

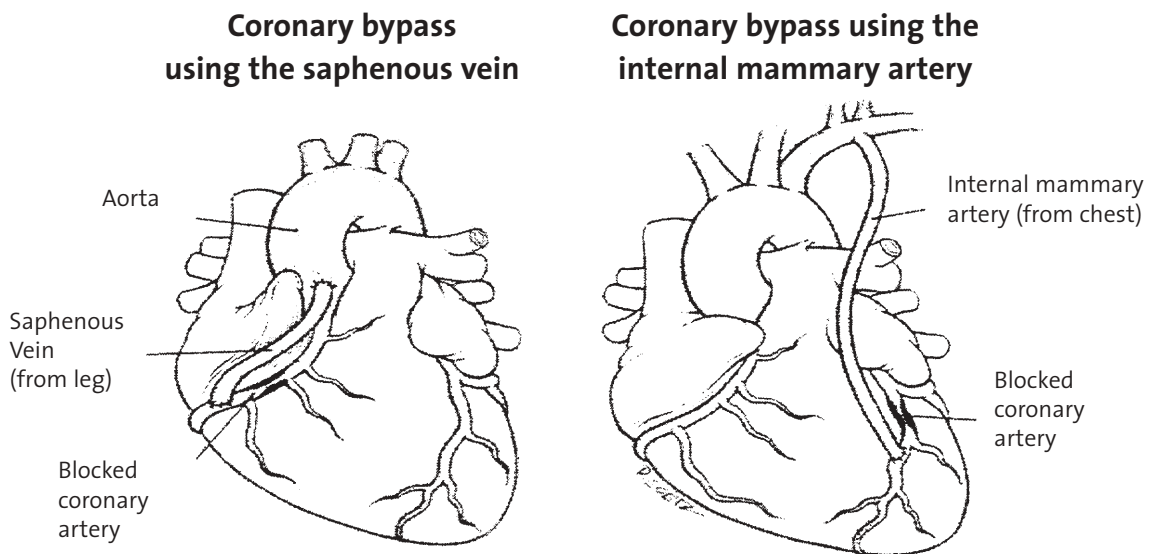
HEART SURGERY (Coronary Artery Bypass Surgery)

Coronary artery disease and angina may also be treated with surgery to improve circulation and get oxygen to the heart. Bypass surgery involves using veins from your legs or an artery from your arm or chest as grafts to improve the blood flow around the blocked part(s) of your coronary arteries. When the vein is used, one end of the vein is attached to the aorta. The other end is attached just beyond the blockage to create a bypass or detour, thereby improving blood flow to the heart. The radial artery (from the lower arm) is attached in the same way as a vein bypass.

When the chest artery is used, the lower portion of the left internal mammary artery (LIMA) or less commonly the right internal mammary artery (RIMA) is freed from the chest wall and attached to the coronary artery just beyond the blockage. If you have had a LIMA, you may experience left upper chest discomfort. It is important to tell your doctor or nurse if this is similar to your pre-operative angina-like pain or if the pain does not decrease with pain medication.

Bypass surgery is not a cure all. Atherosclerosis can continue to form even in the grafted artery or vein. To help the bypasses to remain open, you should modify your risk factors that cause coronary artery disease and continue to take your medicine as ordered.

After surgery, it is important that you start walking as soon as possible and gradually increase the amount of activity as ordered. Activity helps you keep the bypass graft(s) open, regain strength and develop heart conditioning.



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VALVULAR HEART CONDITIONS

Heart valves are the “doors” that open and close to regulate the blood flow in one direction through the heart and to parts of the body. The valves may be affected by a variety of conditions such as rheumatic fever, congenital defects, bacterial infections or injury to supporting structures of the valves.

Valve disease occurs when a valve does not work the way it is supposed to. If a valve does not close all the way, blood may leak backward. This condition is called **regurgitation or insufficiency**. If a valve does not open all the way, less blood moves through the opening. This condition is called **stenosis**. These problems cause the heart to work harder to pump the same amount of blood. Fluid may back up into the lungs or body and causes signs of shortness of breath and fluid retention.

Symptoms of valvular heart disease vary from person to person. Some have no symptoms, while others have only mild discomfort. Valve problems often worsen slowly. Signs and symptoms might include heart murmur, angina, increasing fatigue, shortness of breath, heart rate irregularities, chest pain, fainting or near fainting during exertion, fluid retention and lung congestion.

