

*Empowering you*  
throughout your heart  
surgery experience

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What to expect before and after



*Real change lives here*

# Heart surgery

Thank you for entrusting your cardiac care to Piedmont Healthcare.

Our physicians and staff are dedicated to providing the best care possible. Educating you and your loved ones about the process helps to empower you in your role as the patient. This booklet has been created to help you care for yourself before surgery as well as what to expect while you are in the hospital, and how to prepare yourself after leaving the hospital.

Please note: If you are having heart surgery for a VAD implant or a heart transplant, your care will differ from the information in this book. You will receive additional education materials regarding your recovery.



In addition to this book, you may find the following resources helpful:

- Heart Channel: Some Piedmont facilities have an educational video system you may use free of charge while you are in the hospital. Ask your nurse for more details.
- [piedmonthheart.org](http://piedmonthheart.org)
- [americanheart.org](http://americanheart.org)
- [choosemyplate.gov](http://choosemyplate.gov)
- Piedmont's YouTube Channel (can be accessed from [piedmonthheart.org](http://piedmonthheart.org))
- Georgia Tobacco Quit Line:  
**1.877.270.STOP (7867)**

The information in this book provides general education material for informational purposes only. It is not intended to substitute for the advice of your physician. Please always follow your physician's specific advice.

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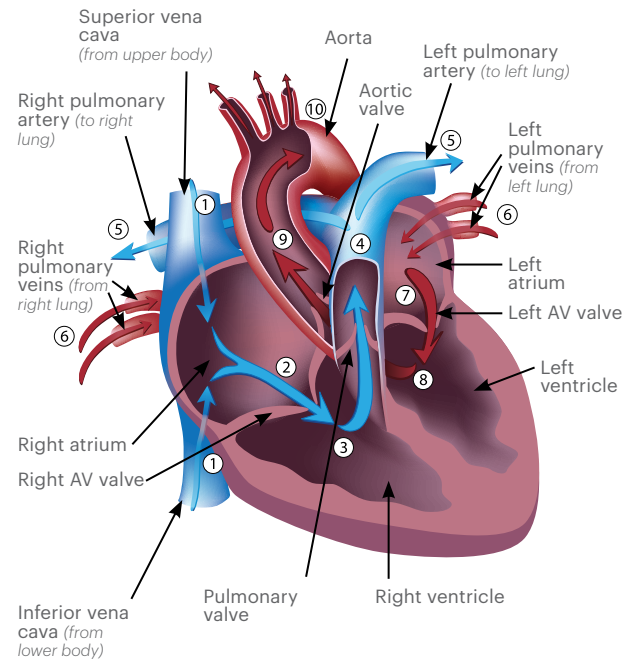
# All about the *heart*

## How The Heart Works

Your heart pumps blood to all parts of your body, which need the oxygen and nutrients it delivers. The inside of the heart is divided into four chambers: the two upper chambers are called the atria, and the two lower chambers are called the ventricles. In between the atria and the ventricles are valves. The valves help direct blood flow in the proper direction.

Normal blood flow starts on the right side of your heart in the right atrium. From there, it passes through the tricuspid valve into the right ventricle. From the right ventricle, it is pumped through the pulmonic valve, then enters the lungs. The lungs oxygenate the blood and remove carbon dioxide. The oxygenated blood leaves the lungs through your pulmonary veins and travels back to the heart, where it enters the left atrium. From there, it passes through the mitral valve and enters the left ventricle. It is pumped from the left ventricle through the aortic valve into the aorta, which delivers oxygenated blood to your entire body. Your blood then travels through your peripheral veins to the right atrium, and the cycle begins again.

## PATHWAY OF BLOOD FLOW THROUGH THE HEART

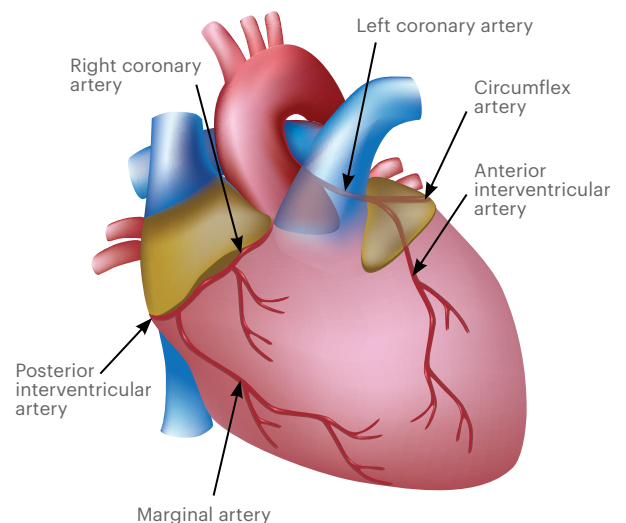


## Coronary Artery Disease

Your heart requires a supply of oxygen just like all other organs and muscles. It has its own set of arteries to deliver blood, called the coronary arteries, which branch off the aorta.

There are three main coronary arteries with many branches. These arteries lie on the outer surface of the heart and carry oxygen to the heart muscle. If they are blocked or narrowed, the heart muscle may not receive enough oxygen. This condition is called Coronary Artery Disease (CAD) or Coronary Heart Disease (CHD). CAD or CHD can cause angina (chest discomfort), damage to the cells of the heart muscle, a heart attack, or even sudden cardiac death.

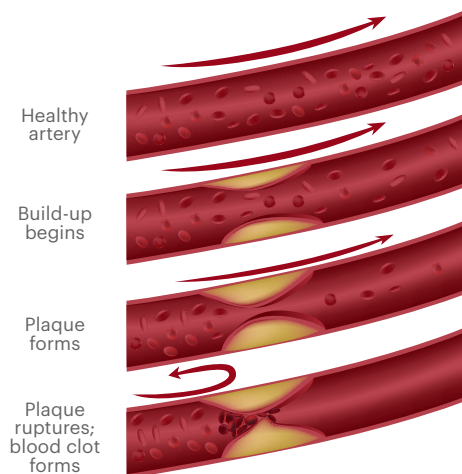
## ARTERIAL SUPPLY OF THE HEART





Another form of CAD is **atherosclerosis**, a buildup of plaque (fatty substances that are made up of cholesterol and other particles) in the coronary arteries. This buildup damages the lining of the artery walls and causes them to be stiff (less able to expand). As the plaque buildup increases, it can narrow the artery, which reduces the blood flow to the heart muscle. Plaque can also rupture (crack open), tearing the lining of the artery. Blood clots form around the rupture site. This can completely block the artery, and the heart muscle below the blockage does not get any oxygen. When this happens, it is called a myocardial infarction (MI), more commonly known as a heart attack. Lack of oxygen to the heart muscle causes damage to the muscle and can decrease the heart's ability to pump blood.

