs.

In the lungs, carbon dioxide is removed from the blood and oxygen is added. The left side of the heart collects the oxygen-rich blood and pumps it to the whole body.

The four chambers of the heart are separated by one-way valves that open and close with every heartbeat.

The valves open when blood is pumped forward out of the heart chambers and then close to prevent blood from flowing backwards. When a valve is not working properly, the heart has to work harder to pump your blood.

For more information about how the heart works from the Heart and Stroke Foundation website, click the link: [heartandstroke.ca/heart-disease/what-is-heart-disease/how-a-healthy-heart-works](https://heartandstroke.ca/heart-disease/what-is-heart-disease/how-a-healthy-heart-works) or scan the QR code.



How the Heart Works

## The Coronary Arteries

The heart muscle has blood vessels on its surface called coronary arteries. These arteries supply blood, oxygen and nutrients to the heart muscle.

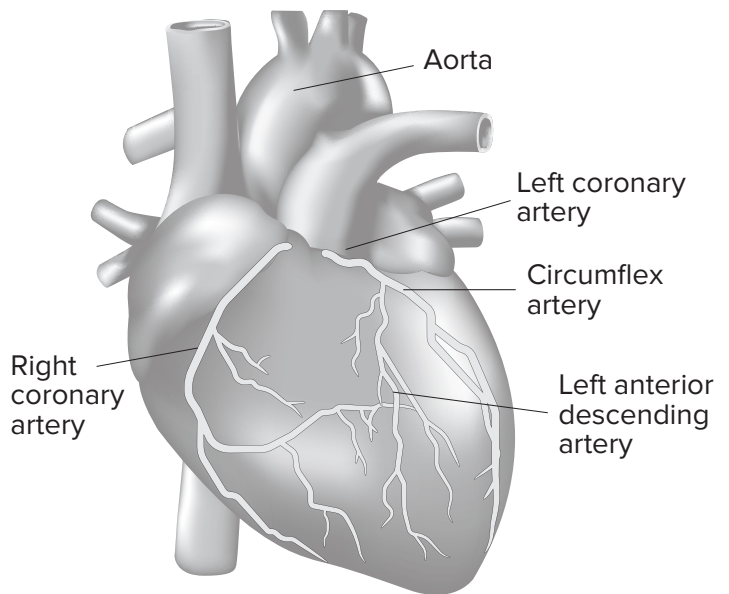
## Coronary Artery Disease (CAD)

Coronary artery disease (CAD) is the most common form of heart disease. It happens when one or more of the coronary arteries become blocked by a buildup of cholesterol fats, often called “plaque”. The vessels become narrow and stiff and affect blood supply to the heart.

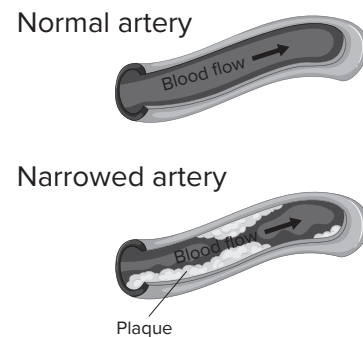
For more information about coronary artery disease from the Heart and Stroke Foundation website, click the link:  
[heartandstroke.ca/heart-disease/conditions/coronary-artery-disease](http://heartandstroke.ca/heart-disease/conditions/coronary-artery-disease)  
scan the QR Code.



Coronary Artery  
disease Information



**Figure 2: Coronary arteries**



**Figure 3: Narrowing of arteries**

## Coronary Artery Bypass Graft (CABG) Surgeries

Coronary artery bypass graft surgery is commonly called “bypass surgery” or “CABG surgery” (pronounced “cabbage”). Surgery can redirect blood around the blocked areas in the coronary arteries to improve blood supply to the heart. Healthy blood vessels (arteries or veins) may be taken from your arm, leg and/or chest to be used as bypass grafts.

### Heart Valve Surgery

Valve surgery involves repairing or replacing one or more faulty valves inside the heart. Valves may be repaired using rings or replaced with tissue or mechanical valves.

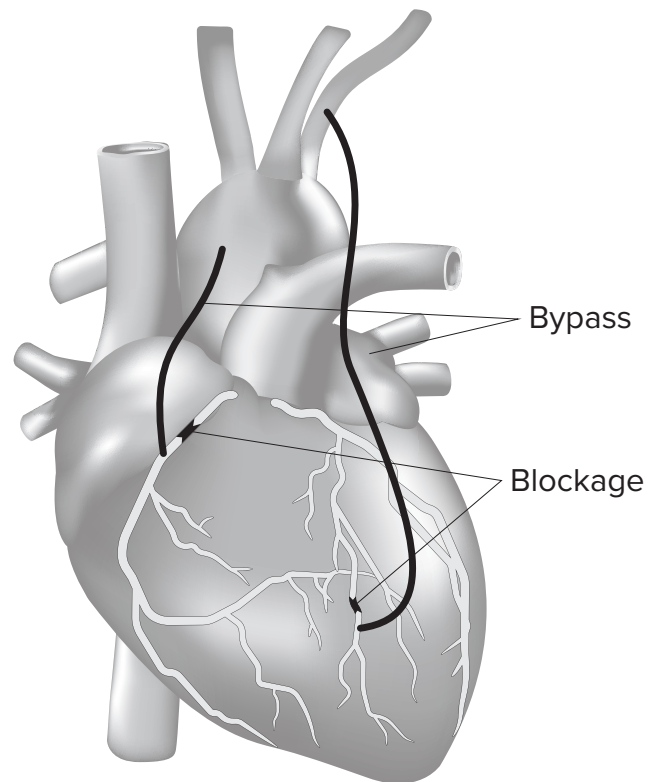
#### Mechanical valves

Mechanical valves are made from durable materials such as carbon and plastic. They last longer than tissue valves but require you to take a blood thinner (anticoagulant) to prevent blood clots and stroke. You will need to take this medication and have frequent blood tests for the rest of your life.

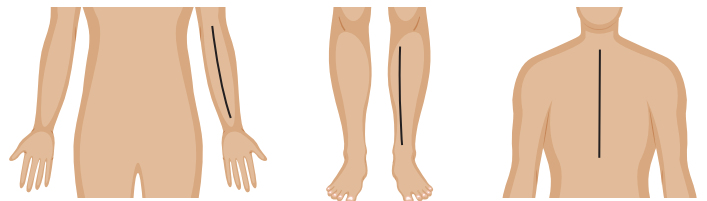
#### Tissue valves

Bioprosthetic (tissue) valves are animal valves that are similar to your own heart valves. These valves may not last as long as mechanical valves but cause fewer problems with clot formation. Tissue valves need less blood thinning medication. If the valve wears down over time, another replacement may be needed.

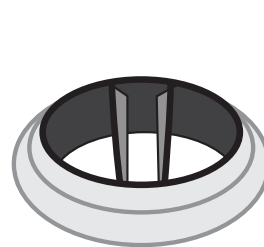
Your doctor will talk with you about which valve is best for you.



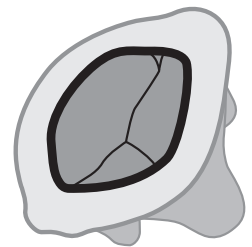
**Figure 4: Bypass grafts on heart**



**Figure 5: Surgical incisions**



**Figure 6:  
Mechanical valve**



**Figure 7:  
Tissue valve**

**NOTE: PRE-OP Dental Clearance:** If you are scheduled to undergo heart valve surgery, please submit a clearance letter from your dentist to your surgeon's office before your surgery date. If you have not seen a dentist in the past year (or longer), you need to book a pre-operative dental exam. Dental infection can spread to your heart and damage your new valves (bacteria are more likely to attach to an artificial valve than to a normal heart valve).