Medical Treatment for Valve Disease

Treatment may include:

- Avoiding activity that causes you to become overly tired
- Trying to prevent infection
- A low salt diet to reduce fluid retention.
- medicines, such as diuretics to reduce excess body fluid, digitalis or other medicines to slow and regulate the heartbeat

Normal closed valve



Normal open valve



Defective closed valve



Defective open valve

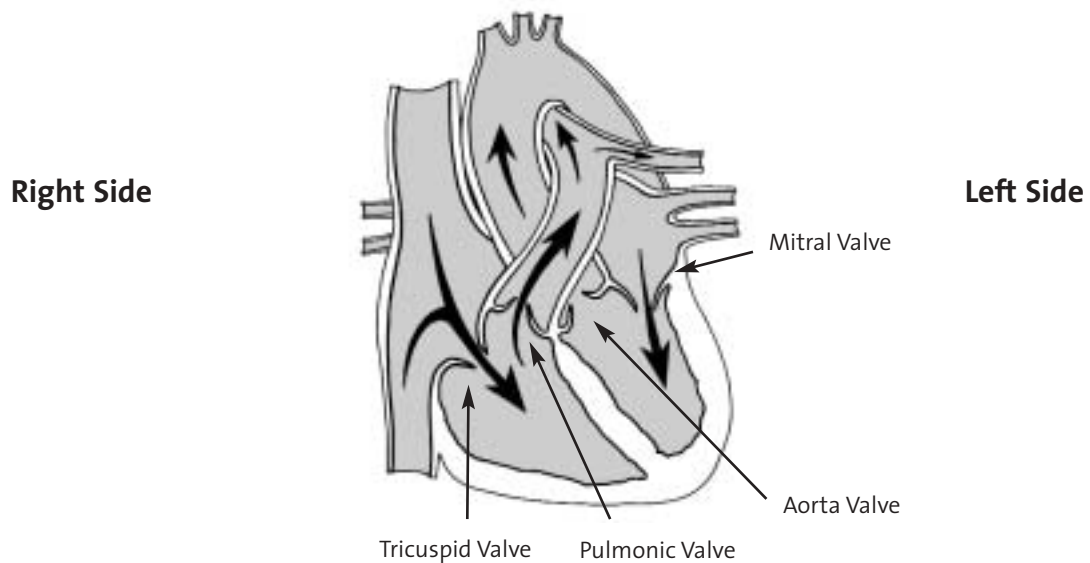


CARDIAC SURGERY: VALVE REPLACEMENT

There are four heart valves that act like one-way doors to keep blood moving in one direction through the heart.

- The **tricuspid valve** is between your right atrium and right ventricle. This valve regulates the blood flow between the right atrium and ventricle.
- The **pulmonic valve** is between your right ventricle and your pulmonary artery. This valve regulates the blood flow from the heart to the lungs. This blood going to the lungs is in need of oxygen.
- The **mitral valve** is between your left atrium and left ventricle. This valve regulates the blood flow between these two chambers of your heart.
- The **aortic valve** is between your left ventricle and the aorta. This regulates the blood flow from your heart to the body.

Blood flow through the heart



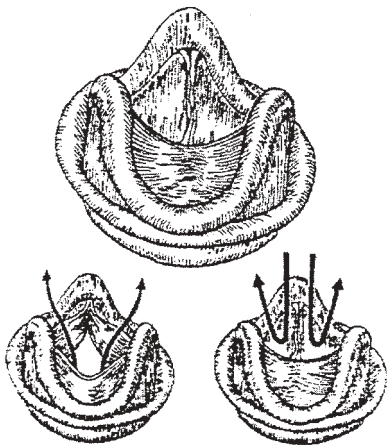
TREATMENT OF HEART DISEASE

Treating Heart Valves with Surgery

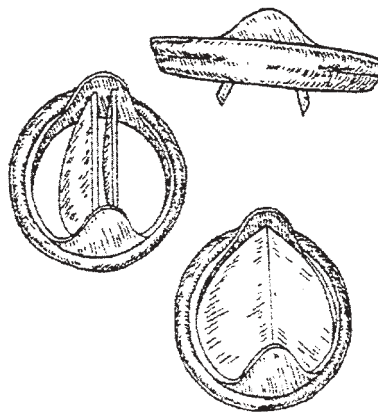
Heart valve surgery involves repairing or replacing the defective valve. To repair a valve (valvuloplasty), the surgeon releases or cuts the tissue causing the valve to be “stuck” or narrowed. A ring may also be used to tighten a leaking valve. To replace a defective valve, the surgeon removes the valve and replaces it with tissue, either porcine (pig valve) or bovine (cow tissue), or with a mechanical valve.

