



INSTITUT UNIVERSITAIRE
DE CARDIOLOGIE
ET DE PNEUMOLOGIE
DE QUÉBEC



Cardiac Surgery and Recovery

PATIENT GUIDE

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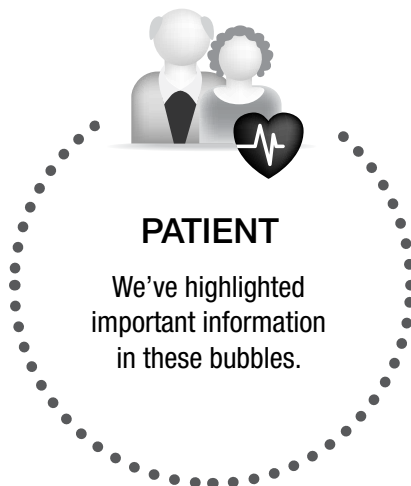
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The news that you need heart surgery can raise many questions and sometimes cause a whirlwind of emotions. The purpose of this guide is to help you and your loved ones by giving you the information you need to prepare for your surgery and facilitate your recovery. You don't need to read all of it — simply check the relevant sections as any questions arise.



This guide has four parts:

1. Recommendations and preparations before your admission
2. Your stay at the hospital
3. Return home and recovery
4. Information about your surgery

During your stay, you'll meet a number of health professionals, interns and research professionals. Affiliated with Université Laval, the *Institut universitaire de cardiologie et de pneumologie de Québec (IUCPQ)* aims to promote teaching, research and innovation in order to drive knowledge forward. You may be approached to participate in a research project, but you are free to accept or refuse. Your cooperation is valuable since it helps us improve quality of care.



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INSTITUT UNIVERSITAIRE DE CARDIOLOGIE ET DE PNEUMOLOGIE DE QUÉBEC (IUCPQ)

Telephone: 418 656-8711 | www.iucpq.qc.ca

BEFORE OR DURING YOUR STAY

Cardiac surgery reception desk	418 656-4717
Nurse-led preoperative clinic	418 656-4741
Intensive care	418 656-4847
Cardiac surgery unit nursing station	418 656-4803
Hôtellerie Marguerite d'Youville	418 656-8711, extension 2747
Physiotherapy	418 656-4729
Social services	418 656-4830

DURING YOUR RECOVERY

Nurse-led postoperative clinic	418 656-4741
Appointments	418 656-4827
Your family physician:	_____
Your cardiologist:	_____
The CLSC in your region:	_____
Your pharmacist:	_____

OTHER RESOURCES

Pavillon de prévention des maladies cardiaques (PPMC)	418 656-4594 www.iucpq.qc.ca/ppmc-services.asp
IUCPQ Foundation	418 656-4999 www.iucpq.qc.ca/fondation-mission.asp
Quebec Heart and Stroke Foundation	1 800 567-8563 www.fmcoeur.qc.ca
Les diabétiques de Québec	418 656-6241 www.lesdiabetiquesdequebec.com
Association diabète Québec	1 800 361-3504 www.diabete.qc.ca
Société québécoise d'hypertension artérielle	www.hypertension.qc.ca
J'Arrête	1 866 527-7383 www.jarrete.qc.ca
"Traité Santé" program (CSSS)	www.csssqn.qc.ca
Dietitians of Canada	www.dietitians.ca



Before your admission | 1

PREPARING FOR SURGERY

Lower your risk of post-operative complications

Stop smoking

Even though you'll have surgery soon, you will lower your risk of complications if you stop smoking immediately. For more information on how quitting helps you, refer to *Heart disease risk factors* on page 37. To find out the resources that can help you stop smoking, refer to *Resources* on page 46. During your stay, a smoking cessation specialist can meet with you if you're having trouble quitting. Always feel free to ask for help.

Reduce your drug and alcohol consumption

Drug and alcohol consumption increases your risk of delirium (agitation, confusion, hallucinations) after your surgery. Be honest when asked whether you use drugs or alcohol. This will help us better prevent any withdrawal symptoms and reduce the risk of postoperative delirium.

Maintain your daily routine

Staying active will help you keep your strength up and let you resume your daily activities faster after surgery. Do light-intensity activities and, above all, follow your physician's recommendations. Use the opportunity to try the exercises recommended by your physiotherapists (see pages 20 to 22).

Eat healthy

Use the time before your surgery to evaluate your diet and eat healthy. During your stay, if you are diabetic or your cholesterol level is abnormal, a dietitian may meet with you to suggest changes to your diet. Feel free to ask to see a dietitian during your stay. We recommend that you start making changes to your eating habits right away. Refer to *Diet* on page 42.

Prepare yourself psychologically

It is entirely normal to experience anxiety while waiting for surgery, cardiac surgery in particular. Try the following to reduce your anxiety:

- Discuss your concerns with your loved ones.
- Try one or more relaxation techniques.
Deep breathing is a simple and effective technique.

Put your affairs in order (insurance, mandate in case of incapacity, will, etc.).

If you feel the need, professional help is available. Talk to a preoperative clinic nurse, who can direct you to the appropriate resources



See your dentist

You **MUST**
have your teeth cleaned
three months prior to the
following surgeries:

- Valve replacement or reconstruction
 - Aortic surgery
- Surgery to correct a congenital malformation

If dental repairs are necessary, they must be carried out before the surgery.

If you have a dental prosthesis, you must also have a dentist examine your gums and soft tissues.

These precautions are intended to prevent infective endocarditis. For more information, refer to Preventing infective endocarditis on page 29.

SIGNS AND SYMPTOMS TO WATCH FOR BEFORE SURGERY

Call a preoperative clinic nurse at 418 656-4741 if you have one of the signs or symptoms below.

- Your symptoms worsen:
 - more frequent chest pain
 - pain in chest when lying down or at night
 - effort-related dizziness
 - loss of consciousness
 - more frequent heart palpitations
- You develop one of the following in the week before your surgery:
 - flu or cold-like symptoms
 - gastroenteritis
 - diarrhea
 - fever
 - a sore that is slow to heal
- You have experienced significant and unwanted weight loss in recent weeks or months.
- Your medication changes.

PREADMISSION CONSULTATION

If you are waiting for your surgery at home, we will contact you to make an appointment for your preadmission consultation.

Telephone interview

A cardiac surgery preoperative clinic nurse will contact you to gather your personal information and plan your admission. Depending on your situation, the nurse will determine whether you should be admitted the day prior to or the morning of your surgery. If you are admitted the day prior, the surgeon and anesthesiologist will meet with you in the evening. If you are admitted in the morning, a preoperative meeting will be planned.

Preoperative meeting

You may be invited to a preoperative meeting a few weeks before your surgery so that we can discuss your concerns and answer your questions.

At the meeting, we will take blood and urine samples, perform an echocardiogram test and take a chest x-ray. We may order additional tests if necessary.

Group meeting

If you meet the preoperative meeting criteria, you will be invited to a group meeting to discuss all aspects of your surgery and recovery with health professionals and other patients.



We ask that you obtain an up-to-date list of your medications from your pharmacist and give it to the nurse when being admitted. If you use several pharmacies, make sure to bring a list from each pharmacy.



Family and loved ones

You can join the patient at the preoperative meeting and the group meeting. We will be pleased to answer your questions and address your concerns. Because space is limited, however, only one or two family members or loved ones can attend.

The Hôtellerie is close to the Institute and offers modestly priced accommodations. You can reserve a room for yourself if you have numerous appointments or for your family during your hospitalization.

HÔTELLERIE
Pavillon Marguerite-d'Youville
2725, chemin Sainte-Foy, Québec (Québec) G1V 4G5
Telephone: 418 656-8711 poste 2747

In case of emergency or hospitalization, all preparations will be taken care of when you are admitted to the Institute or by your local health centre in cooperation with our team.

ADMISSION CALL

On the Thursday one week before your surgery, you will receive a call to inform you of the date of your surgery. However, you must wait for confirmation from the Admissions department before going to the hospital since the arrival time will vary depending on the availability of beds. You will receive the confirmation call the day prior to or the morning of your admission.

Once you receive the call for the date of your surgery

- Stop taking any natural health products.
- Stop taking any over-the-counter anti-inflammatories (Motrin®, Advil®, Aspirin®, Anaprox®, etc.).

Three days before the surgery

- Shower or bathe every day.
- Gargle 4 times a day with an antiseptic mouthwash (Scope®, Listerine®).
- Continue to take your medication as prescribed, unless advised otherwise.

The day prior to your surgery

- Wash your hair and do not use any styling products afterwards.
- Remove all nail polish, jewellery and piercings.
- You must fast from midnight on: do not drink water, chew gum or eat any sweets or foods.
- The care team will provide disinfection and preoperative shaving instructions depending on the time and date of your surgery.

The morning of your surgery

- Brush your teeth, do not swallow any water and gargle with mouthwash a final time.
- Take only allowed medications with a mouthful of water (around 30 ml) and fast thereafter.

MEDICATIONS TO HALT

The surgical team will inform you, as applicable, of the medications you can stop taking.

Medication	Date

WHAT TO BRING TO THE HOSPITAL



Bring the following items

- ♥ An up-to-date list of your medications. Obtain a list from your pharmacist(s) a few days before your surgery.
- ♥ The name and address of your family physician and cardiologist
- ♥ Your health insurance card
- ♥ Your IUCPQ card
- ♥ Pyjamas or a nightgown
- ♥ Underwear, including bras
- ♥ A bathrobe
- ♥ Comfortable clothing for when you leave the hospital
- ♥ Slippers with anti-slip soles or indoor shoes (avoid knitted slippers)
- ♥ A cane, walker or prosthetic, if applicable
- ♥ Glasses, contact lenses or hearing aids (with accessories such as cleaning solution, case, container or batteries)
- ♥ A container for any dental prosthesis
- ♥ A personal toiletry bag
- ♥ A box of tissues
- ♥ Some money (for newspapers, magazines, etc.)
- ♥ As little jewellery as possible (Be sure you can take off your wedding ring). You can place any valuables in a safe (Ask a care unit nurse).
- ♥ Your ***Cardiac Surgery and Recovery guide***
- ♥ Your breathing exerciser, if applicable
- ♥ If you are diabetic, your blood glucose monitor
- ♥ If you have sleep apnea, your ventilation machine



PLANNING YOUR RETURN HOME

Read the information below to plan your return home.

- The information below to plan your return home.
- The average hospital stay is 4 to 7 days.
- By the time you leave the hospital, you will be increasingly autonomous in your activities of daily living (personal hygiene, getting dressed, moving about, climbing stairs, etc.).
- You will need help with errands and household cleaning, but you can gradually resume your usual activities at your own pace.
- It can be helpful to prepare meals in advance and freeze them.

It is best if someone stays with you your first day home. However, you don't need round-the-clock care thereafter. If your condition allows, someone can check on you daily and provide help as needed.

If it is a problem for you to return home, find an aftercare facility before your surgery. If you cannot return home because of your condition after surgery, inform a nurse so that a social services consultation can be arranged. Your situation will be analyzed in order to refer you to the resources that best meet your needs.



Family and loved ones

You play an important role in the patient's return home.