**STAGES OF ATHEROSCLEROSIS**



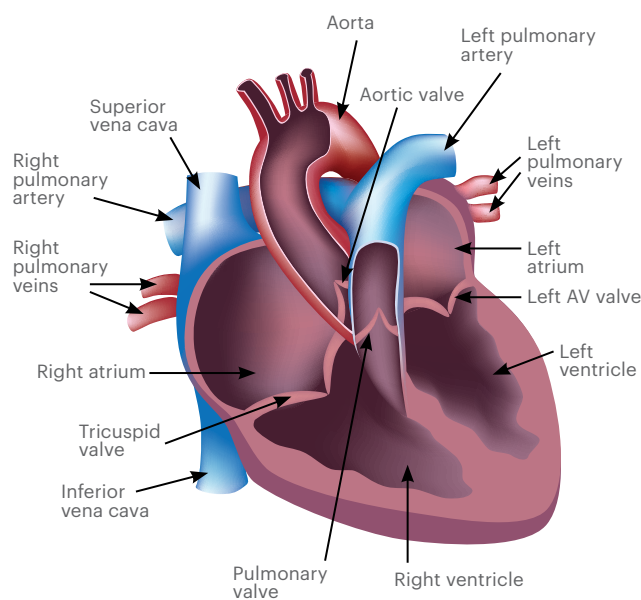
**Heart Valve Disease**

Normally, your four heart valves are thin and smooth, with one directional blood flow through the heart chambers. Scarring or thickening of the valves can result from birth defects, infection, rheumatic fever and scarlet fever. These changes can make the valves harder to open (stenosis) or not close all the way (insufficiency). The mitral and aortic valves are most affected by these changes. Symptoms may include palpitations with an irregular heartbeat, shortness of breath, swelling, coughing, and fatigue (extreme tiredness).

**Bacterial Endocarditis**

This is a very serious infection of the heart valves and/or inner lining of the heart (endocardium). It can damage or destroy the heart valves. Endocarditis may happen when bacteria enter the bloodstream during infection, dental work, surgery, or IV drug abuse. You are at risk for endocarditis if you have a heart defect or heart valve disease, or have had heart valve surgery. If you have endocarditis, your doctor may prescribe antibiotics pre-procedure. Symptoms of endocarditis may include fever, chills, sweating, tiredness, or loss of appetite. Call your doctor if your symptoms don't go away within 2 or 3 days.

**INTERNAL ANATOMY OF THE HEART**



# Surgical treatments

We feel that it's important for you to understand the different types of heart surgery and what you can expect.

Coronary artery bypass graft surgery and valve surgery are the most common types of heart surgery. Heart surgeons can also repair aneurysms and congenital heart defects. A heart-lung or bypass machine is used to pump for the heart and to add oxygen for the lungs while surgery is being performed.

## Coronary Artery Bypass Surgery

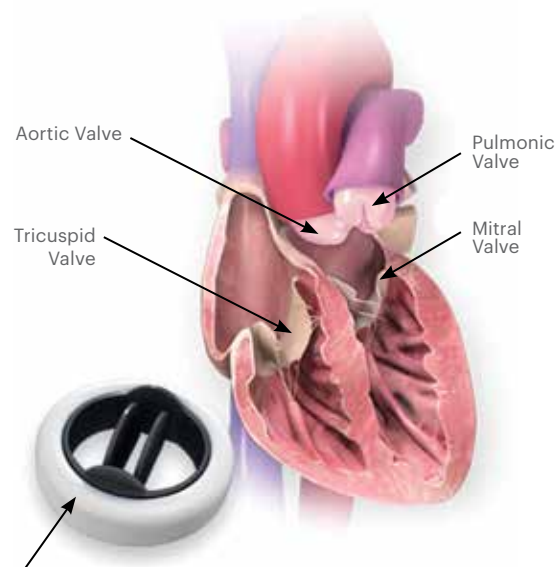
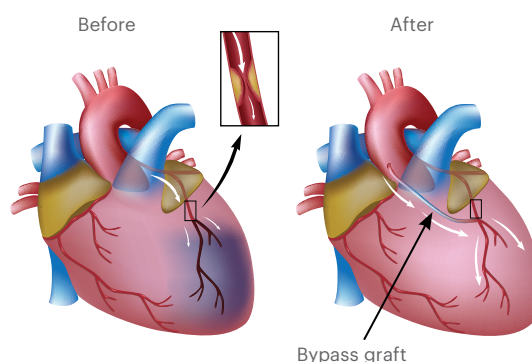
A coronary artery bypass graft (CABG) is performed to improve blood flow in blocked arteries. This relieves symptoms of angina (chest pain). During CABG surgery, a vein, typically the saphenous vein, is removed from the leg to be used for part of the bypasses. An artery (internal mammary or IMA) is usually taken from the inside of the chest wall to be used also. The surgeon removes the vein endoscopically through a small incision which is made near the knee. They sew one end of the vein onto the aorta to establish blood flow and attach the other end below the blocked area. The same principle is used with the artery, but it remains attached to its initial arterial source for blood flow.

Once the bypass is placed, the blood flow is rerouted around the area of the blockage. This allows oxygen to get to the area of the heart that is below the blockage and relieves symptoms. Many patients worry about the vein being removed from their leg. However, the remaining venous system will compensate for the vein that has been removed.

## Valve surgery

There are four valves in your heart that function as one-way doors, allowing blood to flow in and out of the chambers. Valve repair or replacement surgery is performed when a valve is damaged or scarred. A damaged or scarred valve does not open and close properly. This can lead to enlargement of the heart's chambers, which can lead to congestive heart failure.

## CORONARY ARTERY BYPASS SURGERY



If a valve becomes diseased or damaged, it may need to be replaced with an artificial one like the mechanical valve shown here.

*Illustration courtesy of the American Heart Association.*

The aortic valve will usually need to be replaced instead of repaired, as it is a high-pressure valve. The mitral and tricuspid valves commonly can be repaired. There are two types of valves used for replacement. The first is a tissue valve, typically bovine or porcine. The second is a mechanical valve, which is made of a type of carbon metal. People who receive a mechanical valve must take a blood thinner called warfarin. Your surgeon will review your specific medical history and your lifestyle to make a recommendation for the appropriate type of valve to be used.

### Atrial Septal Defect

An atrial septal defect forms when the wall between the upper chambers (the atria) does not close completely. This allows blood to flow inappropriately. The defect is repaired with a patch during surgery.

### Aortic Aneurysms

The aorta is a major blood vessel in your body that carries blood to the body's vital organs. An aortic aneurysm is an abnormal bulge that occurs in the wall of the vessel. The area can then become weakened and develop a tear, which is a life-threatening emergency.

Causes are chronically high blood pressure, congenital conditions such as Marfan syndrome or a bicuspid aortic valve.