Your doctor will consider your special needs to determine the proper treatment for your valve problem. Some of the determining factors include your age, the disease process, your heart size and your ability and willingness to take certain medicines.

Tissue Valves (Porcine - pig valve)



Mechanical Valves (St. Jude or bileaflet valve)



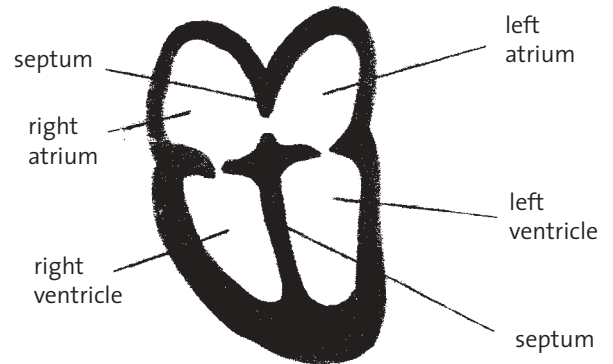
IMPORTANT POINTS ABOUT HEART VALVE SURGERY

- Follow medicine instructions carefully. If you are taking an anticoagulant (prevents the blood from clotting), you will get information on precautions you should be aware of while taking this medicine.
- Be aware of signs of extra fluid, or a sudden weight gain of 3-4 pounds in 24 hours or heart failure.
- You may wish to wear a medic alert bracelet or necklace to inform emergency medical personnel of your condition and potential problems.
- Make sure ALL your other health care providers (doctors, dentists, etc.) know you have had heart valve problems, have had heart valve surgery or are taking an anticoagulant.

You should take antibiotics before and after any invasive procedure, including dental work (e.g. teeth cleaning). During these procedures, bacteria may be released into the bloodstream and may become lodged in the artificial valve, causing an infection called subacute bacterial endocarditis (SBE). Antibiotics will help reduce the risk of infection.

SEPTAL DEFECTS

The atrial septum is the wall that divides the upper chambers (atria) of the heart. An **atrial septal defect** (ASD) is an opening or hole in this wall that fails to close during the body's development. The ventricular septum divides the two lower chambers (ventricles) of the heart. A **ventricular septal defect** (VSD) is also an opening that, in addition to birth defects, can also be caused by an extensive heart attack. Surgery may be needed to repair the defect. This is done by covering the opening with a material or by simply sewing the opening together.



RELIEVING PAIN AFTER SURGERY

Acetaminophen and Codeine (Tylenol with Codeine #3)

Acetaminophen and propoxyphene (Darvocet-N 100)

These may be taken with food if they upset your stomach. Do not exceed the recommended dose or take this medicine longer than prescribed. Talk to your doctor if you are having continued pain.

These medicines may cause drowsiness or dizziness and may affect your ability to drive or perform other potentially dangerous tasks. Other side effects, which may go away during treatment, may include light-headedness, constipation, nausea or vomiting. If they continue or are bothersome, check with your doctor. If you notice a rash or itching, or other effects not listed here, call your doctor.

STERNAL (CHEST) PRECAUTIONS

Observe these precautions until your doctor tells you otherwise. These precautions allow your chest incision to heal and will help avoid breaking sternal wires.

DO'S

DO use your bear or pillow when coughing, sneezing or getting in and out of a bed or chair.

DO use a pillow or padding under your seat belt when traveling in a car.

DO use stairs, if needed, limit to 1-2 times the first week. Use the railing for support only - do not pull on railing.

DO move items that are used often to shoulder level or below.

DO use your arms and hands to wash or comb your hair or to put on pullover shirts without allowing elbows above your shoulders.

DO lift arms over your head **one time** each day to maintain full shoulder movement.

DO sleep only on your back for 4 weeks.

DON'TS

DO NOT lift more than 5 to 10 pounds.

DO NOT use your arms to push yourself out of a bed or chair

DO NOT lift your arms over your head more than one time each day.

