

# Patient Guide to Cardiothoracic Surgery



## **Cardiovascular Institute**

Rhode Island Hospital • The Miriam Hospital  
*Lifespan Partners*

# Patient guide to cardiothoracic surgery

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## **Cardiovascular Institute**

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Dear Cardiac Patient,

Your cardiothoracic surgery health care team has prepared this booklet for you. We want you to know what to expect before and during your surgery and how best to care for your health after you leave the hospital. If you understand what is happening to your body, you can make your hospital stay more pleasant and also speed your recovery.

Your cardiac care team consists of your surgeon, your cardiologist, your anesthesiologist, staff nurses, physician assistants, a nurse practitioner, a nurse case manager, a respiratory therapist, a physical therapist and a dietitian. Each of them offers different experience and training, and collectively they offer you the information you'll need to keep your heart healthy. With this booklet, you'll take some of the knowledge and expertise of all your different team members home with you.

The information your health care team presents here will help you and your family know what to expect before, during and after your surgery. And if you know what to expect, you can be an active participant in your own plan of care. The very best cardiac care providers at Rhode Island and The Miriam hospitals have come together in our joint cardiothoracic surgery program, part of the two hospitals' Cardiovascular Institute. Together, we will work to restore your heart to health and speed you toward recovery.

Sincerely,

Your cardiothoracic surgery team

# Your health care team

Your health care team will consist of:



## Operating Room Team

Your **surgeon** is in charge of your care. He or she will work in close partnership with your cardiologist, who will make recommendations about your care.

In the operating room, your surgeon will lead a team of trained professionals who will be caring for you while you are in surgery.

An **anesthesiologist** will start intravenous lines, place monitoring devices on your body (for example, patches to monitor your heart rate) and will be responsible for carefully monitoring you throughout the operation.

**Staff nurses and technicians** with extensive training in cardiothoracic surgery will care for you and ensure that all your needs are met during your surgery.

A **perfusionist** will run the bypass machine used to do some types of operations.

**Physician assistants (PAs)** also play a role in the operating room. PAs are highly trained at assisting surgeons during the operation.

## Post Operative Care Team

A team of **registered nurses** with specialized training in the areas related to cardiothoracic surgery will care for you. They are responsible for your daily assessments, for your physical care, for giving your medications and treatments, and for patient education. They will work with you to make sure your recovery progresses smoothly.

**Physician assistants (PAs)** and **nurse practitioners (NPs)** oversee your day-to-day care. These professionals are highly trained and work under the guidance of the surgeon. They may be involved in many aspects of your care, from your pre-admission testing, to managing your medical care during your hospital stay, to assisting with the postoperative period and discharge. They work as an “extension” of your surgeon and perform daily physical assessments, check x-rays and laboratory data and adjust medications. When you are ready to go home, they will write your prescriptions and prepare your discharge instructions. While your cardiologist should be your primary contact for questions and problems before you come to the hospital and after you go home, you can also direct questions to the PAs and NPs.



They are in constant contact with all the members of your health care team, as well as with home care nurses or facility nurses.

### Support Team

On the second or third day after your surgery, you will be evaluated by a **physical therapist**, who will provide exercises and activities to help you regain your strength and normal functioning. You will be working with members of the rehabilitation team to learn exercises that will help you move around more easily. Occasionally, a patient needs a walker or cane for the first several weeks. The physical therapist will provide this for you and teach you how to use it.

If you have difficulty resuming normal activity, your health care team might request that an **occupational therapist** see you, to help you regain normal function with daily activities such as dressing and bathing. Other specialty therapies, such as speech therapy, are available if your condition indicates. **Respiratory therapists** help manage your care immediately

after surgery, when you will receive support from a ventilator or breathing machine. They are responsible for helping you recover your lung function. When you no longer need the ventilator, the respiratory therapist will administer respiratory treatments and encourage you to use a device called an incentive spirometer to exercise your lungs.

A **registered dietitian** will provide materials and education regarding any changes in your dietary restrictions, if you or your doctor so requests. There are also diet technicians and diet aides to assist you with meal selection while you are in the hospital.

