



# Understanding Your Heart Surgery

Giving your heart another chance.  
Ensuring a smooth recovery.  
Lowering the risks to your heart.



Dignity Health®

# Welcome

This booklet is designed to give you an overview of your open heart surgery experience. We hope this will help guide you and your family through the process of recovery. The physicians, nurses, and other health care team members strive to provide you with the best medical care possible. Please do not hesitate to ask your surgeon, nurse, or other health care team members any questions before, during, or after your surgery. The goal is to inform you about the surgery and prepare you for your hospital stay and your recovery at home.

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# Meet Your Surgeons

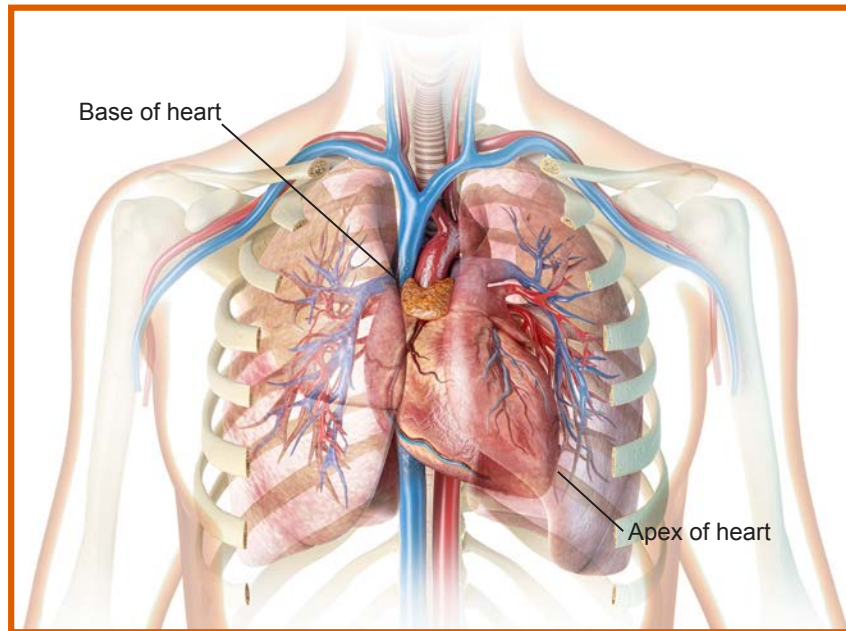


From left to right:

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# So You Are Scheduled for Heart Surgery. . .Now What?

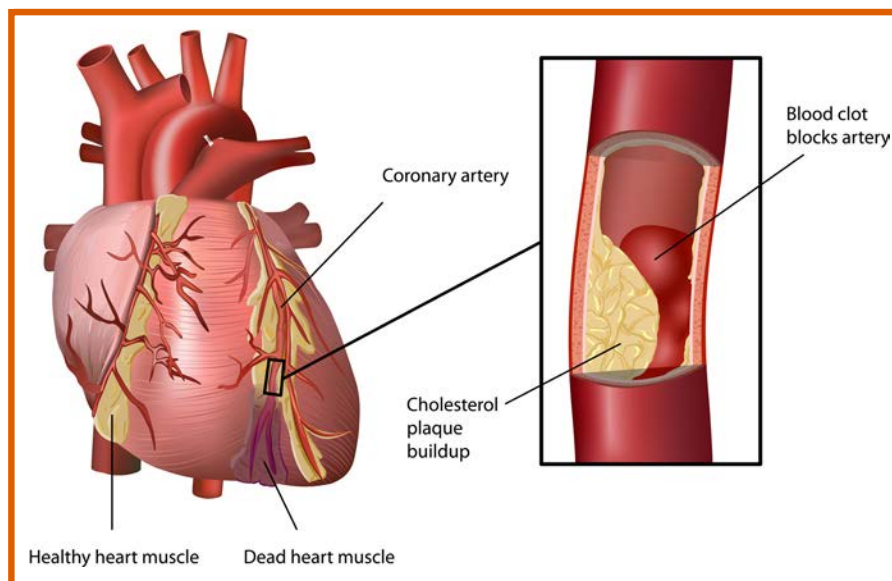
You and your surgeon have come to the decision that you are in need of heart surgery. There are many reasons someone may need heart surgery with the most common being to treat coronary artery disease or a heart valve problem. This booklet has been created to help you understand cardiac surgery and assist you in your surgical journey from the day of surgery through your recovery at home.