DO NOT use your arms to pull on stair railings.

DO NOT allow others to help you by pulling on your arms.

DO NOT sit in the front seat of a car that has an airbag.

Getting out of bed:

- Helper stands beside the bed at patient's shoulder level.
- Hold bear or pillow tightly.
- Scoot hips closer to edge of bed.
- Allow feet to drop off bed and use heels to catch hold of mattress or bed frame.
- Use feet and legs to pull body into upright position. Do not use elbows to push up.
- Helper should put hand on patient's back and in front of bear or pillow to assist with lift OR helper can place hands on patient's shoulders.

Getting up from chair or commode:

- Hold bear or pillow with both hands.
- Scoot hips forward to edge of chair.
- Rock upper body forward and back to gain momentum.
- Use legs to come to standing position. DO NOT USE hands or elbows.
- Helper should stand in front of patient or to patient's side.

POTENTIAL PROBLEMS AFTER HEART SURGERY

After surgery, the electrical system of your heart may be a little more irritable than usual. Because of this, you may develop irregular, fast or slow heartbeats, often called an arrhythmia. This often happens during the recovery period (48 hours) after surgery but it may occur after you go home. It is important that you learn to recognize irregular heartbeats and report them to your doctor.

Here is a brief explanation of some of the problems that may occur with the electrical system of the heart.

Atrial fibrillation (often called “a fib”)

You may experience a fast, irregular heartbeat or pulse after heart surgery. This occurs when the upper chambers of the heart become irritable and begin sending many impulses to the lower chambers. This can cause rapid and erratic heart rates. This often goes away after the swelling and irritation are gone. This is common after heart surgery and sometimes lasts for a short while (up to 6 weeks). This is often treated with medicines.

If your resting heart rate is above 120 beats per minute and you do not feel well call the emergency squad (**911**). Refer to page 58 for more information on heart rhythms.

Premature heartbeats

An irritable site in the heart can cause early heartbeats. These types of premature beats are usually not cause for concern, but you should tell your doctor. When you feel these skipped or missed beats, count the number you are having for 1 minute. If you feel you are having 5 or more skipped beats per minute, **call your doctor**.

Slow Heart Rates

If your resting heart rate is less than 50 beats per minute, call your doctor. If you have severe dizziness or blackout spells with this slowed heart rate, **call the emergency squad (911)**.

If these irregular heartbeats continue during your recovery, your doctor may prescribe medicines. These medicines will be discussed with you. More information on treatments for heart rhythm problems will be discussed later in this booklet.

INCISIONAL CONCERNS

Incisional pain

It is common to have incisional pain, itching, numbness or tingling for several weeks after surgery. The discomfort or pain may extend into your neck, shoulders or legs. If needed, you may take pain medicines.

Patients who have had veins removed for coronary artery bypass surgery often have the greatest discomfort. This is due to the movement of the legs and irritation to the incision. You may continue to have aches and pains after you go home. You'll be given a prescription for pain medicine.

Infection

Tell your doctor if you notice any signs of infection at the incision: redness, swelling, tenderness, change in skin temperature, drainage, a fever greater than 100 degrees. If there is drainage from your incision, tell your doctor about the amount, color and odor of the drainage. Yellow or green drainage may be a sign of infection.

Incision Care

- Shower using an antibacterial soap (Dial, Zest, Safeguard). Do not soak in a tub (for at least 4 weeks) until your incisions are completely healed. Gently clean your incisions. Do not scrub them. Do not put anything (lotions, creams, powders) on the incisions.
- Women should wear a bra after surgery. A soft gauze pad can be used to protect the incision from rubbing against the bra.
- If ordered, wear your elastic stockings for 4 weeks to limit swelling and increase circulation in your legs. It is also helpful to elevate your feet when sitting. You will need help putting on your elastic stockings. **Do not put these stockings in the dryer.**
- It is important to remember good posture. Maintain a straight back with shoulders, back and chin up.

OTHER PROBLEMS

Anemia

You may become anemic after surgery because of a loss of blood. Your body will replace the blood loss naturally, so unless your blood count is very low, your doctor will not order blood replacements. Exercise, an iron supplement and a well-balanced diet can help your body replace this fluid volume.

Fluid Retention

It is normal for a person to retain fluid right after surgery. This fluid should slowly come off during your hospital stay. Weigh yourself each morning at home to check for any fluid retention.

