NHRMC Cardiac Surgery
Patient Guide
Welcome to NHRMC Heart Center

Thank you for choosing NHRMC Heart Center for your cardiac surgery care. The NHRMC Heart Center is committed to providing you the very best care as we help you through your surgery and recovery. Our highly skilled and compassionate team will respond to your needs and address any questions or concerns you may have. We welcome any feedback and thank you again for allowing us to be part of your healthcare team.

The NHRMC Heart Center offers the region’s best cardiovascular programs and provides excellence in diagnosis, management and treatment of cardiovascular disease.

This book belongs to:
Your Cardiac Surgery

Heart Center
910.667.7000

Cardiac Surgery Pre-Admission Testing
910.343.4079

Cardiovascular Intensive Care Unit (CVICU)

After surgery, you will be taken to CVICU, a 14-bed intensive care unit. No one under 16 years of age is allowed to visit. Only four visitors are allowed at one time.

Visiting Hours:
10:00 a.m. - 10:30 a.m.
2:00 p.m. - 2:30 p.m.
5:00 p.m. - 5:30 p.m.
8:30 p.m. - 9:00 p.m.

Cardiac Medical Surgical Telemetry Unit (CMSTU)

You will be transferred to a private room on the 9th floor when your surgeon determines your condition has improved.

Parking

On the day of surgery, please park in the parking lots in front of the Surgical Pavilion. To get to the Surgical Pavilion, take Savannah Court from South 17th Street and follow the signs to the back of the hospital.

After your surgery, visitors may park in the Zimmer Cancer Center parking lot and enter through the main hospital entrance.

What Not to Bring to the Hospital

- Money or jewelry; New Hanover Regional Medical Center cannot be responsible for lost or stolen items.
- Electrical equipment (TVs, radios, etc.).
- Live plants or cut flowers.
- Food (the patient will be on a special diet).

Your heart surgery is scheduled for ____________

Please report to the Surgical Pavilion at ____________

- You will be given a special cleanser prior to surgery. You must shower with this the night before your surgery.
- DO NOT eat or drink anything after midnight the night before surgery unless the anesthesiologist instructs you to take your medication(s). If you are instructed to take medication prior to surgery, take with a small sip of water.
- All fingernail and toenail polish must be removed prior to surgery. Clear polish is acceptable.
- While you are in surgery, your family can wait in the Surgical Pavilion lobby. The Surgical Liaison will keep them informed throughout the procedure.

Resources Available

Au Bon Pain Cafe

Located near the Emergency Department entrance on the Main Concourse, Au Bon Pain Cafe features fresh baked goods, sandwiches, salads and gourmet coffee. It is open from 6 a.m. until 2 a.m.

A vending machine is available 24 hours a day.

Cafeteria

Located on the service level of New Hanover Regional Medical Center, hot food is available during specific hours:

Breakfast 6:15 a.m. - 10:00 a.m.
Lunch 11:00 a.m. - 2:00 p.m.
Dinner 4:30 p.m. - 8:00 p.m.

SECU Family House

This facility offers families of seriously ill patients a place to rest, bathe and stay the night if needed. We encourage you to rest at the Family House rather than in the medical center’s waiting areas.

The SECU Family House is located at 1523 Physicians Drive (910.662.9980).
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Office: ________________________________________________________________________
Date: ________________________________________________________________________
Time: ________________________________________________________________________
Phone: ________________________________________________________________________

Surgeon: ______________________________________________________________________
Office: ________________________________________________________________________
Date: ________________________________________________________________________
Time: ________________________________________________________________________
Phone: ________________________________________________________________________

Cardiologist: __________________________________________________________________
Office: ________________________________________________________________________
Date: ________________________________________________________________________
Time: ________________________________________________________________________
Phone: ________________________________________________________________________

Specialist: ___________________________________________________________________
Office: ________________________________________________________________________
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Specialist: ___________________________________________________________________
Office: ________________________________________________________________________
Date: ________________________________________________________________________
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Phone: ________________________________________________________________________
How the Heart Works

The heart is a hollow organ and a muscle about the size of your fist located near the middle of your chest. The heart constantly pumps blood throughout the body. It is made of strong muscle tissue called myocardium. The heart has four chambers, two chambers on the left and two on the right, which work together to squeeze and pump blood. The upper chamber on each side, called an atrium, receives and collects blood. The lower chamber on each side, called a ventricle, pumps blood out of the heart. As the blood travels through the heart it fills each chamber. It then exits each chamber through a one-way gate called a valve. Each valve has flaps called leaflets. They spread to open and then come together to close. Opening lets blood out of the chamber; closing keeps blood from leaking back in. This action keeps blood flowing in the right direction. As it leaves the heart, the blood delivers oxygen and nutrients throughout the body. It also receives oxygen-filled blood like all other muscles in the body.