One to two days prior to discharge, you will see your nurse **case manager**, who will guide you through the hospital system and collaborate with your health care team to coordinate your discharge from the hospital. The case manager's role is to organize the transition of care from the hospital to home, based on each patient's needs. Surgery can be

stressful, and it is not uncommon to feel a little worried about returning home and to work. A **social worker** is available upon request to address the emotional and social aspects of your care.

**Certified nursing assistants and collegiate nurse interns (CNAs/CNIs)** are trained to assist you with daily living activities such as eating, bathing and getting in and out of bed. They also assist nurses with taking vital signs and blood sugar levels, as well as transferring and discharging patients.

# Your operation

## Coronary Artery Bypass Surgery, also referred to as CABG (pronounced cabbage)

This is one of the more common types of heart surgery performed here. The coronary arteries surround the heart muscle and bring it the blood and oxygen it needs to function properly. Over time, plaque can build up in the walls of your arteries and cause them to become blocked. When the arteries are blocked, the

heart muscle does not receive the blood and oxygen it needs and can no longer function effectively.

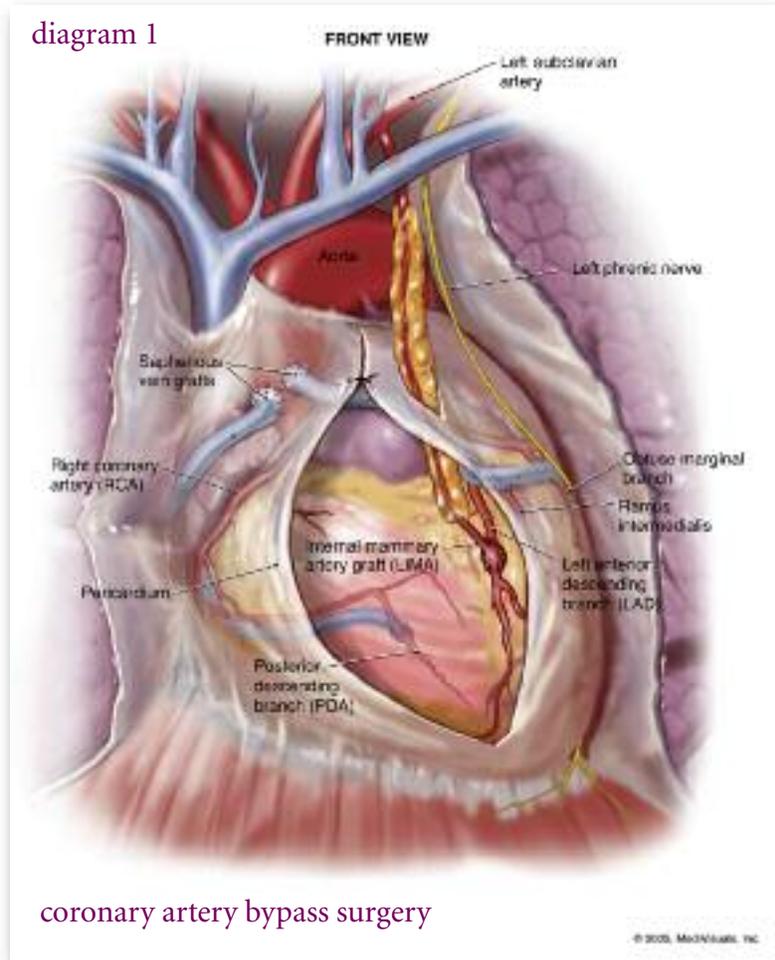
This can lead to chest discomfort (angina), shortness of breath, or a heart attack.

Bypass surgery improves the flow of blood to the heart muscle. An artery from the chest wall (the internal mammary artery), a vein from the leg (the saphenous vein), or an artery

There are four major types of open-heart surgery.