Emotional Feelings

You may experience a wide range of emotions and feelings after your heart surgery. For example, you may cry easily and can not explain why. Most of these feelings are normal and occur for only a short time. If negative feelings continue for long periods, you may want to seek help, such as counseling or a support group, to return to a more positive state of mind. **The stress of surgery or an illness may also stir up these emotions:**

Depression

You may become depressed in the hospital and continue to feel so after you get home. Depression can be caused by biological changes in your body, the emotional fatigue that is normal after surgery or when you realize that your activities will be limited for a while.

To overcome this depression, try to find ways to keep your mind active. Take this opportunity to start a new hobby, read those books you haven't had time for or catch up on your letter writing. Report prolonged depression to your doctor.

Denial

This is an emotional problem that occurs when you try to convince yourself that there's nothing wrong. Something was wrong or the surgery would not have been needed. If atherosclerosis was diagnosed, this was not corrected with the surgery. Rather, the blockages were merely bypassed. Denial can be dangerous because you could choose to ignore risk factors that affect your heart health, such as poor diet, lack of exercise and smoking.

Grief

It is normal to feel grief after any loss, real or imagined. You may have some sort of grief during your recovery. You may feel disorganized, tired, sad, desperate or helpless. These feelings will lessen as you recover. Realize that you may have a bad day and that grief takes time to resolve itself. If these bad days happen more often or for long periods, it may help for you to talk to someone who can help you feel more positive about things.

Memory changes or forgetfulness

It is common for a heart patient to feel forgetful after surgery, mostly due to the stress of surgery and the lack of sleep. Your memory will most likely improve over the weeks following surgery. In the meantime, write down questions and instructions. Make use of the written material provided for you and your family. It helps to have family members involved in your education after surgery and throughout the healing process.

GOOD NUTRITION DURING RECOVERY AFTER OPEN HEART SURGERY

After open-heart surgery, the body needs increased calories, protein, vitamins and minerals to promote rapid and thorough wound healing. Most people have a decreased appetite that may continue for 4 to 6 weeks after surgery.

To make the best recovery, it is important to:

- Increase calories
- Increase protein
- Choose a wide variety of foods
- Eat increased amounts of nutritious foods
- If you have diabetes, monitor your blood glucose levels

Plan a healthy recovery diet by using the Food Guide Pyramid in the diet section of this book. Choose from each food group using the number of servings suggested.

About 4 to 6 weeks after surgery, or when your appetite and physical strength have improved, start to make gradual, lifelong changes in eating habits. The goal is to help prevent the further build-up of plaque in the arteries and the resulting need for more heart surgery. To help you make these changes, refer to the diet section of this booklet.

More Nutrition Tips for Recovery

- Try 5 to 6 smaller feedings a day; because large meals can be overwhelming. Try fruit, sherbet, pudding, cottage cheese, custard, milkshakes, soup or half sandwiches (for those people who do not have diabetes). If you have diabetes, try fruit, cottage cheese, peanut butter and crackers, soup and half a sandwich, or sugar-free custard and pudding between meals.
- Check with your doctor or dietitian about a daily multivitamin and mineral supplement to provide nutrients when food intake is not good enough.
- Low blood hemoglobin (anemia) due to the loss of blood during surgery is a common cause of weakness during recovery. An iron supplement may be prescribed. Eat food that contains iron, such as: lean red meat, fortified cereal, enriched bread, dried beans and peas, raisins and green leafy vegetables. Iron is better absorbed by the body if eaten with a food high in Vitamin C, such as citrus fruits, melon, strawberries, broccoli, cabbage and potatoes.
- Unless your doctor has restricted fluids, drink 6 to 8 glasses of fluid each day to avoid constipation and dehydration. Choose nutritious fluids such as milk and fruit juice, along with plenty of water.
- Constipation is a common complaint after surgery. This may be from medicines, decreased activity, or poor intake of food and fluids. Eat more high-fiber foods, such as fruit, dried beans and peas, vegetables and whole grain breads and cereals. Breakfast is a high fiber meal when you choose bran cereals, fruit, prunes or prune juice.

