



PATIENT EDUCATION

Getting Ready for Heart Surgery

learning **EDUCATION** EXCELLENCE
HEALTHY **LIVING** CARING INTERACTION

BARBARA WOODWARD LIPS
PATIENT EDUCATION CENTER

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What You Need to Know Before Heart Surgery

This booklet tells you about getting ready for your heart surgery and about the first few days after it is over. You will find general information about:

- Things to do to get ready for heart surgery.
- Your surgery.
- What usually happens in the hospital after surgery.
- What you can do to help recover from your surgery.

This is general information about heart surgery. Your experience may be different. The surgery is described in general terms. Ask your health care team questions about your own case.

You are the most important member of your health care team. Your recovery depends on your active participation. Before and after surgery, you will meet and work with many different members of your health care team, including nurses, therapists, pharmacists and dietitians. Ask any member of your team questions you may have.

What you can do to help prepare:

- Read the written materials you are given.
- Make sure you complete the “to do” list at the beginning of the booklet. This includes seeing a dentist and preparing your home before your surgery.
- Ask questions.

Getting ready for heart surgery

What to talk about before surgery

Before your surgery, read the written materials given to you. Talk with your health care provider about the following:

- When you will go to the hospital
- What happens before and during surgery
- Reasons for your surgery
- Risks of your surgery
- Advance directives
- Medications — which ones you should and should not take before surgery
- Any allergies or other reactions you have had to medications
- Any history of depression
- Whether you could be pregnant
- What you can expect after surgery
- Any other concerns about your surgery

What to do before surgery

- See your dentist. Dental problems could delay surgery.
- If you have diabetes, think about seeing a podiatrist before surgery to get your nails trimmed.
- Work with your family to make plans for your return home after surgery. Who will be able to help you?
- Choose the family spokesperson.

Choosing a spokesperson may help to avoid misunderstandings. The person you choose can be responsible for talking with members of the health care team and passing on news to the rest of the family. Before your surgery, you will have to fill out a form that names your spokesperson.

Name of spokesperson: _____

Phone number: _____

Promoting a healthy recovery

As you get ready for heart surgery, there may be things you can do to help your recovery and speed your healing:

- If you use tobacco, you will be encouraged to quit before surgery.
- Eat a healthy, well-balanced diet.
- Stay as active as you can.
- Practice ways to relieve your stress, such as listening to music, meditation, deep breathing or guided imagery.
- Gather people around you who will support you during and after your surgery.

If you have questions about any of these things, talk to a member of your health care team.

Mayo Clinic offers CarePages™, a free Web service for patients and their families. This service lets you create a webpage and distribution list so you can send out information about your stay at Mayo. It can help you keep in touch with loved ones back home. You can also get messages from family and friends through this page. If you are interested in CarePages™, talk to your health care provider about how to use this service.

Plans to make for your return home

Before you come to the hospital for your heart surgery, work with your family to make plans for your hospital stay and make plans for your return home after surgery. Arrange for help for your return home after surgery.

- Ask your spouse, children, friends or neighbors whether they can help you for one to two weeks after you get home.
- Plan to lower your activity level for awhile. If you are a primary caregiver who takes care of another person, you will not be able to do so for awhile. You will not be able to care for another person while you are in the hospital or during your early recovery period. Make plans for someone to take over for you before you go to the hospital.
- Organize your house before you go to the hospital, so you will not need to deal with housekeeping right after you return home.
- Prepare some meals ahead of time and freeze them.
- If you need to, stop mail delivery.
- If you have a pet, make plans for pet care before you go to the hospital.
- You will have limits on how much you can lift when you come home. You will not be able to lift more than 5 to 10 pounds, about what a gallon of milk weighs. This means that you will need help with daily activities such as grocery shopping and doing laundry.
- Make an appointment to see your cardiologist about one week after surgery.

You will not be able to drive for several weeks after surgery.

What to bring to the hospital

Bring the following items to the hospital:

- List of medications you take and the reason you take them. Give the name of the medication, how much you take and the number of times you take the medication every day. Bring the medications in the original bottles if your health care provider asks you to do so.
- Your prescription drug insurance card.
- Eyeglasses, hearing aids, dentures.
- Sleep aids such as a favorite pillow.
- Women: Bring a comfortable, wireless supportive bra.
- Personal care products, such as comb, toothbrush, shaving equipment.

- Devices you use to help you walk, such as cane, walker, prosthesis.
 - Robe and slippers.
 - Loose-fitting, comfortable clothing.
 - Copy of your advance directive.
 - Relaxation aids such as CDs or inspirational books.
 - Other.
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Valuables

Do not bring large amounts of money, jewelry or valuables such as cell phones and laptops to the hospital. The staff is not responsible for your valuables. If you want to have a laptop in your room after you leave intensive care, ask a family member to watch over it for you.

However, while you are in the hospital you may wish to have enough money to buy a newspaper or other small items. Also, when you leave the hospital, you must pay for any medications you take home from the hospital, so make plans to do so. You may have valuables stored in the hospital safe until you leave the hospital.

The Day Before Your Surgery

You may be in the hospital before your surgery, or you may come to the hospital the morning of your surgery. If you are not in the hospital already, you will be asked to call the hospital the evening before surgery to find out what time to come to the hospital the next morning.