Symptoms of an aneurysm can include: acute onset of chest pain, pain between the shoulder blades, abdominal pain, and shortness of breath.

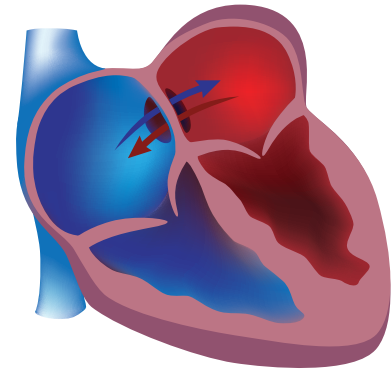
During surgery to repair the aneurysm, the weakened area is removed and replaced with a synthetic tube called a graft.

### Myxoma

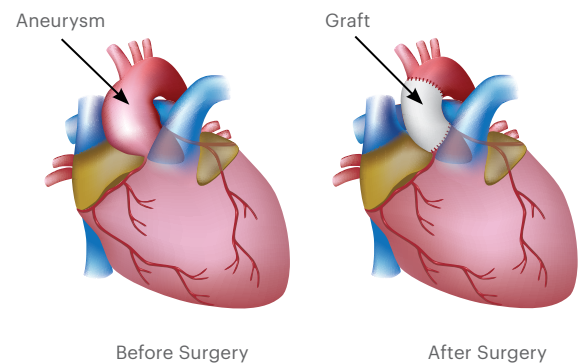
A myxoma is a mass or tumor of the heart. They can develop at any age and are more common in women than men. Typically, they grow in the left upper chamber of the heart and are most often benign. They are removed from the chamber in the heart, and a patch is used if necessary.

### CONGENITAL HEART DISEASE

*Arterial Septal Defect*



### ASCENDING AORTIC ANEURYSM AND SURGICAL REPAIR



# Before your surgery

- **Office visit:** You may have an appointment with your surgeon in their office to discuss and plan your surgery.
- **Admissions testing appointment:** You will have a scheduled pre-op appointment with the admissions testing nurse. During this time, you will complete your paperwork for your admission to the hospital. You will also have blood drawn and any X-rays or ultrasounds that are needed before surgery. The admissions nurse will go over instructions on when to arrive at the hospital on the day of your surgery and what you need to do at home to prepare for your surgery (special bathing, incentive breathing, etc.).

If you are already in the hospital when your surgery is scheduled, all of your pre-surgery tests and labs will be done in the hospital. Your surgery team and nurses will give you all necessary information and answer any questions you may have.

## The Night Before Your Surgery

### If you are at home:

- DO bathe with Hibiclens and follow the instructions carefully.
- DO use your Bactroban (ointment for nose) as directed.
- DO practice your incentive breathing and coughing (see page 10).
- DO take medicines only as instructed at your surgeon's office or pre-op appointment.
- Do NOT eat or drink after midnight. No smoking, no chewing tobacco, breath mints, or gum either.
- Do NOT shave your chest, groin, underarms, or legs. This will be done in the operating room as needed.

### If you are in the hospital:

- DO apply the Bactroban (ointment for nose) your nurse brings you.
- DO practice your incentive breathing and coughing (see page 10).
- Do NOT eat or drink after midnight. No smoking, no chewing tobacco, breath mints, or gum either.
- Do NOT take medications on your own. Your nurse will give you what you need.
- DO NOT shave your chest, groin, underarms, or legs. This will be done in the operating room as needed.

If you have diabetes or your blood sugar has been high, you will have an insulin drip (IV insulin) started the night before surgery and continued for 24-48 hours after surgery. Controlling your blood sugar before and after surgery decreases the chance of infection and promotes healing.



## The Morning of Your Surgery

### If you are coming from home:

- **DO NOT** shave your chest, groin, underarms, or legs. This will be done in the operating room as needed.
- **DO** use your Bactroban (ointment for nose) as directed.
- **DO** take medicines only as instructed at your surgeon's office or pre-op appointment.
- **DO** give yourself enough time to arrive at the hospital at the time you've been given. Use the Main Entrance.
- **DO** wipe down with Hibiclens as instructed when you arrive at the pre-op area.

### If you are in the hospital:

- **DO NOT** shave your chest, groin, underarms, or legs. This will be done in the operating room as needed.
- Your nurse will bring you a special CHG mouthwash and toothbrush to use along with some Bactroban ointment (for nose).
- Someone will come from surgical services to take you to the pre-op area. Your family may walk down with you.



Your family will be directed to the open heart surgery waiting room when you go back to the pre-op area. They will be given updates throughout your surgery by one of the patient representatives.

They will meet with your surgeon after the surgery is over for an update. They will be allowed to visit you a few hours after your surgery is over.

# Your *spirometer* (incentive breathing device)

If you are given a spirometer before your surgery, you can practice using it ahead of time as instructed.

Using your spirometer after surgery will help keep your lungs clear while you are recovering.



## It may also:

- Reduce your need for oxygen
- Lessen soreness from surgery
- Shorten your length of stay in the hospital
- Prevent lung infections

## How to use the incentive spirometer

- Sit on the edge of your bed if possible, or sit up as far as you can in bed.
- Hold the spirometer in an upright position.
- Place the mouthpiece in your mouth and seal your lips tightly around it.
- Breathe in slowly and as deeply as possible, raising the blue piston toward the top of the column. The blue coach indicator should be in the blue outlined area.
- Hold your breath as long as possible (at least 5 seconds). Allow the piston to fall to the bottom of the column.
- Rest for a few seconds and repeat the steps above at least 10 times every hour while you are awake.
- Position the blue indicator on the left side of the spirometer to show your best effort. Use the indicator as a goal to work toward during repetition.
- After each set of 10 deep breaths, cough to help ensure your lungs are clear. Support your incision when coughing by placing a pillow firmly against your incision.
- Once you are able to get out of bed, walk in the hallway and continue to cough and deep breathe well.

## Coughing

Anesthesia and surgery may weaken your cough. Follow this technique to cough effectively. This will help eliminate blockages to your breathing, and it will help keep your lungs clear. You should perform this cough after completing your 10 breaths on the spirometer (or any time you feel you need to clear your lungs).

## How to cough

- Sit up tall.
- Take a big deep breath in from your belly.
- Hug your pillow tight and cough 2 times.
  - The first cough raises secretions. (phlegm or fluid)
  - The second cough helps you to expel it. (Have tissues ready; wash your hands after)



## Splinting your incision

- Apply pressure over your incision by crossing your arms over a pillow and grasping your elbows in your hands.
- This helps with coughing, laughing, and sneezing.

# After your surgery



## Cardiovascular Intensive Care Unit

Immediately after surgery, you will be taken to the cardiovascular intensive care unit (ICU). You will stay in the cardiac ICU for 12-24 hours. Here's what you may see and experience during your stay.