In some cases, more than one type of surgery may be required. Your surgeon will explain these options to you and recommend the method that is best. If you have any questions, please speak with your surgeon or bring them with you to pre-admission testing for the cardiac surgical team.

diagram 1



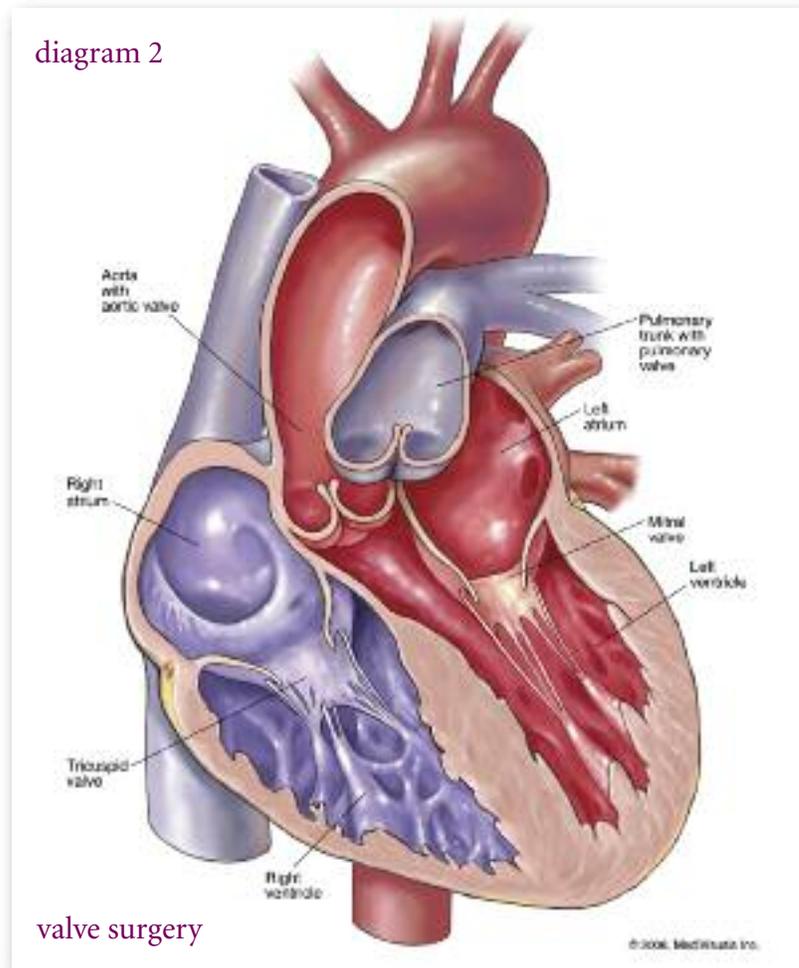
from the arm (the radial artery) is used to redirect the flow of blood around the blocked arteries. If the vein from the leg or the artery from the arm is used, it will not affect the circulation in that area. You will be able to walk or use your arm as you normally would. Various techniques of endovascular harvesting are available. (See *diagram 1*)

### Valve Surgery

Four valves control the blood flow through your heart. The valves act as one-way doors, directing the flow of blood with each heartbeat through the chambers of the heart and from the heart out to the body. Sometimes the valves do not function properly. The heart muscle then has to work harder, which can cause shortness of breath, dizziness, pain, or other symptoms.

Valve surgery is designed to either repair or replace the damaged valves. There are several types of replacement valves that can be used. A tissue valve is one taken from an animal or donor and is specially prepared for use as a new heart valve. There is no risk of rejection from this valve. A mechanical valve is made from metal and plastic. Your surgeon will discuss the different options with you. (See *diagram 2*)

diagram 2



### Aortic Surgery

The aorta is the main blood vessel that carries blood from the heart to the rest of the body. Blood is pumped from the heart, through the aortic valve, into the aortic artery, and then to different areas of the body. As it carries blood to the head, it is called the ascending aorta; as it carries blood down through the chest, it is called the descending aorta. Our thoracic aortic surgery program is extensive, with cardiologists, radiologists, vascular surgeons and other specialists working