- Follow fasting instructions and any other instructions you get from a member of the health care team about coming to the hospital.
- Take a shower the evening before your surgery. Use the special soap you are given. Taking a shower helps lower the amount of bacteria on your skin and may lower your risk of infection after surgery.
- Get a good night's rest before surgery. If you are in the hospital the night before surgery and have trouble falling asleep, tell your health care provider. You may be given a medication to help you sleep or relax. Relaxation CDs also are available.

The Day of Your Surgery

Morning of surgery

- Take only the medications your health care provider tells you to take on the morning of your surgery. Take them with just enough water to swallow comfortably.
- Shower again the morning of surgery before you go to the hospital. Use the special soap you are given.
- After you come to the hospital, a nurse will take your temperature and check your pulse, weight, respiration rate and blood pressure.
- A member of your health care team will ask you about the medications that you take. Make sure you bring a list of the your medications with you to the hospital. Make sure you include the name of the medication, how much you take, how often you take it and when you last took it.
- Your health care provider will talk with you and get you ready for surgery. Ask questions during this time.
- An intravenous (IV) line may be started before surgery to give you fluid and medication.

Before going to surgery

- You are asked to empty your bladder.
- Take off all jewelry (including rings), contact lenses and nail polish.
- Remove your glasses or dentures. If you wear a hearing aid, leave it in so you can talk with members of the team in the preoperative area.
- You go to the preoperative waiting area on a transport cart.
- The anesthesiologist may talk with you about the anesthesia. Tell the anesthesiologist if you have had problems with anesthesia in the past, such as nausea or vomiting.

Heart Surgery

This section has general information about heart surgery. Ask your health care team questions about your own case. Surgery is a little different for each person.

Risks of heart surgery

With any surgery, complications can occur. Some risks of heart surgery include:

- Bleeding
- Infection
- Breathing problems
- Injury to nerves
- Kidney failure
- Heart attack or stroke
- Death

Risks are different for each person. Talk with your surgeon about your risks related to heart surgery.

Chest incision

To operate on your heart, in most cases the surgeon makes an incision in the center of your chest. The flat bone in the center of your chest, the sternum, is divided. At the end of the operation, the bone is wired together to prevent movement and to help it to heal. This also lessens the discomfort while it heals. These wires do not need to be removed. This bone must be treated with care, just like any other broken bone until it is completely healed.

Cardiopulmonary bypass

Cardiopulmonary bypass is used for most heart surgery. Bypass means a machine does the work of your heart and lungs during surgery. The bypass or heart-lung machine is a pump. This pump takes blood from the great veins before they empty into the heart. The pump then passes the blood through a chamber where oxygen is added. Then it sends the blood back into the body. Bypass lets your surgeon work on your heart while your heart rests.

For family members and friends

After your family member goes to surgery, a staff member takes you to the ICU (intensive care unit). Someone gives you information about the ICU and shows you where you can wait during the surgery.

Staff members share information from the operating room with you as it comes to them. When your family member is off the bypass (heart-lung) machine, you are called. "Off bypass" means that the main part of the surgery is over and that the heart is working on its own.

When your family member arrives in the ICU, you get a call in the waiting room. One of the physicians who helped with the surgery talks with you. The surgeon will talk with you when he or she is finished with surgery for the day or on the next day.

Following are general descriptions of different types of heart surgery. Look for the section that applies to you. You don't have to read the other sections.

Coronary artery bypass grafts

The heart muscle gets blood from the coronary arteries. These arteries branch off the aorta just as it leaves the heart. The right coronary artery sends blood to the bottom and back of the heart. The left coronary artery, which has two major branches, sends blood to the top, front, side, and back of the heart (Figure 1).

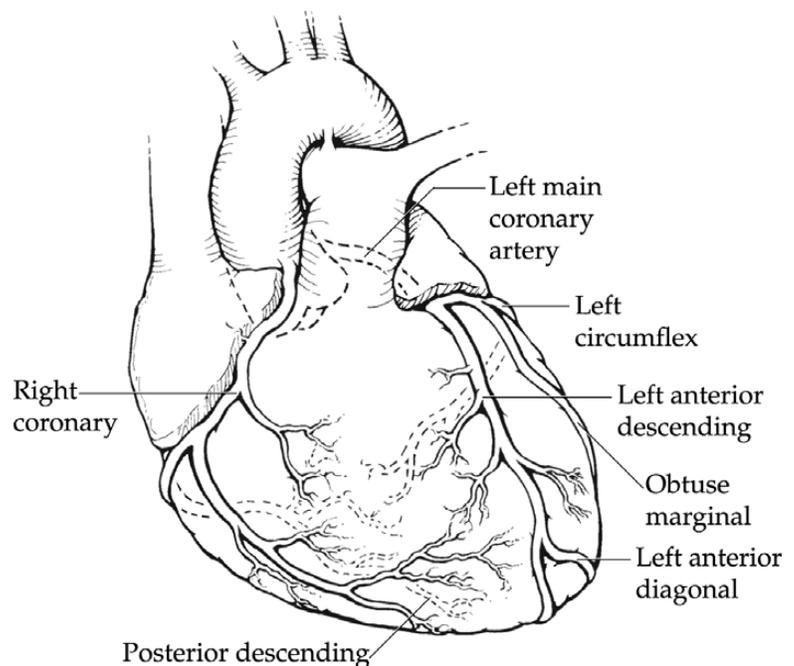


Figure 1. The heart muscle gets blood from the right and left coronary arteries and their branches. Dotted lines show structures on the other side of the heart.