Sometimes a problem valve may not open wide enough, not close tightly enough, or both. In any case, not enough blood gets sent out to the body. The heart tries to make up for that shortage by working harder. If the problem isn’t fixed, that extra work can further damage the heart, leading to heart failure—the inability of the heart to pump enough blood to meet the body’s needs.

When a valve doesn’t open all the way, the problem is called stenosis. The leaflets may be stuck together or be too stiff to open fully. When the valve doesn’t open fully, the blood has to flow through a smaller opening, making the heart muscle work harder to push the blood through the valve.

When a valve doesn’t close tightly enough, the valve is said to be insufficient, and may cause regurgitation. The valve itself may be described as leaky. Leaflets may fit together poorly. Or the structures that support them may be torn. Some blood leaks through the valve back into the chamber it just left. So the heart has to move that blood twice.

The Coronary Arteries

In order to keep pumping day after day, the heart needs its own supply of oxygen. The coronary arteries are the vessels that carry oxygen-rich blood to the heart muscle. If fat and cholesterol build up in the coronary arteries, they become narrow and the oxygen-filled blood cannot reach the heart. This causes damage to the heart muscle (heart attack) and chest pain (angina).

As blood leaves the left ventricle, it is pumped into the aorta, the body’s main artery. At the beginning of the Aorta, near the top of the heart, two coronary arteries start. They are called the “left” and “right” coronary arteries.

The first part of the left coronary artery is called the left main artery. It is about as wide as a drinking straw and less than an inch long. The Left Main Artery then branches into two slightly narrower arteries; the left anterior descending, which travels down the front side of the heart; and the left circumflex, which circles around the left side and then to the back of the heart.

The right coronary artery branches off the aorta, circles around the right side, and then travels to the back of the heart. The coronary arteries travel on the outer surface of the heart and divide into smaller branches. These branches then go deep into the heart muscle, carrying oxygen-rich blood to all the cells.
HOW THE HEART WORKS

Artery and Veins

Normal artery

Abnormal artery

Narrowed artery

Lipids, calcium, cellular debris

Radial artery

Internal mammary (thoracic artery)

Saphenous vein
Types of Heart Conditions

Coronary Heart Disease:
The inside walls of your arteries are normally smooth and flexible, which allows blood to flow through them easily. Over the years, fatty deposits may build up on the inside of an artery’s wall. As these fatty deposits, called plaque, continue to build up, they narrow the artery and can reduce or even block the flow of blood. When plaque builds up in the coronary arteries, the result is coronary heart disease. Blood flow in the coronary arteries may be reduced enough to cause angina or heart attack.

Angina:
Angina is pain or discomfort in the chest, arm, or jaw that occurs when not enough blood flows to the heart muscle. Angina is a warning sign that the coronary arteries may be narrowed or blocked. Angina typically occurs during physical exertion or emotional stress, when the heart works harder and needs more oxygen. Angina generally lasts for only a few minutes and goes away with rest.

Heart Attack:
Patients who have coronary heart disease are at an increased risk of having a heart attack (myocardial infarction). A heart attack occurs when a blood clot blocks the flow of blood in a coronary artery. When a coronary artery is blocked, the area of heart muscle that receives blood from that artery dies.

The most common symptom of a heart attack is severe pain or discomfort in the center of the chest that lasts for more than 15 minutes. The pain may spread to the arms, shoulders, and neck. Dizziness, and nausea may also occur, with or without the pain.

Heart attack is a serious medical condition. It causes damage to the heart muscle and can result in major complications, such as life-threatening heart rhythms, heart failure, and death. If you have coronary heart disease, your doctor may recommend bypass surgery to help reduce symptoms of angina and/or help prevent a heart attack.
Coronary Artery Bypass Graft Surgery

Coronary Artery Bypass Graft Surgery (CABG) is performed either to reduce symptoms of coronary heart disease or to help prevent a heart attack. Your doctor will discuss with you the exact reasons you need CABG. Generally, bypass surgery may be the best option, if you have:

- Blockage in the left main artery
- Blockages in multiple coronary arteries, especially if your heart is weakened or you are diabetic
- Diabetes and there are blockages in two or more coronary arteries
- Symptoms that do not respond to medications and cannot be treated with angioplasty

Risks of CABG

If your doctor decides that you need bypass, he/she has determined that your condition is serious enough to require surgery. Although all precautions will be taken to safely complete your operation, CABG is major surgery which carries some risks. Your doctor will explain the possible risks and answer any questions and concerns you may have.