**THE PATIENT WILL BE
DISCHARGED BEFORE 11 A.M.**

In general, we will notify you one day prior to the patient being discharged.



At the hospital  2

ADMISSION

When you arrive in the care unit, a nurse will greet you and inform you and your loved ones about the final preparations for surgery and the stages of hospitalization. The heart surgeon and anesthesiologist will visit you the day prior to or the morning of your surgery. Feel free to ask them any questions and mention any concerns.

Visiting hours

To know our visiting hours or to get more information about visiting the hospital, you're invited to consult our website at iucpq.qc.ca.

Spouses and loved ones may make personalized visiting arrangements with the care unit.



We ask visitors to:

- Respect patient rest periods
 - Be quiet and respectful
 - Follow all isolation precautions, if applicable



THE MORNING OF YOUR SURGERY

The morning of your surgery, you will be given a drug to relax you. A family member can accompany you to the entrance of the surgical suite. You will then be taken to the operating room. You will notice a number of electronic devices and large lamps above you. We will then put you into a deep sleep. When you wake up, you will be in the intensive care unit.

How long will the surgery take?

Surgery times vary, but most procedures are completed in 3 to 5 hours. More complex procedures take more time.

It takes a certain amount of time to place people when they arrive in intensive care. As soon as possible, a nurse will call you into the waiting room for the first visit. To help us avoid making numerous calls during the patient's hospitalization, we ask that you designate only one person to contact us for news.



Family and loved ones

The cardiac surgery unit has a waiting room for family and loved ones. The surgeon will meet you there after the surgery to explain how the surgery went and answer your questions. If you cannot be there, the surgeon will call you.

YOUR STAY IN INTENSIVE CARE

You will stay in intensive care for 18 to 24 hours. You may stay longer depending on your condition or the availability of care unit beds.

In intensive care, a nurse will closely monitor your status and meet your needs.

An intensivist (a physician specializing in intensive care) will provide medical followup.

Various devices will be used to monitor you. Most are painless, but some can cause discomfort. If your condition allows, most of the devices will be removed the night of or the morning after your surgery.

You will wake up a few hours after arriving in intensive care. You will not be able to talk because you will have a temporary tube in your throat to help you breathe. Be sure to remain calm. In general, the tube is removed the day of the operation. If you are uncomfortable, you will be given a medication.

The thirst or dry mouth you may experience can cause discomfort in the hours after you awake. A nurse will hydrate you using a sponge stick. You can start hydrating a few hours after the throat tube is removed. However, the quantity of liquid will be restricted to prevent nausea. Foods will be phased in the following day.

Care staff will help you get up for the first time a few hours after you awake. The following day, if your condition allows, you will be transferred to another room. If you require special attention, your stay in intensive care will be extended.



YOUR STAY IN THE CARE UNIT

Care staff will make sure your pain is managed and help you regain your autonomy. You will be encouraged to move about as soon and as often as possible. This will improve blood flow and prevent mucus buildup in your lungs.

A specialized nurse practitioner, in cooperation with the surgeon, will be responsible for your medical followup in the care unit. Since the Institute is a university hospital, residents, externs and interns work with the team.

Pain relief

Nurses will use a verbal scale of 0 to 10 to evaluate your pain.

- 0 means you have no pain.
- 10 means your pain is intolerable or the strongest you have experienced.

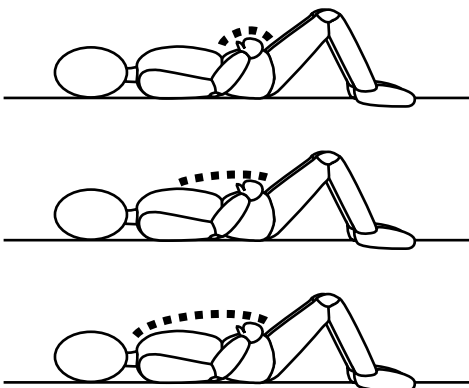
The nurses will administer the appropriate medication for your pain. Do not hesitate to take your pain medication regularly or request it if your pain reappears or increases.

Breathing exercises

The purpose of these exercises is to help your lungs regain maximum function. Do 5 to 10 repetitions every hour.

Deep breathing:

- Breathe in through the nose. Your abdomen and ribs will expand.
- Hold your breath for 1 to 2 seconds.
- Purse your lips and exhale slowly.



Analgesics

Taking narcotics such as (Dilaudid®) for a short period of time does not create dependency. The less pain you have, the more comfortable you will be. This means you will sleep better, eat better and move about more, which will help you recover faster.

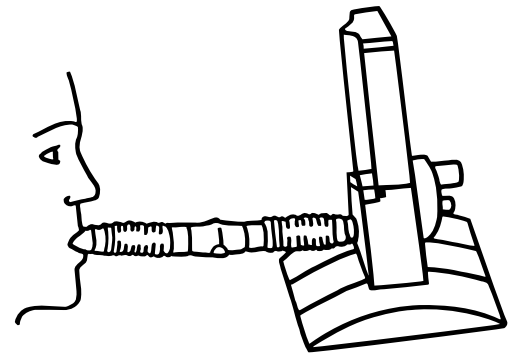


It is **very important** for women to wear a bra as soon as possible to reduce strain on the sternal incision. We recommend a firm, wire-free, front-closure bra.

Exerciser:

(You may be asked to use this device during your stay)

- Turn the knob to the easiest setting.
- Inhale slowly to raise the ball.
- Try to keep ball raised for 3 seconds.
- If you can keep the ball raised longer, turn the knob to next setting to increase the difficulty.
- Keep the exerciser in a bag to reduce the risk of contamination.



If necessary, wash the blue tube and mouthpiece in running water. Reconnect to the side opposite the rear dial.

Forced expiration:

- Take a deep breath.
- Exhale quickly, keeping your mouth wide open as though you were trying to fog a window.
- Repeat as needed.

Coughing:

- Hold a pillow or folded towel tightly against your incision.
- Breathe in deeply and hold your breath.
- Cough once or twice.
- Repeat hourly or as needed.



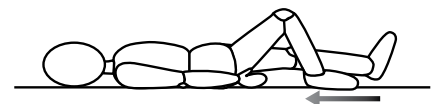
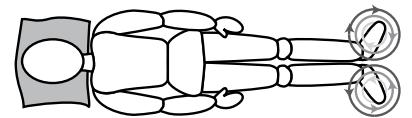
Even though these exercises may cause discomfort, it is very important for you to cough and spit to reduce the risk of respiratory infection.

Circulation exercises

These exercises are intended to foster blood circulation in the legs during periods of bedrest. Do 5 to 10 repetitions hourly. Reduce the frequency as you resume walking regularly.

Lying on your back or sitting:

- Make circles with your feet.
- Point one foot as you flex the other foot. Aim for maximum extension.
- Alternate bending your knees.

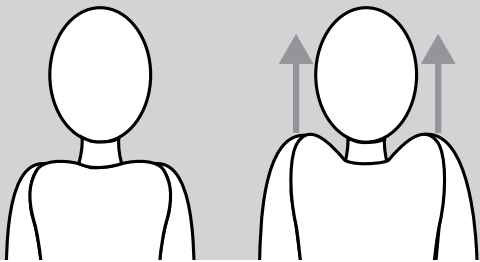
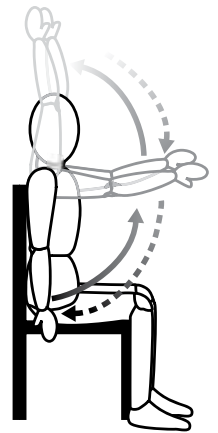


These exercises are crucial for preventing blood clots and pulmonary embolisms after your surgery. You must do them a few hours after your operation and continue doing them daily. Do not cross your legs in bed or when sitting since this hinders circulation.

Strength-building exercises

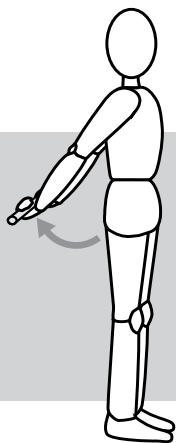
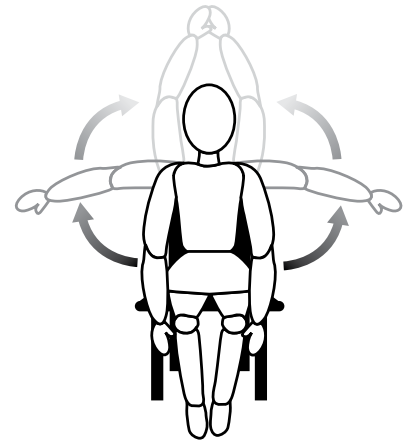
The purpose of these exercises is to restore flexibility to your chest and shoulders. **Do these exercises twice a day.** Start with 3 to 5 repetitions. If you can, increase the number of repetitions to 10. You can do the exercises standing up or sitting down.

- Start with your arms by your sides. Raise arms forward and over your head while breathing in.
- Return to starting position while breathing out.



- With arms by your sides, raise your shoulders while breathing in.
- Lower your shoulders while breathing out.

- With arms by your sides, raise arms to each side and over your head while breathing in.
- Lower your arms while breathing out.



- With arms by your sides, raise them backwards, keeping them straight and breathing in. Lower your arms while breathing out.
- Keep your back straight.

It is normal to feel a slight pulling when doing certain exercises. Do the exercises in front of a mirror so that you can see whether you are doing them equally on both sides. Do not hold your breath when doing the movements.

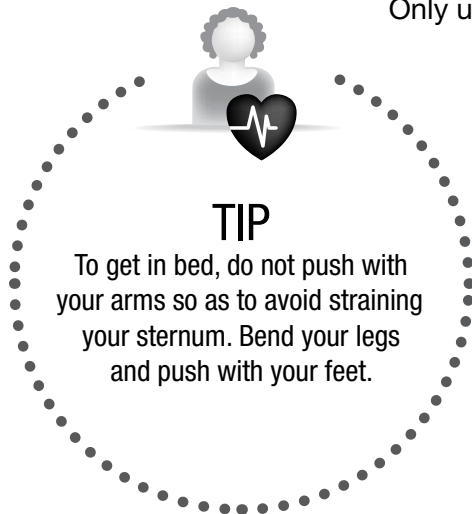
Nurses and other health professionals will remind you of the importance of increasing your mobility and doing your exercises. **It is your responsibility to do your exercises as often as possible.**

Techniques for getting up and lying down

In order to reduce pain and enable your sternum (breastbone) to heal properly, we recommend that you use the following techniques for 8 weeks when you want to get up or lie down.

To sit down or get up from a chair or toilet:

- Do not put weight on your arms — use your legs.
Only use your arms to guide your movement.



To get out of bed:

1. Turn on your side, bending your legs.
2. Swing your legs out of the bed.
3. Push with the elbow of the arm underneath you and the hand of the arm in front of you while breathing out.



Regaining autonomy

All care staff will focus on helping you resume your daily activities. You need to regain sufficient autonomy to do certain things, such as washing yourself or walking alone in the hall, so that you can return home. On the third day following your surgery, you should be able to take care of your personal hygiene. You will need to rest after each activity in a chair or in your bed.