## Meeting the Cardiac Surgeon

Your surgeon will explain the surgical procedure to you during this visit. Come prepared with a list of questions and bring a family member. Your surgeon will ask you to sign a consent for surgery and blood products if needed. You may receive a prescription for medications to take before your surgery.

## Wait Times for Surgery

Caring for your heart condition is very important to us. Your surgery will be performed at the earliest possible date. Your wait may range from 1 week to a few months depending on the situation.

## Surgery Date

Once you have been booked, your cardiac surgeon's office will notify you of your date and time for surgery.

Your surgery date depends upon various things including your heart condition, how long you have been waiting, and if you have been postponed in the past.

Please note that even after your surgery date and time has been confirmed you may have your surgery changed or delayed should another patient require more urgent surgery. If this happens, you will be rebooked for a new surgery date as soon as possible.

## Pre-Admission Clinic

If you are waiting at home and live in the Lower Mainland, you will attend the pre-admission clinic before your scheduled surgery date.

If you are coming from out of town, your pre-admission clinic appointment will be booked for one or two days before your surgery. The pre-admission clinic or surgeon's office will notify you of the date and time of your clinic appointment.

Please bring the following with you to your appointment:

- BC Services Card/Care Card
- All medications, supplements and herbal products you are taking in their original containers
- A summary of your medical history and your health problems
- Your reading glasses
- A family member or friend to help you understand the information we will give you
- An interpreter if you need help understanding English (Interpreter services can be arranged.)

During your visit, you will:

- Meet with an anesthesiologist (the doctor who gives you the medicine you need to sleep through the surgery.)
- Have blood work, an electrocardiogram (ECG) or a chest X-ray.
- Meet with a nurse about how to get ready for surgery and answer your questions.
- Receive instructions for when to stop eating and drinking prior to your surgery.
- Discuss any medications or herbal products you might need to stop taking prior to your surgery.

## How Will I Feel While Waiting for Surgery?

Waiting for surgery can be very stressful for you and your family. Many patients describe feeling as if their lives are “on hold”. Common feelings include:

- Anger and frustration
- Anxiety and fear
- Dependency and helplessness
- Boredom
- Depression or “feeling blue”

For information from the Canadian Mental Health Association website click the link: [cmha.ca](http://cmha.ca) or, scan the QR code.



Canadian Mental  
Health Association

If you need more help, contact a healthcare professional.

## What If My Symptoms Change While Waiting for Surgery?

It is important you share any changes or concerns you may have about your condition with your doctors and surgeon. **Please do not ignore your symptoms.**

If your symptoms (e.g., chest pain, shortness of breath) change or get steadily worse:

- Contact your primary care provider and cardiologist immediately.
- Notify your surgeon’s office.

**Call 9-1-1** or go to the nearest Emergency Department if you have symptoms that are severe or you are concerned and are not able to see your primary care provider.

## Getting Ready for Surgery at Home

You can prepare for your surgery and recovery by following the advice below.

### Should I Stop Smoking?

Yes - quitting smoking is the single most important action you can take to improve your health. Click the link: [QuitNow.ca](https://quitnow.ca) or scan the QR code.



[QuitNow.ca](https://quitnow.ca)

### How Else Can I Improve my Health Before Surgery?

You can eat well, avoid alcohol and stay active safely, as directed by your health care team.

### Tips for Heart-Healthy Eating

Your body will need extra nutrients to heal. It is important that you be in the best nutritional shape that you can be.

#### Eat more:

- Vegetables and fruit
- Whole grains
- Beans and legumes
- Nuts and seeds
- Fish
- Herbs and spices
- Healthy oils – avocado, olives, olive oil

#### Eat Less of:

- Processed food (such as fast foods, hot dogs, chips, cookies, frozen pizzas, deli meats, white bread).
- Salt
- Sugar

If you have diabetes, do your best to keep your blood sugar within the range that is normal and acceptable for you. If you are finding this difficult due to the added stress of your upcoming procedure, contact your care team for support.

Abstain from or reduce alcohol use to two standard drinks per week. If you don't drink, don't start. The risk of delirium after surgery increases significantly if you drink alcohol within 7 days of your surgery.

A Dietitian can help you choose healthy foods to help prepare you for surgery. If you have recently had unexplained weight loss or gain, noticed a decrease in appetite, or if you are overweight or underweight, it may be helpful to speak with a Dietitian.

You can get a referral to a Dietitian from your primary care provider or by calling HealthLink BC at 8-1-1. Be sure to tell them you are going for cardiac surgery.

For diet information from the Heart and Stroke Foundation website click the link: [heartandstroke.ca/healthy-living/healthy-eating](https://heartandstroke.ca/healthy-living/healthy-eating) or scan the QR code.



[Diet Information](https://heartandstroke.ca/healthy-living/healthy-eating)

## Important Preparations Before Surgery

Planning ahead will decrease the anxiety you and your family may feel and set you up for a smooth recovery. Here is a list of things to get ready ahead of time.

If you have Medical Services Plan (MSP) coverage, you should register for Fair PharmaCare. Coverage is based on family net income. To register click the link: [www2.gov.bc.ca/gov/content/health/health-drug-coverage/pharmacare-for-bc-residents/who-we-cover/fair-pharmacare-plan](http://www2.gov.bc.ca/gov/content/health/health-drug-coverage/pharmacare-for-bc-residents/who-we-cover/fair-pharmacare-plan) or scan the QR code.



Fair PharmaCare

We encourage you to consider advance care planning. Talk with your loved ones and health care providers about your wishes. For more information click the link: [www2.gov.bc.ca/gov/content/family-social-supports/seniors/health-safety/advance-care-planning](http://www2.gov.bc.ca/gov/content/family-social-supports/seniors/health-safety/advance-care-planning) or scan the QR code.



Advance Planning

You will be unable to work for 6–12 weeks after your surgery, depending on your recovery and the type of job you do. Please speak with a social worker if you have any financial concerns. Please discuss with your employer if there are any medical forms that need to be completed and to bring to the hospital.

A physiotherapist and/or occupational therapist will assess in hospital if home supports and equipment are required. Lists of private equipment vendors and home support companies are also available.

### It may be helpful to arrange for someone to:

- Stock up on non-perishable groceries. Make and freeze meals to last you 3–4 weeks.
- Transport you to the hospital for surgery.
- Look after your home, and pets or plants while you are in the hospital.
- Fill your prescriptions on your way home from the hospital.
- Clean your house and do your laundry for six to eight weeks after your surgery.
- Help you with your meal preparation and grocery shopping for 3–4 weeks after surgery

#### *Optional:*

- Drive you home and/or accompany you home from hospital if you are going home by bus, plane or ferry
- Take you to your doctor's appointments for 1–6 weeks after your surgery (patients can independently take a taxi/uber or use telehealth).

### What If I Have to Travel to Vancouver for Surgery?

- Arrange for accommodation for family members who will stay in Vancouver while you are in hospital. (A list of accommodations can be provided.)
- Bring government issued photo ID. (**Remember:** you cannot board a flight without your ID.)
- You cannot drive at all for a minimum of 4–6 weeks after surgery.
- We recommend you stay one extra night close to town after discharge before heading back home, but this is not mandatory in most cases.



## How Will I Get Home?

You may travel home by any form of transportation, but you will need to **make your own travel arrangements**. You **cannot drive yourself**. Please arrange for a family member or a friend to pick you up whenever possible.