EXERCISES AFTER HEART SURGERY***The goals of the program are to:***

- Relax muscles that may have tightened during surgery.
- Increase muscle strength around your incision.
- Encourage good posture.
- Improve circulation
- Decrease the chance of blood clots

Warm-up and Cool down Exercises

Do each of these exercises 10 times each before and after you exercise or walk.

Ankle Pumps

Before starting any exercise it is important to warm up. Start your warm-up with range of motion exercises. Start with ankle pumps. **Do each of these exercises 10 times before and 10 times after each walk with each foot.**



Ankle pumps

Ankle Rotations (both directions)

Next do ankle rotations by moving the ankle in a circle. **Do this 10 times each direction with each leg.**



Ankle rotations

Hip Flexion (sitting)

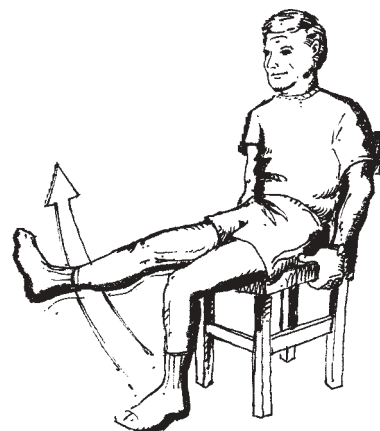
While sitting in a chair or on the edge of a bed, raise your knee toward your chest to warm up the hip joint. **Do this 10 times with each leg.**



Hip flexion

Knee Extension (sitting)

While sitting in a chair or on the edge of a bed, slowly straighten your knee and then bring your foot back to the floor. Do this exercise slowly. Do not kick and drop your leg. **Do this 10 times with each leg.**



Knee extension

UPPER BODY EXERCISES AFTER HEART SURGERY

Neck Turns (sitting)

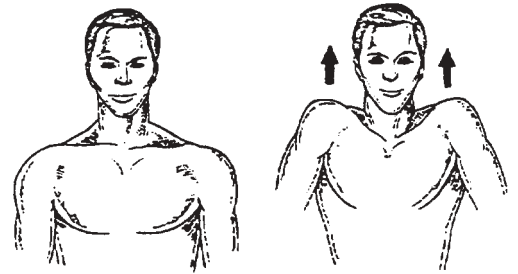
Sit with arms relaxed at your side. While holding your chin to your chest, slowly turn your head from side to side.



Neck turns

Shoulder Shrugs (sitting)

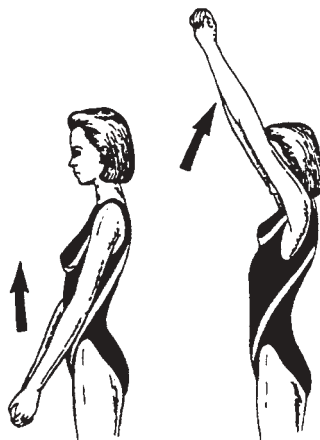
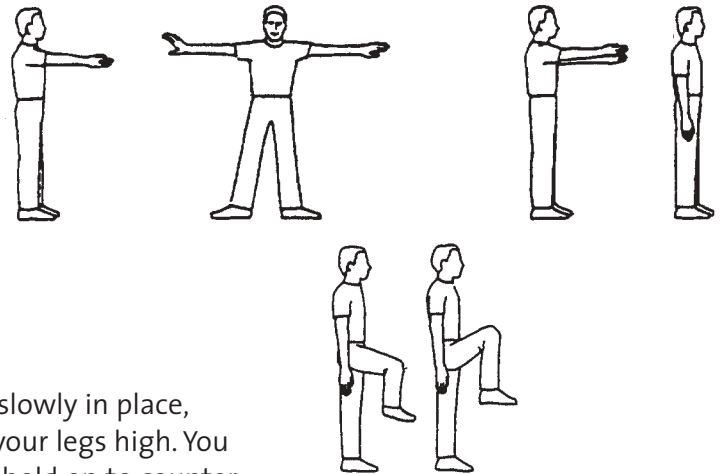
Sit with arms relaxed at your side. Try to touch your shoulders to your ears. Take a deep breath while raising your shoulders. As you relax, exhale. Make sure shoulders are brought up equally high and lowered to the same level.



Shoulder shrugs

Arm Extensions (sitting)

Although the pictures reflect a person standing, we recommend sitting in a chair while performing these exercises. Begin with arms at your side. Lift arms up to shoulder level, then out to the sides, back to the middle and finally back to the sides.