Some risks of bypass surgery include pneumonia (lung infection), breathing problems, infection at incision sites, excessive bleeding, abnormal heart rhythms, memory loss, confusion, heart attack, stroke or death. Certain factors may increase your risks during surgery including:

- Weakened or damaged heart
- Advanced age
- Severe obesity
- Smoking
- Serious lung or kidney disease

If you are pregnant or suspect that you may be pregnant, you should notify your healthcare provider. If breastfeeding, you should notify your healthcare provider. Patients who are allergic to or sensitive to medications, contrast dyes, iodine, or latex should notify their doctor. There may be other risks depending on your specific medical condition. Be sure to discuss any concerns with your doctor prior to the procedure.

Benefits of CABG

Bypass surgery is primarily done to relieve angina symptoms and prolong life. The majority of patients experience relief from their symptoms. In fact, about 90% of bypass patients either become free of angina symptoms or have fewer symptoms. Many patients remain totally free of angina symptoms for years.

The effect of surgery on prolonging life, on the other hand, is not as clear-cut. Most experts agree that surgery usually prolongs life in people who have disease of the left main artery or severe blockages in all three major coronary arteries.

How CABG Is Performed

Bypass surgery requires general anesthesia. Once you are asleep, your surgeon usually makes an incision down the center of the chest to reach your heart. The breastbone (sternum) is separated. If your surgeon plans to reach your heart by different means, he or she will discuss it with you. The surgeons will use a blood vessel from your leg, chest, or arm to make a graft.

One end of the graft is attached to the aorta, and the other end is sewn to the diseased coronary artery, beyond the narrowed or blocked area. The graft creates a detour (bypass) that allows blood to flow around the blockage. The operation does not remove the blockage, and it does not “cure” coronary artery disease. Rather, it relieves angina symptoms by improving the supply of blood to the heart muscle. After surgery, the breastbone is rejoined with wires and the incision is closed.

Most patients will stay in the hospital four to seven days following surgery. In many cases, the breastbone heals in six to eight weeks, and it usually takes up to three months to fully recover after this type of surgery. Some patients may develop symptoms again. Most often, this is caused by the spread of disease in the coronary arteries. Less often, new fatty deposits build up inside the bypass graft(s).
Additional Cardiovascular Surgical Procedures

Transmyocardial Revascularization (TMR)

TMR uses a laser to create small channels in the heart through which blood can flow into the heart muscle. The procedure is done while the heart is still beating and can be done with or without a CABG. With an incision in the left or center of the chest and the use of a special imaging tool, a transesophageal echocardiogram (TEE), your surgeon can see your heart to determine where channels are needed. Then he or she will use a high-energy, computerized carbon-dioxide laser to create small channels in the heart. The outer channels close, but the internal channels remain open, acting as bloodlines to improve blood flow to the heart muscle. They may also stimulate the growth of new capillaries, which are small vessels that can carry blood to the heart.

Maze Procedure

The Maze Procedure is done to treat an abnormal heart rhythm called atrial fibrillation (a-fib) in the upper chambers. Electric signals in the upper chambers of the heart are disorganized and cause it to beat quickly and chaotically, making it hard for blood to circulate properly. To interrupt these abnormal electrical impulses, your surgeon will make small incisions in the upper chambers of the heart in an intricate pattern, or maze. As these incisions heal, scar tissue is formed that blocks the abnormal impulses. In many cases, this is a permanent solution for A-fib.
Valve Surgery

If you have a condition which involves the valves of your heart, your doctor may recommend valve surgery. Depending on the type of valve problem you have, your doctor will discuss your options with you and decide which is best.

The different types of valve surgery are:

• **Valve Repair**
  Whenever possible, your surgeon will repair a mitral valve rather than replace it. The most common repair involves sewing a ring around the entrance to a valve to improve its shape or size. Another type of repair involves cutting tissue to help leaflets open or close better. When repair isn’t possible, the valve will need to be replaced.

• **Valve Replacement**
  If your surgeon determines that a valve needs to be replaced, he or she will suggest either a mechanical or tissue replacement. Your doctor will determine what type of valve replacement you need and will discuss it with you.