If you were brought by ambulance from an outside hospital, you still need to arrange your own transportation home. **Ambulance services are not used to return patients to their homes.** Patients are usually discharged directly home and are not returned to the original hospital.

If you need help, please ask to speak with a social worker or case management leader.

## What Should I Pack for My Hospital Stay?

Please limit belongings to **one small bag** containing:

- This booklet
- Your BC Service Card/Care Card and private insurance information
- Your Driver's License or other government-issued identification
- Your house keys
- Your medications in original containers (including non-prescription medications). Do not bring your opioid pain medications to the hospital.
- Pack essential items in a small separate bag: Glasses, dentures, hearing aids with spare batteries.
- Loose, comfortable clothes to wear when you go home
- If you wear a bra, pack a comfortable front closure bra that is easy for you to put on after surgery.
- Non-slip, easy on, flat shoes or slippers with a closed-in heel. No flip flops
- Toothbrush, toothpaste, deodorant, shaving supplies, earplugs
- Any prosthetic device, cane, or walker you use at home
- Your Continuous Positive Airway Pressure (CPAP) machine if you use one

The hospital is not responsible for lost or stolen items. Please leave valuables at home.

The hospital has a "no scent" policy. Please do not bring any scented products.

## What Should I Do The Night Before Heart Surgery?

- Remove any jewelry and body piercings.
- Prepare your skin as per hospital recommendations.
- Follow the Pre-Admission Clinic instructions regarding medication, eating and drinking, etc.

## What Do I Do The Day of Heart Surgery?

- Follow the Pre-Admission Clinic instructions.
- Do not wear any make-up, perfume or jewelry of any kind.
- Give yourself plenty of time to find parking near the hospital.



## Going for Surgery in Hospital

Check in at admitting area of the facility. Admitting staff will register you and direct you to the perioperative care area. Please review maps on pages 5 and 7.

You will be taken from the Pre-Operative Holding Area directly to the Operating Room. Family/friends can stay with you until you are ready to go to the Operating Room.

After you go to the operating room, your family may wait for you in the family waiting room (please check for site specific waiting room location). Family members may also wait in a comfortable area (e.g., home, hotel, or shopping area). Most heart surgeries will take 4–6 hours, and patients may be kept asleep for several hours after surgery. This can vary from case to case.

Please choose **one** family member to call for updates. If your family decides to wait at home or at a hotel, please leave contact information with the health care team so they can reach your designated family member when the surgery is finished. They should be available at least 60 minutes before the scheduled completion time of the surgery.

After surgery, you will be moved to the Cardiac Surgery Intensive Care Unit (CSICU).

Please review maps on pages 5 and 7.

The cardiac surgeon will call your listed contact with an update following your surgery. Please know that if your family has not heard from the health care team at the expected time, the designated family member may call the CSICU for updates.

Once you have been settled in the CSICU by the team, your family will then be able to visit.

Please refer to site-specific visitation guidelines regarding visitation times and restrictions.

## **Section 2: Recovering in Hospital After Your Surgery**

### **Recovering in the Cardiac Surgery Intensive Care Unit (CSICU)**

You will be under observation by your nurse and watched very closely for 12–24 hours. As you begin to wake up from the anesthetic you will become aware of all the tubes and lines put in while you were asleep. You may hear many sounds such as alarms or bubbling noises. These are normal sounds made by the equipment around you. If you have a breathing tube in your windpipe, you will not be able to speak. You will be able to communicate by nodding “yes” or “no” to the questions your nurse asks you.

You will have a chest x-ray, blood test and an electrocardiogram (ECG).

There are different types of tubes you can expect after the surgery:

#### **Endotracheal (Breathing) Tube**

This tube is put through your mouth into your windpipe. It is attached to a breathing machine called a ventilator. This machine breathes for you during and after surgery until you can breathe strongly on your own again. When you first wake up, this tube will still be in your throat. It may feel uncomfortable, but know it will be removed as soon as you can breathe on your own (about 1.5–12 hours after the surgery.)

#### **Foley Catheter**

This is a tube that will drain urine from your bladder. You may have the urge to urinate while the catheter is in place. This will be removed 1–2 days after your surgery when you are able to use a bedside urinal or go to the toilet.

#### **Central Line**

This IV line is inserted into a vein in your neck, to deliver medications, and assess blood flow and pressures in your heart. This will be taken out when it is no longer needed. You will also have an IV line in your arm, which will stay in place until you have been on the unit for a few days.

#### **Chest Drainage Tubes**

These tubes are placed in your chest near the bottom of your incision during surgery. The tubes drain blood and fluid that collects in your chest after surgery. They are usually taken out the day after your surgery. Some patients find this uncomfortable. Pain medication will be given before removal to make you more comfortable.

#### **Temporary Pacing Wires**

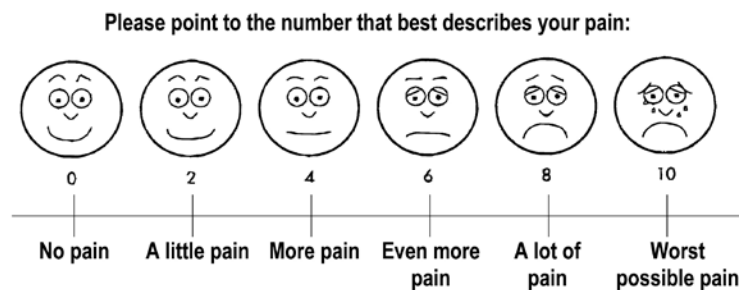
You may also have temporary pacing wires inserted at the time of surgery. These are wires with metal tips placed on the surface of your heart and brought out to the surface of your chest. These wires allow staff to attach an external pacemaker if needed to improve your heartbeat. You will not be able to feel this. Once your heart is in a stable rhythm, the wires will be removed. This usually occurs close to your discharge date.

## Will I Have Pain?

Yes, you will probably have some pain. Pain is most common in the shoulders, back, and incision sites. You will sleep, breathe, cough, and move more easily if your pain is well managed. Pain medication works best if it is taken **BEFORE** the pain becomes too great. Don't be shy - ask your nurse for medication if you have pain.

Your nurse will ask you to rate your pain using a scale of 0 to 10. A rating of zero means you feel no pain and ten means you have the worst pain you can imagine.

It is important to know that pain medication will not make your recovery painless. The goal is to manage your pain and to help you resume your regular activities.



**Figure 8: Pain scale**

## How Can I Expect to Feel?

You may notice that it is hard to keep track of time after your surgery. The surgery, constant activity in the CSICU, changes in your normal routines, and being in unfamiliar surroundings may disturb your rest and sleep.

Nausea and vomiting are common after surgery. Tell your nurse if you feel nauseous.

## Recovering in the Cardiac Unit

Once you have recovered enough in the CSICU, you will go to the Cardiac Surgery Ward. On the ward your nurse will care for you and other patients. Rest assured your nurse will check in on you regularly. You will have a call bell if you need assistance at any time.

The usual hospital length of stay is 4–7 days, but everyone recovers at their own pace. We will monitor your heart while you focus on rest, managing pain, getting up and active, and preparing to go home according to the Cardiac Surgery Patient Pathway.

## Protecting Your Sternum

Your sternum (breastbone) or a portion of your sternum may have been divided during your heart surgery. This bone is now held together with stainless steel wires. You will need to carefully protect your sternum as it heals over the next 8 to 12 weeks. The activities listed below require special attention to your sternum.