## Why You Need Surgery

### Coronary Artery Disease

Your doctor may have ordered various tests to reveal the extent of your heart disease. You are likely to have had a cardiac catheterization along with coronary angiography. Together these procedures provide enhanced x-ray images of your heart. Based on the extent of clogging in your arteries, your doctor is recommending coronary artery bypass surgery. This procedure will help restore blood flow to your heart muscle and put you back on the road to a healthy future.



## Coronary Arteries are Lifelines to Your Heart

Your heart depends on coronary arteries to send it life sustaining blood. These tube-like arteries branch off from the aorta, the large vessel that carries blood from your heart to the rest of your body. The left coronary artery and the right coronary artery branch off into smaller arteries that encircle and plunge into the heart muscle, nourishing every part of it with blood. Your heart is located behind your breastbone and between your lungs, slightly left of center.

### Healthy Artery

When the inner lining of a coronary artery is healthy, blood flows through the artery easily. This gives your heart muscle the oxygen and other nutrients it needs. Even during activity, healthy arteries can meet your heart's increased demand for oxygen.

### Damaged Artery

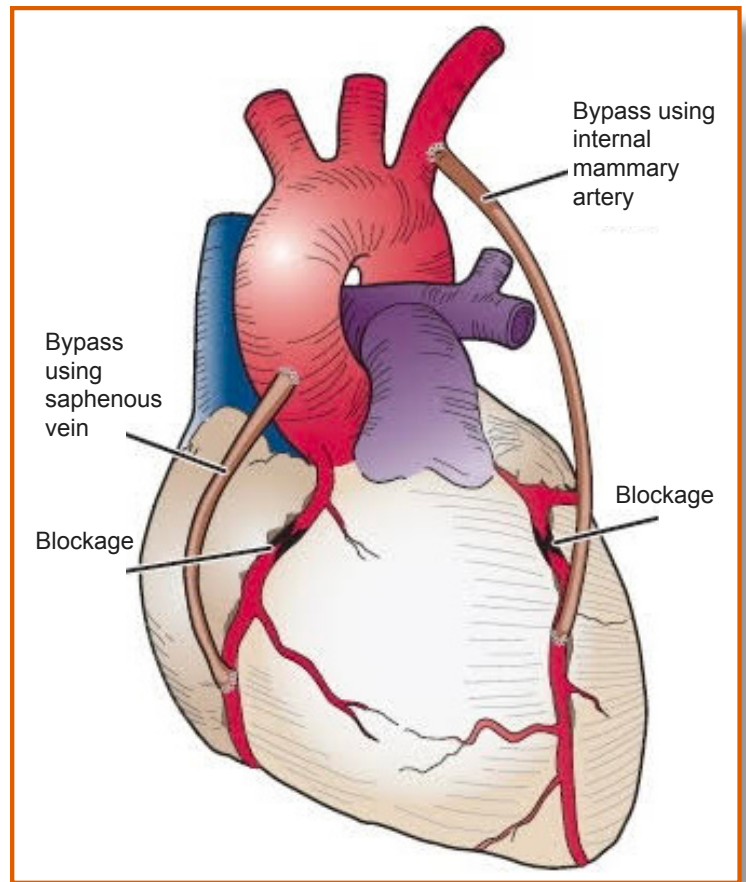
The inner lining of the artery can be damaged by high blood cholesterol, high blood pressure, or smoking. This leads to a buildup of plaque (fatty substances and calcium) within the lining of the artery. Blood may no longer flow easily to the heart muscle. This is the beginning of coronary artery disease. If plaque buildup increases, the artery narrows and blood flow to the heart muscle is severely reduced. Your heart becomes starved for oxygen, which may cause chest pain (angina).

**Blood flow to the heart muscle is severely reduced when plaque builds up within the walls of a coronary artery.**

## Bypass Surgery

Coronary artery bypass surgery creates a new pathway around the blocked part of your artery, allowing blood to reach your heart again. In most cases, a healthy blood vessel from another part of your body is used to restore blood flow. If you have more than one blockage, more than one bypass may be used.

