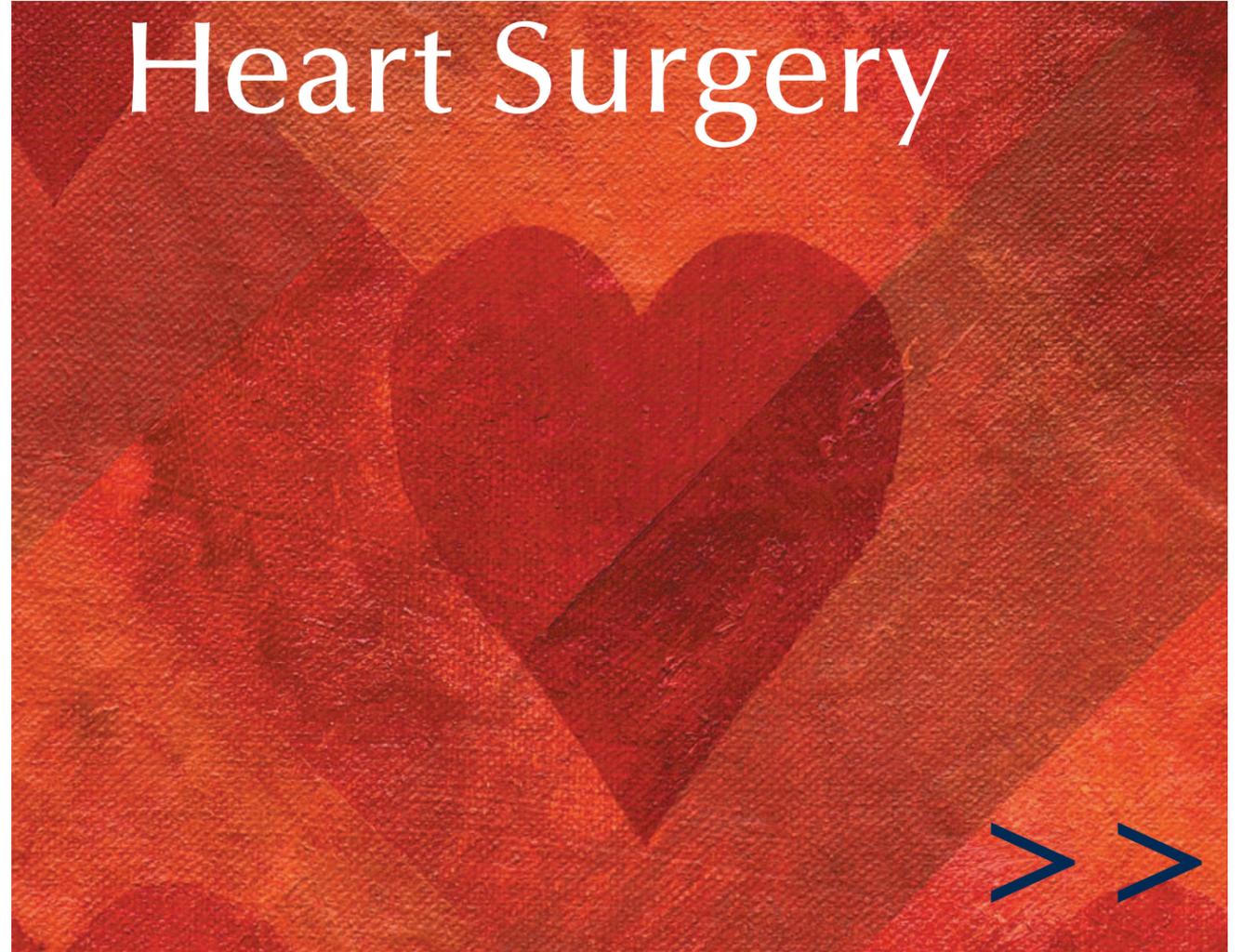


Your Guide to Heart Surgery



Morristown Memorial Hospital

100 Madison Avenue
Morristown, NJ 07960

Overlook Hospital

99 Beauvoir Avenue
Summit, NJ 07901

For a referral to a cardiologist at
Gagnon Cardiovascular Institute
call 1-800-247-9580 or visit atlanticealth.org.