- **Waking Up** – You may hear machines running or beeping. You will feel the breathing tube in your mouth. Do not pull on the tube.
- **Breathing Tube** – Otherwise known as an endotracheal tube, this is connected to a machine (ventilator) that breathes for you. Your care team will make sure you can breathe on your own before they remove the tube. Usually the tube is removed a few hours after surgery.
  - You won't be able to talk while the tube is in, but you can nod your head for yes or no questions.
  - Once the tube is removed, you will still receive oxygen either through a mask or nasal prongs.
  - Your throat may be sore. Your voice may be hoarse. Both will get better in a few days.
- **Pain** – It is normal to have pain after surgery. We will give you medicine to help manage your pain and keep it at a level that you can tolerate. Please tell your nurses when you are feeling pain. You want to keep the pain under control so that you can breathe more easily, get up and move around, and rest/sleep better.
- **Heart Monitor** – You will have electrodes attached to your chest. These are attached to a device that monitors your heart rhythm and heart rate.
- **IV** – You may have several intravenous (IV) sites after surgery. These may be in your arm, hand, or neck. You may see several bags of IV medicine hanging near your bed. These medicines will be stopped when you no longer need them. The large IVs in your neck will be removed when you

no longer need them. A small IV in your arm or hand will be left in until just before you leave the hospital.

- **Chest Drainage Tubes** – These are put in during surgery to drain excess blood and fluid. They will be removed once the drainage has slowed or stopped.
- **Urine Drainage Tube (Bladder Catheter)** – This is a small tube that collects your urine. This will be removed as soon as possible.
- **Pacing Wires (temporary)** – These are wires that are attached to your heart; the wires come out of your chest in the same area as your chest drains. These wires can be hooked up to a pacemaker if needed. Once you no longer need the wires, the physician's assistant or nurse practitioner will remove the wires.
- **Family Visits** – Your family will be able to visit you in ICU for short periods of time. They will need to contact the patient representative in the waiting room or use the phone on the wall by the ICU doors to make sure they are allowed to come in and visit.

### When your family first visits you, they should know:

- You may look pale and feel cold and clammy
  - You may look swollen
  - They are allowed to talk with you, touch you/hold your hand
  - Visits should be kept short; only 2 people at a time
- **Standing up** – You will be allowed to get out of bed **with the help of your nurse** for a short time. You might also be asked to march in place.

When your surgeon decides you are ready, you will be transferred to the cardiac step-down unit.

### Cardiac Step-down Unit

- After leaving the cardiac ICU, you will be moved to the cardiac step-down unit. You will stay here for 3-5 days before leaving the hospital.

We believe that recovery from heart surgery requires a team effort between you and your care providers. This pathway is only a guideline, and the speed of your recovery may be different.

DAY # 1 (FIRST DAY AFTER SURGERY)	DAY #2	DAY #3	YOU MAY GO HOME WHEN YOU:
<ul style="list-style-type: none"> <li>• Urine drainage tube may be removed</li> <li>• Chest drainage tubes converted to a small bulb drainage system</li> <li>• Out of bed (to the chair) for all meals</li> <li>• Walk 1-2 times</li> <li>• Use incentive breathing device every hour, x 10 breaths, while awake (10 deep breaths every hour)</li> <li>• Progress diet as directed and tolerated</li> <li>• Take pain medicine by mouth to permit adequate breathing, movement, and sleep</li> <li>• Receive instruction on proper incision care</li> <li>• Watch "Leaving the Hospital After Heart Surgery" video</li> <li>• Review Heart Surgery Book</li> <li>• Review all new medications with nurse</li> </ul>	<ul style="list-style-type: none"> <li>• Pacing wires may be removed</li> <li>• Out of bed (to chair) for all meals</li> <li>• Walk 3 times today (in the hallway)</li> <li>• Use incentive breathing device every hour x 10 breaths, while awake (10 deep breaths every hour)</li> <li>• Self-bathe</li> <li>• Take laxative if no bowel movement</li> <li>• Take pain medicine by mouth</li> <li>• Demonstrate proper incision care</li> <li>• Attend open heart surgery discharge class with your family</li> <li>• Review Heart Surgery Book</li> <li>• Review all new medications with nurse</li> <li>• Begin planning for discharge: rehab and home health needs</li> </ul>	<ul style="list-style-type: none"> <li>• Drains may be removed</li> <li>• Out of bed (to chair) for all meals</li> <li>• Walk 4 times today (in the hallway)</li> <li>• Use incentive breathing device every hour x 10 breaths, while awake (10 deep breaths every hour)</li> <li>• Self-bathe</li> <li>• Laxative as needed</li> <li>• Take pain medicine by mouth</li> <li>• Attend open heart discharge class if you did not attend on Day #2</li> <li>• Review Heart Surgery Book</li> <li>• Watch "Leaving the Hospital After Heart Surgery" video again if needed</li> <li>• Plan for discharge</li> </ul>	<ul style="list-style-type: none"> <li>• Walk 5 minutes in the hallway</li> <li>• Move your bowels</li> <li>• Maintain a stable heart rate, blood pressure, and blood sugar</li> <li>• Can control your pain to permit adequate breathing, movement, and sleep</li> <li>• Have normal labs</li> <li>• Do not require oxygen</li> <li>• Have had drains and pacing wires removed.</li> <li>• <b>Can understand and describe:</b> <ul style="list-style-type: none"> <li>○ When to call the doctor</li> <li>○ Incision care</li> <li>○ New medicines</li> <li>○ Follow-up appointments</li> <li>○ Heart-healthy diet</li> </ul> </li> </ul>

You may have a physical therapist come and work with you for movement and walking. It is very important to work with the therapist when they come to your room. This will help build your strength and endurance. Working with physical therapy allows you and your care team to plan for any help you may need when you leave the hospital.

# Recovery after leaving the hospital



After you leave the hospital you may return home or you may go to an acute rehab or sub-acute rehab facility if you need extra recovery time. If you go home and require services from a nurse, physical therapist, occupational therapist, or nurse's aide, the case managers in the hospital will work with you to arrange home visits. They will also work with you to find a rehab facility if you need one.

If you go home, someone should stay with you for the first 1-2 weeks after you leave the hospital. It is not a good idea to live alone right after heart surgery.

Here are answers to some common questions you might have during your first weeks of recovery.

## Recovery time

### How long will recovery take?

Recovery after heart surgery takes about 4-6 weeks from the time you leave the hospital. You should not plan anything strenuous during this time.

- Gradually return to your previous activity level, but pace yourself. Don't try to do too much at one time.
- Take frequent rest breaks. If you feel yourself breathing hard and fast: stop, sit down, and rest until your breathing returns to normal.