  • **Mechanical Valve Replacement**
    Mechanical valves are made of metal or hard carbon. There are many designs. Although they can last for decades, over time blood tends to stick to them, forming clots. So if you receive a mechanical valve, you will have to take an anticoagulant medication for life to prevent blood clot formation.

  • **Tissue Valve Replacement**
    A tissue valve usually comes from a pig or a cow. Blood does not clot as easily on tissue valves. If you get a tissue valve, you may need an anticoagulant medication for only a short time. Sometimes aspirin is used. Because tissue valves may wear out faster than mechanical valves, they may need to be replaced sooner.

How Valve Surgery Is Performed

Heart valve surgery is performed under general anesthesia, which means you will be asleep. Your surgeon will first gain access to your heart. Once your surgeon reaches your heart, he or she will assess the damage and decide to either repair or replace the problem valve. You will be placed on a heart-lung machine to oxygenate your blood so your heart and lungs can be still during the surgery.

Additional Considerations

Some patients with valve problems may need bypass surgery too. If your doctor determines that you need more than one surgical procedure, he or she may combine the procedures. This reduces the risk of undergoing multiple operations. If your doctor plans to combine surgeries, he or she will discuss the options and risks with you.
The Team

Your surgery will be performed by a team of highly trained professionals. The open-heart team includes the following people:

- The **Heart Surgeon**, the head of the surgical team, performs the key parts of the operation.
- **Physician Assistants** prepare the bypass grafts and follow the direction of the heart surgeon.
- **Registered Nurses** each specialize in a different phase of your care, such as assisting with the surgery, pre-operative teaching and testing, recovery in the ICU and step down unit.
- **The Anesthesiologist** gives you the medications (anesthesia) that keep you asleep and free of pain during surgery.
- **Respiratory Therapists** manage the ventilator under the direction of the primary care physician.
- **The Perfusionist** operates the heart-lung machine that keeps your blood circulating during surgery.
- **A Primary Care Physician** provides ongoing care; may be your Heart surgeon, Cardiologist, Internal Medicine Specialist, or General Practitioner.

Awards

**NHRMC's Heart Center** has been recognized by the American Heart Association and the American College of Cardiology (ACC).

The region’s only open-heart surgery center, NHRMC Heart Center performs more than 550 open-heart procedures a year, including coronary artery bypass and complex heart valve surgery. NHRMC Heart Center is also a leading angioplasty and angiography center, with more than 12,000 diagnostic catheterization and interventional procedures annually.
Pre-Admission Testing

A few days before your surgery, you will have a final round of testing to make sure your surgeon has a complete picture of your overall health. This will also help spot any potential issues that may delay your surgery. You and your loved ones will meet with a nurse to discuss in detail what to expect before, during, and after surgery, and ask any questions. You will be required to view a DVD about the surgery and sign a consent form.

- Please bring all the medications you are taking to show the nurse.
- Be sure to mention any blood thinning medicines you are taking as they may need to be stopped before heart surgery.
- If you are still smoking it is very important to quit now. This will be a great benefit to you during your recovery process.
- Inform your surgeon if you are in need of any dental work. This is most important if you are having any type of valve surgery.

Tests Before Surgery

Once you and your surgeon have discussed your options and decided on treatment, you will have certain tests done before your surgery. Each test is designed to make sure you are healthy enough for surgery and to determine any other factors to consider before your procedure.

Blood work is done to check your:
- Blood type
- Kidney function
- Blood count
- Liver function

Other testing will include:
- Chest X-ray
- Electrocardiogram (EKG)
- Echocardiogram
- Breathing status
- Pulmonary test to assess your lung function
- Carotid ultrasound to check for any blockages in the arteries of your neck that could potentially cause a stroke

Pre-Operative Nutrition

One week prior to surgery, your doctor will have you drink a nutrition boosting drink three times a day for five days. This will help prepare your body for the stress of surgery.

Your doctor will also have you drink a carbohydrate drink the night before surgery (before bed) and the morning of your surgery (before leaving your home.) This will provide your body nutrition to help reduce postoperative complications, improve your energy, increase your hydration, and reduce postoperative hunger.
Preparing for Surgery

Prior to surgery, your doctor will explain the procedure and answer any questions. You will be asked to sign a consent form. Read the form carefully and ask questions if something is not clear. There are several things you need to do at home to prepare for surgery.