CARD-7118-09



ATLANTIC HEALTH



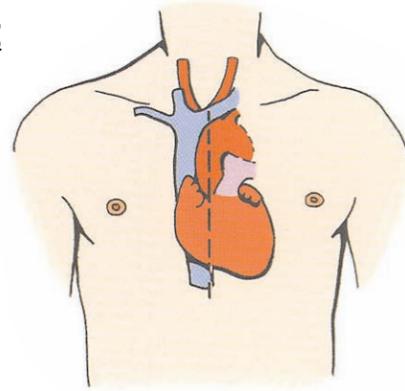
ATLANTIC HEALTH

THE PASSION TO LEAD

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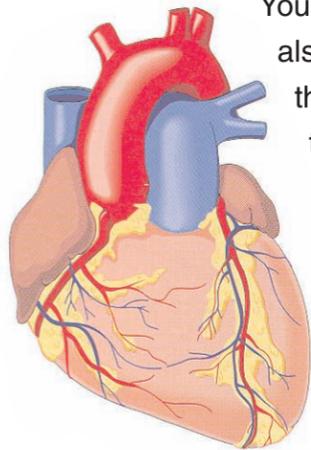
Heart Surgery – Know What to Expect

When it comes to the health of your heart, Morristown Memorial Hospital's Cardiovascular Program is there every step of the way. We realize that heart surgery may be stressful or even overwhelming for some people. That's why we created this patient guide—so you know what to expect before, during and after surgery. Use this guide to learn about your surgical procedure, as well as how you and your family can assist in your care and recovery.



Your Heart and How it Works

Your heart is a muscle about the size of your clenched fist. Located behind the sternum (breastbone) in your chest, the heart's function is to pump blood to all parts of the body. It does this by supplying oxygen and nutrients through blood vessels called arteries.



Your heart is divided into four chambers – two atria and two ventricles. It also has four valves that function as one-way flaps to keep blood moving through the four chambers. The right side of the heart receives blood through the body's veins and pumps it to the lungs. Then, with each breath, oxygen is added to the blood. This oxygen-enriched blood travels from the lungs to the left side of the heart and is then pumped through the arteries to the rest of the body. The heart muscle receives its own supply of oxygen through the coronary arteries that surround the heart. There are three major coronary arteries and each of these has smaller branches.

Common Heart Problems

Heart Blood Vessel Disease:

The most common problem, known as atherosclerosis, is when fatty plaque builds up on the walls of the arteries around the heart. This causes the coronary arteries to narrow and compromise the oxygen blood supply to the heart. This condition is called Coronary Artery Disease (CAD). It may cause angina (pain caused by lack of blood supply to the heart), a heart attack, or even sudden death. Options for treating CAD include medication, angioplasty, coronary stents and bypass surgery.

Day of Discharge

In order to be discharged from the hospital, you require clearance from your surgeon as well as your cardiologist, both of whom will have seen you during every day of your recovery. You also receive written care instructions as well as prescriptions, including one for pain medication. It's important to review your medications carefully as they may differ from your previous medication routine.



Discharge Instructions

Please follow these recovery guidelines. (More detailed information is provided in a postoperative education booklet.)

- ▲ **Traveling by car:** You may ride in a car at any time, but do not drive for four to six weeks.
- ▲ **Bathing:** Do not take tub baths or swim until your skin incisions have healed. Shower every day, washing your incisions with antibacterial soap and water. Pat, rather than rub, the incisions dry so as not to disturb the absorbable sutures.
- ▲ **Heavy lifting:** Do not lift, push, pull or carry anything over 10-15 pounds for at least six weeks—your breastbone needs time to heal.
- ▲ **Follow-up:** Schedule follow-up visits with your cardiologist. The only time you need to see your surgeon is if there's a problem with your incisions.