## Pain

### How bad will the pain be?

- It is normal to have pain after surgery. Each day the pain will lessen.
- It is normal to have muscle pain or tightness in your shoulders and upper back (between your shoulder blades). This will also get better as time goes on.
- You may feel numbness to the left of your incision if an artery in your chest was used for bypass surgery.
- If you were given a prescription for pain medicine when you left the hospital, take it as directed when you are hurting.



**DO NOT** take it more often than is prescribed.

- Most prescription pain medications contain acetaminophen (Tylenol). **DO NOT** take Tylenol and prescription pain medicine at the same time.
- You can take regular strength acetaminophen (Tylenol) instead of your prescription pain medicine if you want. This is a good way to gradually decrease your use of the strong pain medicine.
- You should not take more than 3000 mg (3 grams of acetaminophen (Tylenol) in a 24-hour period.
- Check with your physician before taking ANY medications that are not prescribed to you.

## Activity restrictions

### What activities are restricted during my recovery?

- No driving until your surgeon says it is okay. This includes driving lawnmowers, golf carts, tractors, motorcycles, four-wheelers, etc. in addition to cars or trucks. You will have a follow-up appointment with your surgeon in 3-4 weeks. Ask about driving then.
- No returning to work until your surgeon says it is okay. Discuss a timeframe for returning to work at your follow-up appointment.
- You should not lift, push, pull, or carry anything over 10 pounds. Your breastbone (sternum) takes about 6 weeks to heal. Putting strain on your chest will keep it from healing.

## Sternal Precautions (Breastbone)

- It is normal to have an occasional “clicking noise” or sensation in your chest during the first few days after surgery. This should occur less often with time and go away completely after 2 weeks. If it gets worse, call your surgeon.
- Your breastbone takes about 6 weeks to heal. To keep chest wounds closed and promote healing of your breastbone, follow these guidelines for the next 6 weeks:
  - No lifting, pushing, carrying, or pulling greater than 10 pounds
  - No heavy yard work for now such as mowing, planting gardens, raking leaves, etc)
  - No heavy house work for now such as vacuuming or lifting baskets of laundry.
  - Don’t tense your upper body, e.g. when trying to open a tight jar lid.
  - Don’t lift heavy bags, purses, or suitcases
  - Don’t push/pull heavy doors
  - No strenuous sports (golf, bowling, swimming, tennis, hunting, fishing, etc.)
  - Avoid lifting heavy pets or letting a dog on a leash pull on your arm.
  - Don’t lift children. Small children can sit next to you, but don’t move/pull them with your arms.
- If you sit in a lower chair, use pillows in the seat so that you’re seated higher. Avoid using your arms when getting out of the chair—especially **DO NOT** push with your arms.
- Avoid activities that make you reach over your head or towards your back.



## Mobility

At all times, try not to put all of your body weight onto your hands and arms. This puts strain on the middle of your chest.

### Sitting up (from a lying position)

1. Keep both arms in front of you
2. Then, bend both knees towards your chest and roll to your side.
3. Move your legs off the bed and sit up propping with your arms (use both arms evenly or push with your elbow).

**DO NOT** use side rails.

### Scooting forward in a chair

1. Lean back and push back against the chair (using your back)
2. Slide buttocks forward or shift your weight side-to-side using both arms equally

### Standing up

1. Sit on the edge of your chair with feet flat on the floor and underneath you
2. You may balance with your hands on the bed/ chair, but **DO NOT** push with them.
3. Lean forward and stand up using your legs. (You may want to rock up)
4. If people are helping you up, they should **NOT** pull your hands.
5. To return to the chair, reach back with both arms on the arm rests, but put the weight/force through your legs.

### If you are in a wheelchair or using a walker

**DO NOT** roll your wheelchair with your arms. Use your legs or have someone push you.

If you are using a rolling walker, roll it, **DO NOT** lift it.

## Sleeping

### Can I sleep on my side?

You can safely sleep on your back or either side if it is comfortable for you. For side lying, you may find it helps to place a pillow between your knees.

You should not sleep on your stomach for 4-6 weeks. This puts pressure on your breastbone and incision.

You may sleep lying flat or propped with pillows. Do what feels comfortable.

You may have difficulty sleeping the first few nights after leaving the hospital. This will improve with time. A pain pill at bedtime might help. Try not to nap late in the afternoon.



## Riding in a car

### When can I ride in a car?

You may ride in a car any time. Short trips will be better at first, such as a trip to the drugstore and back home. Pace yourself; don't do too much at once.

Wear your seat belt when you ride in the car. Use a pillow or rolled towel as a cushion between your seat belt and chest.

Due to airbags, you may want to ride in the back seat for a few weeks. If you do sit in the front seat, have someone else push the front seat all the way back. Your chest should be at least 10 inches from the dashboard (where the airbag comes out). Do not disable/turn off the front airbags.

Please talk with your surgeon about any long trips or vacations. It is usually best to put these off until after your follow-up appointment with your surgeon.

If your surgeon approves and you do take a long car ride or airplane trip, exercise your legs every hour.

- Get out of the car every hour and take a walk (at least 5 minutes).
- If on an airplane, get up and walk around the plane every hour if possible.
- While riding in a car or plane, move your ankles around, flex and extend your feet, raise your knees, etc.



## Climbing Stairs

### Can I climb stairs?

You may climb stairs. Take them slow and steady. One step at a time, one foot at a time. Don't pull on hand rails, just use them for balance.

Have a family member place a chair at the top of the stairs. That way if you need to sit and rest after climbing the stairs, you can.

Once you are up the stairs, stay up for a while. Once you are down the stairs, stay down for a while.



## Support Stockings

### Will I have to wear support stockings (TED hose)?

- You will only need these if your surgeon prescribes them. If they are prescribed, wear them during the day while you are awake for at least two (2) weeks after leaving the hospital. You will need someone to help put them on and take them off.
- The stockings will help decrease swelling, especially if you have a leg incision.
- Remove your stockings at bedtime.
- Wash the stockings with mild soap and water; hang them on a line or towel bar to dry.

## Swelling/blood clot prevention

### How do I prevent swelling and blood clots in my legs?

- Avoid sitting in one position or standing for prolonged periods of time. Move around/take a short walk every hour while you are awake.
- For the first few weeks after discharge, keep your feet elevated above heart level—you want your head lower than your feet. You can accomplish this by propping your feet on pillows. Elevate your feet at all times unless up eating a meal or walking.
- Flex and extend ankles; circle your ankles (draw a circle in the air with your toes)
- Do not cross your legs or ankles.
- If you have swelling, it should decrease after you elevate your legs. If it becomes worse, call your doctor.