A blood vessel, or graft, may be taken from your chest or leg and attached to your blocked coronary artery. The grafts most often used are the internal mammary arteries along the inside of the chest wall, the radial arteries in the arms, and the saphenous veins in the legs (these arteries and veins can be used to make several bypasses). One end of the vessel is sewn to an opening in the coronary artery below the blockage and the other end is sewn to an area on the aorta.

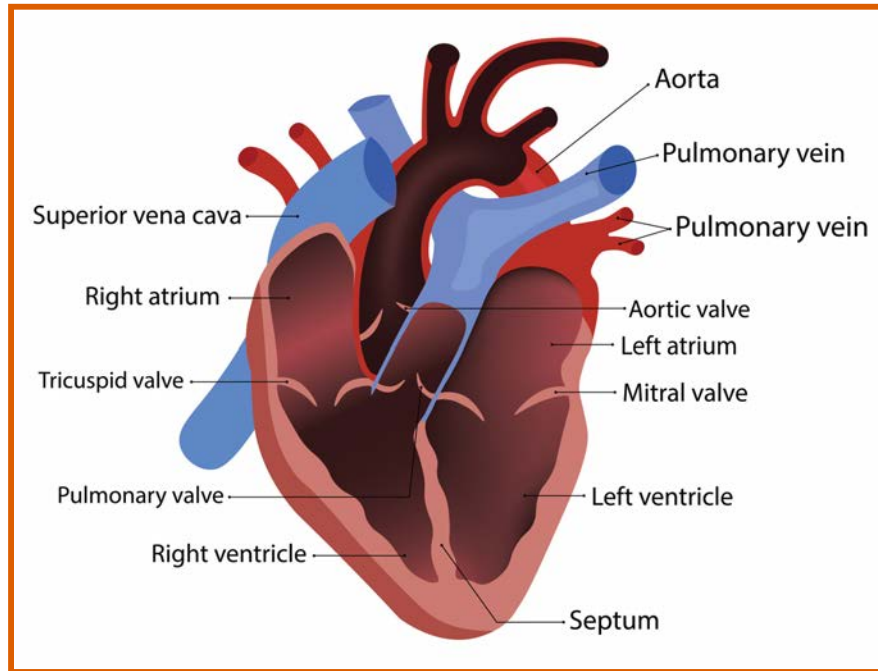


## Heart Valve Disease

Heart valves act as doors between the chambers of your heart, opening and closing to allow blood to move forward through the heart and out to the body. If these valves become leaky (insufficient), they allow the blood to move backward into the heart (regurgitation). If the valves are stiff (stenosis), they restrict the flow of blood. With either condition, the heart may begin to fail or have an abnormal rhythm.

# Heart Valve Surgery

Based on your specific needs and desires, the surgeon may repair or replace the faulty valve with your own tissue, a tissue valve (pig or cow valve), or a mechanical valve. The heart valves are in close proximity to the electrical conduction system of the heart which can sometimes cause conduction problems after surgery requiring a temporary pacemaker. While the need for a pacemaker is often times temporary in nature, a permanent pacemaker may be required after heart valve surgery. A brief course of blood thinning medications may also be required after this operation. Your surgeon will help guide these decisions.



## Before Your Surgery

When possible, a nurse may meet with you and your family to provide a tour of the ICU and talk about what to expect. The hospital staff will do everything they can to answer your questions and help you stay comfortable.

### Your doctor will tell you the risks and benefits of this major surgery including:

- Breathing problems or lung complications.
- Bleeding.
- Wound infection.
- Nerve injury.
- Heart attack, stroke, or death.