- The night before surgery, do not eat or drink anything after midnight, unless you received carbohydrate loading instructions.
- You will take a shower with special soap.
- Continue taking your medications as prescribed.

Once you arrive at the hospital, the staff will prepare you for your procedure. Before surgery you will be shaved from your neck to your toes. You will be given medicines, ordered by the anesthesiologist, to relax you. Once you are taken to the operating room your family will be escorted to the Surgical Pavilion. The cardiac surgery liaison will keep your family informed of your progress during surgery. When your surgery is complete you will be taken to the Intensive Care Unit (ICU). Your family will speak with the surgeon immediately after the surgery is over. You will be allowed to have visitors for short periods on the first day. The ICU staff will work with you and your family to set up visitation that helps meet your recovery needs, your family’s schedules, and the needs of the other patients in the ICU.

Depending on how you progress:

- You could spend anywhere from one to two days in ICU.
- You will then transfer to the step down unit (CMSTU) on the 9th floor.
- You will spend another two to three days in the hospital, on average.
- Once your surgeon feels you are ready, you will be discharged with home health services or if further care is needed, to a skilled nursing or rehabilitation facility.

If Your Loved One is Having Surgery

If your loved one is having heart surgery, you may feel nervous and anxious. Knowing what to expect can help you feel more relaxed, so we encourage you to ask questions. If there is anything we can do to ease your concerns, please do not hesitate to ask.

Keep in mind:

- The entire surgery can take four to six hours.
- Plan some activities, such as card games or reading to help you relax while you wait.
- Be sure at least one person is always in the waiting room to receive updates.
- Familiarize yourself with your loved one’s team and ask questions so you can reassure yourself that your loved one is in good hands.
**SHOWER PREP INSTRUCTIONS - Infection Prevention 101**

Take a shower using special soap the night before and the morning of surgery.

*Example:* If surgery is on Monday, take a shower with special soap on Sunday night and Monday morning.

**Directions:**

1. Wash all areas as normal - then rinse
2. Pour the special soap on a wash cloth.
3. Wash all areas of your body, except face, hair and genital area, with the special soap - scrubbing for 3 minutes.
4. Wash the area where you are going to have surgery thoroughly.
5. Rinse as usual. Dress as usual

Your surgeon recommends this special soap to reduce the amount of germs on your skin prior to surgery. This is one of the best ways individual patients can help in lowering the risk of infection.

If you have an infected tooth, any open wounds, cuts, scratches, rashes, or any odd skin conditions, or any symptoms of other infections it is important that you notify your surgeon. He will want to assess these situations closely before operating on you. This is very important to protect against infection as a minor cut that may become infected can migrate in the bloodstream to your joints. The best way to prevent this is to prevent these cuts, abrasions, etc from occurring. If they do occur, let your surgeon know about them.

**Before Surgery**

The morning of your surgery, you will receive medications ordered by your anesthesia team to reduce the pain and swelling caused by the surgery.

The anesthesia doctor may give you an injection of long-acting pain medication in your back to help with post-operative pain.

The anesthesia doctor may also give you another medication injection to block the pain associated with the tubes for drainage.
After Surgery

Following surgery, you will be taken to the ICU to be closely monitored during the early stages of your recovery. It is common to feel disoriented and sore following your procedure. Knowing what to expect, however, can help you and your loved ones be better prepared.

Waking Up in the ICU

Many patients feel sore, cold, confused and groggy when they first wake up. These feelings are quite common and should not last too long. While you are asleep, several tubes and devices are placed to help monitor and stabilize you during surgery.

These include:

- A heart monitor to record your heart’s electrical activity and allow your nurse to spot rhythm changes immediately.
- A tube in your throat connected to a ventilator to help you breathe.
- Drainage tubes connected to your chest to drain fluids that build up around the heart and lungs after surgery.
- A tube placed through your nose down the back of your throat into your stomach to help remove stomach secretions and air until you start eating.
- An arterial line to measure blood pressure and provides easier access for blood samples.
- A catheter placed in your bladder to help drain and measure urine.

What to Expect in the ICU

Because your breathing tube passes next to your vocal cords, you will not be able to speak. However, you will be asked to respond to simple questions by nodding and shaking your head. Once you are fully awake and able to breathe on your own, this tube will be removed—often on the day of your surgery. Once the tube is removed, your nurse may give you small amounts of ice chips until you are able to eat and drink. You may also be helped to sit up in bed.

To help with your recovery, you will be encouraged to move around. You will be helped out of bed the morning after your surgery and may start walking in the unit as soon as the day following surgery. It is normal to experience pain after your operation, however, your healthcare team will offer you medication to keep you as comfortable as possible.