Best wishes for a smooth operation and a speedy recovery.

Postoperative Issues

- ▲ **Post-op fever:** One of the most common post-op problems, post-op fever is usually related to the incomplete expansion of the lungs. That's why those coughing and deep breathing exercises are so important.
- ▲ **Irregular heart rhythm:** It's also common to experience an irregular heart rhythm. Studies have shown that up to 30% of people will experience this after heart surgery. In most instances, this situation is easily treated by medications. However, sometimes you need to stay hooked up to the telemetry unit so we can continuously monitor your condition.
- ▲ **Due to the breathing tube (called an endotracheal tube),** you will not be able to talk right away. The tube is the first to be removed once you are awake enough and able to breathe without the support of the ventilator. This generally takes about four to eight hours after surgery, but each patient recovers at his/her own rate.
- ▲ **The respiratory therapist assists you with deep breathing and coughing exercises.** These exercises are very important to your recovery because they improve breathing and prevent postoperative complications. That's why we encourage you to perform ten deep breaths (with the Incentive Spirometer) every hour while you're awake.
- ▲ **Coughing one or two times after the deep breathing clears your lungs by expelling any secretions that may have accumulated during surgery.** Also, hugging your heart pillow when you cough reduces the discomfort you may feel in your chest from the incision.
- ▲ **While you're in bed, moving your ankles in a circular motion improves the circulation in your legs and prevents the formation of blood clots.** Once you're up and walking around, you no longer need to perform these exercises.

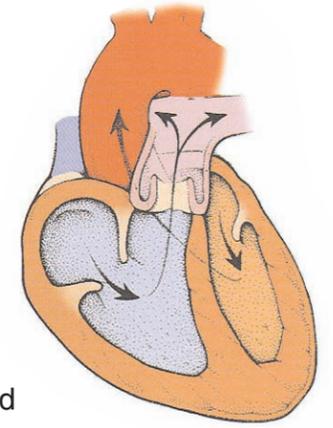
Postoperative Milestones

It's important to keep in mind that many of these guidelines are general. Specific timing of your care is always dictated by your individual needs.

- ▲ **Day Three:** Usually, on postoperative day three, the temporary pacemaker wires inserted at the time of surgery are removed at your bedside. You will also go to the radiology department for a chest x-ray.
- ▲ **Day Four:** If your heart has remained in normal rhythm, your telemetry monitor is discontinued. You may be ready to climb stairs, and you may take a shower.
- ▲ **Day Five to Day Seven:** Most patients consider these days to be the highlight of the recovery period. You should be ready to go home!

Heart Valve Disease:

Heart valve disease occurs when the valve operates improperly. It may not be opening or closing all the way. Therefore, there is a decrease in the amount of oxygenated blood pumped through the heart to the rest of the body. This may result in fainting, shortness of breath, weakness, or fatigue (to name just a few symptoms).



- ▲ **Stenosis,** the valves inability to open all the way, may be caused by calcium deposits. This makes them stiff and hard to open. This allows only small amounts of blood to squeeze it's way through the affected valve.
- ▲ **Regurgitation or insufficiency,** is when the valve doesn't properly close. The valve may have extra tissue or be loose or shortened. As a result. blood will leak backwards through the valve. Not forwards to the rest of the body, where it is needed.

Heart Muscle or Structural Disease:

Some people may be born with small holes in the walls of the heart (between the right and left chambers). This may cause a variety of symptoms. This problem can be corrected with a surgical procedure.

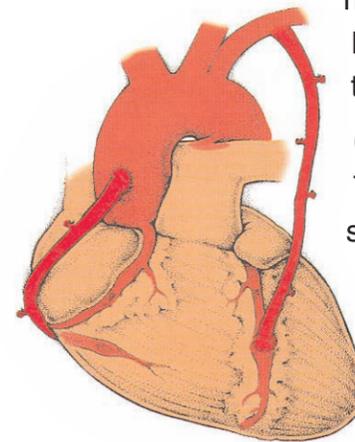
Surgical Procedures

The following overview of surgical procedures is intended as a guide only. You and your doctor will discuss the best option for your treatment, as well as the specifics of your procedure.