### Preparing for surgery:

- You may need to stop taking certain medications prior to surgery. Ask your doctor.
- Stop smoking immediately to improve blood flow and breathing. Even a few days without smoking reduces the risk of pneumonia.
- Your anesthesiologist will talk about your medical history with you and explain the use of medicine to put you to sleep and control your pain.
- Do not eat or drink anything at midnight the night before surgery, unless told otherwise.
- Your weight will be obtained before and after surgery to help manage your fluids and medications after surgery.
- To help prevent infection, your chest, leg, arm, and groin hair may be clipped at the hospital the day of your surgery. **Do not do this yourself before surgery.**

## During Your Surgery

You can feel confident knowing that your surgery is being performed by a skilled heart surgery team. With the help of highly advanced technology, these surgeons and specialists will ensure the safest possible surgery for you.

### Your Surgical Team

Each person involved in your surgery plays a vital role. The heart surgeon and surgical assistants perform the operation, with support from several specially trained nurses. The anesthesiologist constantly monitors your anesthesia to help you sleep without pain. The perfusionist operates the heart-lung machine that keeps your blood circulating. Your blood pressure, temperature, and respiration are all closely monitored while your operation is performed.

### Notes to Your Family

- The entire bypass procedure, from preparation through surgery, can take anywhere from four to six hours. Plan some activities while you wait.
- Shortly after surgery, your loved one will be taken to the Intensive Care Unit (ICU) where they will recover from anesthesia and be weaned off the ventilator. You will be able to visit the ICU within hours after surgery. The ICU staff will let you know when you can come into the room for a visit.
- Be prepared to see your loved one with a breathing tube surrounded by other tubes and monitors. He or she will be unconscious or groggy, pale, and puffy-looking. This is normal following surgery. You can be confident that your loved one is being cared for by specially trained professionals at all levels, every step of the way.

## After Your Surgery

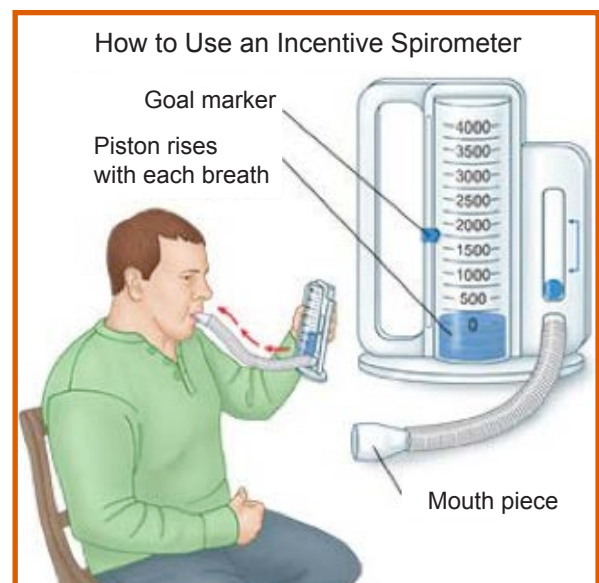
After surgery, you will be taken to the ICU where you will be under direct, constant monitoring. Everyone recovers at a different rate, but you typically may spend a few days in the ICU. After you leave the ICU, you will move to another area of the hospital.

### In the ICU

Initially, you will be breathing through a tube in your throat. When you wake up from surgery, you may feel thirsty, groggy, cold, or swollen. These effects will not last long. Your nurses will give you pain medications to ease your pain. It is extremely important to communicate your pain to nursing staff so they can medicate you and keep your pain under control. This will aid in a quicker recovery. Expect to see a variety of surgical tubes and wires attached to your body after surgery. You will likely have two to four drainage tubes, a line for monitoring your heart and blood pressure in your neck, wrist, or groin, and a temporary pacemaker. You will also have a heart monitor, intravenous (IV) lines to receive fluids, blood, and medications, and a catheter to empty your bladder. When these tubes are no longer needed, they will be removed.

### Respiratory Therapy

Throughout your hospital stay, your nurse and respiratory therapist will assist you with deep breathing and coughing exercises. It is imperative that you are diligent with these exercises to prevent pneumonia and other lung problems. Continue to use your incentive spirometer as directed, usually 10 times every hour while you're awake. This lung exercise should become easier with time and practice and pain control.





When you are asked to cough, or feel the urge to cough, bracing your incision by hugging a small pillow, will help make it easier to cough with less pain. Brace your elbows in at the side and gently but firmly press down on your chest. You may need to do this for up to six weeks after your surgery.