## Appetite

### Why don't I have much of an appetite?

- It is normal to have a decreased appetite after surgery. Sometimes food does not taste right either. This should return to normal in about 2 weeks.
- Keep in mind that nutrition plays an important role in healing after surgery. Frequent small meals throughout the day will help you get the calories you need to heal.
- Eat a well-balanced diet. Try to eat a variety of foods every day (grains, vegetables, fruits, meats, beans, dairy).
- Increasing your activity will improve your appetite.
- If you are on a special diet (such as for diabetes or kidney disease), stay on your meal plan as directed.
- You may have problems with constipation. You may use a laxative of your choice. Add more fruits, fiber, and juice to your diet to help with constipation. Try not to strain/bear down for a bowel movement.





## Emotions

### Why am I so emotional?

It is common to have a let-down feeling after surgery. Some people feel depressed and are tearful. Others may be a little short-tempered. You may have mood swings. This is a normal part of recovery. You should feel back to yourself in 3-4 weeks. If you do not feel like you are “bouncing back” to yourself, please tell your doctor.

Leaving the hospital will help. Make sure to get your rest and exercise. Short trips are okay (to the store, to church/religious services). All of this will help you get back to normal. Just pace yourself and don't do too much at once.

Even though you cannot do strenuous chores around the house, you can do some things. You could help fold the laundry—you just can't lift the whole basket. You could help prepare meals. It might not be a good idea to stand up and cook the whole meal, but you could help with one or two parts. These types of activities will help you feel like you are getting back to normal as well.



## Sex

### What about sexual activity?

- Sexual activity may resume after 3-4 weeks, or when you can climb two flights of stairs without difficulty.
- Avoid putting weight on your arms or chest.
- **DO NOT** use any sexual stimulants (Viagra, Cialis, Levitra, etc.) without first checking with your doctor.



## Incision Care/Showers

### Can I get my incisions wet?

- You may get your incisions wet 24 hours after the last chest drain is pulled. While in the hospital, you will give yourself a sponge bath.
- Once you are at home, shower daily, wash your incisions with soap and water. Pat to dry.
- Be gentle. No scrubbing!
- No baths, swimming pools, or hot tubs until you are completely healed.
- Do not use any lotions, creams, ointments, or powders on your incisions until they are completely healed—not even Neosporin, peroxide, scar cream, etc.

### How do I clean my incisions?

- Gently remove any gauze dressings from the chest drain site and/or IV sites.
- Use a mild soap without any fragrances or moisturizers/lotions.
- Use warm water.
- Let the water from the shower hit on your back first. Then let the water gently run over your shoulder to get your chest wet. You need to get your incisions wet to clean them properly.
- Wash your incisions very gently with a clean washcloth or clean hand. **DO NOT** scrub.
- Wash your incisions first. Then, wash the rest of your body.
- After rinsing, gently pat all incisions dry with a clean towel.

There is no need to keep any area covered with a bandage unless you are still seeing drainage from any of the incisions. If you see drainage, cover the area with clean gauze (and tape) after your shower.

You may have a lump at the top of your chest incision. This will go away within several months.

**Notes about your scar:** Your incisions may sunburn easily. Be sure to protect your incisions from sunlight during the first year after surgery. The scar will get darker if exposed to sun.

### Call your doctor if you see or have:

- Increased redness or swelling around your incisions
- Increased pain around your incisions
- Increased drainage from your incisions
- Drainage that has a yellow/green/brown color or an odor
- Warmth/heat around the incisions

### Special Situations

If you have Steri-Strips on your incision (little paper skin tapes) – you may wash over them. They will fall off as you heal. If they have not all fallen off one (1) week after you leave the hospital, you may remove them.

If you have sutures (stitches) or staples (metal clips) – these will be removed by a visiting nurse that will come out to your home. Or, you may have an appointment to have them removed. Make sure you know when they should be removed.



## Dress

### What should I wear? How should I dress?

- Wear comfortable, loose-fitting clothes (nothing that puts pressure on your incision).
- For women, you may find a supportive bra helpful. Avoid underwires. Don't reach with your arms to the back, this will pull and stretch the incision. A sports bra that clasps in the front is a good option.
- You should get up every day and get dressed. This will help you get back into a normal routine.

## Medicines

### What medicines do I need to take?

- Your nurse will review your medicines with you before you leave the hospital.
- You will receive prescriptions for any medicines that are new for you.
- You will be told which medicines from home to continue taking.
- You will be taught how to check your blood sugar and give yourself insulin if you are going home on insulin.

### Key points to remember!

- Take your medicines exactly as directed.
- Do not stop any medicine without talking to your doctor first
- If you feel you are having side effects from a medicine, please call your doctor
- If you feel a medicine is not working for you, please call your doctor
- Check with your doctor before taking any additional medicines (herbs, over-the-counter, etc)



### Follow-up appointment

#### When do I follow up with my doctors?

- You should see your primary care doctor (family doctor) 2 weeks after leaving the hospital.
- You should see your cardiologist 3-4 weeks after leaving the hospital.
- You should see your cardiac surgeon 3-4 weeks after leaving the hospital.
- Keep all other appointments as directed.
- If you are taking warfarin, you will have an appointment to have your blood checked.  
Make sure to keep this appointment!

#### Call to make your appointments as soon as you are discharged from the hospital.

### Questions to ask

You may want to make a list of questions to take with you to your doctors' appointments, especially your surgeon. For example:

- Can I start driving now?
- When can I go back to work?
- When can I play golf?
- Do I need to keep taking the same medicines?

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# Home exercise *plan*



## You may start light exercise once you get home from the hospital, but follow these guidelines:

- Start with two walks per day. Each walk should be only 5 minutes at first. You may add one minute every other day to your walks.
- Continue to add one minute to your walks every other day until you reach two 20-minute walks. It will take about 4 weeks to build up to two 20-minute walks.
- Walk on level ground at an easy pace until your doctor says you can do more. You should be able to “walk and talk” at the same time.
- If you feel short of breath, dizzy, lightheaded, or extremely tired, stop the exercise and rest.
- Exercise indoors if it is very hot or very cold outside (above 80°F or below 40°F). Department stores or shopping malls are a great place to walk indoors!
- You may exercise on a stationary bike instead of walking. Use your legs only—no arm exercising yet. You should still be at an easy pace.
- Once you are cleared by your doctor for regular exercise, build up slowly to 30-60 minutes of aerobic activity 5-6 days per week.

### It is okay to feel:

- Mild breathlessness
- Mildly tired
- A pleasant sense of muscle use

### Stop if you notice:

- Chest discomfort
- Dizziness
- Excessive shortness of breath
- Feeling more tired than expected
- Irregular heartbeat
- Nausea

## Walk twice per day:

DAY # (out of the hospital)	1-2	3-4	5-6	7-8	9-10	11-12	13-14
Duration	5 minutes	6 minutes	7 minutes	8 minutes	9 minutes	10 minutes	11 minutes

## More tips:

- Do not increase exercise time if you have difficulty completing the previous exercise time.
- Avoid exercising immediately after meals or bathing. Wait at least one hour.
- Wear loose-fitting, comfortable clothes and appropriate athletic shoes.
- If you temporarily stop your exercise program, resume your activity at a lower level than where you stopped.
- If you have been prescribed nitroglycerin, carry it with you at all times.