### Deep Breathing Exercises

Do these exercises **every hour** you are awake:

1. Sitting up, hold the palms of your hands or a small pillow over your sternum. Do not be afraid to push against it.
2. Slowly inhale until you can't fit any more air in.
3. Hold your breath for 2 seconds.
4. Breathe out slowly through your mouth.
5. Repeat 4-9 more times.

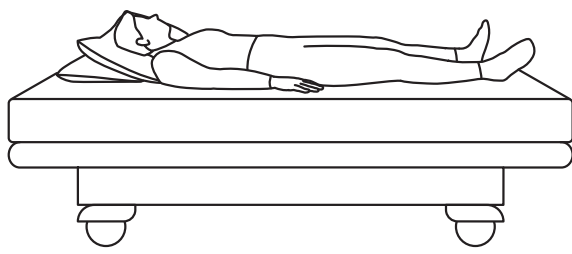
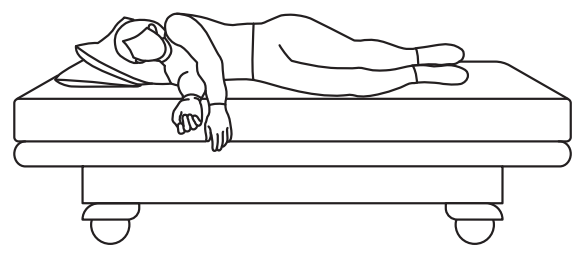
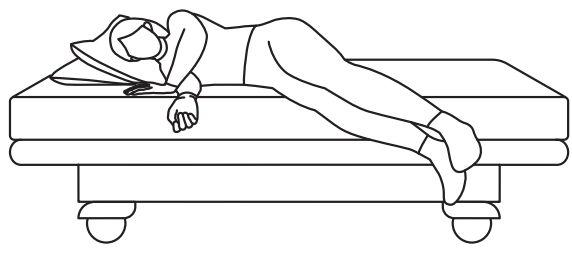
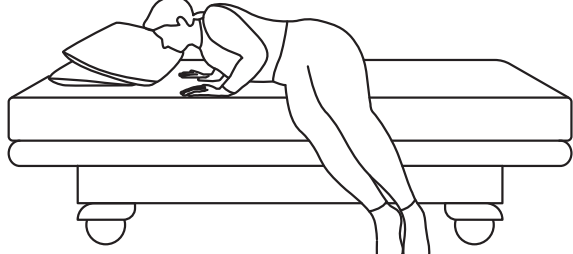
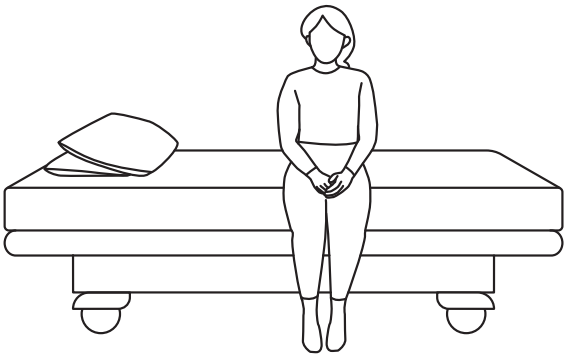
Tips:

- Managing your pain will help you do these breathing exercises.
- Pressing hard enough against your sternum will actually ensure that it hurts **less**.



**Figure 9:**  
**Using both hands,**  
**press the pillow**  
**over your sternum**  
**while deep**  
**breathing**  
**or coughing.**

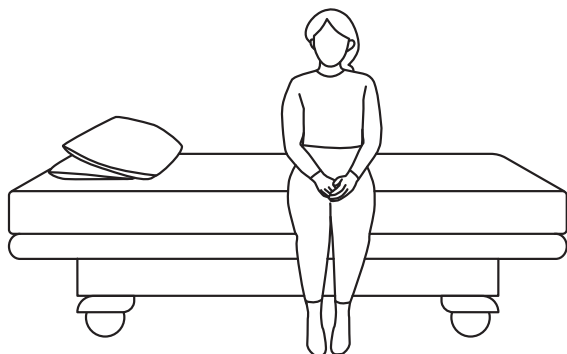
## How to Get Out of Bed Safely

	
<p><b>STEP 1:</b> Lying on your back, bend both knees up.</p>	<p><b>STEP 2:</b> Roll completely onto your side (log roll), close to the edge of the bed.</p>
	
<p><b>STEP 3:</b> Drop your legs over the side of the bed</p>	<p><b>STEP 4:</b> Gently push yourself into sitting with your “down” arm and trunk muscles. You may use the uppermost arm to push gently, if needed. You can also use your trunk/stomach muscles without your arms if you are strong enough.</p>
 <p><b>STEP 5:</b> Sit for a few moments to catch your breath. Take a few deep breaths.</p>	

If this is too much effort or causes pain, ask for help and pain medication.

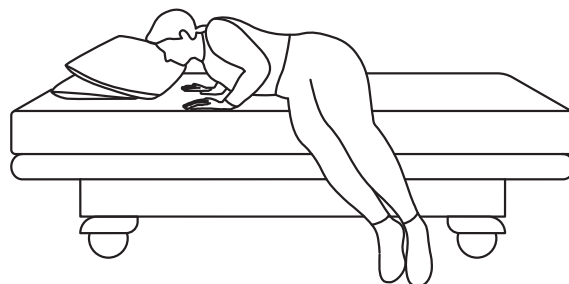
## How to Get into Bed Safely

Put the top bedrail down, and ensure the bed is completely flat — ask for help if you are unsure how.



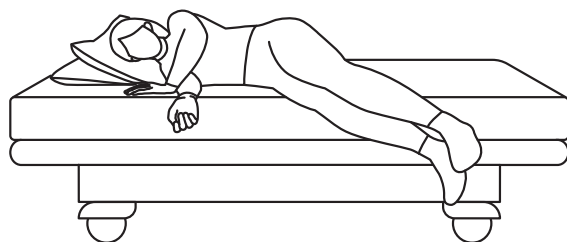
### STEP 1:

Sit about an arm's length down from the head of the bed.



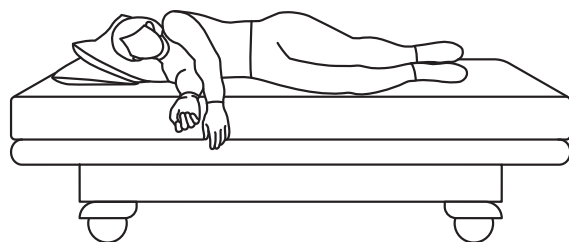
### STEP 2:

Lean sideways, GENTLY, support yourself with your hands.



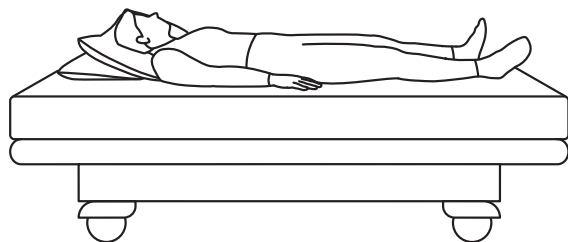
### STEP 3:

Continue to support yourself with your hands until you are lying on your side.



### STEP 4:

Lift your legs onto the bed, one after the other.