For more information, watch the YouTube video [https://www.physio-pedia.com/Sternal\\_Precautions](https://www.physio-pedia.com/Sternal_Precautions)



**Sternal precautions:**

- Movements of the arms in the horizontal level, backwards or over the shoulder level, should only be performed within pain-free limits during the initial 10 days following sternotomy or until the wound is healed.
- Lifting should be less than 10 pounds and at a pain-free level.
- In general, patients should keep the upper arms close to the body for six to eight weeks.
- Patients should be taught to hug a pillow over the surgical incision when coughing and sneezing for six to eight weeks.
- Patients with large breasts should use a supportive brassiere that fastens in the front.

# Beyond the ICU

When the constant care of the ICU is no longer needed, you will be moved to the step down unit. At this point, your health care team will support you to increase your activity and role in your recovery.

As soon as possible after surgery, you will need to start increasing your activity. This will increase your muscle strength, blood flow, and resistance to illness. A nurse or physical therapist will help you start to sit up and then walk.

## Leaving the Hospital

Before leaving the hospital, your care team will work together to ensure you have a safe discharge. Your care team may recommend you continue your rehabilitation at an acute rehabilitation facility or skilled nursing facility for additional supportive care and therapies. Some patients discharge home with the help of family and home health nurses and therapists if needed. Just as each person's surgery varies, so does their recovery.

Your doctor and nurse will teach you about your medications, diet and safe activities for recovery at home. Upon leaving the hospital, someone will need to drive you home and provide assistance for several weeks. Please ask any questions throughout your hospital stay. For questions at home, call your doctor's office which will be included in your discharge teaching.

Each individual recovers at a different rate. Give yourself eight weeks before you go back to your normal routine. During these first weeks it is important that you follow the instructions provided to you and attend all your follow up appointments. Stay in contact with your doctor and take your medications as prescribed. You will receive a follow up phone call from cardiac rehab or the patient navigator to check on your progress and answer any questions or concerns you may have.

## Visiting Your Doctor

Follow-up visits with your doctor help assure that you're recovering safely after surgery. To monitor your healing, you may have chest x-rays, blood work, or other tests. Electrocardiograms (ECGs) may be done to show if there are any changes in your heart's rhythm that may indicate a problem. Your staples will be removed at one of your follow up appointments with the surgeon.

## Needs Immediate Attention

**Call 911 or go to your nearest emergency room.**

- Bright red stool.
- Chest pain similar to before your surgery.
- Chills or fever .
- Coughing up bright red blood.
- Fainting spells.
- Heart rate faster than 150 beats/ minute with shortness of breath or new irregular heart rate.
- New onset of nausea, vomiting, or diarrhea.
- Severe abdominal pain.
- Shortness of breath not relieved by rest.
- Sudden numbness or weakness in arms or leg.
- Sudden, severe headache.
- Uncontrollable bleeding.

## Urgent Problem, Call Your Surgeon

- Acute gout flare-up.
- Elevated temperature more than 100.0°F/38.0°C two times within 24 hours.
- Extreme fatigue.
- Pain or tightness in calf that becomes worse when pointing toe up to head.
- Drainage from your incision is bloody or looks like puss. Some clear drainage is ok.
- Redness near the incision is growing or becoming more painful.
- Sharp pain when taking in deep breath.
- Skin rash.
- Urinary tract infection: frequent urination, burning with urination, urgency with urination, bloody urine.
- Weight gain of more than one to two pounds within 24 hours.
- Worsening ankle swelling or leg pain.
- Worsening shortness of breath.

## Call Your Doctors Office or Nurse Navigator

- Helpful community services or agencies.
- Incisional care.
- Postoperative recovery.
- Discharge instructions.
- Home health care.
- Surgery.
- Draining or reddened wounds.
- Management of symptoms.

What your doctor/nurse might ask if you call:

- How long have you had these symptoms?
- What medications are you currently taking and when did you last take them?
- When did you have surgery?
- Who was your surgeon?
- Where was your surgery done?
- What was the date of your hospital discharge?
- Does the visiting nurse come to see you?
- Is your incision site draining any fluid? What is the drainage color; does it have an odor; how long has it been draining; is the drainage getting better or worse; is the area red and/or swollen?