The majority of these will take three to five hours and require a four-to-six day hospital stay. In order for the surgeon to view and operate on your heart, most procedures will require a cut in the breastbone. In addition, your body may need the assistance of a heart-lung bypass machine during the operation. This machine takes over the functions of the heart and lungs, allowing the surgeon to carefully stop your heart while the vital organs continue to receive blood and oxygen. In this way, the surgeon can perform very delicate work without the interference caused by the heart's pumping action.

Coronary Artery Bypass Grafting (CABG):

This operation re-routes the blood flow around the blocked section of the coronary artery in order to restore the oxygenated blood supply to the heart. Portions of a leg vein (saphenous vein) and/or an artery from the chest (internal mammary artery) or arm (radial artery) are used as bypass grafts. See endoscopic vein harvesting for more detail.

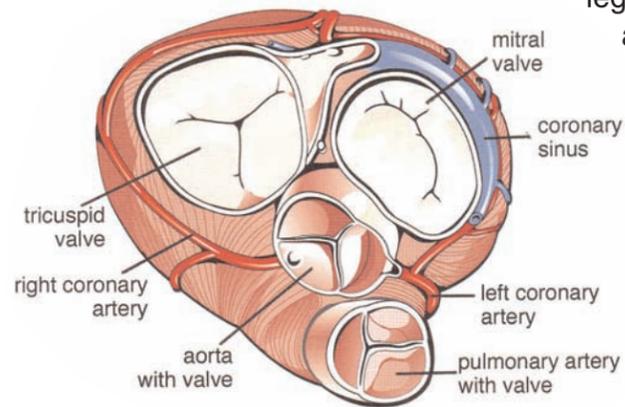


Off-Pump Coronary Artery Bypass Grafting (OPCAB):

This procedure bypasses blocked arteries without the use of the heart lung bypass machine, allowing the surgeon to operate on a beating heart. There are many variables that determine candidacy for OPCAB; your surgeon will discuss these with you.

Endoscopic Vein Harvesting:

This technique is used for the majority of bypass patients. When the bypass graft is taken from your leg, the surgeon and physician assistant(s) harvest the needed length of vein through a two-inch incision. In addition to reducing the size of the surgical scar, endoscopic vein harvesting significantly reduces leg discomfort during the postoperative period, and is associated with less chance of infection. Some patients, however, are not candidates for this technique and a traditional longer leg incision is necessary.



Valve Surgery:

Heart valves are normally thin, smooth structures that open to allow blood to flow through the heart's four chambers and then tightly close to prevent back flow. Valve repair or replacement is performed to restore normal function to the valve. If a valve cannot be repaired with surgery, a replacement or prosthetic valve will

be required. Two types of prosthetic heart valves are available. These are a Mechanical valve (manmade materials) and a Biological (tissue valve), made from cow, pig or human donors. There are a few factors in choosing the type of valve that is best for each person. Your cardiac surgeon will discuss which valve is most appropriate for you.

Atrial Septal Defect Surgery:

The atrial septum is the wall that divides the upper chambers (atria) of the heart. An Atrial Septal Defect (ASD) is an abnormal opening in the wall that disrupts normal blood flow and increases the work of the heart. During surgery, the abnormal opening is covered with a synthetic material or sewn closed in order to restore normal flow.

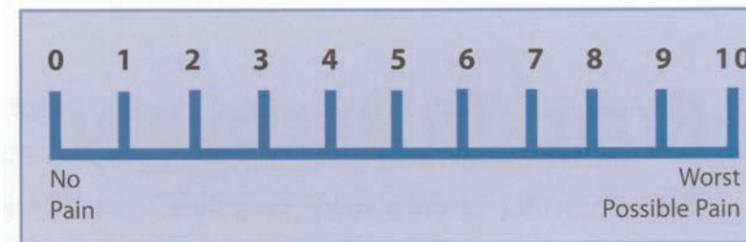
Major Aortic Surgery:

The aorta, the largest artery in the body, carries oxygen rich blood from the heart to rest of the body. If the wall of the aorta weakens, it may bulge out (balloon) and interfere with the delivery of blood, causing an aneurysm. A synthetic graft is used to repair the weakened area.