# Checklist for the first 4 weeks out of the hospital

## Every day:

- Remember not to lift, push, pull, or carry anything over 10 pounds.
- Weigh yourself every day (at the same time each day). Call your surgeon if you have gained 3 or more pounds in a day or 5 or more pounds in one week. Fast weight gain may mean you are retaining fluid (water weight).
- Take your medicines every day as directed.
- Check your temperature around 4 p.m. every day. Call your surgeon if you ever have a fever above 101°F. A fever can be a sign of an infection.
- Continue to use your spirometer (incentive breathing device). Take 10 slow, deep breaths every hour during the daytime (while you are awake). This keeps your lungs expanded and prevents lung infections.
- Wash your incisions daily with soap and water. Please see the section on page 17 called “How do I clean my incisions” for more details. Call your surgeon for signs of infection such as redness, swelling, warmth, or drainage.
- Promote circulation/prevent blood clots/reduce swelling. Move your legs or take a short walk every hour or so during the daytime. It is good to spend a few hours during the day lying flat and keeping your toes above the nose in order to decrease swelling in your legs. Don't cross your legs. See page 15 for details.
- Walk twice each day. If a physical therapist is coming to your home, they may give you a different plan. If you are going to rehab after the hospital, the physical therapists at rehab will be working with you to develop an exercise plan.
- Rest periods: plan to have a 30-45 minute rest period twice each day. This is a good time to elevate your feet and have some quiet time. Avoid sleeping late in the afternoon or evening; this might keep you from sleeping well at night.
- Remember: no driving and no working. Take it easy. Light activities are best. Books, puzzles, board games, easy walks, cards, movies, or needlework may be a good way to pass the time.
- Stop any activity immediately if you feel short of breath, irregular heartbeats, faint/dizzy, or you have chest pain. Rest until the symptoms (feelings) go away. If they do not go away, call your doctor.
- Remember, it takes 4-6 weeks to start feeling better.

# Who to call with *concerns*



## When do I call my doctor?

### **Call your doctor if you have:**

- Increased redness, swelling, drainage, heat or pain on your incision(s)
- Incision drainage that has a color or odor (foul smell, yellow/green discharge)
- Fever above 101°F (or a lower fever lasting more than 2 days)
- Weight gain of 3 pounds or more in one day (or weight gain of 5 pounds or more in one week)
- Increased swelling in your feet, ankles, legs, hands, arms, or abdomen
- Increased shortness of breath
- A heartbeat that is fast, slow, or irregular

## When to Call 911

### **Call 911 or go to the nearest emergency department if you have:**

- Chest pain or tightness not relieved by 5 minutes of rest (and not associated with your incision)
- Shortness of breath not relieved by rest
- A sudden severe headache
- Sudden numbness or weakness in arms or legs
- Fainting spells, dizziness, or confusion
- Blurred vision
- Any other symptom that is new and affecting your well-being



# Cardiac *Rehabilitation*

## What is Cardiac Rehabilitation?

Cardiac rehabilitation is a program that meets 3 times per week as an outpatient service at your hospital or a nearby clinic. You must first see your cardiologist or primary care doctor for your follow-up appointment and referral. You may need to have a stress test before you begin.

### Cardiac rehab usually includes:

- Blood pressure and cholesterol control
- Diabetes control
- Education for lifestyle modification and exercise
- Nutrition recommendations
- Smoking cessation
- Stress management
- Supervised, progressive exercise/activity
- Weight management

## Benefits of Cardiac Rehab

Our patients who attend cardiac rehab have reported the following:

- Better quality of life
- Higher self-esteem and confidence
- Improved ability to perform daily life activities
- Increased knowledge of disease process and prevention strategies
- A reduction of lifestyle related risks
- Stronger adherence to healthy lifestyle choices

## Who Is Eligible for Cardiac Rehab?

- Anyone with heart disease or risk factors for heart disease would benefit from cardiac rehab.
- Medicare and private insurances often cover cardiac rehab. Please call the cardiac rehab of your choice and the staff will be able to tell you what your insurance covers.
- “Maintenance” programs are designed to help patients continue their commitment to exercise. These programs usually are not covered by insurance.

## Why is Cardiac Rehab Important?

Cardiac rehab will give you the tools, knowledge, and motivation needed to slow the progression of cardiovascular disease and reduce the chances of having a heart attack.



Visit [piedmont.org/CardiacRehab](http://piedmont.org/CardiacRehab) to learn more about Cardiovascular & Pulmonary Rehabilitation or speak to your provider about your options.





**Angina (Angina Pectoris)** – discomfort and/or other symptoms in any area from the umbilicus (belly button) to the ear lobes (chest, back, arms, jaw, neck, or shoulders); this discomfort occurs when the heart is not getting enough blood/oxygen

**Arrhythmia (Dysrhythmia)** – an abnormal heart rate or rhythm

**Asystole** – absence of a heartbeat

**Atrium (plural-atria)** – one of the two upper chambers of the heart; receives blood from the veins and squeezes it into a ventricle

**AV Node (atrioventricular node)** – cluster of cells between the atria and ventricles; the AV Node receives signals from the SA node and transmits them to the ventricles

**Benign** – not cancerous; not malignant

**Bovine** – of or pertaining to cattle, buffalo, kudu

**Bradycardia** – a heart rate slower than 60 beats per minute

**Cardiac** – having to do with the heart

**Cardiac Arrest** – the heart stops beating and causes sudden death if not corrected; ventricular fibrillation and ventricular tachycardia are the most common causes of cardiac arrest

**Cardiac Catheterization (angiogram)** – a procedure to diagnose heart problems; a small catheter is threaded into a blood vessel and guided into the heart; this test is used to look at the coronary arteries, valves, muscle action, and to measure ejection fraction

**Cardiology** – the study of the heart and its functions

**Cardiomyopathy** – a disorder of the heart muscle; the heart muscle has a reduced ability to pump blood

**Cardiopulmonary Resuscitation (CPR)** – the act performed by one or two people to try to revive a person whose heart and breathing have stopped; CPR usually involves mouth-to-mouth ventilation and external chest compressions

**Cardioversion** – the process of converting an abnormal heart rhythm to a normal rhythm; this is done by delivering a synchronized electrical shock to the heart; the patient is usually sedated for this procedure

**Catheter** – a flexible or rigid hollow tube that can be inserted into a body cavity, vessel, or duct

**Conduction** – the transfer or transmission of signals from one place to another

**Congestive Heart Failure (CHF)** – when the heart is not able to adequately pump blood to the body's organs and tissues

**Contraction** – when the heart muscle squeezes in order to pump blood; the heartbeat or pulse is the result of each contraction