## Warning Signs

**Call your doctor if you notice any of the following, which may be signs of post operative problems.**

- You gain more than one to two pounds in one day or five pounds in one week. Weigh yourself every day.
- You have chills, sweating, or a fever over 100.0°F for more than a day.
- Your heart seems to be beating fast or slow, skipping beats, or you feel irregular beats.
- You have shortness of breath while reclining.
- You have pain in your chest or chest pain that worsens with deep breathing or coughing.
- You have swelling, redness, oozing, or tenderness near any incision.
- You have unexplained bruising or bleeding.
- You have extreme fatigue, weakness, dizziness, fainting or significant change in your ability to perform normal activities.
- You have significant loss of appetite.

# Home Care Instructions

## Goals

- To help you achieve a full recovery.
- To decrease risk factors you can control.
- To reduce the workload on your heart and improve the ability of your heart to pump.

## Activity Guidelines

- Gradually increase your activity level. It may take four to six weeks to start feeling better.
- Weigh yourself every day when you get out of bed and keep a record. Rapid weight gain of two to three pounds per day means excess fluid in your body.
- Avoid straining as it puts pressure on your healing sternum. For example, no pushing or pulling, straining to open a jar or window, or straining to have a bowel movement.
- You may have problems with constipation. As approved by your doctor, you may use a stool softener or laxative, hydration, exercise and the addition of fiber-rich foods to your diet will help you to move your bowels. Call your doctor if you have prolonged constipation of more than two to three weeks. Speak to your doctor before progressing.
- Follow the exercise program listed in the Home Walking Program section.
- Avoid extremes in temperature.
- Alternate rest and activity. Resting also includes sitting quietly for 20 to 30 minutes. After meals, rest for 45 minutes before exercising. Be sure to get six to eight hours of sleep.
- You may have difficulty sleeping at night which will improve over time. If going to sleep or staying asleep is difficult due to pain or discomfort, taking your prescribed pain medications prior to going to bed may help. Your daily exercise routine will also help you to fall asleep.
- It is normal to have some swelling, especially if you have a leg incision. Keep legs elevated when sitting, and continue your exercise routine as prescribed. This will help with the swelling.
- Avoid holding your breath.
- If you become ill or contract a virus, rest until you are well before exercising.
- Wait at least 30 minutes after exercise before showering.
- No driving until your doctor okays it.
- When traveling, be sure to get out of the car every two hours and walk around for a few minutes.

- Talk to your surgeon about when to resume sexual activity. In general, you can resume having sex as soon as you feel comfortable. Try to avoid positions that put weight on your breastbone or upper arms.
- Take stairs one at a time and stop and rest as needed.
- You may shower, but do **not** submerge yourself in water.
- Continue to cough, deep breathe, and use your incentive spirometer for one to two weeks. Use every two hours 10 times while awake.
- Limit visitors for a few weeks to focus on healing.
- You may have good days and bad days, experience mood swings, and feel depressed. Do not become discouraged. This will get better.
- If you smoke, **stop**.

## Suggested Daily Routine

- Plan a daily routine for taking your medications, self care and hygiene, exercise and eating.
- Take your prescribed pain medications about an hour before exercising. This will help you to be more active and recover faster.
- Weigh yourself in the morning at the same time every day when you get out of bed.
- Dress for the day in loose fitting and comfortable clothing. Avoid staying in your pajamas during the day. Choose clothes that do not put undue pressure on your incisions. If you wear a bra, choose one without under wires and with a front closure.
- Plan for rest periods in between activities such as eating and doing your home exercise routine.

## Medications

- Develop a system to take your medications as prescribed. Carry your medication list on a card in your wallet.
- Do not stop taking medications, skip doses, or double doses unless instructed to by your doctor.
- If the cost of a medication is a problem, do not stop taking it- ask your doctor or pharmacist for advice.