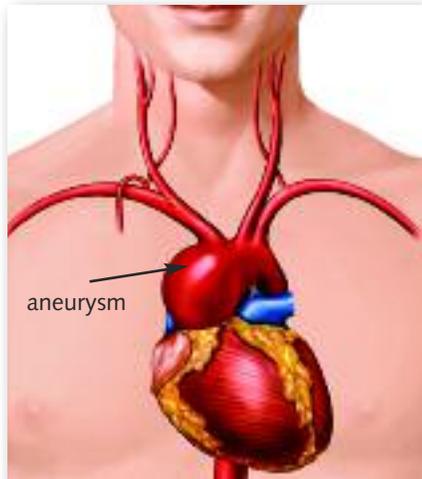
together to determine the best treatment for your condition, whether you need medical and surgical management of a complex thoraco-abdominal aneurysm or emergency surgery for acute or traumatic dissection—a tear in the wall—of the aorta.

### Surgery to Repair Aneurysm of the Heart

An aneurysm is an area of muscle or artery that has become weakened and shows a bulging or ballooning effect. A heart muscle aneurysm is

usually the result of damage to the heart during a heart attack, and it prevents the heart from pumping properly. This might cause you to have shortness of breath, pain, or an irregular heartbeat. The aneurysm is cut out or patched during the surgery. (See diagram 3)

diagram 3



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### Surgery to Repair Congenital Heart Defects

Congenital heart defects may need to be corrected surgically. Although present from birth, these defects may not be detected or may not cause problems until adulthood.

Atrial septal defects are one example of the most common type of congenital heart defect. The septum, which is a wall between the chambers of the heart, does not close all the way at birth. Extra blood flows through this hole, between the

chambers, and causes the heart to work harder. The additional workload can cause enlargement of the heart muscle, fatigue, and shortness of breath. A surgical correction might include sewing the hole closed or using a patch to cover the hole.

There are other congenital defects of the heart. Your doctor will explain your particular defect and the specific surgery to correct it.

### Surgical Treatment of Atrial Fibrillation

Atrial fibrillation is one of the more common types of cardiac arrhythmia. The condition occurs when the atria (the two upper chambers of the heart) do not open properly due to irregularities in the transmission of electrical impulses through the heart. As a result, the heart is unable to pump blood properly, causing an irregular heartbeat. This may result in blood clots, which can move to an artery in the brain, resulting in a stroke. Atrial fibrillation also increases the risk of congestive heart failure and can further complicate other types of heart diseases, particularly those involving heart valves. Surgical treatment of atrial fibrillation requires surgical incisions in the receiving chambers (atria) of the heart, to destroy abnormal electrical pathways. When local freezing,

radiotherapy or ultrasound is applied to these pathways, further destruction of the abnormal pathways occurs, reverting the heart rhythm to normal.

### Minimally Invasive Surgery (based on selection-specific criteria)

We routinely apply the full range of minimally invasive techniques and technology for many of our patients with valvular disease or coronary artery disease. The advantages of minimally invasive heart surgery include smaller incisions, causing less pain and blood loss; no incision through the middle of the sternum; and avoidance of cardiopulmonary bypass. Many of our patients leave the hospital within four days of their operation and return to work quickly, after being cleared by their surgeons.

It is important to plan for the help you will need before, during and after your surgery. If you have any specific needs or concerns, please let your cardiologist or your cardiothoracic surgery team know as soon as possible.

The average hospital stay for open-heart surgery patients is four to seven days. Each patient recovers differently from cardiothoracic surgery, so this is a guide to help you understand cardiothoracic surgery in general. Your own case may vary somewhat. Your health care team will discuss your care and preferences with you and your family. If you have any questions, please ask your cardiothoracic surgery team.

### Blood Transfusions

You may require a blood transfusion during or after your surgery. We encourage you to donate your own blood prior to surgery or have a family member donate for you. Two units of blood are usually donated, allowing one week between each donation, and one additional week between the donation of the second unit and surgery. Please speak with your cardiologist or cardiothoracic surgery team if you would like to donate for yourself.