### STEP 5:

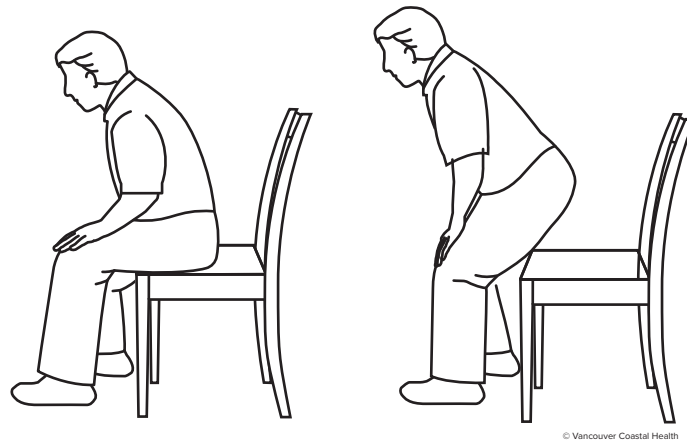
If done correctly, you should be lying on your side, then you can log roll on to your back if you prefer. It is ok to lie on your back or on your side but not on your stomach.

## What Is the Safest Way To Get Up From a Chair?

Slide to the front edge of the chair.

1. Put one foot slightly ahead of the other.
2. Place your hands on your thighs.
3. Bend forward at your hips to position your shoulders over your knees and nose over toes.
4. Push up with your legs – **not your arms**.


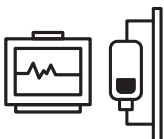




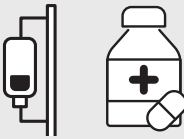



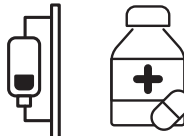













To sit down, use your legs to lower yourself onto the front of the chair. Use your legs – not arms – to move back.



**Figure 10: Getting up from a chair**

## Cardiac Surgery Patient Pathway

All cardiac surgery patients aim to follow the Cardiac Surgery Patient Pathway. Your nurse will discuss your goals and your progress with you each day. The table below is an example of what the progress of your recovery might look like after surgery. Remember that every patient is different, and you may recover faster or slower than others.

	Activity	Tubes & Lines	Pain medication	Food & Nutrition
<b>Admission day</b> Day of surgery OR → CSICU	 Bedrest	 Heart monitor, breathing tube, IV, & drainage tubes	 IV	 No fluids No solid food
<b>Day 1</b> After surgery	 Sit up Take a short walk	 Heart monitor	 IV/oral	 Fluids & food as tolerated
<b>Day 2</b> After surgery	 Sit in chair for meals Walk with help	 Heart monitor	 Less IV/oral	 Fluids Solid food
<b>Day 3</b> After surgery	 Walking exercise	 Heart monitor Plan for discharge	 Oral	 Fluids Solid food
<b>Day 4</b> After surgery	 Stair with physiotherapy	 Heart monitor	 Oral	 Fluids Solid food
<b>Day 5</b> After surgery	 Going home	 Discharge	 Oral	 Fluids Solid food



## Common Complications After Surgery

Having any type of surgery is not without its risks and although your healthcare team will be doing everything possible to prevent any complication from happening, certain post-operative complications may occur.

Your surgeon and health care team will discuss and review the most common complications in preparation for your surgery. Below are some common complications that cardiac surgery patients may experience.

### Delirium

- Delirium is a sudden change in mental state that causes confusion that occurs in about 30% of patients after cardiac surgery.
- Delirium commonly occurs in older adults and people with serious or chronic medical conditions. Other risk factors include alcohol withdrawal, lack of sleep, poorly managed pain, infections, some medications, and dehydration.
- Patients with delirium may be very sleepy, restless or combative. They may also see or hear things that are not really there.
- Delirium usually improves with treatment and time.
- Delirium can be scary. We will ensure that you are safe and comfortable if you experience delirium.
- Psychiatrists have expertise treating delirium. One may be called to help with your care.

### Atrial Fibrillation (AFib)

- AFib is a fast, irregular heart rate that occurs in about 30% of patients after cardiac surgery.
- You may feel weak and dizzy with your heart pounding, or you may not be aware when it occurs.
- AFib may only last a few hours or it may continue for days. It can be treated with medication.
- AFib puts you at higher risk of blood clotting. You may be put on blood thinners (anticoagulants) to prevent blood clots.

### Pneumonia

- Pneumonia is an infection that could occur in one or both lungs. The tiny air sacs in the lungs may fill with fluid, causing a cough and often fever, chills, and difficulty breathing.
- Pneumonia can be caused by bacteria or viruses and is much more common when patients do not move around and breathe well after surgery.
- Deep breathing and coughing regularly will help prevent pneumonia. (See instructions on page 20.)

## Discharge Instructions

You will receive discharge teaching during your hospital stay. If you have questions, please ask your nurse. When you leave the hospital, you will be given a discharge package containing important information.

If you had valve surgery, you will receive a temporary valve card. Please keep this in your wallet in case of emergencies, and it can be helpful to have for medical appointments, diagnostic tests and hospital visits. A permanent card will be mailed to your home in a few months.

Please bring this information to all your follow-up appointments.

### Heart Pillow

Remember your Heart Pillow is your new best friend. Take it everywhere with you. Use both hands to keep it close to your chest. This will give you something to do with your hands and will help stop you from automatically reaching with your arms.



**Figure 11: Heart pillow**

## When Will I Be Ready To Go Home?

You are ready to go home when:

- Your heart rate, blood pressure, and temperature are stable.
- Your bowels have moved.
- Your pain is well controlled.
- You are able to get in and out of bed on your own.
- You are sitting up in a chair for all meals.
- You take 3-4 walks per day.
- You complete stairs with a physiotherapist.
- You are able to wash/shower and dress on your own.
- You have a place to go and a ride to get you there.
- Your discharge teaching is complete.

## Section 3: Recovering at Home

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Congratulations – you are going home!

The speed of your recovery depends on your age, health before surgery and whether or not you had any complications. You can expect to start feeling like yourself again after two weeks, and a full recovery may take 3–6 months. Try to discourage visitors during your first few days at home. Ask friends and family to visit for short periods only when you feel ready. Rest, relax, and be patient with your recovery.

### What About My Medications?

A clinical pharmacist will review medications and can assist with organizing prescriptions at your preferred pharmacy. This prescription will reflect any new or changed medication doses. You will be provided instructions on any home medications to continue taking as before (without a new prescription) or home medications to stop taking.

We will provide you with a discharge prescription to fill at your regular pharmacy or at a local pharmacy (if you are from out of town). The hospital does not provide a supply of medications upon discharge.

The length of time that you take each medication may vary depending on what the medication was for - some will be used long term, whereas others will only be used for a short period of time after your surgery. It is important that you take these exactly as prescribed and try not to miss any doses. For refills of long term medications, contact your general practitioner. Always check with your primary care provider or pharmacist before starting any new medication to make sure it is right for you and there are no drug-interactions (where one drug changes the effect of another drug).

We recognize that being discharged with all these medication changes can be confusing and stressful. Having your previous home medication bottles with you will help with discussion about any changes to your medications on discharge (ie. New or stopped medications, changed doses).

Note: If you had valve surgery you will need to take antibiotics prior to any dental procedures. If needed, please contact your primary care provider.

## How Do I Care for My Incisions?

Check your incision(s) every day.

- Gently wash your incision with soap and water.
- Do not rub or scrub your incision.
- You may shower, but do not let the water spray right on your incision.
- Do not sit in a bathtub, hot tub or public swimming pool for at least 8 weeks after your surgery. Soaking your incision might damage the healing skin.
- Strips of tape called “steri-strips” may have been used to secure your incision. If the tape gets wet, pat them dry. They will fall off 6 to 10 days after leaving the hospital.
- As your incision heals, it may be bruised, itchy, numb, or sore. These are all normal parts of wound healing.
- Do not use lotion or powder on your incision until the skin is completely healed at around 6 weeks.
- Cover your incisions for the first year to prevent sunburn and darkening of the skin. You may use a high SPF sunscreen for extra protection after the incision is well healed.