If your coronary arteries become narrowed or blocked, your heart may not get enough blood. During coronary artery bypass surgery, the surgeon places grafts around blocked or narrowed vessels so that blood can flow past the blocked area and get to your heart muscle.

To create a bypass graft, the surgeon may use the saphenous vein from the inner side of the leg, the internal mammary artery (IMA) from the chest, or the radial artery from the forearm (Figure 2). Some people may have a combination of grafts. These vessels are “extra” blood vessels your body does not need.

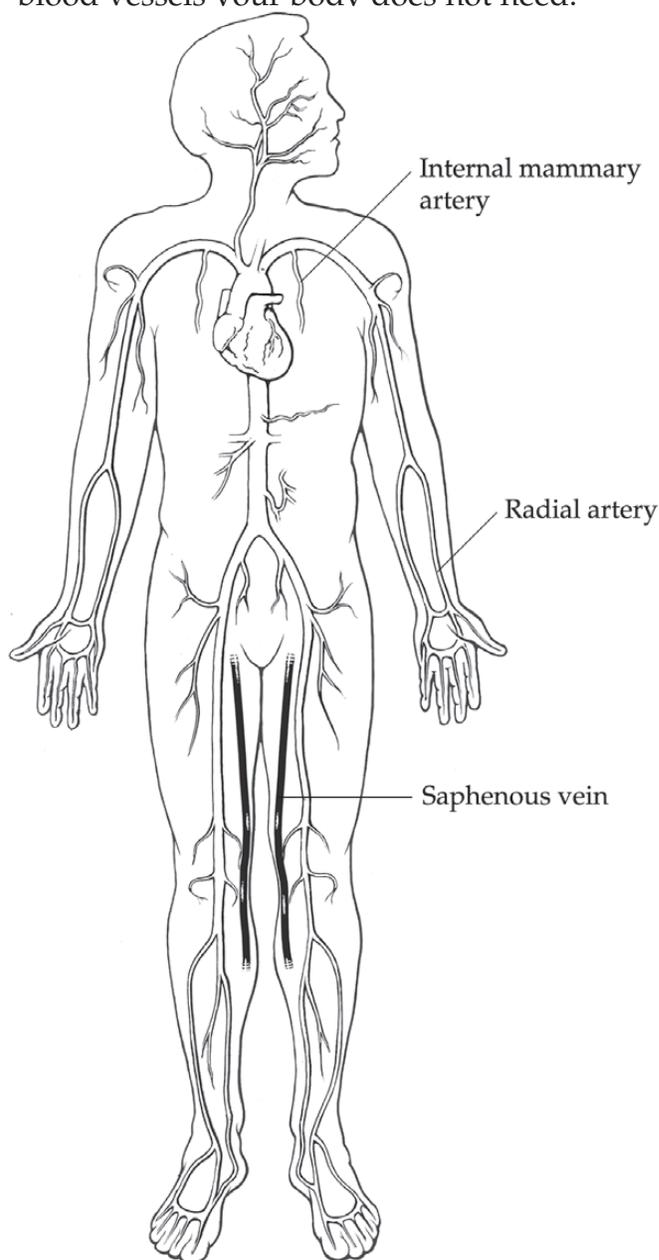


Figure 2. Blood vessels used in bypass surgery

To make a bypass graft with the saphenous vein or the radial artery, the vein or artery is taken from its normal location. One end of the vein or artery is connected to the aorta above the blocked coronary artery. The other end is connected to the coronary artery beyond the blocked area. The blocked part of the artery is not removed; it is bypassed. The grafts go around the blocked part like a detour when a road is blocked.

The left and right internal mammary arteries run underneath your chest wall. They are about an inch to the left or right of the center. To make a bypass graft with the internal mammary artery, the surgeon frees the artery from the inside of the chest wall and attaches it directly to one or more coronary arteries beyond the blocked part.

After surgery, some people notice a pulling sensation or numbness of the skin on the chest just to the left or right of the sternum. This is because the nerves to this area are close to the internal mammary artery. These nerves may be affected when the artery is taken. This feeling generally goes away with time.