## Diet

- It is normal to experience a loss in appetite for about a month. You may even experience a diminished sense of taste and nausea with the smell of food. If so, try to eat frequent, small meals.
- A cardiac diet (low salt, low fat) is recommended.
- Restrict your salt intake to less than 2 grams per day to prevent fluid retention.
- Include high protein foods: poultry, fish, pork, dairy products – milk, cheese, cottage cheese, and eggs to promote healing and prevent infection.
- Include high iron foods: poultry, greens, prunes, raisins, oatmeal, and whole grains to prevent anemia (which may cause fatigue and shortness of breath).
- Include high fiber foods: fruit, vegetables, beans, and whole grains. These foods will keep your bowel movements soft and regular.
- Avoid alcohol.



## Incisional Care

- You should shower daily with soap and warm water. It is ok to get your wound wet. You do not need special soap, it is good to gently wash your wounds with soapy water. Do not submerge in a bath or hot tub until your doctor gives the OK.
- Avoid vigorous scrubbing. A gentle lather and rinse is encouraged.
- You may go home with staples in your leg and chest which your doctor will remove at your office visit.
- Protect incisions from over exposure to the sun.
- Do not apply lotions, creams, oils, powders, vaseline, or alcohol to your incisions.
- The breastbone (sternum) takes six to eight weeks to heal which is why you should not lift, push, or pull more than five pounds.
- You may have a lump at the top of your sternal incision that may appear to be pink and tender to touch. This will steadily disappear over time. Contact surgeon if the swelling, redness, or pain increases.
- You may notice an occasional “clicking” sensation in your chest the first several days after surgery which should disappear within the first several weeks. Mention this to your surgeon while in the hospital prior to discharge if this occurs and call the surgeon if this continues to get worse.
- Itching, numbness, and sensitivity along incisions are a normal part of the healing process.
- Avoid crossing your legs which impairs circulation.
- Elevate your legs while sitting. This will help reduce swelling of the feet and ankles which is normal after surgery.
- Avoid sitting in one position or standing for long periods of time.
- Call your doctor if you have concerns or questions about the healing of your incisions.



## Your Feelings

It's common to have mood swings after surgery. You may feel depressed, frustrated, or angry while recovering from this kind of major surgery. You might feel cheerful and energetic one day, then cranky and tired the next day. You may find it hard to concentrate or you may have trouble sleeping. Remind yourself that these things are only temporary. And don't withdraw from the people around you, stay involved with your family and friends. Keep talking, listening, and supporting each other. If you feel that you are unable to cope, or experience undue anxiety, depression or panic attacks, talk with your doctor.

# Home Walking Program

Here are your initial walking guidelines to follow after your discharge from the hospital. Exercising your heart is a key part of your recovery. Walking should start at a slow, comfortable pace. We wish to increase your duration of walking as you tolerate. You may progress to the next stage once you are able to complete the previous stage without excessive fatigue, required rest, or adverse symptoms for three days in a row. Do not be concerned if you take several days on one stage because you require rest during your walks. Early on, you may have less energy and require a few weeks before you can progress to the next stage.

Stage	Time	Frequency	Total Time
1	5 min.	4 times/day	20 min.
2	10 min.	2 times/day	20 min
3	10 min.	3 times/day	30 min.
4	15 min.	2 times/day	30 min.
5	20 min. 10 min.	1 time/day 1 time/day	30 min.
6	30min	1 times/day	30 min.

For questions beyond these stages of exercise, call your surgeon's office.