### **Please Call Your Primary care provider If You Notice:**

- Thick yellowy-green drainage from any incision or chest tube site.
- An area in your incision that is red, tender and warm to touch.
- New swelling or a sharp pain in your incision.
- Fever above 38 °C or 101 °F.

## How Do I Protect My Sternum at Home?

Your sternum will take 8 to 12 weeks to heal. Support your sternal incision when coughing or sneezing and avoid any movements that cause pain or clicking of the sternum.

For 8 to 12 weeks after surgery, **DO NOT**:

- Sleep on your stomach.
- Lift, push or pull more than 5-10 pounds (e.g., grocery bags, laundry, children, garbage, pets.)
- Push or pull with one hand (e.g., using cane, opening heavy doors, or pulling a chair recliner handle.)
- Swing your arms too vigorously while walking.

## Daily Sternal Precautions

### Getting Dressed

- Slow down and think about your movements.
- Keep your arms in front of you.
- Larger short-sleeved shirts will be easier to put on and take off.
- Sit down to put your underwear and pants on over your feet, then stand up to pull over hips.
- Put your belt through the pants loops before putting your pants on.
- If you wear a bra, use a comfortable front closure bra that is easy for you to put on.

### Having a Shower

- You may need help to wash your back.
- Avoid pushing or pulling on grab bars.
- Do not stay in the shower too long.
- Always raise and lower both arms at the same time when moving your arms above shoulder height. (e.g., to wash or comb hair)

### Using the Toilet

- Do not hold your breath when having a bowel movement. Relax and breathe.

Note: You may need a raised toilet seat or a bath transfer bench at home for a short time after surgery. The Occupational Therapist will assess this following your surgery.

## Exercise Program After Heart Surgery

Regular exercise will speed your recovery, strengthen your muscles, increase your balance and flexibility, and prevent complications due to inactivity. Your exercise program consists of seated exercises and a “Cardiac Walk” that slowly increases the work of your heart.

### Instructions for Exercises

1. Hold any stretches for 15–30 seconds. Increase hold time as the stretches get easier.
2. Avoid bouncing or quick repetitions.
3. DO NOT hold your breath.
4. DO NOT stretch to the point of pain.

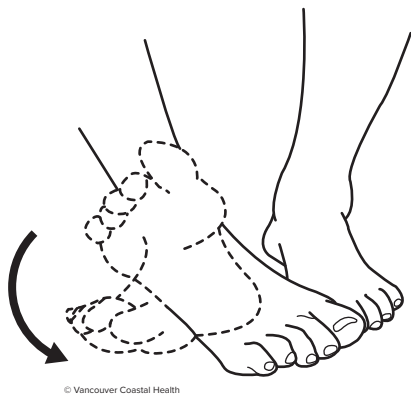
Listen to your body - It will tell you when to stop what you are doing and when you are ready to do more.

If you notice that you are sweating, short of breath, or very tired during activity, you may have increased your activity too fast. STOP and REST.

### Exercises

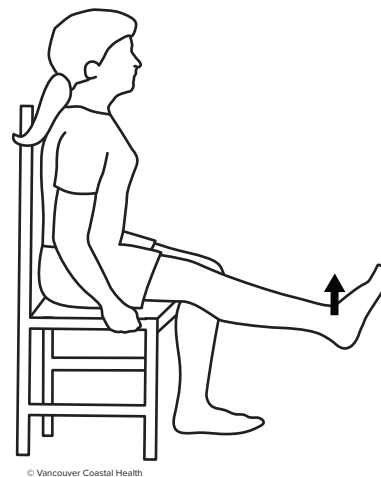
#### Ankle Rotations

Make circles with your ankles or write your name.



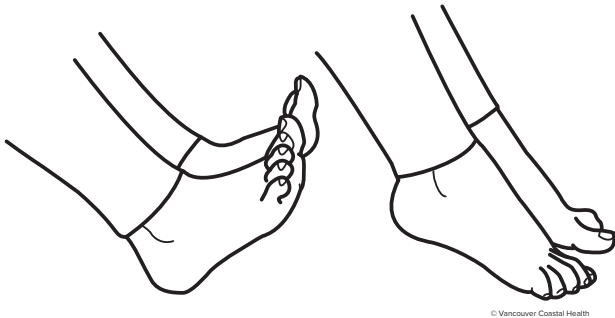
#### Leg Lifts

Tighten your thigh and straighten your knee while keeping your thigh on the chair. Then continue to hold this as a stretch. You may have to lean forward at the hips slightly to feel this stretch.



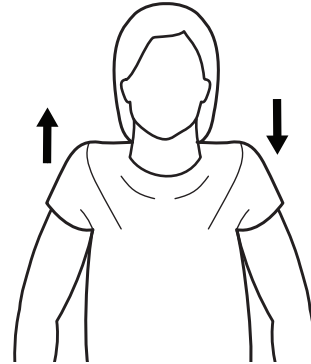
### Ankle Pumps

Gently rise up on your toes, and then rock back on to your heels.



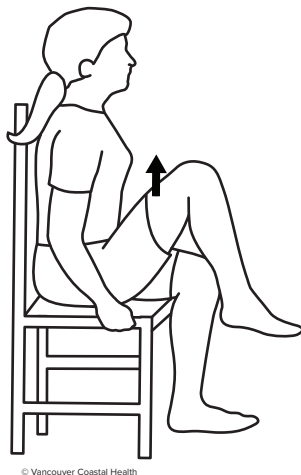
### Shoulder Shrugs

Raise shoulders in an exaggerated manner, then reverse the movement and emphasize stretching downward.



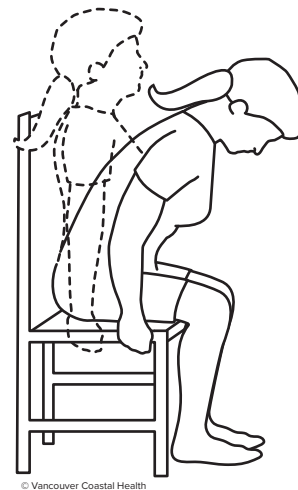
### Knee Raises

Lift one knee so your thigh leaves the chair. Alternate knees one at a time.



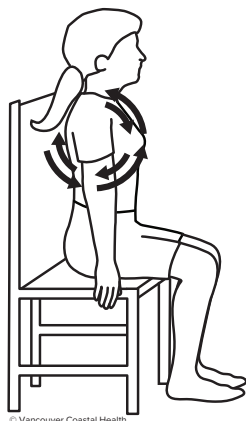
### Forward Bends

Exhale as you lean forward in your chair, keeping your head in line with your trunk. Return to a normal sitting position while inhaling deeply.



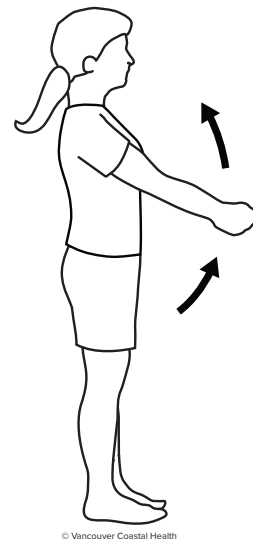
### Shoulder Circles

Roll your shoulder forward and backward slowly. Try to make the circles as round as you can without forcing any movement. The lower and backward parts of the circle are the hardest. Repeat 5 times each direction.