Maze Procedure:

Some heart disease patients also have a rapid and irregular heart rhythm called atrial fibrillation. The Maze procedure creates electrical barriers in the upper chamber of the heart that allow only one route for an electrical impulse to travel from the top to the bottom of the heart. This returns the heart rhythm back to normal. Results may take up to three to six months to be seen.

Pain Management



It's normal to have some degree of pain after surgery, but everyone's tolerance to pain is different. That's why we provide pain medication as you need it. If you're experiencing pain, you

must ask your nurse for medication. If you're unable to ask, an alternative means of communication will be used (one that is appropriate for the situation). The nurse will ask you to rate your pain on a scale of 0-10, with 0 being no pain, and 10 being the most severe. This way we can monitor your pain level after medication and ensure that we're effectively alleviating your discomfort.

Nutrition

Now that you have a "renewed" heart, it's important to maintain a healthy diet. We encourage you and your family to attend a nutrition class offered by our dietitian, and we've set the following postoperative guidelines:

- ▲ Your diet will progress according to your tolerance level – from ice chips to clear liquids, then to full liquids and finally, to a heart-healthy diet designed specifically for cardiac patients.
- ▲ It is not uncommon to have a decreased appetite after surgery. Please do your best to eat the food given to you. You need protein and calories in order to heal.
- ▲ You may notice a slight weight gain after surgery. Your body tends to hold onto fluid after surgery, we may limit your daily fluid intake to 2000 cc for the first three days. This fluid buildup may exhibit itself with swollen hands, feet or face, this resolves as your body recovers.
- ▲ An important notice for diabetics – it is not unusual for your blood sugar to be elevated after the physical and emotional stress of surgery. The medical and nursing staff will be monitoring your "sugars" closely until they begin to resume your normal baseline levels. In addition to resuming your normal diet, your diabetic medications will be restarted as needed.

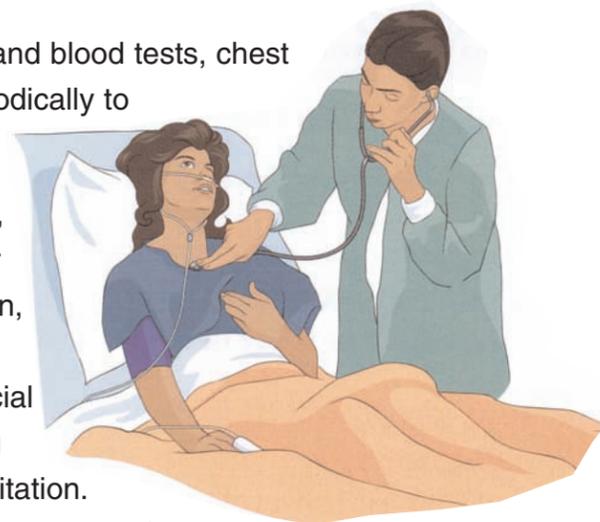


Road To Recovery

The remainder of your hospital stay is spent on the cardiovascular telemetry unit, under the care of a large team of health care professionals, including cardiovascular surgeons, your cardiologist, a cardiac care manager, nursing staff, a respiratory therapist and cardiac rehabilitation staff.

When it comes to your recovery, it's our goal to see you make progress each day and become increasingly independent. It's important to remember that the road to recovery can present many challenges, but also many rewards. Stay mentally strong, confident patient, and remember that we're here to help.