**Coronary Arteries** – the arteries that lie on the surface of the heart; they provide the heart with oxygen and nutrients

**Defibrillation** – delivery of a shock (high energy) to the heart in order to stop ventricular fibrillation

**Dysfunction** – impaired functioning; not functioning normally

**Dysrhythmia (Arrhythmia)** – an abnormal heart rate or rhythm

**Echocardiogram (echo)** – a test that uses ultrasound to produce images of the heart; the movement of the heart, valve function, and size of the heart and chambers are studied

**Ejection Fraction** – the percentage of blood that is pumped out of the heart with each heartbeat; a normal ejection fraction is 55-70%; the ejection fraction is a way to measure the strength of the heart muscle

**Electrocardiogram (EKG)** – a recording or picture of the electrical activity in the heart

**Electrode** – a device that senses electrical signals from the heart

**Electrophysiology** – the study of the electrical conduction system of the heart

**Endoscopic Vein Harvesting** – a minimally invasive technique used to remove a vein from the body to use as a bypass graft. Only 2-3 very small incisions are needed. The technique uses special instruments that are long and thin; they are inserted through the small incisions in order to get to the vein.

**Fibrillation** – when the atria or ventricles quiver; a rapid and chaotic heart rhythm; little or no blood is pumped from the chamber that is fibrillating

**Heart Attack (Myocardial Infarction)** – injury or damage to the heart muscle because the heart cells are not getting oxygen

**Heart Block** – when the electrical signal in the heart is impaired; the signal is not conducted normally from the atria to the ventricles

**Heart Failure** – when the heart is not able to adequately pump blood to the body's organs and tissues

**Heart Rate** – how many times the heart beats or contracts in one minute

**Intravenous (IV)** – inside the vein; a small catheter placed into a vein to deliver fluids or medications

**Life-threatening rhythms** – arrhythmias that can result in cardiac arrest or sudden death

**Myocardium** – the heart muscle

**Pacemaker** – a device that delivers an artificial electrical impulse which causes the heart to beat

**Palpitations** – a fluttering or pounding in the chest; a common symptom of many arrhythmias; usually due to a rapid or irregular heartbeat

**Pericardectomy** – surgical removal of part or most of the pericardium. Usually done by open-chest surgery. If you had this surgery, you should follow the same recovery guidelines that are discussed in this book.

**Pericardial Effusion** – too much fluid in the pericardial sac; fluid around the heart

**Pericardium** – a protective sac that surrounds the heart

**Porcine** – of or pertaining to swine or pig

**Rhythm** – the heartbeat's pattern

**SA Node** – the sinoatrial node or sinus node; the natural pacemaker of the heart; a cluster of cells in the atria that normally start the electrical impulse which stimulates the heart to contract/beat

## GLOSSARY

**Symptoms** – something a person feels or experiences with a health problem

**Synchrony** – two or more events happening at the same time

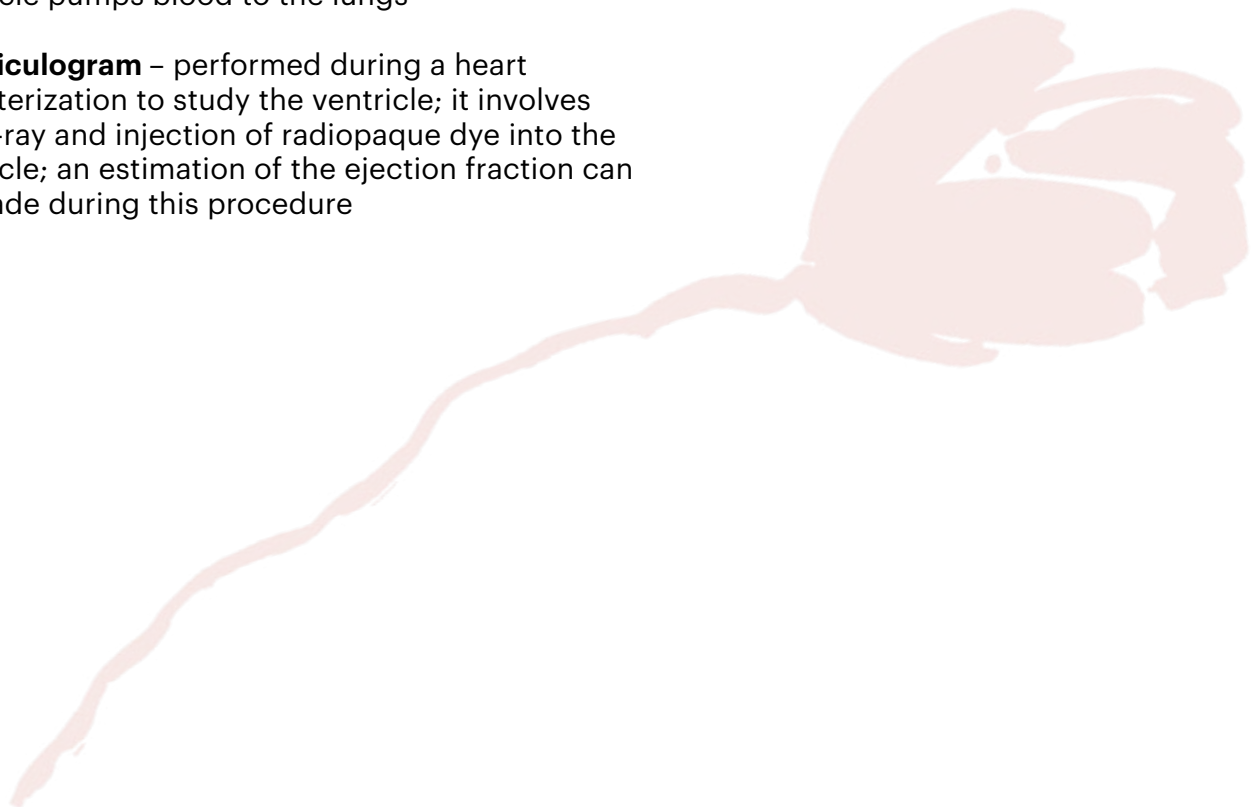
**Syncope** – fainting; passing out; losing consciousness momentarily due to lack of oxygen to the brain

**Tachycardia** – a heart rate greater than 100 beats per minute

**Valve** – a part of the heart that maintains blood flow in one direction through the heart; there are two atrioventricular (AV) valves between the atria and ventricles; there are two semilunar (SL) valves in the arteries leaving the heart

**Ventricles** – the two lower chambers of the heart; they perform the main “pumping” action of the heart; the left ventricle pumps blood to the body; the right ventricle pumps blood to the lungs

**Ventriculogram** – performed during a heart catheterization to study the ventricle; it involves and x-ray and injection of radiopaque dye into the ventricle; an estimation of the ejection fraction can be made during this procedure









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