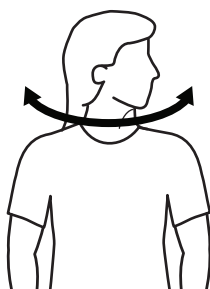
### Arm Lifts

1. Keeping your elbow straight, raise one arm slowly above your head to a comfortable point. Stop if you feel pulling through your breastbone. Very slowly return your arm to the side. Repeat with the opposite arm.
2. Clench your hand in a fist, then relax and fully extend your fingers.



### Neck Rotations

Rotate your head as far to one side as is comfortable. Return to middle and then rotate in the other direction.



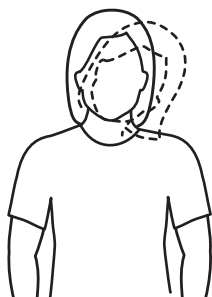
### Deep Breaths

With your left hand on your belly and your right hand on your chest, breathe in deeply. Your left hand should move outwards as you breathe in.



### Neck Side Bends

Tilt your head toward one shoulder (do not raise the shoulder). Then tilt to the other side.





## Cardiac Walk

Most people will be able to walk between 3 and 10 minutes consecutively by the time they leave the hospital following surgery. It is best to focus on the duration (time) that you are walking, NOT the speed OR the intensity (e.g., hills).

Increase the length of your walking sessions by 1 or 2 minutes each day (not each walk). If you are walking under 15 minutes, it is best to do two (or even three) walks daily. Keep the speed steady and comfortable. Once you can walk 15 minutes, you can focus on one walk daily if you choose.

Fight the urge to 'jump ahead' just because you are feeling good on a particular day. You have plenty of time to progress. And don't be too hard on yourself! Measure your recovery week-to-week, not day-to-day. You are likely to have 'off days' now and again but it is still fine to continue walking unless you are having significant symptoms. In this case, stay at a comfortable level until you are able to progress again.

Most people will have progressed to 30 minutes of consecutive walking between 4 and 6 weeks after surgery.

At this point, you can add more structure to your walk. For the first ten minutes, walk at an easy pace (warm-up). After this, increase your pace slightly so there is more of a challenge but make sure you can still carry on a conversation, and are not experiencing any of the symptoms listed below. End the last ten minutes of your walk with walking at an easy pace again (cool down). Each week, try to increase the middle part of the walk (conditioning phase) by 2 minutes until that part alone is 30 minutes.

Tip: If you are...finding...that...you...have...to speak...between breaths, you should slow down. If you could sing a song, you could likely pick up the pace a little.

## Signs to Stop and Rest while Exercising

- Gasping for breath
- Any new chest pain, or pain like you had before your heart surgery or heart palpitations
- Extreme sweating relative to your workload (exercise level)
- Dizziness, faintness, blurry vision or nausea
- Strong cramping or pain in the legs, significant fatigue that is still quite evident even an hour after finishing your exercise session

## What Can I Eat And Drink at Home?

Your body needs nutrition for healing and recovery from surgery. It is normal to have a smaller appetite after surgery and your appetite will improve as you start feeling better. Make sure you are eating enough to maintain your weight.

Resume your usual diet at home. For 2 months after your surgery, you will need to eat a normal diet for the nutrients required for healing. Afterwards, you should return to a cardiac diet – low salt and low saturated fat diet.

You may be placed on a 1.5 Litres per day fluid restriction. This helps prevent fluid retention and swelling in your legs.

When you attend the Cardiac Rehab Program you will have the opportunity to see a Dietitian and have your diet reviewed and adjusted as needed for long term health. If you have any questions or concerns about your diet while waiting to see a Dietitian in the Cardiac Rehab Program, call Health Link BC at 8-1-1 and ask to speak to a Dietitian.

## Five Steps to Healthy Eating

These steps are important to help lower your blood cholesterol and improve your overall health. Make changes one step at a time.

1. Use fats in moderation. Focus on reducing saturated and hydrogenated (trans) fats and adding heart healthy fat options.
2. Eat a variety of vegetables and fruit everyday.
3. Eat more whole grain products.
4. Select smaller, leaner portions of meat, poultry, fish and alternatives.
5. Limit your salt intake.

Lowering dietary salt (sodium) can help some people lower their blood pressure. If you have high blood pressure and/or congestive heart failure, limit salty foods like commercial soups, salad dressings and sauces, pickles, deli meats, salty snacks and fast foods, or choose “low sodium” versions available. Use salt sparingly in cooking and at the table.

## What Activities Can I Do at Home?

You can start with very light activities and slowly move to harder activities as you recover.

For 8 weeks after surgery, **you must avoid:**

- Holding your breath during activity (ever!)
- Lifting, pushing or pulling more than 5 to 10 pounds.
- Exercising with machines that need you to use your arms (rowing, stationary bikes with arm levers.)
- Sustained overhead activities.
- Overstretching the chest so that your breast bone is being stressed.
- Extreme hot temperatures.
- Exercising right after a meal (wait 30 minutes.)
- Bath tubs, hot tubs, swimming pools or soaking in any water.

## When Can I Drive?

Patients must not drive any vehicles (including ATVs, recreational vehicles, etc.) for the first 4 weeks after heart surgery in accordance with RoadSafetyBC's guidelines.

Most people can resume driving 4–6 weeks after their surgery. However, depending on your recovery after surgery, you may be instructed to wait longer and be reassessed by your Primary Care Provider before you resume driving. Commercial driving is typically suspended for 3 or more months.

## When Can I Return to Work?

Your return to work depends on your medical condition and the type of work you do. The decision to return to work can be made by you and your primary care provider during your follow-up. Most patients take about 3 months off work.

## What May Families/Caregivers Experience?

Your caregiver must also tend to their own needs while helping you recover. Caregivers should continue to eat well, get plenty of sleep, and get out on their own while you rest. Encourage your caregiver to keep up their usual activities and discuss their feelings with you.

## How Will I Feel Emotionally?

After surgery, you might feel “blue” or low in spirits. This is common and might last a few days or sometimes a few weeks. You might also feel:

- Concerned about whether your recovery is going normally.
- Impatient with physical restrictions and being dependent on others.
- Frustrated by the speed of your recovery.
- Sad or angry that your recovery is not meeting your expectations.

Talking out your feelings may help you and your family deal with them. If you continue to feel “blue” or are worried by how you are feeling, talk with your primary care provider.

## When Can I Have Sex?

Some people worry about having sex after surgery. If you can climb 2 flights of stairs without discomfort or getting short of breath, then you can return to sexual activity. Sternal precautions still apply.

To protect your sternum, do not use positions that put pressure on your chest or need support from your arms. Use a position that you and your partner find comfortable.

Avoid sexual activity after a large meal or after exercising. If you feel tired or tense, wait until you are more rested.

Some people find that their sex drive is reduced in the early recovery period after heart surgery. This is normal and usually improves as you begin to feel stronger.

## When Can I Travel?

A flight or long drive may be needed to get you home after surgery. Follow these precautions to make your return safer:

- Try to sit in an aisle seat.
- Move your legs and feet often to improve blood flow.
- Get up and walk every 1–2 hours on longer trips.
- Do not pull a suitcase (even one with wheels) and do not carry your bags.

If traveling for pleasure, discuss the timing of your trip with your medical team. Travel insurance may not cover you until a certain amount of time has passed since your surgery or until your medical team clears you.