- ▲ The day of transfer, you're helped out of bed and over to a chair one or two times.
- ▲ The cardiac rehabilitation staff visits with you every day. They teach you various arm and leg exercises, which you should perform two times a day. They also walk with you in the hallway and provide a plan for what you should do for the rest of the day. Your activity level will increase each day, to the point that you will be able to climb stairs prior to discharge.
- ▲ A respiratory therapist assists you with deep breathing and coughing exercises. He/she also monitors your breathing and oxygen level, administering breathing treatments if necessary.
- ▲ Your weight is measured each morning, and blood tests, chest x-rays and EKGs may be performed periodically to monitor your progress.
- ▲ At some point during your hospitalization, a care manager meets with you and your family. Together, along with your physician, a plan for discharge will be made. This plan may include assistance for any special arrangements such as home care/visiting nurses, or placement for inpatient rehabilitation. A social worker is also available for a wide variety of issues.



Guidelines – Before, During and After Surgery

The Night Before Surgery

If you're at home:

Be sure to follow these guidelines prior to surgery:

- ▲ Shower with the antibacterial soap that was given to you. Scrub skin from neck to toes, paying particular attention to the chest, groin and legs.
- ▲ Have dinner as usual, but do not eat or drink anything after 12 midnight.
- ▲ Place the antibiotic ointment that was given to you in your nose, as directed by your surgeon. This reduces the potential for infection.
- ▲ Take all your usual medications up until midnight, unless instructed otherwise by your physician.
- ▲ Important note for diabetics: Remember, you will not be eating. Take no injections of insulin or oral diabetes medicines the morning of surgery.

If you're in the hospital:

The night before the surgery is a busy one. Various members of our health care team stop in your room for a visit. You will undergo numerous diagnostic tests in preparation for surgery. Here's what to expect:

- ▲ Chest X-ray, EKG and bloodwork. You may also require additional vascular test.
- ▲ Discussion with a nurse about what to expect before and after surgery.
- ▲ Visit from your cardiac surgeon (if you have not already seen him/her).
- ▲ Review and instructions on important breathing exercises by a respiratory therapist.
- ▲ Overview of the anesthesia you'll receive during the surgery.
- ▲ A skin preparation routine. To reduce the risk of infection, you shower with an antibacterial soap, scrubbing your skin from neck to toes, paying special attention to the chest, groin and legs. Your body will be shaven from the chin to the toes. Then, you will shower again.
- ▲ A nurse places ointment in your nose to reduce the potential for infection. This will be repeated in the morning.
- ▲ Have dinner as usual, but do not eat or drink anything after 12 midnight.



The Day of Surgery

If you're coming to the hospital the morning of surgery:

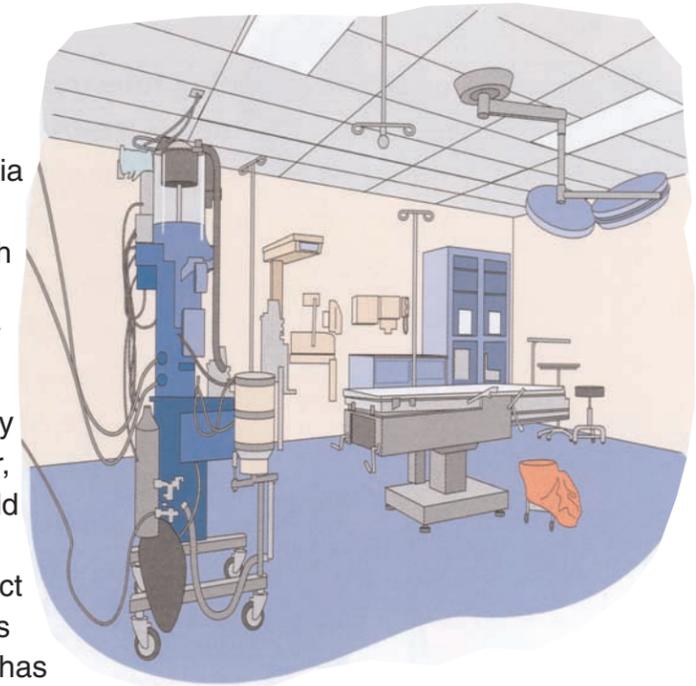
- ▲ The morning you arrive at the hospital, the nursing staff will perform an extensive admission assessment (questionnaire). Please bring a list of the medications you're taking.
- ▲ To reduce the risk of infection, you will be shaven from your neck to your toes. Then you will take a shower with an antibacterial soap. Please do not shave yourself!
- ▲ Your family is asked to take your clothes and valuables home; this includes eyeglasses, dentures and jewelry. Feel free to pack a bag of belongings to bring in the following day during your second phase of recovery in the Cardiothoracic Nursing Unit. Most people like to have their own toiletries, bathrobe and nonskid slippers or shoes. Some men prefer to bring in pajama bottoms or boxer shorts.
- ▲ Before going to the operating room, your nurse gives you a medication that will make you drowsy.
- ▲ Your family may accompany you while you're transported to the holding area outside the operating room.
- ▲ Your family will be directed to the Surgical Family Waiting Room. This is where your surgeon will meet your family to discuss your postoperative condition. If they cannot or do not want to stay in the waiting room, beepers are available at the waiting room desk.