If you are having trouble regaining your strength or autonomy, the rehabilitation team (which includes physical therapists and occupational therapists) can help you address the following:

- Eating
- Getting up, lying down
- Walking
- Personal hygiene or dressing
- Household cleaning and washing
- Meal preparation

Walking and stairs

During your stay, you will be encouraged to walk in the halls and continue walking once discharged, progressively increasing your distance.

Stairs:

- Go at your own pace.
- Do not hold your breath.
- Stop and rest if you feel out of breath.



Preparing to leave

You must plan your return home so that you can progressively resume your normal life.

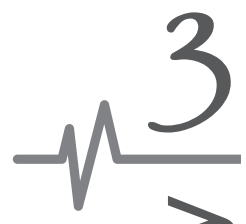
The care team will assess your situation to identify your needs once you leave the hospital. Your family and loved ones will be invited to the meeting. We will forward the necessary information to your CLSC, your family physician and your aftercare facility, if applicable.



You will be discharged at 11 A.M.
BE SURE TO PLAN THIS WITH YOUR FAMILY.



Return home and recovery

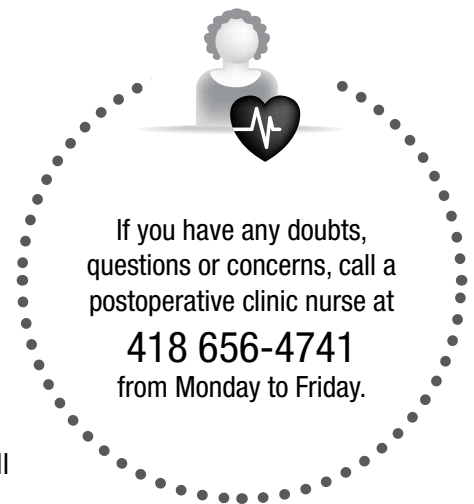


MEDICAL FOLLOWUP

You must make an appointment with your family physician and cardiologist. Mention that you recently had heart surgery.

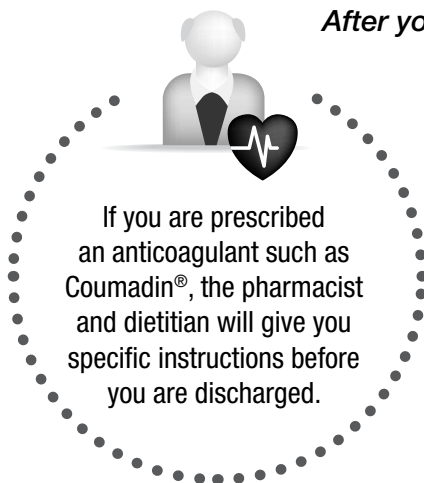
- See your family physician 1 to 2 weeks after leaving the hospital.
- See your cardiologist 4 to 6 weeks after your surgery.

You must see your surgeon three months after having aortic surgery. The surgeon will perform a computed tomography (CT) scan of the chest or an echocardiogram. You will receive a call to plan your appointments at the aortic diseases clinic. If you have any questions, call a nurse at 418 656-8711, extension 5612.



MEDICATION

While you are in the care unit, the pharmacist, surgeon and specialized nurse practitioner will jointly reassess your medications. It is highly likely that your usual medication(s) will be changed. You will be given a new prescription before you are discharged.



After you leave the hospital:

- Give your pharmacist your prescription.
- Bring your former medications so the pharmacist can identify which ones you should continue or stop taking.
- If you have additional questions about your medications, ask your pharmacist.
- You must take your medications as prescribed until your next appointment with your family physician or cardiologist, who will re-evaluate you and make changes to your medications if necessary.

WOUND CARE

- If you have sutures, staples or bandages when you are discharged, a CLSC nurse will provide wound care at your home.
- You can take a shower once all bandages have been permanently removed.
- Use a mild, unscented soap to clean your wound and rinse it with clean water. Upon exiting the shower, dry the wound well by patting it lightly with a clean towel.
- It is normal for your wound to be sensitive and itch. This is part of the healing process.
- Do not expose your wound to the sun for 6 months.
- Avoid baths, pools and spas as long as your wound has not fully healed and still has a scab.



Contact your physician or a postoperative clinic nurse if you have any of the following signs of wound infection:

- Increased redness
- Swelling
- Unpleasant odour
- Increased pain
- Fever
- Yellowish or greenish discharge

PROTECTING YOUR STERNUM

If your surgery required a sternotomy, your sternum had to be cut and rejoined using metal wire. It will take an average of 6 to 8 weeks to heal, the same amount of time as a broken bone.

During this time, you have to take certain precautions:

- Do not lift, pull or push any objects 10 lb (5 kg) or over.
- When lifting an object, keep it close to your body. You should not feel pain from your wound when moving. Avoid twisting and sharp movements.
- Before coughing, press your pillow firmly over your wound. If your pillow is not available, cross your arms tightly.
- Continue to use the techniques for getting up and lying down. Refer to Techniques for getting up and lying down on page 23.
- Within 8 weeks and with your physician's consent, you can progressively resume any activities requiring the use of your arms (golf, bowling, tennis, cycling, skiing, etc.).
- Avoid any activities where you could fall (using a ladder or stepladder, etc.).



If it feels like your sternum is moving when you make certain movements or cough, contact a postoperative clinic nurse.

PREVENTING INFECTIVE ENDOCARDITIS

Endocarditis is an infection that is generally caused by bacteria. It most often affects the heart's valves and sometimes affects the heart's inner wall. It normally occurs in people with heart valve disease. This is why certain precautions must be taken to prevent this complication.

Keep your mouth healthy

The germs in your mouth are not normally harmful, but a dental procedure or poor oral hygiene can introduce these germs into your bloodstream.

- Brush your teeth after each meal and before going to bed.
- Floss every day.
- See your dentist at least once a year, even if you have a dental prosthesis.
- Notify your dentist if you have bleeding gums.
- Remove your dental prosthesis for at least 5 hours a day.

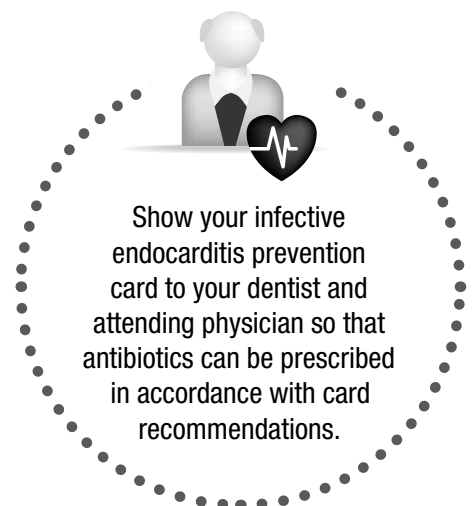
Watch for signs of infection and call your physician if you have:

- A fever higher than 38.5°C (101.3°F) for more than 2 days or any chills.
- A cold with a persistent fever or greenish secretions.
- Signs of a urinary tract infection: trouble urinating, burning sensation or foul-smelling urine.
- Greenish discharge from your wound.

You will need to take antibiotics

To prevent infective endocarditis, you will be prescribed antibiotics before certain respiratory tract exams or before a dental treatment (including a cleaning) if you have any of the following:

- Partially repaired or unrepaired congenital heart defect
- Heart transplant and heart valve damage
- Replaced or repaired heart valve
- Aortic endoprosthesis
- A previous episode of endocarditis within 6 months following a complete repair of a congenital heart defect or an aortic replacement



Show your infective endocarditis prevention card to your dentist and attending physician so that antibiotics can be prescribed in accordance with card recommendations.

SOLUTIONS TO THE MOST COMMON PROBLEMS

You may experience certain problems once home. This section provides solutions to the most common problems following cardiac surgery and describes the symptoms for which you must see a health professional.

Pain

It is normal to have muscle pain for a few weeks to a few months. Your pain must be effectively managed so that you can gradually resume your normal activities and recover faster.

- If necessary, take a pain medication as prescribed. Take it before bed, even if the pain is tolerable, to ensure you get a good night's sleep.
- Use your pillow to reduce pain when you cough and when you do your breathing exercises.

Palpitations

Palpitations frequently occur after cardiac surgery because of the trauma your heart has just experienced. The palpitations can persist for up to one month. Avoid mint and stimulants such as coffee, tea, chocolate, cola and tobacco.

Fever

Fever is common in the first few days after surgery. However, after the first week, fever may be a sign of infection. If you had a valve replacement, you must watch carefully for signs of fever. Refer to Preventing infective endocarditis on page 29.

- Consult a physician if you have any other signs of infection, such as a red and painful incision, coughing, coloured sputum, pain when urinating, etc.
- If your temperature is over 38.5°C (101.3°F), take acetaminophen every 4 to 6 hours.



You should not have any angina after a bypass procedure. If you have chest pain that seems abnormal or that resembles the chest pain you had prior to your surgery, consult a physician.



If your palpitations last longer than 30 minutes and are accompanied by breathlessness and discomfort, **go to the emergency room.**



If your temperature is over 38.5°C (101.3°F) for more than 48 hours or if you develop a fever after your first week at home, consult a physician.

Breathlessness or fatigue

It is normal to experience fatigue and some shortness of breath after your surgery. A number of factors can cause these symptoms.

- Physical deconditioning
 - The fact that you have been less active for a period of time may cause you to feel tired and more short of breath faster than before.
- Pleural effusion
 - This is an accumulation of fluid around the lung. If you develop this condition, a diuretic may be prescribed. In more severe cases, a puncture may be necessary to drain the effusion.
- Pericardial effusion
 - This is an accumulation of fluid around the heart. An anti-inflammatory may be prescribed to treat it.
- Anemia (low hemoglobin)
 - Surgery-related blood loss can decrease the number of oxygen-carrying red blood cells, causing fatigue and shortness of breath.
 - Your red blood cell count should return to normal within 2 to 3 weeks. If necessary, you will be prescribed iron supplements before you leave the hospital.

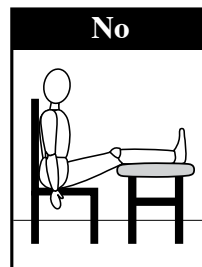
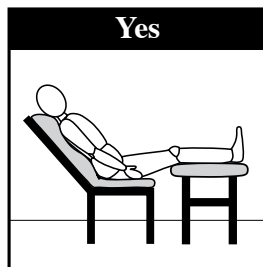
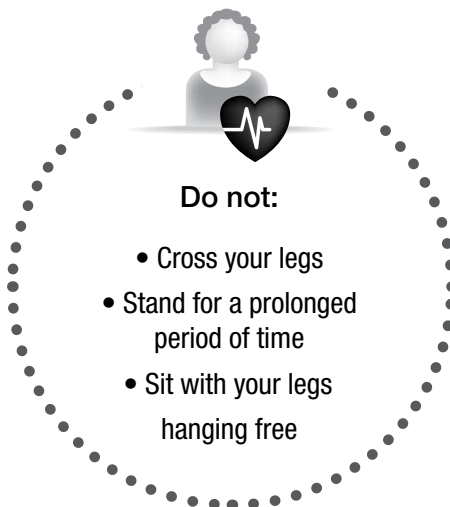


>>> If you experience shortness of breath while resting or are unable to have a conversation or tolerate lying down, go to the emergency room.