In some cases, there may be alternatives to blood transfusions. To learn more about transfusion-free medicine and surgery, please call 401-444-4550, or visit the transfusion-free pages at [www.cardiac.lifespan.org](http://www.cardiac.lifespan.org).

### Advance Directives

All patients are asked if they have written advance directives. An advance directive is a legally recognized, written document that states your wishes concerning medical treatment. If you have advance directives, it is your responsibility to provide us with a current copy. This will be filed in your medical record. Remember, an advance directive is effective only if your health care team knows about it. Please speak to your surgeon for more information on this matter.

### Patient Financial Services

Our hospitals offer financial assistance to patients who meet specific guidelines. If you are not insured or are insured for only part of your expenses, please talk with one of our financial counselors. They can help you establish a payment plan or apply for financial aid. For more information, please call 401-444-6966, Monday through Friday, from 9 a.m. to 4 p.m.

As a patient, you are responsible for:

- Asking questions. Please feel free to write them down.
- Asking for explanations when you do not understand.
- Reading or watching the appropriate teaching material as soon as it is convenient for you and your family to do so.
- Communicating any concerns you have regarding your plan of care.
- Planning with us for your discharge and your follow-up appointments.
- Helping us to complete each day of the plan.

### Family Contact and Decision Making

Please make sure you have appointed one family member as your contact person, with whom the surgical care team can speak openly concerning your care. This designated contact should be the one to call the nursing units for updates on your condition, and can then notify the rest of the family if necessary. Your contact should also be aware of any advance



## Pre-admission Patient Checklist

Testing Date: \_\_\_\_\_ Time: \_\_\_\_\_

Location: \_\_\_\_\_

If you have had other tests or procedures in the past six months, please write down the tests and the locations where they were performed.

Test	Testing Date	Location

- You are allowed to eat on the day of testing.
- Take your medicines on the day of testing as you usually do, unless you have been instructed by your physician to stop taking them.
- If you smoke, please stop immediately! If you have difficulty quitting, please contact your surgeon's office.
- If you have had blood tests, an EKG or a chest x-ray at Rhode Island or The Miriam hospitals, please notify the staff.

Bring all your medication containers (prescription and nonprescription) with you to the testing area. If you keep a current record of the medications you are taking, please bring it in as well. The team members interviewing you will want to see it.

If you have advance directives (power of attorney, health care proxy, and/or living will), please bring copies of these documents to be placed in your chart. If you do not know what they are, please ask the pre-admission testing staff.

If there are any changes in your physical condition after your pre-admission testing appointment, it is important that you notify your surgeon's office. These changes might include:

- Any changes in your medications
- Any new illness or changes in your health
- Fever
- Sore throat
- Increased coughing
- A cold or virus
- Any change in your dental health
- Any other conditions that concern you