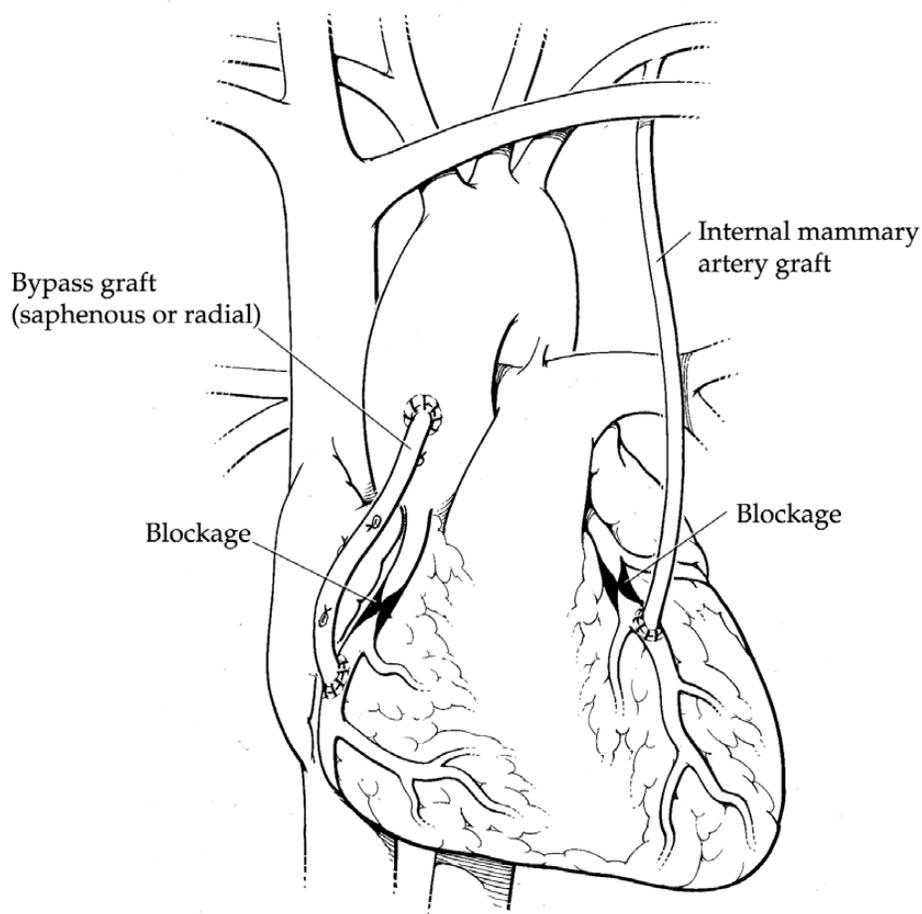


Figure 3. Coronary artery bypass grafts allow blood to flow from the aorta to the heart muscle around the blocked parts of the blood vessels.

Heart valve repair or replacement

The heart has four chambers: the right atrium, the left atrium, and the right and left ventricles. Valves control the blood flow to and from the chambers. The right atrium gets blood from the body, while the left atrium gets oxygen-filled blood from the lungs. The right and left ventricles pump blood out of the heart.

For the heart to pump efficiently, the four valves of the heart must open completely and freely to let blood flow forward (Figure 4). If the valves do not open completely, the heart has to work harder to pump the blood forward past the blockage. If the valves leak or are held partly open, some blood flows backward so that the heart has to pump extra blood.

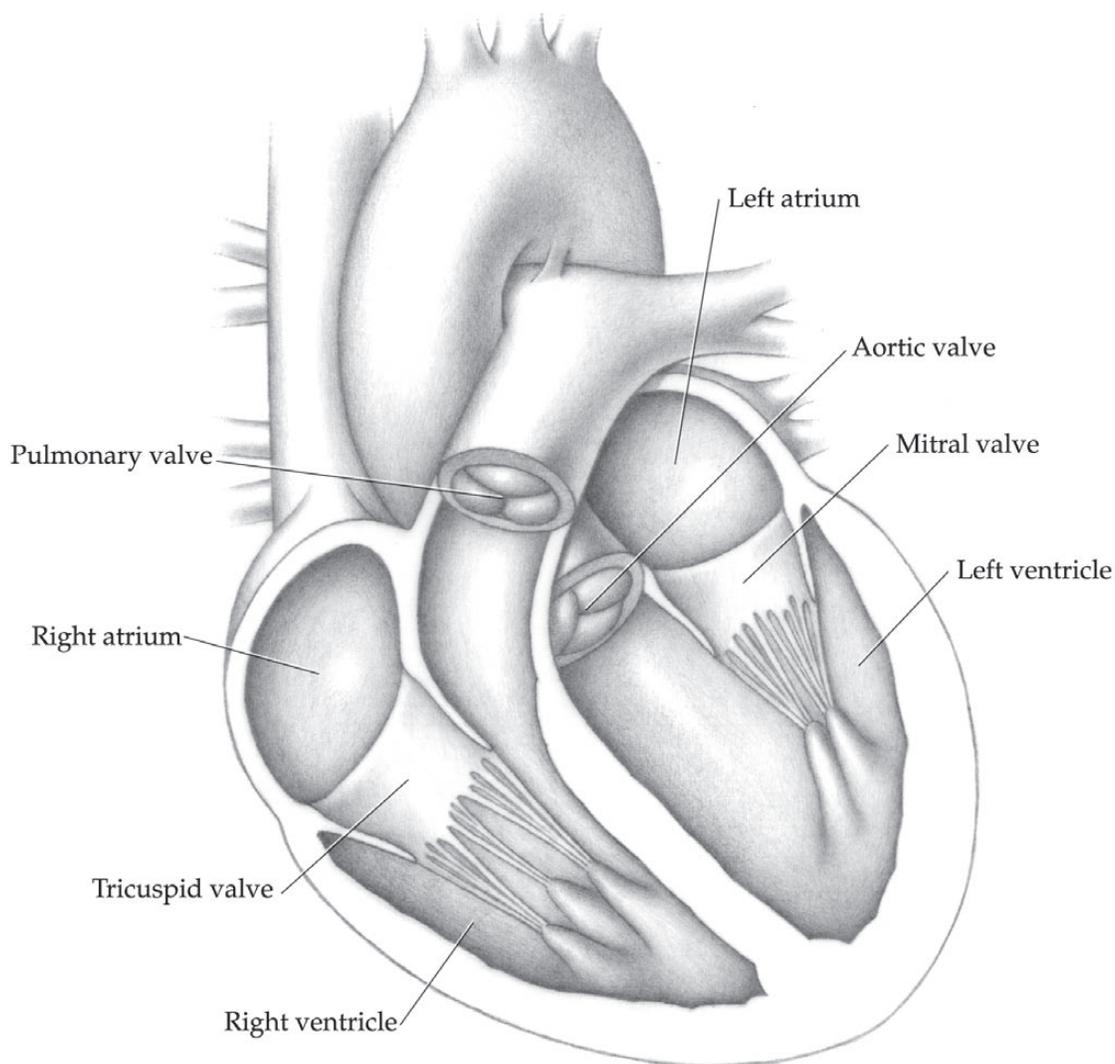
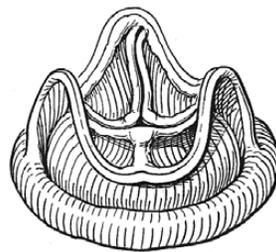