Arm raises

March slowly in place, lifting your legs high. You should hold on to counter top, chair or table for stability. Do this exercise 10 times before and after you walk.

Arm Raises (sitting)

Raise your arms above your head once each day to maintain full shoulder movement. Sit in a chair with no arms. Clasp your hands together at your waist. Keep your elbows straight and raise your arms up and over your head. Slowly return your arms to the starting position.

TREATMENT OF HEART DISEASE

Good Posture

Check your posture in a mirror. Keep shoulders back, head and chin back and shoulders even. Do not hunch shoulders forward.

Daily Routine Use of Arms

Use your arms normally for daily routine activities performed in front of your body such as washing and eating. For washing and combing your hair, keep elbows bent and do not raise above shoulder level. Avoid lifting any more than five pounds for the next month.



Poor



Good

CARDIAC SURGERY DISCHARGE INFORMATION

After heart surgery, it takes a few weeks to regain strength and resume your normal activities. The following instructions should help as you resume your activities.

GENERAL INFORMATION

- Your surgeon will send a letter to your family doctor about your surgery and hospital course. Once you arrive home, contact your family doctor.
- Call your surgeon's office if a follow-up appointment has not been scheduled. An appointment time may be given to you while you are in the hospital or you may get a letter at home with the appointment scheduled.
- You should have all prescriptions before leaving the hospital. Some medicines may be different from those you had prior to admission. Your nurse will teach you about the use of these medicines (refer to medicine section of this booklet). Let us know if you have a mail away prescription plan.
- Join an outpatient cardiac rehab program close to home.
- If you cannot reach your doctor or surgeon with what you believe is an urgent problem, go to your local emergency room.

HOME ACTIVITIES

- The first 2 to 3 weeks will be the most uncomfortable. It is common to have aches and pains that might interfere with your appetite, sleep and activities.
- You may also experience some depression. These things are common after surgery and will slowly get better after the first few weeks.
- It is very important to be up and around, steadily increasing your activity and involvement in things. Get up each day and dress in your normal clothes.
- Do not drive until your doctor says it is okay and only if you feel up to it. Always wear a seat belt. Do not ride in the front seat if you have air bags.
- Do not plan on returning to work until after your checkup.
- Do not lift anything heavier than 5 to 10 pounds until you see your surgeon at your follow up appointment.
- Avoid strenuous activities such as gardening, golfing, skiing, etc. until your checkup.
- You will be able to resume sexual activities when you feel comfortable. Avoid increased pressure or weight on arms and chest.
- Limit stair climbing to no more than twice a day for the first week and climb stairs slowly. Do not use handrail to pull yourself up.

TREATMENT OF HEART DISEASE

- Do not sleep directly on your side or your stomach for 2 - 4 weeks after surgery.
- Light household activities (dishes, dusting, making beds but not changing sheets) and cooking may be done. Avoid vacuuming, mowing the lawn, raking leaves, shoveling snow and pounding with a hammer.
- Rest at least 30 minutes between all activities such as eating, showering and shaving.

SPECIAL PRECAUTIONS AFTER SURGERY

Rest and sleep

When you go home, dress in your normal clothing. Try to take a short nap each afternoon for the first 2 to 3 weeks. Rest after most of your activities, especially your meals. If you feel unusually tired one day, it may be because you pushed yourself too hard the day before.

Do not sleep directly on your side or on your stomach for 2-4 weeks according to your doctor's advice. You may prop yourself up and slightly off your back with pillows.

Bathing

Remember, you shouldn't take a tub bath for the first month after your surgery. It's best if you take lukewarm, not hot showers, and try to prevent the water from directly hitting your incision.

Gently wash over the incision using your hands and mild antibacterial soap and water. If you don't have a shower, you may take a sponge bath for the first month. Avoid hot, humid bathrooms. Avoid using lotions, creams or ointments on the incisions.

Climbing stairs

You may climb stairs when you go home, but do this slowly at first and avoid unneeded trips. Do not pull on stair railing - use for balance only.

Other activities

Your doctor will tell you when you may drive a car and return to work. If you want to do more vigorous activities after your recovery, such as tennis, skiing or heavy yard work, talk to your doctor first.

Social support

An outpatient cardiac rehabilitation program can often help deal with emotions. For more information about these and other programs, refer to the resource section of this booklet.