## Benefits of Exercise

### Increased effectiveness of the heart to pump by:

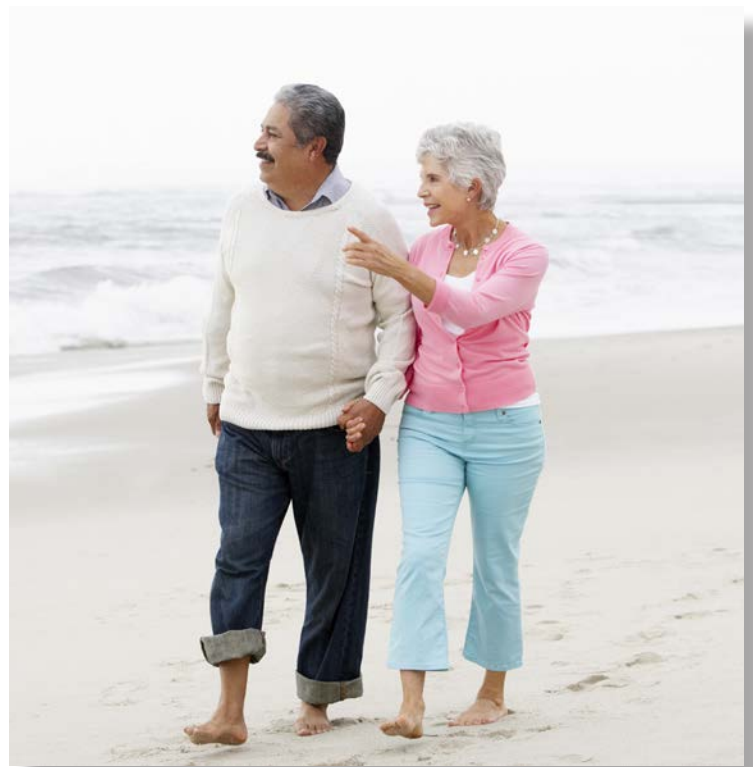
- Increased amount of blood pumped per heart beat.
- Increased wall thickness.

### Increased endurance capacity:

- Increase in the part of the muscle cell which creates energy for contraction.
- Increased ability to take up oxygen within working muscles.
- Achievement of lower heart rate and blood pressure for that amount of exercise.

### Lowers risk factors for coronary artery disease by:

- Lowering blood pressure, increasing HDL (good cholesterol), lowers body fat, controls appetite, and helps control blood sugar.



### STOP your exercise if you experience:

- Tightness across your chest, back, or shoulders that may spread to the jaw, throat, or arms, and may be felt with nausea, shortness of breath, sweating, or fatigue. (This is not incisional pain which is typically sharp, localized to the incision, and can be relieved with medication.)
- Light-headedness.
- Shortness of breath.
- Irregular pulse. If you notice your heart racing or skipping notify your doctor.

### Watch for signs of over exercising:

- Fatigue with exercise. Decrease your walking pace and/or distance if you can't complete the walking stage without feeling completely exhausted. You should have some reserve after completing your walking sessions.
- Faintness or nausea after exercising may occur from walking too fast and/or stopping abruptly. Slow down if this occurs.
- Chronic fatigue. Although you may feel tired after walking, an hour or so of rest should replenish your energy. If your fatigue lasts beyond two hours after exercise, then decrease the amount of exercise you do and if this occurs repeatedly, notify your doctor.
- Sleeplessness. Walking should help you sleep better at night. If you find you have a difficult time falling asleep or staying asleep, then decrease the amount of walking you are doing. If this persists, notify your doctor.

# Notes to Your Family

Encourage your loved one to move steadily back into activity. Boost their confidence by supporting each effort. Your loved one might feel depressed or frustrated during recovery. This is common after major surgery. You might even feel that way yourself. Be sure to talk with each other about your feelings. Make communication a priority. Try not to be overprotective or controlling. Let your loved one do the things that they feel able to do.

## Household Chores

After a few weeks, you can start doing light housework such as dusting or minor household repairs. For at least six weeks, avoid activities such as mowing the lawn or vacuuming, which can strain your breastbone.

## On the Job

Your doctor can advise you about the best plan for returning to work. If you have a desk job, you may be able to return in three to four weeks. If you have a more physical job, you may need to wait up to twelve weeks.

## Making Love

Unless your doctor advises otherwise, you can resume having sex as soon as you feel comfortable. Try to avoid positions that put weight on your breastbone or upper arms.

## Eat Right

For healthy eating, think low fat, low cholesterol, low sodium, and high fiber. Eat turkey instead of salami. Low-salt pretzels instead of potato chips. Fresh fruit instead of cookies. Your heart will thank you for it.

## Travel

To protect your healing sternum, you may not travel until four to six weeks after your surgery. Wear your seatbelt when you are a passenger in a car, padding it with a towel as needed for comfort. Ask your surgeon before traveling more than two hours away, during the first month. Stop every one to two hours to stretch your legs.

# Look Forward to Your Future

Surgery is just the beginning of your journey to better health. After that, it's up to you to nurture your heart, your body, and your mind. Give yourself the chance to enjoy a healthy life with the people you love.

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