Figure 4. Heart valves

Valves may need to be repaired or replaced if they become narrowed or do not open and close as they should. Several kinds of replacement valves are available, including different kinds of tissue or mechanical valves (Figure 5). Mechanical valves are made from man-made materials. Tissue valves are made using animal or human tissue.



Porcine valve



Pericardial valve



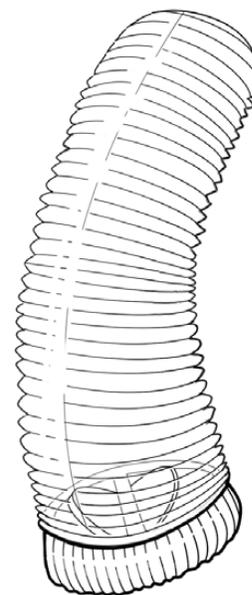
Mechanical valve



Partial ring



Homograft valve



Composite valve

Figure 5. Kinds of replacement valves

Repair of congenital heart defects

Some congenital heart defects are repaired with surgeries. Surgery may improve heart function, maintain or improve endurance, lessen symptoms and prevent future complications. Some people who have used medication may get better with surgical treatment. And some who have had surgery may need medication or more surgery later.

Surgery is not right for everyone with a congenital defect. Discuss the specific risks and benefits of different kinds of surgical procedures with your health care provider.

Surgical strategies depend on how severe the defect is and also on the condition of the heart and lungs:

- **Palliative surgery** is done to lessen the effects of the defect, but it does not completely fix the defect. For example, surgery may be done to improve circulation. Sometimes palliative surgery is done during childhood to allow the heart and circulation to develop more. Then another operation can be done later to repair the defect. Sometimes a palliative operation is all that can be done.
- **Reparative surgery** is done to correct the defect. But people who have had reparative surgery may still have problems as they age. People who have heart defects should be seen regularly by a cardiologist who is an expert in adult congenital heart disease.

Surgery for hypertrophic cardiomyopathy

Treatment for hypertrophic cardiomyopathy is done to maximize your heart's function, lessen your symptoms and avoid future complications.

Myectomy is done to remove part of the overgrown muscle in the septum. Myectomy is done when medication no longer helps with symptoms. The goal is to improve blood flow through the heart chambers.

Some people have severe thickening of the heart muscle at the apex, the lower part of the heart. This is called apical hypertrophic cardiomyopathy. The thickened muscle may take up so much room that there is hardly room for the ventricle to fill with blood. An operation can remove a large part of this muscle, allowing the left ventricle to fill better.

After Your Surgery

Intensive care unit (ICU)

You are taken to the ICU right after surgery. While you are asleep in surgery, several tubes and drains are placed. Chest tubes drain excess blood from around the heart and lungs into a container. A catheter removes urine from your bladder. A tube may be passed through your nose and throat into your stomach to keep it empty. At first, you get fluids and medications intravenously (IV) through a catheter (Figure 6).

For family and friends

After your family member is settled in the ICU, you can visit. The first time in the ICU may be difficult for you. You may feel uncomfortable hearing unusual sounds and seeing all the monitoring equipment used in the ICU.

When you see your family member right after surgery, he or she may not look like himself or herself. He or she may look pale and swollen and be connected to machines to help with breathing. Your family member may be cool to the touch and may not respond to you right away.

Your visits and support are important. Even though your family member may not seem to know you are there, you can talk and hold his or her hand. This may help your family member know you are there.

Hospital staff need to know where a family member can be reached at all times. There is a sign-in sheet for family members to note names and places where you can be reached. Be as clear about where you are as possible. For example, give the name of the motel or restaurant or mention whether you are in the waiting room.

It is not necessary for you to stay overnight in the hospital. Your family member needs you to be well rested.

Breathing tube

After surgery, the condition of the lungs is very important. A breathing tube, called an endotracheal tube, is inserted through your nose or mouth in the operating room (Figure 6). This tube does three things:

- Helps you breathe while under anesthesia.
- Helps clear secretions from your lungs.
- Helps lessen the workload of the heart.