## Overview of Cardiothoracic surgery

pre-admission testing	day before surgery	1st day post surgery	2nd day post surgery	3rd day post surgery	4th day post surgery	5th day post surgery
<p><b>You will have:</b></p> <ul style="list-style-type: none"> <li>• Blood work</li> <li>• Electrocardiogram</li> <li>• Chest X-ray</li> <li>• Urine test</li> <li>• Physical exam</li> </ul> <p><b>You will be seen by:</b></p> <ul style="list-style-type: none"> <li>• Nurse</li> <li>• Anesthesiologist</li> <li>• Nurse practitioner</li> </ul> <p><b>Expect to:</b></p> <ul style="list-style-type: none"> <li>• Review past medical history and current health</li> <li>• Discuss your surgery and answer questions</li> <li>• Discuss discharge needs</li> <li>• Review medications to be taken</li> <li>• Review educational materials</li> </ul> <p>You will be given a special soap (Hibiclens) to shower with.</p>	<p>Shower with special soap.</p> <p>Nothing to eat or drink after midnight.</p> <p>You may take medicine with small amounts of water.</p> <p>Give items such as dentures, glasses and hearing aids to someone to hold for you during surgery.</p> <p>Arrive at the Admitting Office at scheduled time.</p> <p>You will take medication to help you relax and sleep.</p> <p>After surgery, your family may visit you in the ICU.</p>	<p><b>You will have:</b></p> <ul style="list-style-type: none"> <li>• Oxygen</li> <li>• Blood work</li> <li>• X-rays</li> <li>• Some tubes removed</li> </ul> <p><b>You will be:</b></p> <ul style="list-style-type: none"> <li>• On a cardiac monitor</li> <li>• Sitting in a chair</li> <li>• Performing breathing exercises</li> <li>• Drinking clear liquids and eating Jello</li> </ul> <p>Family may make short visits.</p>	<p><b>You will have:</b></p> <ul style="list-style-type: none"> <li>• Oxygen</li> <li>• Blood work</li> <li>• X-rays</li> <li>• Some tubes removed</li> </ul> <p><b>You will be:</b></p> <ul style="list-style-type: none"> <li>• On a cardiac monitor</li> <li>• Sitting in a chair</li> <li>• Eating regular food</li> <li>• Walking with help</li> </ul> <p>Family may make short visits.</p>	<p><b>You may have:</b></p> <ul style="list-style-type: none"> <li>• Oxygen</li> <li>• Blood work</li> <li>• X-rays</li> <li>• Some tubes removed</li> </ul> <p><b>You will be:</b></p> <ul style="list-style-type: none"> <li>• On a cardiac monitor</li> <li>• Walking with or without help</li> <li>• Questioned about bowel movements</li> </ul> <p><b>Expect to:</b></p> <ul style="list-style-type: none"> <li>• Participate in cardiac rehab</li> <li>• Discuss discharge plans</li> <li>• Learn to care for your incisions</li> <li>• Review information on food and drug interactions</li> <li>• Visit with dietitian</li> </ul>	<p><b>You may have:</b></p> <ul style="list-style-type: none"> <li>• Oxygen</li> <li>• Blood work</li> <li>• X-rays</li> <li>• Some tubes removed</li> </ul> <p><b>You will be:</b></p> <ul style="list-style-type: none"> <li>• On a cardiac monitor</li> <li>• Walking and bathing by yourself</li> </ul> <p><b>Expect to:</b></p> <ul style="list-style-type: none"> <li>• Participate in cardiac rehab</li> <li>• Discuss discharge plans and teaching</li> </ul> <p>The person taking you home should arrive at the hospital by 9 a.m. the day of your discharge.</p> <p>Have them bring loose, comfortable clothes for you to wear home.</p>	<p><b>You may have:</b></p> <ul style="list-style-type: none"> <li>• Oxygen</li> <li>• Blood work</li> <li>• X-rays</li> <li>• Some tubes removed</li> </ul> <p>If you are being discharged, expect to:</p> <ul style="list-style-type: none"> <li>• Review discharge plans</li> <li>• Receive new prescriptions</li> <li>• Review medication instructions</li> </ul> <p>Be sure all your questions are answered before you leave!</p>

This grid represents a rough approximation of a typical patient's course of care, and should be considered a general (rather than precise) timeline.

## The Day Before Your Surgery

- Do not smoke or drink alcoholic beverages.
- Do not eat or drink anything after midnight the night before your surgery. You may take small sips of water with any pills you have been told to take the night before and morning of surgery.
- Your team will give you the name of a special antibacterial soap. Wash with this soap on the night before your surgery and in the morning on the day of your surgery. See your surgical care team for more specific instructions on how to use this soap.

## The Day of Your Surgery

- Please arrive at the hospital at the time specified by your surgeon's office.
- You must have someone drive you to the hospital on the day of surgery.
- Remove all make-up, hairpins, contact lenses, nail polish, artificial nails and jewelry.
- Please do not bring a wallet, purse or jewelry (including your wedding rings). If you do, you must make arrangements for the person who brings you to the hospital to take

them. You should bring eyeglasses or hearing aids, if you have them.