Swelling in the operated leg

If you had a bypass and a vein was removed from your leg, you may develop swelling in that leg that can last for a few days or even a few weeks. Walking will improve circulation and reduce swelling in your leg.

In a sitting position, raise your legs while reclining your back.



Throat pain

Intubation during surgery can irritate your throat. Your voice may be hoarse and you may have trouble swallowing. These symptoms should disappear within 2 to 3 weeks following the surgery.

Ice chips and cough drops may soothe your throat. Opt for sugar-free cough drops. If you continue to have trouble swallowing or are choking, consult your physician.

Constipation

Constipation is common following surgery. Lack of exercise, changes in eating habits, anesthesia and certain medications can all cause constipation.

Try the tips below to prevent constipation.

- Gradually increase your fibre intake by eating more whole grain breads and cereals, bran muffins, legumes, fruits and vegetables, and nuts and seeds.
- Prunes and prune juice are effective at preventing constipation.
- Make sure you stay well hydrated.
- Increase your activity level according to your tolerance.
- Some opiates (such as Dilaudid®) can cause constipation. When your pain has diminished, you can replace opiates with 1 or 2 pills of acetaminophen (Tylenol®).
- You may be recommended some over-the-counter products. Ask your pharmacist about them first.



Consult your physician if you are constipated for longer than 5 days.

Problems sleeping

Anesthesia, medication and stress can combine to cause insomnia and concentration problems.

- Any insomnia should disappear once you have resumed your normal activities and have a more stable schedule.
- Sip some herbal tea (camomile, linden flower) 2 to 3 times per day to help you relax and sleep better.
- Avoid caffeine and alcohol.



Consult your physician if your sleep or concentration problems persist.

Emotional reactions

Surgery is a stressful experience for both body and mind. It is normal to experience mood swings and irritability after surgery. Often, people only realize the true scope of the experience after they return home.

- Be sure to alternate periods of activity and rest according to your capabilities.
- Do not fixate on what you did before but rather on the progress you are making every day.
- Surround yourself with positive and meaningful people with whom you can discuss your worries.
- Avoid stress and hassles that can siphon your energy.



Family and loved ones

While the patient recovers, simply be there to listen and provide support. It's the best help you can give!



Important: **Consult a physician** if you are experiencing persistent depression.

RESUMING ACTIVITIES

Daily activities



Family and loved ones

Help out with errands, household chores and meal preparation. The patient will appreciate it, and it will help him or her get back to normal faster.

You will gradually regain your autonomy after returning home. You will be able to take of yourself, attend to your personal hygiene, move about the house and climb the stairs.

You will be able to do short activities and help with light chores. Listen to your body and rest regularly since your body will still need it.

Don't take it too easy — strength-building exercises and walking will help your body regain its flexibility and energy. **Go at your own pace.** In time, you will regain your confidence and be able to gradually increase the distances you walk.

Physical activity





It is important to increase your activity level progressively. The perceived exertion scale is a tool you can use to evaluate the overall intensity of an exercise using numbers or words.

Start with short, light-intensity (2 out of 10 on the exertion scale) walks of 10 to 20 minutes, 2 to 4 times a week.

Gradually increase the duration and frequency of your walks to 45 minutes, 5 to 7 times a week.

Your perceived exertion should be fairly light to somewhat hard (3 to 4 out of 10).

Do the exercises recommended by your physio-therapist after your walk. You will be warmed up and more likely to do them more often.

PERCEIVED EXERTION	
	0 Nothing at all
	0.5 Extremely weak
	1 Very weak
	2 Weak
	3 Moderate
	4 Somewhat strong
	5 Strong
	6 Stronger
	7 Very strong
	8
	9 Very very strong
	10 Maximum

INSTITUT UNIVERSITAIRE DE CARDIOLOGIE ET DE PNEUMOLOGIE DE QUÉBEC

Conception: Jean Jobin, 1989
Adapted from: Borg, G.A.V. Psycho-physical basis of perceived exertion. Med. & Science in Sport Exercise, 1982, vol 14(5):377-81
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Institut universitaire de cardiologie et de pneumologie de Québec
Revised - January 2010



Be sure you can have a conversation while exercising. If you have trouble talking normally or start wheezing, the activity is too intense. **SLOW DOWN!**

After 6 weeks at home

If your recovery is going normally and your physician confirms as much, you can gradually resume doing the activities you enjoy at your own pace. Start with light - to moderate - intensity activities.



Below are some tips on how to make the most of your exercise sessions.

- Always do activities that you enjoy, and do them in a relaxed manner.
- Start by warming up for 5 to 10 minutes.
- Join or involve other people: walk with your spouse, a friend or a walking club.
- Do not exercise in extreme temperatures (extreme cold, high humidity, heat waves, etc.).
- After a meal, wait 30 to 60 minutes before exercising.

Be patient: it can take a few weeks before you see any improvements, so go at your own pace. Your fitness will improve gradually, and you'll feel better with time.

Intensity	Daily life	Activities
Light	Light household chores (washing the dishes, cooking, making the bed).	Light-intensity walking on a flat surface, cycling with no resistance, bowling, playing pool, fishing.
Moderate	Moderate household chores (washing the floor, washing the windows, gardening). Sexual intercourse.	Moderate-intensity walking on a flat surface, going up and down the stairs, light-intensity cross-country skiing, downhill skiing, water aerobics, golfing (without a cart).
Vigorous	Shovelling snow, chopping wood, mowing the lawn (manual mower).	Jogging, mountain hiking, cross-country skiing, swimming

Sexuality

After heart surgery, it is normal to worry about resuming sexual activity. However, there are no restrictions. You should wait until both you and your partner feel comfortable. For six weeks, do not put weight on your arms to avoid straining your sternum.

Sexual intercourse requires about the same effort as quickly climbing the stairs.

Return to work

The length of your recovery will vary depending on your surgical procedure and the nature of your job. In general, you can return to work after 2 to 3 months. If your experience complications, however, that extend your recovery time, your cardiologist or family physician may reevaluate your situation.

Insurance form

- Complete the section concerning you.
- Prepare an envelope with sufficient postage.
- Contact the secretary at 418 656-4717 to find out all fees.
- Return the completed form and envelope by giving it to the cardiac surgery care team directly or mailing it to:

Institut universitaire de cardiologie et de pneumologie de Québec
Secrétariat de chirurgie cardiaque
2725, chemin Ste-Foy, L-3583
Québec, Québec G1V 4G5

Driving

Anesthesia, fatigue and medications can all affect your reflexes. It is recommended to wait 6 weeks before driving. You may need to wait longer if you are taking narcotics (powerful painkillers). Discuss the situation with your physician.



IMPORTANT

By law, you must wear a seatbelt at all times. Doing so will not injure your incision. As a passenger, you can sit in the front of the vehicle when you leave the hospital.

HEART DISEASE RISK FACTORS

Surgery does not cure your heart disease. Instead, it repairs the damage to your heart caused by heart disease. The table below presents the heart disease risk factors. Some factors are non-modifiable, such as age, sex and heredity. However, other factors are modifiable, which means you can change them. This simplified questionnaire can give you insight into your risk factors.

Whatever risk factors you may have, consult your physician for strategies to reduce your risk of another cardiac event.

Non-modifiable risk factors		Check only if
You are:	a man over 45 years of age	<input type="checkbox"/>
	a woman over 55 years of age	<input type="checkbox"/>
A family member experienced cardiovascular problems before age 60 (infarction, stent, bypass, stroke, etc.).		<input type="checkbox"/>
Modifiable risk factors		Check only if
Your blood pressure:	is greater than 135 over 85 when you take your blood pressure yourself	<input type="checkbox"/>
	is greater than 130 over 80 if you are diabetic	<input type="checkbox"/>
You take medication to control your blood pressure		<input type="checkbox"/>
You take medication to control your cholesterol		<input type="checkbox"/>
Your body mass index:	is greater than 30 [weight (kg)/height (m ²)]	<input type="checkbox"/>
Your waist circumference:	men: is greater than 94 cm (37")	<input type="checkbox"/>
	women: is greater than 80 cm (30")	<input type="checkbox"/>
You are physically active: less than 150 minutes per week		<input type="checkbox"/>
You are:	smoker	<input type="checkbox"/>
	diabetic	<input type="checkbox"/>
	stressed	<input type="checkbox"/>

The section below describes how you can change certain life habits that are harmful to your health. There are many resources available to help you change your risk factors. For more information, refer to page 46.

Hypertension (high blood pressure)

Blood pressure is the pressure necessary to circulate blood throughout your body. The only way to know your blood pressure is to measure it. Anything over 140 over 90 (self-measurement: 135/85; diabetic: 130/80) is considered hypertension. One in 5 people have high blood pressure, which is a subtle disease that can cause numerous complications involving the heart, brain or kidneys. Thankfully, high blood pressure is a modifiable risk factor.

Strategies:

- Maintain a healthy weight. If you are overweight, reduce your weight by 5% to 10%.
- Reduce your salt intake (refer to Diet on page 42).
- Exercise regularly.
- Take your medications regularly, as prescribed.
- Drink alcohol in moderation and limit yourself to:
 - Women: 1 to 2 drinks/day to a maximum of 9 drinks/week
 - Men: 2 drinks/day to a maximum of 14 drinks/week
 - Do not drink every day.

Dyslipidemia (cholesterol imbalance)

Cholesterol is a fat that your body produces naturally. Triglycerides are another type of fat that your body needs to function. While you need both cholesterol and triglycerides to stay healthy, they can be harmful to your health in excess quantities. Target values will vary according to your risk level.

Strategies:

- Lower your intake of trans fat and saturated fat (refer to Diet on page 42).
- Opt for monounsaturated and polyunsaturated fats.
- Eat fish high in omega 3s (salmon, trout, sardines).
- Reduce your consumption of sugar and alcohol.
- Boost your intake of soluble fibre (oats, barley, legumes, psyllium, fruits and vegetables).
- Exercise regularly.
- Take your medications regularly, as prescribed.

Overweight/obesity

Excess weight — especially around the waist — increases your cardiovascular disease risk. Reducing your weight by 5% to 10% can often help enhance diabetes control, improve your lipid profile and lower your blood pressure.

Strategies:

- Set realistic objectives and avoid miracle cures.
- Eat slowly and reduce serving size.
- Make better nutritional choices by lowering your intake of salt, sugar and bad fats and increasing your fibre intake.
- Reduce your alcohol consumption.
- Exercise regularly.
- Follow the recommendations of a dietitian or kinesiologist.

Physical inactivity

Physical inactivity means a lack of or irregular physical activity. Physically inactive people have the same risk of heart disease as someone who smokes a pack of cigarettes a day. Physical activity is an essential part of improving your overall health. The recommendation is 150 minutes a week in order to enjoy protective cardiovascular benefits, control your risk factors and improve your quality of life. The periods of physical activity in a day are cumulative.

Strategies:

- Aim for 150 minutes of moderate-intensity exercise per week (see the table on page 35).
- Walk as often as possible.
- Use a pedometer to count your steps. Aim for a minimum of 5,000 steps per day and progressively increase to around 10,000 steps per day, depending on your tolerance.
- Take the stairs instead of the elevator.
- Follow the recommendations of a kinesiologist.