The tube is not painful, but it is uncomfortable. The staff know this and do everything possible to lessen your discomfort. While the tube is in place, you cannot talk because the tube passes through the voice box. Nurses can help you communicate. The endotracheal tube is removed when you can breathe on your own.

When the endotracheal tube is removed, you will get oxygen through a mask or nasal cannula, a tube in your nose. You may have either a raspy voice or a sore throat or both after the tube is removed.

In the ICU, you are checked all the time, day and night. You may notice many unusual sounds from the equipment. Also, members of your health care team are in your room often — day and night — to care for you. Because of all this activity, you may not sleep well the first few days after surgery. If you have trouble sleeping, talk to the health care team. Sleeping aids may be available.

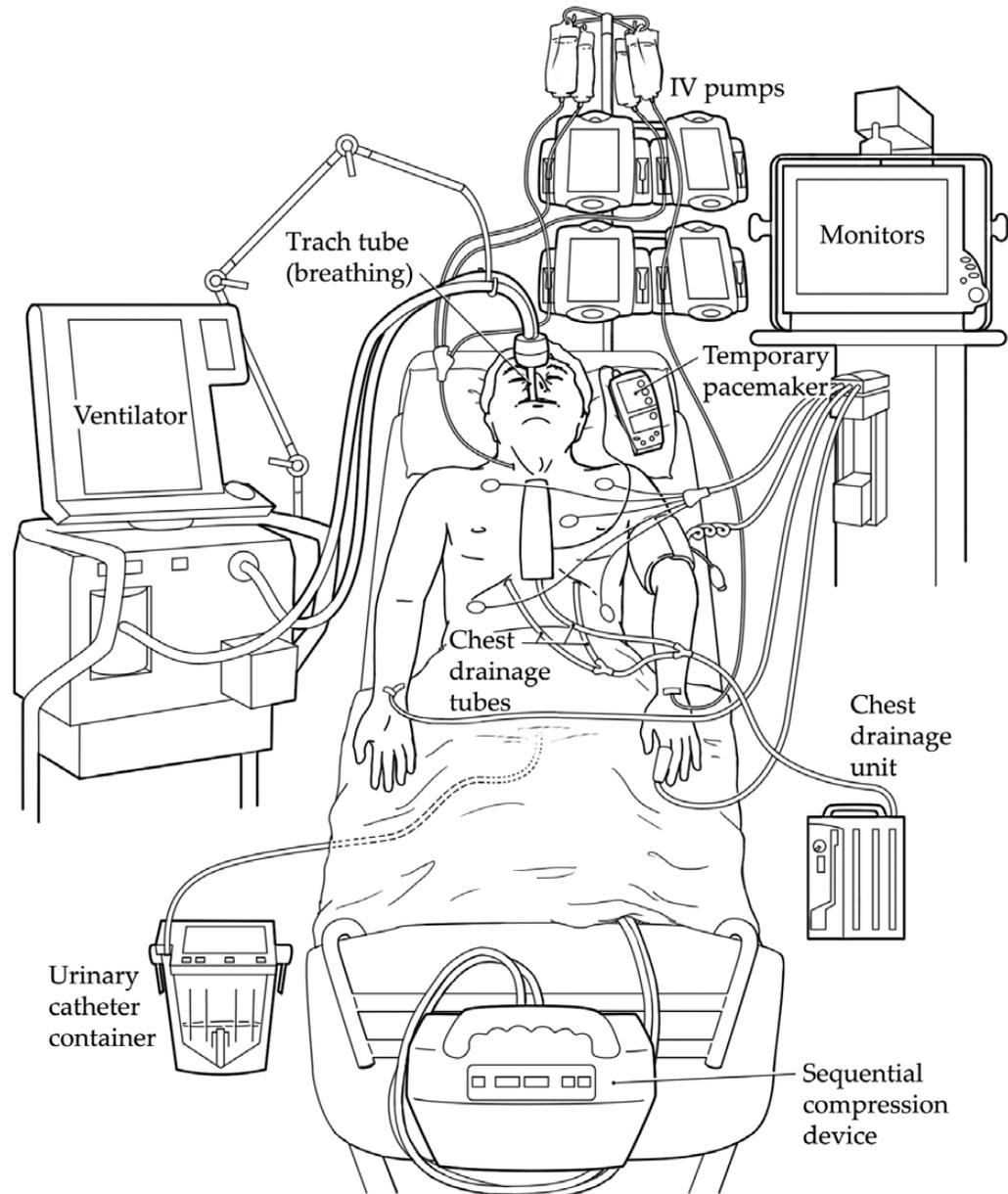


Figure 6. While you are in the ICU, your health care team may use many monitoring devices.

Confusion

After heart surgery, some people get confused. This means their alertness changes over the course of a day. Confusion occurs when there are changes in the way the brain works. Usually, confusion lasts for a time and then goes away. Illness, pain and some medications can cause confusion. If you have confusion, you may have a longer hospital stay.

Signs of confusion may include:

- Problems understanding and reasoning.
- Lack of ability to concentrate.
- Disorientation.
- Changing levels of consciousness, going from sleepiness to an excited state.
- Hallucinations.
- Lack of cooperation.