Some patients are given intravenous (IV) or oral medications. Please make sure you talk to your care team about any pain you are experiencing so that they can discuss your pain control options with you. It is extremely important to your team that you remain comfortable.

You also will be taught to perform some simple exercises to help prevent lung problems. Your nurse or respiratory therapist will show you how to do deep breathing and coughing exercises. These help to clear and expand your lungs.
Visiting Patients in the ICU

While we encourage your family and friends to visit, we stress the importance of rest during your recovery. We also understand that an important part of recovery is support from loved ones. Your nurse will speak to you and your family to tailor a visitation plan that meets your individual needs.

Moving Out of the ICU

Once you no longer need close monitoring, usually within one to two days after your surgery, the tubes and lines inserted during surgery will be removed and you will be moved to the step down unit on the 9th Floor (CMSTU). Here you will continue to be monitored for any complications such as fever, surgical site infections or abnormal heart rhythms. You will continue your deep breathing exercises and be encouraged to become more active by:

• Increasing walking distance to 500 feet four to six times a day.
• Alternating positions including moving from lying in bed to sitting in a chair, walking in the hallways and helping with your bath.
• Walking around the unit and climbing stairs guided by your physical therapist or nurse.
• Your nurses and case manager will teach you and your family what to expect after discharge and will get you ready to go home.
• The 9th Floor has daily Interdisciplinary Rounding (IDR). This is an opportunity for you and your family to participate in your care and recovery. IDR is the entire care team (pharmacy, nursing, social work, case management) performing a quick visit in your room to discuss your care and next steps planning.
• You will have the opportunity to speak with a pharmacist about your medications before you leave.
• Your doctor will let you know when you will be going home so that you can be prepared.

Items for Discharge

Items to have available at home when you are discharged:

• Washcloths (at least 12 pack)
• Anti-bacterial mild soap (Dial)
• Scale
• Thermometer
• Hospital supplied Incentive spirometer
• Hospital supplied compression stockings
• Shower chair (optional)
• Protein supplement drinks (optional)
Recovering at Home

Full recovery from your surgery generally will take six to twelve weeks. You may have diagnostic tests, such as a chest X-ray, blood tests, ECGs, or a treadmill test to monitor your progress.

Follow-Up Visits

• Once you are home, a home health agency will contact you to schedule your first home health visit. Your home health nurse will plan your home health visits with you at that first visit.
• You will follow up with the surgeon in three to four weeks to check your incisions.
• You will follow up with your cardiologist, usually in six to eight weeks, to check and adjust your medications.
• You will follow up with your primary care provider within one week after leaving the hospital, to reestablish a baseline for their management of your healthcare.

Medications

• Be sure you understand what each medication is for. If you do not know, ask your doctor or pharmacist.
• Know when and how often you should take each medication. Take it at the same time each day.
• If you think you are having a side effect, call your doctor. Do not stop treatment!
• Even if you feel better, do not stop taking your medication or change the dosage unless your doctor tells you to.

Incision Care

In general, the breastbone heals in about six to eight weeks, while incisions in the thigh or calf take about three to four weeks to heal. During that period, the incisions may feel sore or itchy. You may experience some numbness near your chest incision. This may persist for months but should gradually fade.

Some patients develop inflammation, redness and pain at the incision site. This usually goes away within a few days. Occasionally, an incision becomes infected, resulting in increased redness, soreness, and drainage at the site. If this occurs, call your doctor. An infected incision may require treatment with antibiotics.

A low-grade fever is fairly common during the first few weeks at home. If your fever is over 100.1°F, if it persists, or if you develop shaking chills, this may be a sign of infection. Tell your doctor.

• Clean all incisions with antimicrobial soap and water daily or as instructed.
• Do not put any lotions, powders, creams, oils, or ointments on incisions until all scabs are gone and incisions are healed.
• Clean chest tube sites every day until scabs form, and cover with a bandage. Once a scab forms, use antimicrobial soap to clean, and then leave open to the air.
• Do not cross your legs. This decreases blood flow to the area where your calf incisions are healing. A clear yellow or pink drainage may be noted in the legs at the site where the saphenous vein was removed. This is fine. A liquid adhesive may be used to reinforce the dissolvable sutures in your leg. This adhesive will wear off by itself and should not be pulled or rubbed off.
• Your chest tube sutures will be removed by the home health nurse or at the surgeon’s office.
At home, the first few weeks:

- Increase your activities gradually. Slow down or stop when you feel tired.
- Get enough sleep.
- Check your pulse when you exercise or if you do not feel well.*
- Weigh yourself and take your temperature daily until you follow up with your doctor. Record on activity record.
- Do not drive (you can be a passenger in the backseat only) until released by the surgeon. This allows time for your breastbone to completely heal and your reflexes to return to normal.
- Do not drive after taking pain medication.
- Use compression stockings, put them on in the morning and take them off for sleep.*
- Use your Incentive Spirometer throughout the day. *
- Shave only with an electric razor (no standard razors) if you are on blood thinners.
- Ask your cardiologist or surgeon if and when it is safe for you to return to work.
- Ask your doctor before you make any travel plans.
- Light walking is a good activity. When you go for a walk, take a companion, and avoid walking uphill, against a cold wind, or on hot, humid days at first.
- Avoid lifting ten pounds for the first three months.
- Avoid motions that strain your arms or chest, such as pushing or pulling.
- For the first few weeks, do light housework only, such as preparing meals, washing dishes, and dusting. Avoid vacuuming, gardening, and mowing the lawn.
- For recreation, you may participate in card games, board games, and arts and crafts. Avoid golf, tennis, swimming, and bowling.
- Limit your visitors if you do not feel well. Excuse yourself when you start feeling tired.
- Avoid straining during a bowel movement, as this may cause bleeding.
- Do not consume alcoholic beverages for 30 days after the procedure. Check with your cardiologist about when you can resume alcohol consumption.

Follow American Heart Association guidelines:

- Drink no more than one ounce of hard liquor per day
- Drink no more than five ounces of wine per day
- Drink no more than twelve ounces of beer per day
- Antibiotics may be needed for future surgical or dental procedures. Please let any healthcare practitioner know that you have had a valve replacement before your procedure.
- It is very common to have a poor appetite and bad taste in your mouth after surgery and at home.
- You should expect your pain level to slightly increase when the long-acting pain medication begins to wear off. This pain will not be the same kind of pain you experienced before surgery. This pain may be felt in the back of your chest and under your shoulder blades, and you may have numbness and tingling in your hands and fingers. This is to be expected due to the surgery.

* See instructions in reference guide
Activities

You’ve just come through one of the major events of your life. So give yourself time to get better little by little. Expect good days and bad days. At first, you may tire easily. But being active will help you recover. Find your right balance between rest and activity.

Before you leave the hospital, your healthcare team will describe the types of activities you can do at home. Your activity program will depend on several factors, including your medical condition, the stage of your recovery, and your fitness level.

Walking is the best form of exercise during the early stages of recovery. Follow the guidelines provided by your cardiac rehabilitation nurse and get up every hour to move.

- You will walk outside, weather permitting, twice a day every day starting with five minutes.
- You will increase your walk time by one minute each day until you are walking 20 minutes (about one mile) twice a day.
- Stop and rest if you feel short of breath, dizzy, or faint. If these symptoms don’t improve within 20 minutes, call your doctor.
- Take a shower after each walk and examine your incisions in the mirror for signs of infection. If you have any concerns, call your doctor’s office.

Showering

You may feel weak the first few times you shower.

- Put a stool in the shower.
- Have someone nearby in case you need help.
- Avoid very hot water and tub baths, which can make you lightheaded.

Resuming Sexual Relations

If you can walk three blocks at a brisk pace or climb two flights of stairs comfortably, you are probably ready to resume sex. For many people, this is about four to six weeks after surgery. If you are not sure, ask your doctor.

- Do not begin sex within two hours after a large meal. It is best to pick a time when you are not tired or under stress.
- Choose positions that require less effort and put less strain on your breastbone, such as side-lying, or active partner on top. Try to avoid supporting your body weight on your arms. Stop sexual activity if you begin to feel chest pain or discomfort, shortness of breath, palpitations, or dizziness. Wait for the symptoms to go away before you try again.

Dealing With Your Emotions

It is quite common to feel discouraged, frustrated, or depressed after heart surgery. Remember these feelings are temporary, and emotional healing will take place. It is also normal to have difficulty focusing and concentrating in the first few weeks after surgery. As you return to a more normal routine your ability to concentrate should also improve. Here are some thing to do to cope with your feelings and recover more quickly.