Diabetes

Diabetes is a chronic disorder that causes high blood glucose levels. It considerably increases cardiovascular risk. You can better control your diabetes by significantly changing your lifestyle.

Strategies:

- Check your blood sugar (a normal level is 4 to 7 mmol/L fasting).
- If you are overweight, reduce your weight by 5% to 10%.
- Limit your consumption of sugar, fat and alcohol.
- Boost your intake of soluble fibre (oats, barley, legumes, psyllium, fruits and vegetables).
- Exercise regularly.
- Take your medications regularly, as prescribed.

Stress

Stress is a reaction to positive or negative forces. It is influenced by your ability to deal with those forces. Stress is negative when you lose or lack control, which throws your life out of balance. Repetitive or sustained stress can harm your health.

Strategies:

- Be more aware of the signs and causes of stress.
- Express your emotions by discussing your needs and fears with someone you trust.
- Set and follow priorities.
- Enjoy a variety of leisure activities (exercise, relaxation techniques, laughing, listening to music, etc.).
- Attend a stress management workshop.
- Ensure you sleep well.
- Prepare to deal with events (get informed, develop strategies, use visualization and positive thinking, etc.).
- Live in the present.

Smoking

Quitting smoking is the best thing you can do for your health.
No drug will ever work as well!

Smoking:

- Decreases or even cancels out the effect of many medications.
- Reduces the longevity of bypasses by half.
- Increases the risk of wound infection after surgery.
- Increases healing and recovery time.

If you stop smoking:

- After 8 hours, your body transports oxygen better. The risk of complications during and after operations diminishes.
- After 48 hours, your risk of heart attack starts to drop.
- After 72 hours, your lungs work better and you can breathe easier.
- After 2 to 12 weeks, your blood flow improves, it becomes easier to walk and your lung function increases by around 30%.
- In less than a year, your risk of smoking-related heart attack drops by half.

It can often take several tries before you manage to lead a smoke-free life. The only danger is giving up.

Whether or not you're ready to quit smoking, during your stay we will provide you with smoking cessation support and services.

We offer:

- Short, personalized interventions in tune with your concerns.
- An evaluation of your withdrawal symptoms.
- Pharmacological help as needed.
- Telephone followup after you return home.
- Referral to community resources for help with quitting.



DIET

Making healthy life choices is part of your cardiac rehabilitation. A crucial aspect of this process is your diet. You must make the necessary changes to help prevent future heart disease and ensure your surgery is a success.

A dietitian may meet with you while you are hospitalized to analyze your diet, make suggestions and steer you towards the best resources for changing your eating habits. Feel free to notify the care staff if this option interests you.

Healthy plate

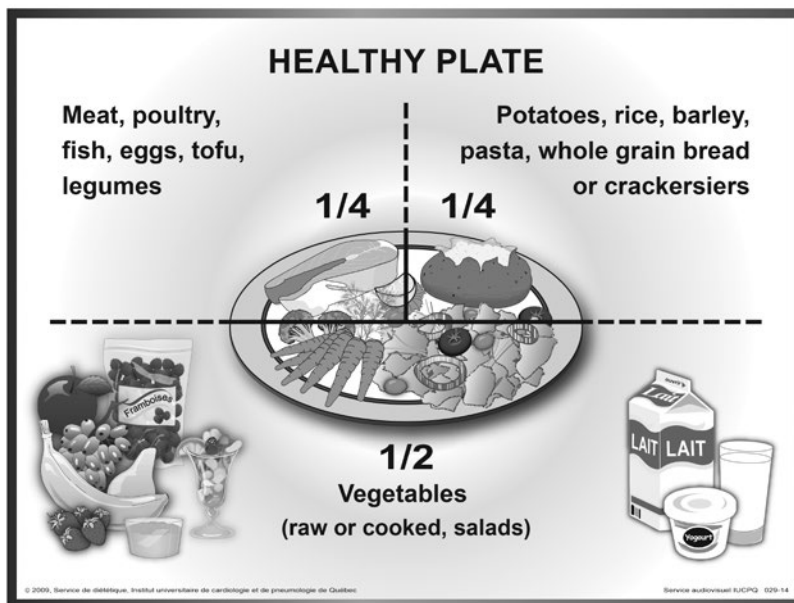
Before worrying about your fat, sugar and salt intake, you need to make sure that your diet is balanced, meaning it provides all the nutrients that your body needs to function. These nutrients include protein, carbohydrates, fat, vitamins and minerals. The healthy plate tool provides practical guidance on food choice and serving size. You can follow the general information below, but feel free to consult a dietitian for more personalized advice.

HERE'S HOW TO MAKE A HEALTHY PLATE:

Half of your plate should be vegetables in the form of cooked or raw vegetables, salads or vegetable soup. They provide fibre and antioxidants that are important for your heart's health.

One quarter of your plate should be protein, which is found in meats, poultry, fish, eggs, tofu, nuts, seeds and legumes. Consuming sufficient protein helps you feel full longer and keeps you from snacking in between meals.

The other quarter of your plate should be starch (bread, potatoes, pasta, rice, barley, crackers). Foods in this food group mainly provide dietary fibre, which contributes to the health of your digestive system and helps you feel full. Opt for whole grain foods.



If you are still hungry, complete your healthy plate with milk or alternatives (milk, yogurt, soy drink, etc.) or a fruit. Milk and alternatives help you meet your calcium requirements to keep your bones healthy. Fruits help you increase your intake of fibre and antioxidants.

Fats and heart health

Certain types of fats—specifically trans fat and saturated fat — are harmful to your heart by helping to raise bad (LDL) cholesterol. It is best to limit their consumption.

Foods to avoid: high sources of *trans* and saturated fat

Fried foods	Butter	Cold cuts
35% cream	Croissants	Chips
Regular cheese	Vegetable fat	Meat fat
Hydrogenated margarine	Pastries	Poultry skin
Lard	Shortening	

These foods are high in trans and saturated fat and can be replaced by the following foods, which provide good fats for heart health.

Foods to choose: sources of good fats

Spread	Soft non-hydrogenated margarine made with canola or olive oil
Sauté	Olive or canola oil
Dressings/vinaigrettes	Olive or canola oil
Baking (cookies, crumbles, pie dough, muffins, cakes)	Soft non-hydrogenated margarine made with canola or olive oil Canola oil

Sodium












It is strongly recommended to limit your consumption of salt and salty foods in order to:

- Control your blood pressure.
- Help your kidneys, heart and lungs work better.

Using salt-free seasonings is a good way to reduce your salt intake. A number of companies offer tasty, salt-free seasoning blends such as *McCormick*[®], *Mrs. Dash*[®], *Garno*[®] and *Club House*[®].

The vast majority of our salt intake, however, comes from processed foods and restaurant meals. Cooking your own meals and opting for fresh products that have undergone little to no processing are good ways to lower your salt intake.

The table below lists a number of common foods and their sodium content.

Food	Serving size	1 packet of salt = 300 mg of sodium
Table salt	1 teaspoon (5 ml)	
Reduced sodium soy sauce	1 tablespoon (15 ml)	
Canned/jarred sauce	1/2 cup (125 ml)	
Powdered soup base	1 teaspoon (5 ml)	
Liquid soup base	2 teaspoons (10 ml)	
Regular canned soup	1 cup (250 ml)	
25% sodium-reduced canned soup	1 cup (250 ml)	
Dry soup mix	1 cup (250 ml)	
Tomato or vegetable juice	1 cup (250 ml)	
25% sodium-reduced pasta side dish mix	1 cup (250 ml)	
Seasoned rice mix	1/2 cup (125 ml)	

Read food labels to make the right choices:

- Salt-free or sodium-free = 5 mg or less of sodium
- Low sodium or reduced sodium = 140 mg or less of sodium
- Low salt

Watch out for “light” products and those with 25% less sodium. They can still contain too much salt.

What to eat after heart surgery?

You may have less of an appetite for the first few days following your surgery. However, you need to consume sufficient protein to:

- Ensure your wound heals well (cell growth and repair).
- Build and maintain muscle mass.
- Preserve immune system function (prevent infection).

You must consume a source of protein at each meal. Protein is mainly found in the following foods:

Fish	Nuts/seeds, nut/seed butters
Poultry	Cheese
Lean meats	Milk or chowder-style soups
Legumes or tofu	Yogurt
Eggs	Milk-based desserts: pudding, tapioca, blancmange

Your incisions will heal faster if you eat 3 meals a day containing protein.

If your appetite is low, you can consult a dietitian during or after your stay in the hospital. You may be recommended enriched foods or supplements, depending on your condition.

RESOURCES

Pavillon de prévention des maladies cardiaques (PPMC)

The PPMC is a specialized cardiac rehabilitation service offered by the Institute. The team of nurse clinicians, kinesiologists and dietitians have all the necessary expertise to help you take charge of your health and restore your wellbeing.

To help you set and achieve your objectives, the following integrated services are offered:

- Health assessment
- Risk factors screening
- Physical exercise program
- Nutritional assessment and followup

Public conferences

Because of your medical condition, you must modify a number of life habits and make changes in your personal life. PPMC public conferences are given by health professionals and are intended to inform you and your family about:

- Cardiovascular disease and risk factors
- Medications
- Physical activity
- Stress and anxiety
- Nutrition

Conferences are given twice a year and are free. They also provide an opportunity to meet people who are going through the same things as you. For information, call 418 656-4594.

Healthy eating

- How to eat healthy
- Introduction to vegetarianism
- Understanding food labels and choosing wisely

Weight management

- Benefits of weight loss
- AMIGO program (multidisciplinary obesity management)

Stress management

- **Institut universitaire de cardiologie et de pneumologie de Québec (IUCPQ)**

IUCPQ diabetes clinic

- **Other resources are available at the CSSS nearest you.**

“Traité santé” program

Smoking cessation (free information and support services)

- J'ARRÊTE
 - Smoking cessation helpline: 1 866-JARRETE (527-7383)
 - Website: www.jarrete.qc.ca

- Quit Smoking Centres: To reach the centre nearest you, contact your local CSSS.

- Your pharmacist and family physician can also help with your efforts to quit smoking.

Ask your CLSC.