Some events in the hospital may bring on confusion:

- An increase or change in medications.
- A long time under anesthesia.
- Excessive blood loss.
- Infection.
- New surroundings.

Other causes of confusion in the hospital may be lack of sleep or changes to the normal day-and-night routine.

For family and friends

Treatment of confusion depends on the causes. Both the health care team and family members can help to lessen the sense of anxiety and unfamiliarity that may contribute to confusion:

- Explain to the person what is happening.
- Call the person by name and mention the date and time.
- Discuss current events and interests.
- Provide a structured routine.
- Make the surroundings as calm and quiet as possible.
- Help to keep some kind of sleep schedule so that the person is awake during the day and sleeping at night.
- Encourage the use of glasses and hearing aids if needed.
- Bring familiar objects from home, such as a favorite bathrobe or family photos.

Although medications are commonly used to lessen agitation and uncontrolled behavior, at times it may be necessary to use physical restraints to prevent injury.

Your presence may help to calm your family member.

Confusion generally gets better after the patient leaves the ICU, but some symptoms may continue. If you have confusion in the ICU, it does not mean that you will have trouble with confusion after you go home. Ask a member of the health care team any questions you have about confusion.

How long you stay in the ICU depends on many things. When your surgeon decides that you no longer need the special facilities of the ICU, you move to the PCU (progressive care unit). You may move to the PCU the same day as your surgery.

Progressive care unit (PCU)

When you go to the PCU, you may still have several IVs, a temporary pacemaker, chest tubes, a urinary catheter and oxygen. When you move to the PCU, your health care team still monitors your heart rhythm all the time. Changes in rhythm are treated as they occur. Also, your physicians will order frequent blood tests.

The nursing staff will work with you to increase your activity level even while you are monitored. As your strength increases, walk farther and spend more time out of bed.

At first, you are expected to walk up to six times a day. As you feel better, increase the number of times you walk from six to eight. Short rest periods throughout the day may help as you increase your activity. Get out of bed for meals.

Continue to cough and do deep-breathing exercises on your own. Coughing is very important to keep your lungs clear. The nurses will continue to encourage you to cough and do your deep-breathing exercises. The nurses may show you how to cough using a pillow for support. The pillow may help lessen discomfort. Women may wish to wear a comfortable, supportive bra to help support the incision. Coughing does not interfere with the healing of your incision.

It is important to measure your fluid intake and output. Your urine is measured until you leave the hospital. Tell your nurse about fluids you drink between meals, so the measurement of the fluid you take in is accurate. Your weight shows the balance between the fluid you take in and the fluid you put out. For this reason, you are weighed each day. You may weigh more the first few days after surgery than you did before, but you will lose the extra weight gradually.

Your appetite may be poor and your sense of taste may not be normal for a few days to weeks after surgery. But it is important that you take in enough liquid and food to nourish your body so that you can heal.

A dietitian may help you plan your diet and answer questions. A diet class may also be available for you and your family to attend. Ask your health care provider any questions you have about your diet.

It is important for you to return to regular bowel habits after surgery. Talk with members of your health care team about what you can do for regular bowel movements. Some pain medications can cause constipation.

How long you stay in the PCU varies and depends on many factors. Nursing staff will work with you to plan for the time you leave the hospital. The staff will also help to set up transitional care or home health nursing, if you qualify for it.

For family members and friends

General hospital visiting hours are open. However, from 9 p.m. to 5:30 a.m., visitors must have a visitor identification badge. Individual nursing units may talk with you about different visiting hours in order to promote rest and healing for the patient. Discuss concerns about visiting hours with the nurse.

Although your visits are encouraged, sometimes your visits may be shortened or postponed if a procedure is being done. If that happens, members of your health care team will try to make sure that you can visit as soon as possible.

Rhythm changes

Your health care team will monitor your heart rhythm closely after surgery. Many people have small changes in heart rhythm after surgery. Changes in rhythm are treated as they occur by treating the cause. Medications may be used to treat changes in heart rhythm.

Atrial fibrillation

One common type of irregular heartbeat, or arrhythmia, is atrial fibrillation. Atrial fibrillation starts in the upper chambers of the heart, the atria. When it occurs, you may feel tired and weak. You also may notice odd feelings of fluttering in your chest.

Short periods of atrial fibrillation are not life threatening. Changes in your rhythm after heart surgery are common and may go away as you recover. However, tell your health care provider about any odd feelings in your chest or if you feel your pulse is not regular.

Pain and discomfort

After surgery, some pain and anxiety are normal. Managing your pain is important because it helps you to recover more quickly. If your pain is under control, you can do what you need to do to get better, such as cough, deep breathe, and walk. You may slow your recovery when you try to “tough it out.”

When you are anxious, your pain may feel worse. Members of your health care team can work with you to help you manage your anxiety and pain.

Medication and other treatments such as distraction and relaxation are available and may help you with your pain and anxiety. Since you are the best judge of how you feel, tell your health care provider when you need help.

Pain is rated on a scale of 0 to 10, with 0 meaning no pain and 10 meaning the worst pain you can imagine. You will be asked to rate your level of pain using a pain scale (Figure 7). Discuss your goal for pain control with your health care provider. Usually, the goal is to keep surgical pain at 4 or less.