- Keep doing things you enjoy, such as hobbies and leisure activities.
- Talk out your feelings with a loved one or with a trusted friend.
- Consider joining a support group for patients with heart disease.
- If your problems do not go away, talk to your doctor, nurse, or a counselor.
Cardiac Rehabilitation

Your surgeon will refer you to an outpatient cardiac rehabilitation program (rehab). Cardiac rehab is a formal program that will monitor your progress and get you back to full activity sooner. The rehabilitation staff offers professional counseling from a dietitian, pharmacist, psychologist, nurses and exercise physiologists. You will participate in exercise sessions.

Exercises include walking on a treadmill or on the track, riding an exercise bike or NuStep machine (avoid arm activities for six to eight weeks).

You will attend sessions two to three times a week, for about three months (36 visits).

In addition to exercise, patients also attend education classes periodically.

Class topics include:
- Heart healthy eating
- Diabetes education
- Recognizing signs and symptoms
- Weight loss
- Medications
- Smoking cessation
- Stress/depression management

Lifestyle Changes

Controlling your risk factors can reduce your risk of having a heart attack. Among the risk factors you can control are high cholesterol, smoking, high blood pressure, excessive body weight, lack of exercise, and diabetes.

- Enjoy a heart-healthy diet.
- Cut down on fat, especially saturated fats (i.e. fatty cuts of meat, sausage, whole milk, cream, butter, cheese, bakery goods).
- Choose foods rich in starch and fiber, such as whole-grain breads and cereals, pasta and rice, dried beans and peas, and fresh fruits and vegetables.
- Choose low-fat dairy products, fish, chicken, and lean meats.
- Use cooking methods that use little or no fat, such as steaming, baking, broiling, and grilling. Trim off fat before cooking meat. Remove skin before cooking chicken.
- If you smoke – QUIT!
- Exercise regularly
- Reduce stress
- Watch your blood pressure
- Control your diabetes
**Vital Sign and Activity Log**

**Report:**
- Weight gain → 2lbs in 24 hr
- Temperature → 101
- Increased redness of incisions

**Walk 5 minutes a day**
**Add 1 minute daily**
**Goal is 20 minutes a day within 3-4 weeks**

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Post Heart Surgery - Quick Reference

No — pushing, pulling, straining, or reaching.

No — lifting over 10lbs for three months unless otherwise instructed by your doctor.

Weigh daily in morning and record on vital sign sheet. Report to nurse or doctor if weight gain over 2lbs in 24 hours noted.

Record temperature every morning, noon and night. Report to nurse or doctor if temperature is greater than 101.0.

Use incentive spirometer five to ten times every two hours while awake for the first two weeks.

Walk twice a day.
Begin walking five minutes two times a day then add one minute every day. Goal is to be able to walk 20 minutes twice a day by doctor’s appointment.

Wear TED hose or Ace wraps during the day.
Apply TED hose each morning and remove each night before bedtime. Keep legs elevated above heart level.

Wash incisions with antibacterial soap.

Report any redness, swelling, drainage, pain, or temperature noted with incisions.
Using Your Incentive Spirometer

**Step 1**
- Slide the yellow pointer to prescribed milliliter volume level.
- Hold or stand exerciser in an upright position.

**Step 2**
- Exhale normally. Then place lips tightly around the mouthpiece.

**Step 3**
- Inhale normally to raise the white piston in the chamber.
- When inhaling maintain top of the yellow flow cup in the “Best” flow range.

**Step 4**
- Continue inhaling and try to raise piston to prescribed level.
- When inhalation is complete, remove mouthpiece from mouth, hold breath as prescribed, and exhale normally.
How to Check Your Pulse

Learning to check your pulse after heart surgery is very important. It is very helpful to check your pulse when you exercise or if you do not feel well.

• Turn your palm face up

• Take the index and middle finger of your opposite hand and place them just below the base of your thumb of your wrist.

• Press gently until you feel your pulse.

• Change the amount of pressure or change the position of your fingers if you can’t find your pulse.

• Count your pulse for 30 seconds and multiply by two. If irregular post noted, count pulse for one minute.
Application of Compression Stockings

1. Insert hand into stocking as far as the heel pocket. Grasp center of heel pocket and turn stocking inside out to the heel area.

2. Gently ease the remaining part of the stocking over the heel. Carefully position stocking over the foot and heel.

*Be sure the heal is centered in the heel pocket.

3. Pull stocking up and lift around the ankle and calf, working up to the final position.

4. Make sure heel and toes are positioned correctly. Smooth out any excess material between top of stocking and ankle.

5. Repeat application for other leg.