## What Can I Do to Maintain my Cardiac Health?

Cardiac surgery offers you a treatment, not a cure, for your heart condition. It gives you an opportunity to return to your old activities with more energy and health.

To lower your risk of worsening cardiovascular disease, it is important to continue monitoring your heart health. If able, we encourage you to check your blood pressure, heart rate and weight on a daily basis for at least the first 2 weeks after cardiac surgery. Monitoring and recording the numbers allows you to know your normal range and can report to your primary care practitioner with any concerns.

For more information on blood pressure monitoring from the HealthLinkBC website click the link: [healthlinkbc.ca/healthwise/home-blood-pressure-test](https://healthlinkbc.ca/healthwise/home-blood-pressure-test) or scan the QR code.



Blood pressure monitoring

For more information on heart rate monitoring from the HealthLinkBC website click the link: [healthlinkbc.ca/healthwise/pulse-measurement](https://healthlinkbc.ca/healthwise/pulse-measurement) or scan the QR code.



Heart rate monitoring

For more information on daily weight monitoring from the HealthLinkBC website click the link: [healthlinkbc.ca/healthwise/heart-failure-checking-your-weight](https://healthlinkbc.ca/healthwise/heart-failure-checking-your-weight) or scan the QR code.



Daily weight monitoring

## Cardiac Rehabilitation

We encourage you to attend an outpatient cardiac rehabilitation program after discharge if one is available in your area. There is one available at SPH, VGH and many other centers around the province. A referral will be sent to your local community program if available. Typically, you will be able to start a program in 1–2 months after surgery.

Cardiac Rehab is a specialized program providing rehabilitation services for cardiac patients and to those who are at risk for developing cardiovascular disease. You will work with a variety of health professionals, but **you** will be the most important member of this team.

Patients who attend these programs often benefit from:

- Healthier lifestyles.
- Improved quality of life.
- Enhanced psychological well being.
- Decreased risk of further heart disease or cardiac event.
- Reduced risk of premature mortality.

### Program Contacts

#### **St Paul's Hospital**

Cardiac Rehabilitation Program  
1<sup>st</sup> floor Burrard Building  
604-806-9270

#### **Vancouver General Hospital**

Cardiac Rehabilitation Program  
Gordon and Leslie Diamond Clinic  
6th floor Cardiac Rehab  
604-875-5389

## What If I Have Concerns?

If you notice the following...	What you should do...
Chest pain not related to your chest incision or angina pain similar to the pain you had prior to surgery.	Stop what you are doing and sit down. If prescribed, take your nitroglycerin spray every 5 minutes until the pain is gone. If you still have pain after a total of 3 sprays call 9-1-1. <b>Do not</b> drive yourself to the hospital.
Redness, tenderness or drainage from your incisions. New or worsening cough with thick coloured sputum. Fever above 38°C or 101°F Feeling unwell.	Call your primary care provider. If you have drainage in your chest incision, let your surgeon know.
New or increased swelling in your ankles. Weight gain of 5 lbs or 2kg over 2–3 days. New or increased shortness of breath or cough. Trouble breathing when you lie down.	Call your primary care provider. If your shortness of breath is sudden or causing you distress, call an ambulance.
Fast and/or irregular pounding of your heart that is sustained or accompanied by dizziness or feeling like you are going to faint.	Go to the nearest emergency department (do not drive yourself). If there is no one to drive you, call 9-1-1.
No bowel movement for a few days. Fullness in your abdomen. Pain or discomfort in your abdomen. Nausea and/or vomiting.	Increase your fibre intake Try a suppository or an enema If no results from these, call your primary care provider. If you are in severe pain, go to an emergency department.
Warning signs of stroke: <ul style="list-style-type: none"> <li>• Sudden weakness or numbness in arm, leg or face</li> <li>• Sudden severe headache</li> <li>• Visual problems (e.g., double, blurred, cloudy or total loss of vision)</li> <li>• Sudden confusion, difficulty speaking or understanding</li> <li>• Sudden dizziness or loss of balance especially with any of the above</li> </ul>	Call 9-1-1. Do not drive yourself or have any one else drive you.

## Resources

### **Heart Health**

Heart and Stroke Foundation of Canada  
*Information for people with heart disease and their families.*

604-736-4404 or 1-888-473-4636

[heartandstroke.ca](http://heartandstroke.ca)

Pacific Open Heart Association  
*Made up of people from British Columbia and the Yukon who have had heart surgery.*

604-436-9005

[pacificopenheart.org](http://pacificopenheart.org)

The Society of Thoracic Surgeons  
*Detailed information on heart surgery*  
[ctsurgerypatients.org/before-during-and-after-surgery/before-heart-surgery](http://ctsurgerypatients.org/before-during-and-after-surgery/before-heart-surgery)

Heart Hub  
*Info for patients, by patients*  
[hearthub.ca](http://hearthub.ca)

QuitNow  
*Resource for quitting smoking*  
1-877-455-2233  
[quitnow.ca](http://quitnow.ca)

### **HealthLink BC**

*Non-emergency health information provided by a nurse, pharmacist or Dietitian.*

8-1-1

[healthlinkbc.ca](http://healthlinkbc.ca)

### **Diabetes Education**

Canadian Diabetes Association  
[diabetes.ca](http://diabetes.ca)

Find a diabetes program in your area:  
[healthlinkbc.ca](http://healthlinkbc.ca) – click “Services and Resources” and search “Diabetes” for your community

### **Stress Management**

HereToHelp  
*Mental health resources in BC.*  
604-669-7600 or 1-800-661-2121  
[heretohelp.ca](http://heretohelp.ca)

Canadian Mental Health Association  
*Various mental health resources*  
1-800-555-8222  
[cmha.ca](http://cmha.ca)

Family Caregivers of BC  
1-877-520-3267  
[familycaregiversbc.ca](http://familycaregiversbc.ca)

### **Accommodations**

Medical travel Accommodation Listing  
[csa.pss.gov.bc.ca/medicaltravel](http://csa.pss.gov.bc.ca/medicaltravel)

Vancouver Coastal Health  
[www.vch.ca/Places-to-Stay](http://www.vch.ca/Places-to-Stay)

### **Equipment**

Canadian Red Cross  
[redcross.ca/in-your-community/british-columbia-and-yukon](http://redcross.ca/in-your-community/british-columbia-and-yukon)

### **Transportation**

Travel Assistance Program (TAP BC)  
1-800-661-2668  
[www2.gov.bc.ca/gov/content/health/accessing-health-care/tap-bc/travel-assistance-program-tap-bc](http://www2.gov.bc.ca/gov/content/health/accessing-health-care/tap-bc/travel-assistance-program-tap-bc)

## Follow-Up Checklist

Use this checklist to keep track of your follow-up appointments. Check off items as you complete them.

- ☐ Blood work requisition, if you received one at discharge.
- ☐ Book appointment to see Primary Care Provider in 1 week.
- ☐ Book appointment to see Cardiologist in 6–8 weeks.
- ☐ If needed, book appointment to see Cardiac Surgeon within 3 months.
- ☐ Cardiac Rehabilitation referral sent from hospital.

## Reminders

- Eat balanced meals.
- Take any prescribed medication.
- Follow your sternal precautions for 8–12 weeks.
- Follow your exercise program.
- Look at your incisions every day.
- Do not drive for 4–6 weeks post-op.
- Get plenty of rest but avoid sitting for long periods. Moving reduces your risk of blood clots.
- Be patient with yourself. Recovery takes time!



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Making better  
decisions together  
with patients  
and families

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