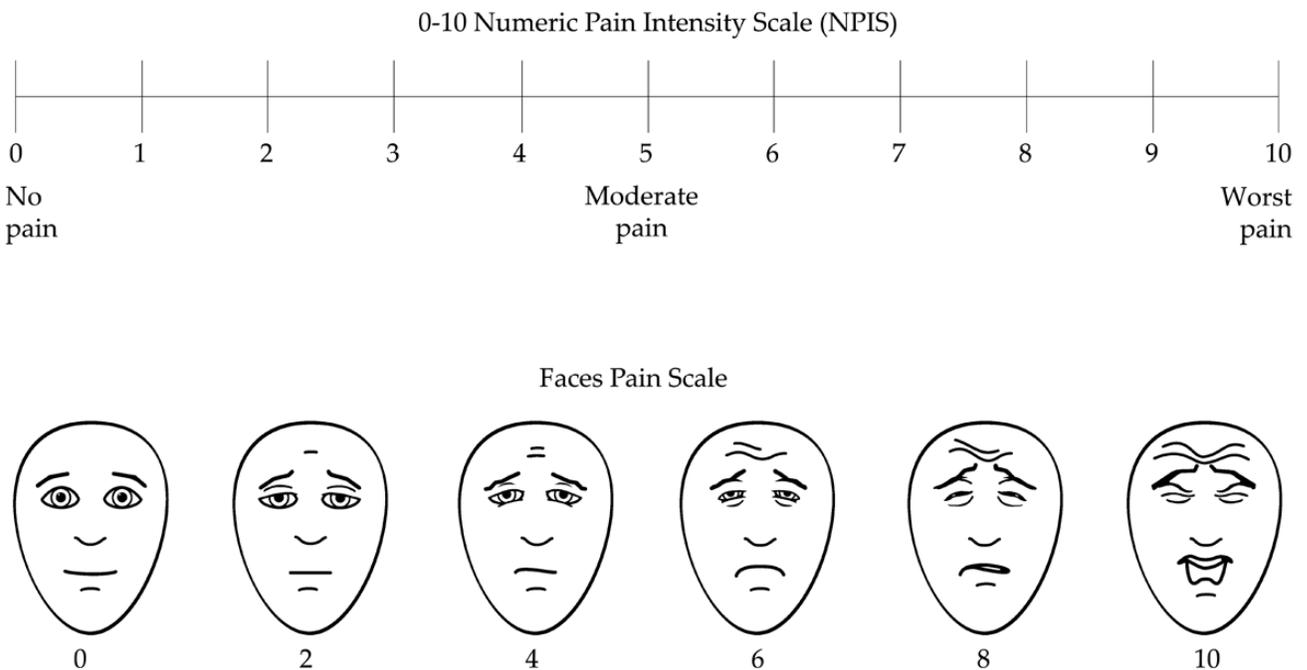


Figure 7. Pain scales

If your pain isn't under control, tell your health care provider right away. If your pain builds, it may take longer to control than if you stay ahead of the pain. Some people worry about getting addicted to pain medications, but that would be unusual during a hospital stay after heart surgery.

Talk to your health care team about what you can do to control your pain.

For family members and friends

After surgery, your family member or friend may have some pain. Encourage your loved one to take pain medication regularly. This may help keep the pain under control. Talk with the health care team if you are concerned about the pain and discomfort of your family member or friend. The health care provider may be able to suggest things you can do to help.

Sleep

Lack of sleep affects your energy level and your mental functioning. Losing sleep can lead to depression. Getting enough restful sleep while you are in the hospital may help you do what you need to do to get better, such as cough, deep breathe and walk. When you are rested, your immune system is stronger and you may recover faster.

As you recover from sickness or surgery, you may need more sleep than usual. Tell your health care team if you are having trouble sleeping while you are in the hospital.

Your health care provider may ask about your sleep in the past. If you have had problems sleeping, think about what has worked for you in the past.

Some things that may help you sleep include:

- Music.
- Ear plugs or eye mask.
- Warm drink.
- Deep breathing or relaxation exercise.
- Medication.

Nausea

Nausea is a feeling of stomach upset. When you have nausea, you also may feel like you are going to throw up. After heart surgery, some people have nausea. It can be caused by the anesthesia used during the surgery or by medications given to you after surgery.

If you have problems with nausea after surgery, tell your health care provider. Your health care provider will work with you to reduce your nausea.

Conclusion

Remember, you are the most important member of your health care team. This information is meant to help you get ready for heart surgery.

Read it and be sure to ask questions whenever you have them. It is hoped that good preparation will mean a smooth recovery.

BARBARA WOODWARD LIPS PATIENT EDUCATION CENTER

Mrs. Lips, a resident of San Antonio, Texas, was a loyal patient of Mayo Clinic for more than 40 years. She was a self-made business leader who significantly expanded her family's activities in oil, gas and ranching, even as she assembled a museum-quality collection of antiques and fine art. She was best known by Mayo staff for her patient advocacy and support.

Upon her death in 1995, Mrs. Lips paid the ultimate compliment by leaving her entire estate to Mayo Clinic. Mrs. Lips had a profound appreciation for the care she received at Mayo Clinic. By naming the Barbara Woodward Lips Patient Education Center, Mayo honors her generosity, her love of learning, her belief in patient empowerment and her dedication to high-quality care.

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