Cardiac procedures | 4



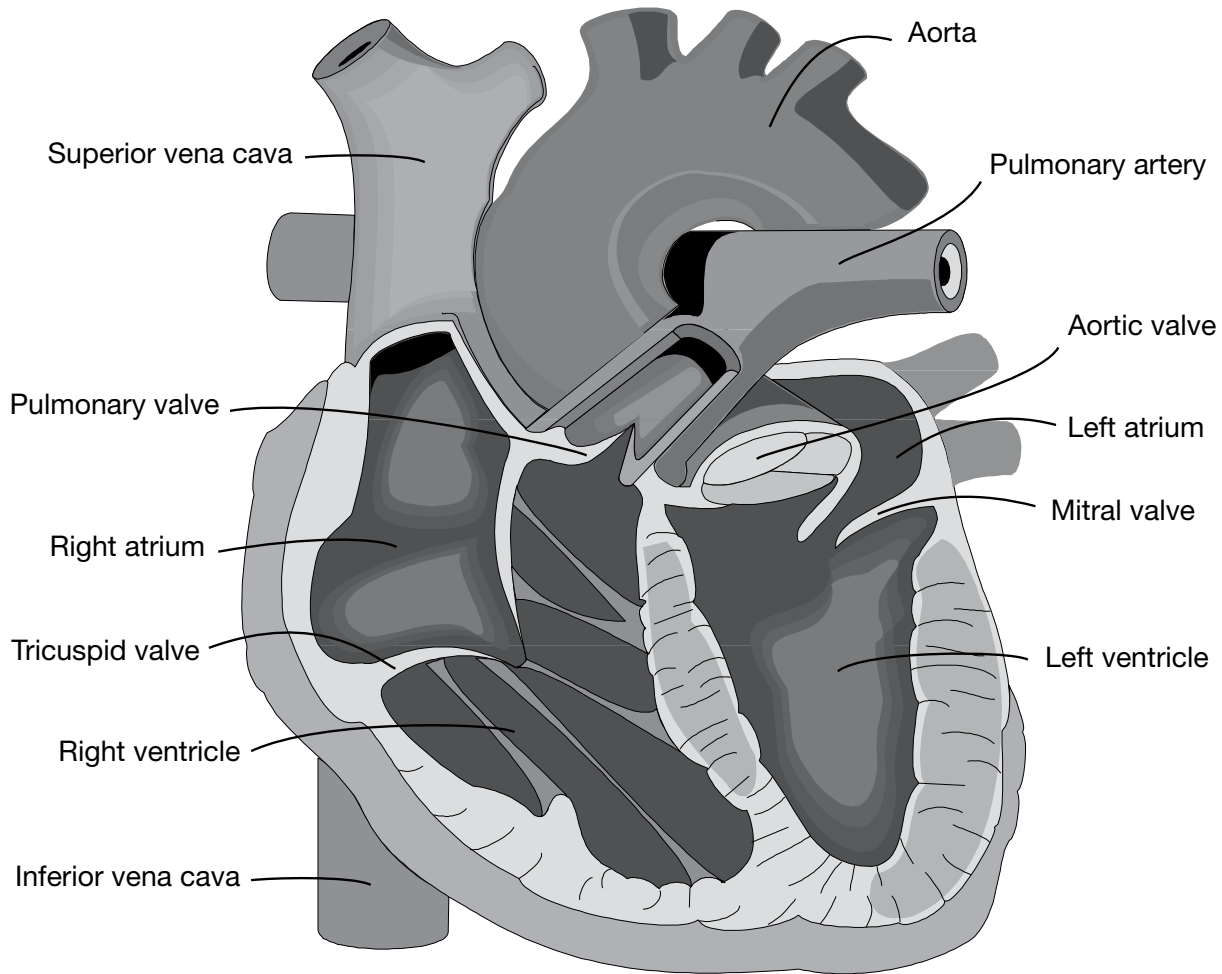
This part provides information on all cardiac procedures. Feel free to read only the sections that apply to you. Your physician may use the illustrations on page 60 or 61 to show you the specific details of your procedure. The topics, procedures and page numbers are shown below.

Heart anatomy and function	52
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HEART ANATOMY AND FUNCTION

The heart is the organ that pumps blood. It is a muscle. The heart has four chambers: two atria and two ventricles.

- The right side of the heart pumps blood to the lungs to pick up oxygen. Once oxygenated, blood is pumped to the left side of the heart.
- The left side of the heart pumps blood throughout your body.



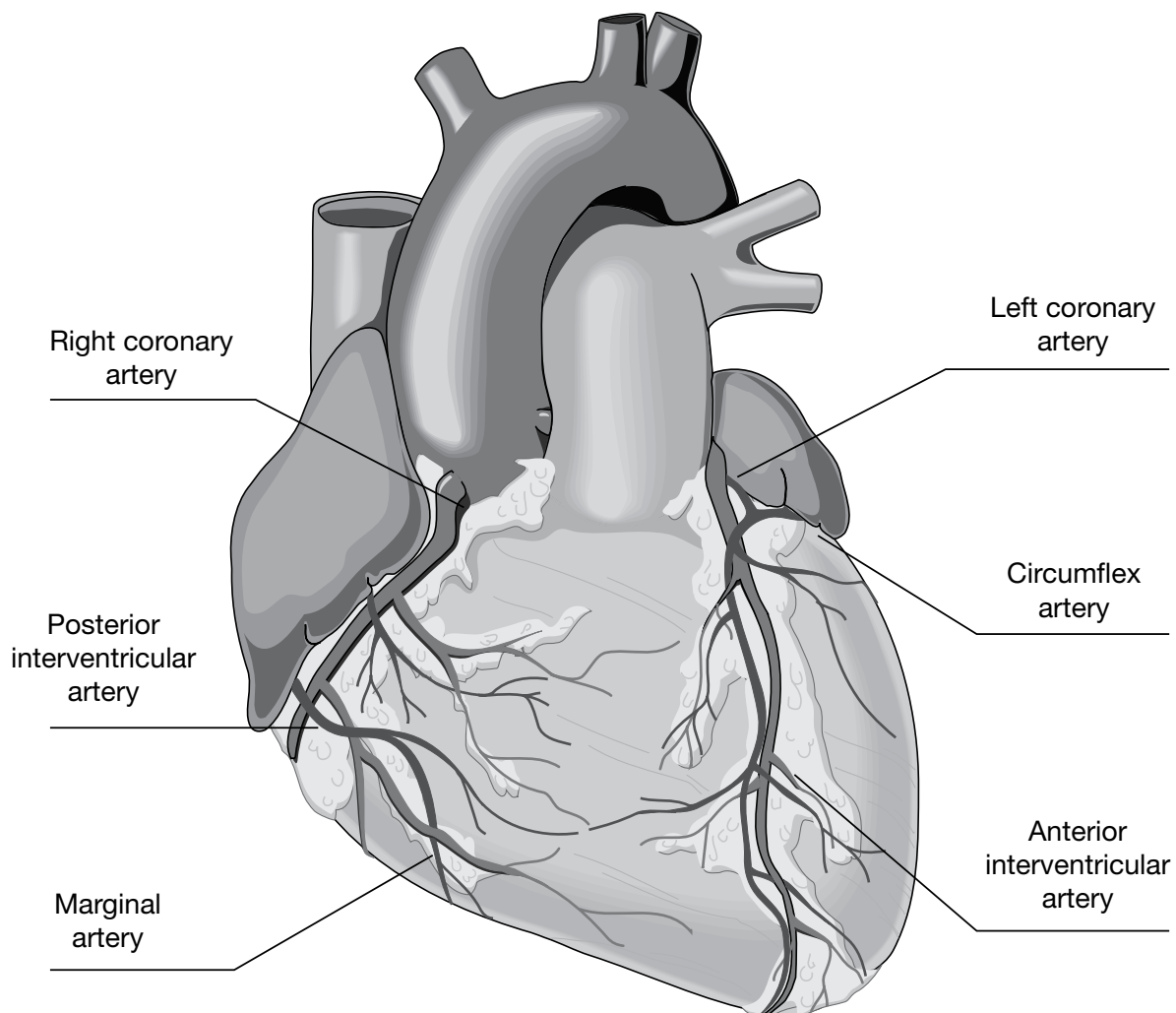
The heart has four valves: mitral, tricuspid, aortic and pulmonary. These valves allow blood to flow from one chamber to the next in a one-way direction. A heart valve may sometimes be defective and must be repaired or replaced.

The most common heart valve problems that require surgery are valve stenosis and valvular insufficiency.

Coronary circulation

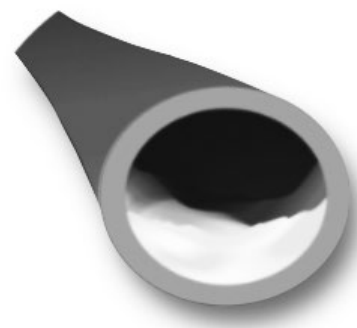
Like the body's other organs, the heart needs oxygen. The coronary arteries carry oxygenated blood to the heart.

If blood circulates poorly in the coronary arteries, the heart may not work as well, causing problems that require treatment or intervention.



Heart disease is a narrowing or blockage of one or more coronary arteries caused by atherosclerosis or arteriosclerosis.

- Atherosclerosis: formation of fat or calcium deposits in the arteries
- Arteriosclerosis: age-related narrowing of the arteries



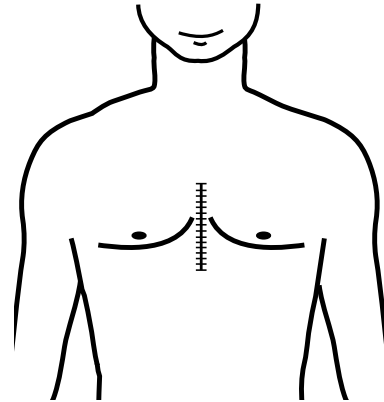
SURGICAL APPROACHES

The approach used depends on the type of surgery. This document covers only the sternotomy, the minithoracotomy and the thoracotomy. If your condition requires another approach, the care team will give you the necessary information

Sternotomy

A sternotomy is the most common approach used for coronary artery bypass surgery and valve replacement. It involves making an incision in the sternum so that the rib cage can be opened.

This approach facilitates access to the heart and the use of a heart-lung machine (which replaces the heart and lungs and keeps blood and oxygen circulating to your organs during surgery).

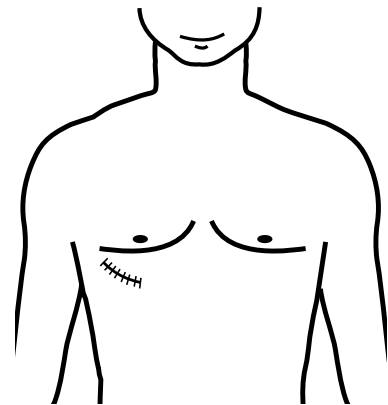


Minithoracotomy

Mitral valve surgery via minithoracotomy

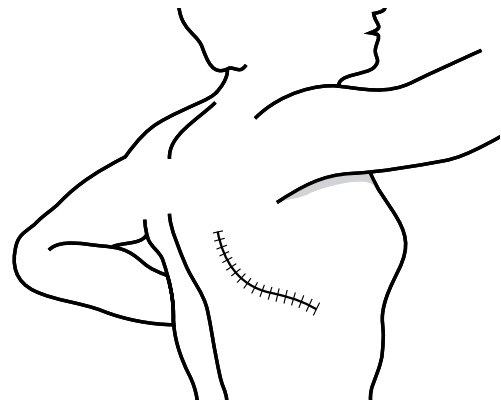
For this surgery, a small incision 4 cm to 5 cm in length is made between the ribs to access the mitral valve. Another incision is made in the groin to connect the heart-lung machine.

This approach cannot be used for other procedures such as a bypass or the repair of another valve. The surgeon will consider several criteria mainly related to your physiognomy (rib cage, size, weight) before suggesting this approach.



Thoracotomy

A thoracotomy (incision between two ribs) is used when the descending aorta must be replaced. This approach causes more chest and shoulder pain. The care team will therefore provide the appropriate pain medication and special recommendations to speed your recovery.