During Surgery

- ▲ Once you're in the operating room, the anesthesiologist inserts an IV that carries anesthesia medications into your veins.
- ▲ Once you're asleep, additional intravenous lines are placed in your arms and neck. Besides monitoring your heart's function and blood pressure, these lines also make it easier for us to draw blood samples and give you fluids.
- ▲ A catheter is inserted into your bladder to monitor urine output.
- ▲ A breathing tube is placed through your mouth and into your lungs to support your breathing while you're under anesthesia.
- ▲ Your surgeon will make an incision in the middle of your chest. If you're having bypass surgery, you may have a leg or arm incision as well.
- ▲ Electrodes are attached to your chest so we can continuously monitor your heart rhythm.
- ▲ Chest tubes are inserted underneath the chest incision to drain blood that may accumulate around your heart after surgery.
- ▲ Temporary pacemaker wires may be inserted to allow us to support your heart with a pacemaker, if necessary.

Immediately After Surgery

- ▲ You're admitted to the Cardiac Post-Anesthesia Care Unit (CPACU), also called the Open Heart Recovery Room. This unit is staffed with critical care nurses (one per patient), doctors and respiratory therapists who are specifically trained to care for cardiac surgery patients.
- ▲ Once you've settled in the CPACU, your family may visit with you for a few minutes. However, you may not be fully awake. Your family should expect you to look pale, be cool to the touch and have a puffy face. They should also expect to see many types of machines, tubes and IVs (including the breathing tube). Each machine has a different purpose, but all are there to help monitor your health and recovery.
- ▲ Your nurse provides your family contact with your bedside phone number. The family contact can call anytime to inquire about you. Please remember, due to privacy issues, information is given only to this person.



If you're already in the hospital:

Please review the steps above. Generally, the same process occurs for inpatients. The questionnaire, as mentioned above, will have already been completed. However, your family should still take all of your belongings and valuables home. You will not be returning to the same room after your surgery.

Your family may visit you before surgery, even if it's early in the morning before the regular visiting hours. And, your nurse may have you take your heart medication with a small sip of water.

The Day After Surgery

The majority of open heart surgery patients are ready for transfer from the CPACU to the cardiothoracic Nursing Unit the day after surgery. Your family contact can call the CPACU to find out what time you're expected to be transferred and to obtain your new room number.

Before being transported,

- ▲ Most of your drainage tubes are removed.
- ▲ Your chest incision is cleaned and a fresh dressing is applied. Elastic stockings are applied to your legs to enhance circulation and prevent the formation of blood clots. If you had endoscopic vein harvesting, an ace bandage wrap remains on the affected leg for another day.
- ▲ You should expect to have an oxygen facemask or nasal prongs as well as a small portable telemetry unit attached to you to monitor your heart rhythm.