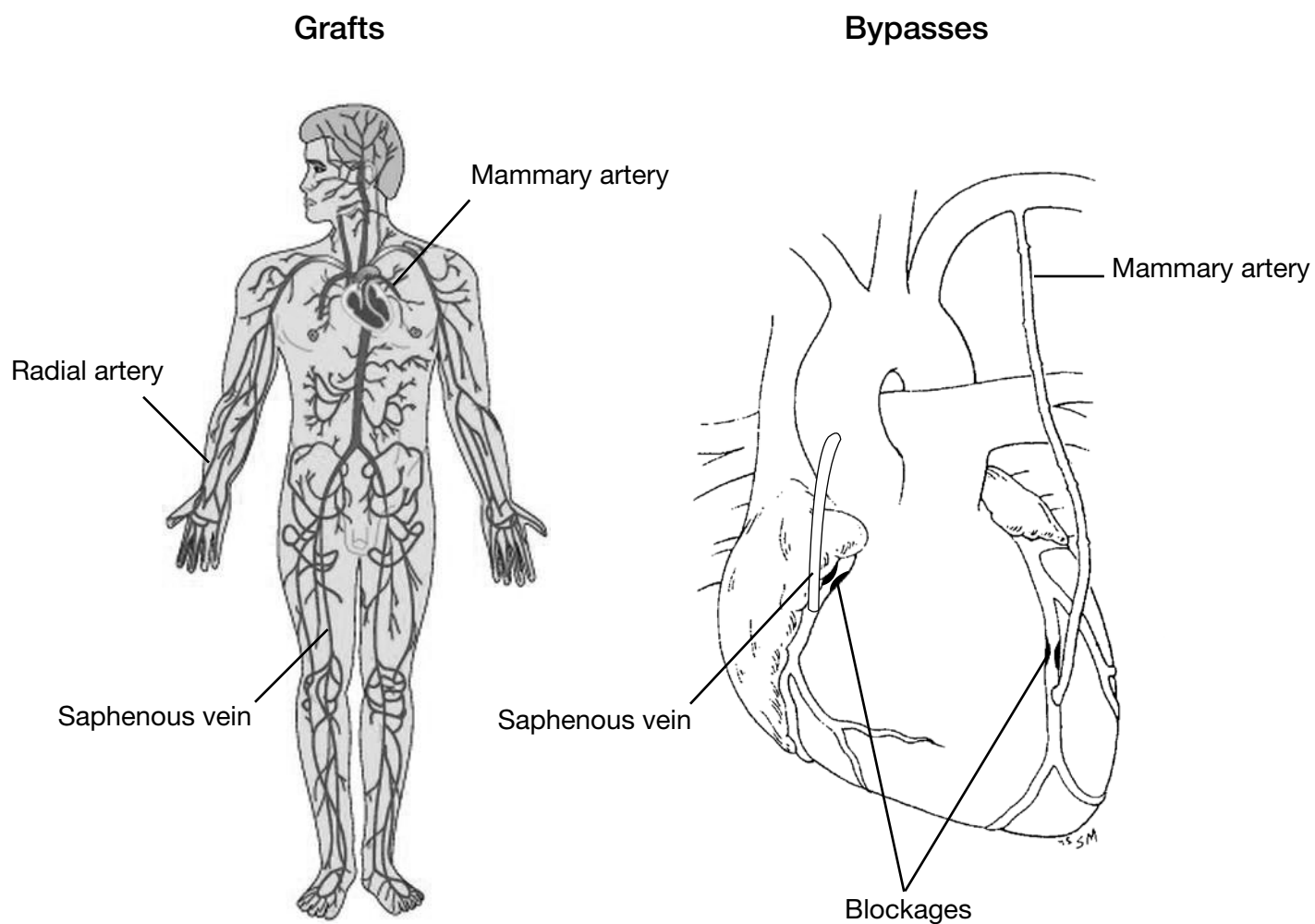
CORONARY BYPASS

This procedure involves bypassing a blocked artery to reestablish blood flow to the heart.

Different blood vessels can be used for a bypass:

- the saphenous vein in the leg
- the radial artery in the forearm
- the mammary artery in the chest wall

The vessel used “bridges” or bypasses the blockage. Blood follows the bypass to better irrigate the heart.



VALVE SURGERIES

Valve stenosis and valvular insufficiency sometimes require surgery.

- Valve stenosis is a narrowing of the valve opening that hinders blood flow through the valve.
- Valvular insufficiency is when the valve does not close completely, causing blood to back up (or leak) into the previous heart chamber.

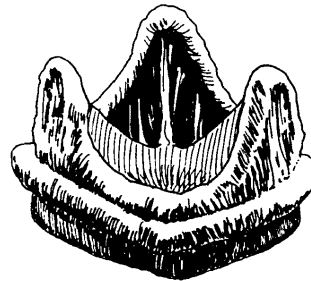
There are two types of surgery for heart valve disease: valve reconstruction and valve replacement.

- Valve reconstruction involves repairing the defective valve.
- Valve replacement involves replacing the defective valve with a prosthetic valve.

The prosthesis can be mechanical or biological. You will discuss with the surgeon which prosthesis is best for you.

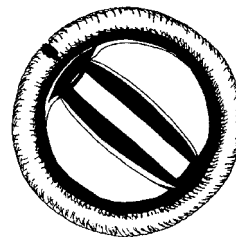
Biological prosthesis (bioprosthesis)

This prosthesis may be made from animal tissue (xenograft) or come from human donors (homograft). The prosthesis does not require you to take anticoagulants (blood thinners) and will last 10 to 15 years.



Mechanical prosthesis

This prosthesis requires that you take anticoagulants for the rest of your life. It lasts the longest.

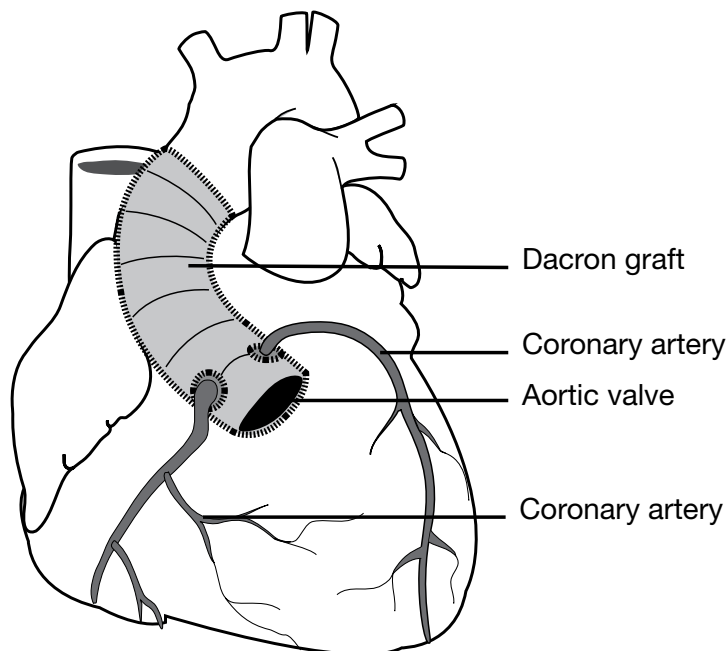


Other valve surgeries

Bentall procedure

This procedure is indicated where the aorta is enlarged and aortic valve disease is or is not present. It involves replacing the aorta and the aortic valve using a valve graft (a Dacron® tube containing a mechanical valve).

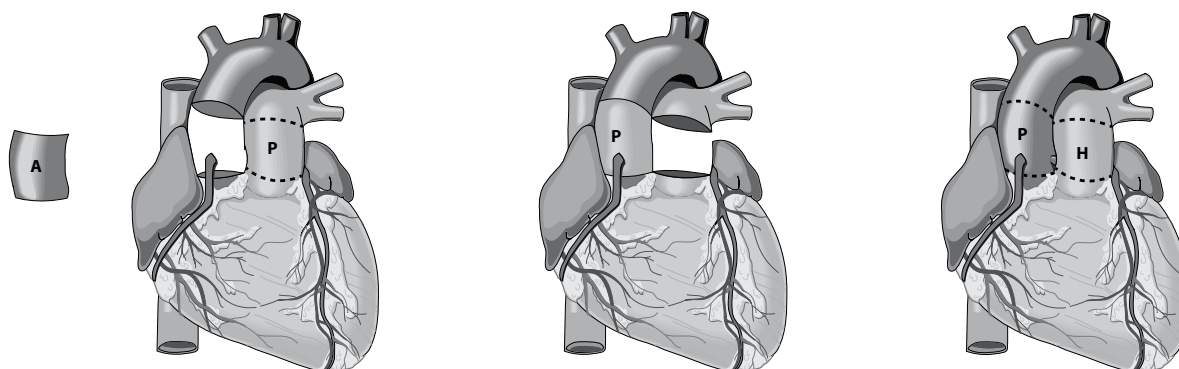
The coronary arteries must be reimplemented onto the graft. The natural valve can sometimes be kept.



Ross procedure

This procedure involves replacing the aortic valve (A) with your pulmonary valve (P) and replacing your pulmonary valve with a homograft (H) of a human valve.

This surgery can be done because your aortic and pulmonary valves have the same size, shape and configuration. The procedure extends the longevity of the homograft (H).



CORRECTING CONGENITAL HEART DEFECTS

Congenital heart defects are malformations of the heart and its main blood vessels that are present at birth. This section describes only the corrective surgical procedures most commonly carried out in adults.

Many congenital heart defects — such as tetralogy of Fallot, Ebstein’s anomaly and atrioventricular canal defect — require valve surgery, either the replacement or repair of one or more valves. If this applies to you, refer to *Valve surgeries* on page 56.

Atrial septal defect (ASD) and ventricular septal defect (VSD)

ASD is a hole in the wall that separates the atria. VSD is a hole in the wall that separates the ventricles. These holes let blood arriving from the lungs to pass through and return to the lungs. This is called a “shunt.”

These defects overload the heart and lungs. Over time, the heart swells to adapt.

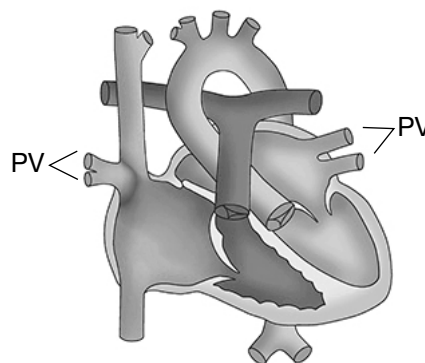
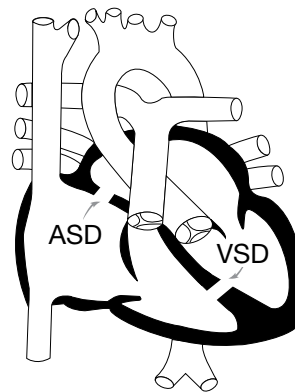
ASDs and VSDs are repaired by suturing the hole or closing it with a piece of your pericardium (the membrane surrounding the heart) or a surgical mesh.

Pericardial and pleural effusions are particularly common after ASD repair and generally occur in the first month following surgery. For more information, refer to *Solutions to the most common problems* on page 30.

Anomalous pulmonary venous return (APVR)

The four pulmonary veins (PV) normally lead to the left atrium. With APVR, one or more veins lead to the right side of the heart. APVR is often associated with an atrial septal defect.

Surgery involves redirecting pulmonary venous return to the left atrium.



THORACIC AORTIC SURGERIES

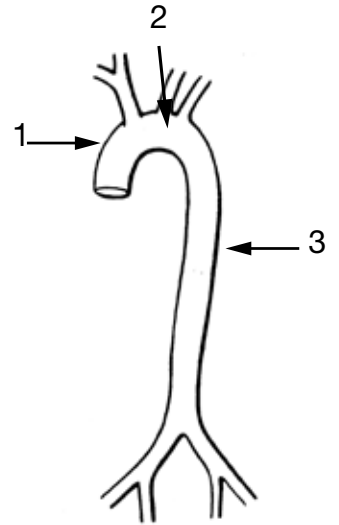
The thoracic aorta has three sections:

1. Ascending aorta
2. Aortic arch
3. Descending aorta

A normal aorta is 2.5 to 3.5 cm in diameter. The aortic wall has three layers and is 2 to 3 mm thick.

Thoracic aortic diseases include the following:

- Aneurysm: enlargement of one or more sections of the aorta.
- Penetrating ulcer: an ulcerous lesion causing the erosion of the aortic wall. The ulcer forms where fatty deposits are stuck to the aortic wall (atherosclerosis).
- Dissection (tearing) of the aortic wall that creates two areas in the aorta where blood circulates.



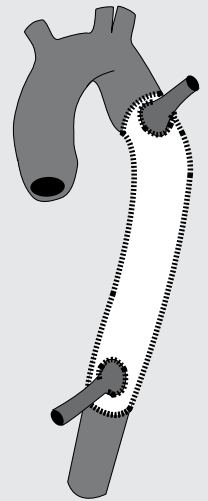
Aortic replacement

This surgery involves replacing the diseased section of the aorta with a synthetic tube made of Dacron®.

When replacing the ascending aorta, a diseased aortic valve can be replaced or repaired.

If the aortic arch must be replaced, the arteries irrigating the head and arms must be reimplemented.

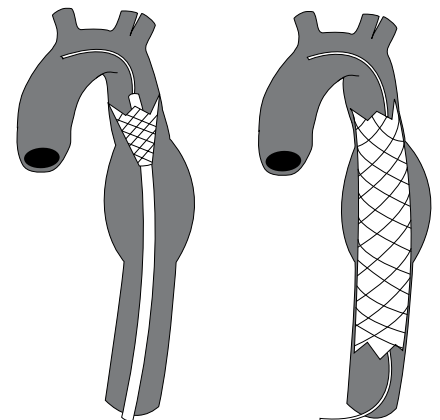
This surgery requires special followup. Refer to *Medical followup* on page 27 for more information.



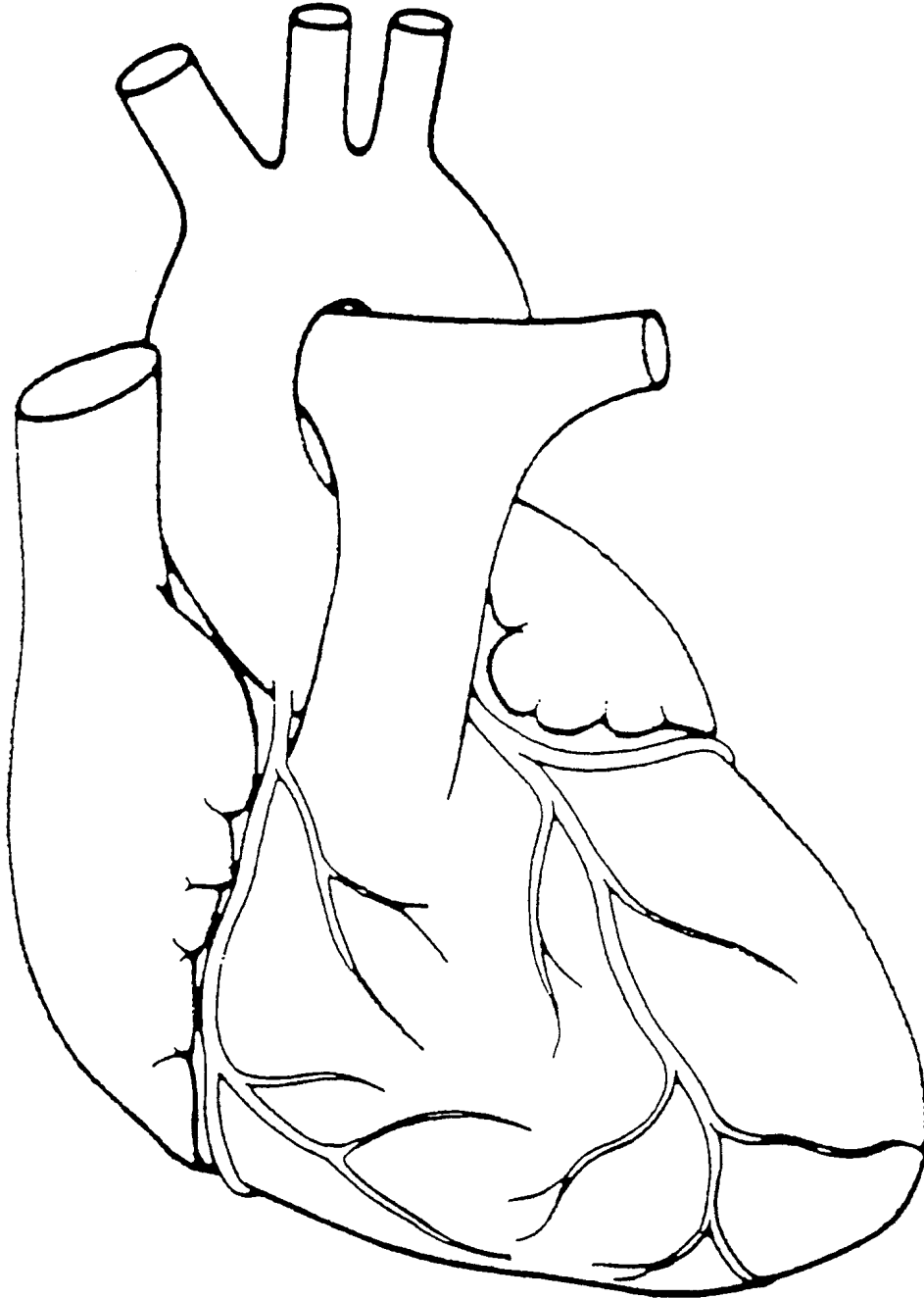
Aortic endoprosthesis

An endoprosthesis is a cylindrical metal tube covered by a fine synthetic fabric. It is installed in the aorta so that blood pushes against the tube and not against the weakened aortic wall. This reduces the risk that the lesion will rupture completely.

The endoprosthesis is inserted via catheter, most often through the femoral artery in the groin. The procedure is done in the operating room or the angiography room.

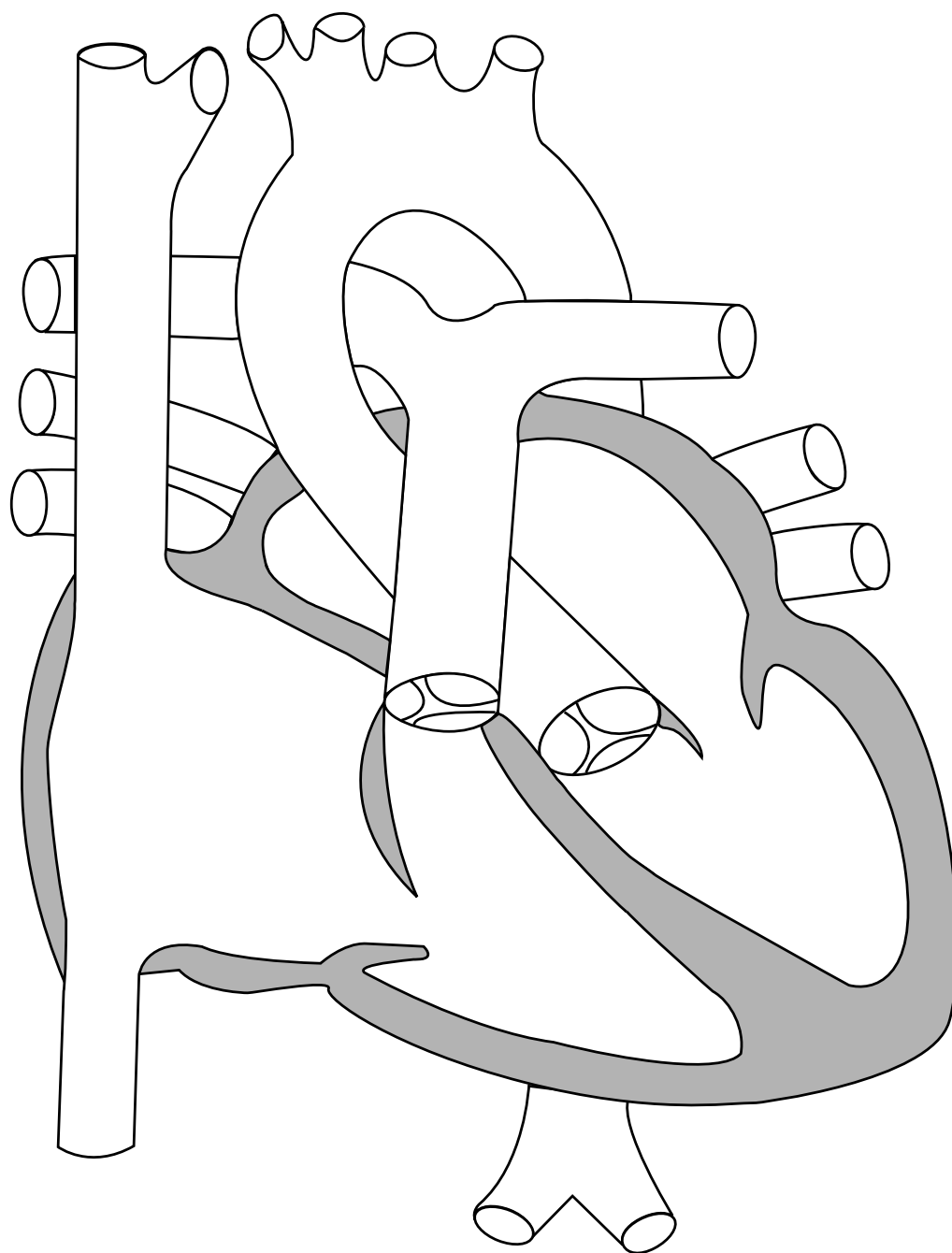


Coronary bypass



Your surgeon may use this illustration to show you certain details of your surgery.

Valvular or intracardiac procedure



Your surgeon may use this illustration to show you certain details of your surgery.

CONCLUSION

We based the information in this guide on the questions and comments of previous users and patients. We hope that it will help you throughout all the stages of your surgery.

Feel free to share your comments and suggestions with us so that we can improve the quality of care and services, as well as ensure your satisfaction and comfort.

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