- We will provide a hospital gown, slippers and toiletries. The things you anticipate needing after surgery may be brought to you by your visitors (e.g., reading material and puzzles). You will not need them before surgery.
- A relative or friend may stay with you intermittently until you are called to surgery. If you wear dentures (false teeth) or a partial plate, glasses or a hearing aid, we will ask you to remove them just before you go to surgery.
- Please identify one person in your family who will call the nursing units for updates on your condition. That person can then notify the rest of the family if necessary.
- The average length of surgery is from three to five hours. You will be asleep during the entire operation.

## After Your Surgery

When your surgery is over, your surgeon will go to the waiting room to speak with your family, or if they prefer, the surgeon will call them at home. If your family chooses to wait at the hospital, please tell them to stay in the waiting area until the surgeon has spoken to them.



You will be transferred to the Cardiothoracic surgery Intensive Care Unit while you are still asleep. There is approximately one hour between the time you are taken into the unit and the time family members are allowed to visit. During that time, your nurses, physician assistants, doctors and anesthesiologist will settle you in, give reports, perform tests and ensure that you are stable and that it's safe to have visitors. This is a good time for your family to stretch and have something to eat.

After an hour, your designated family contact may call into the unit to see if you are able to have visitors. The number of visitors and length of visits might be limited, depending on the overall situation in the unit at that time.

Over the next four to eight hours, you will gradually wake up. Several tubes and monitors will have been placed while you were asleep. Some of them are:

- **Heart monitor.** Small adhesive patches attached to your chest to continuously monitor your heart rate and rhythm.
- **Pacing wires.** Tiny wires from the lower portion of your chest attached to an external pacemaker to improve your heart rate and/or rhythm.
- **Intravenous (IV) lines.** A small tube inserted in a vein to deliver fluid and medications to the body.

- **Swan-Ganz catheter.** A larger tube inserted in a vein near your neck. It is connected to a monitor to measure the pressures in your heart and lungs.
- **Arterial line (A-line).** A tube inserted in an artery (usually in the wrist) to measure your blood pressure.
- **Foley catheter.** A tube inserted in your bladder to drain urine.
- **Chest tubes.** Tubes placed in your chest to drain blood and other fluids that commonly collect in the chest after surgery. The tubes are connected to special containers, which make a bubbling noise.
- **Endotracheal tube (breathing tube).** A tube placed in your trachea (windpipe) to assist with your breathing. You will not be able to speak or drink while this tube is in place. Your nurse will help you communicate your needs. This tube is usually removed within eight hours after surgery. Most people do not remember this.

There will be a lot of bright lights, loud alarms and other noises. There will be nurses at your bedside to monitor and examine you. Many tests will be performed, including blood tests, EKGs and chest x-rays. This is all part of a normal recovery from heart surgery.

During this time, you will be receiving pain medication through your intravenous line. When you are able

to take medications by mouth, you will change to pain medication in pill form. We realize that pain is a personal experience. For that reason, you must let us know if you need additional pain relief.

Pain can be controlled by both medication and non-medication methods. Non-medication methods might include deep breathing, meditation and visualization.

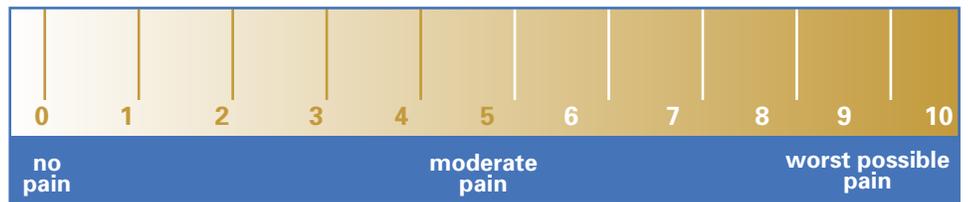
### Intermediate Period

As you recover, all the tubes and monitors will be removed. You will start to eat. In addition, you will begin a walking program, sit up in a chair, and perform specific breathing exercises to prevent pneumonia and blood clots. The exercises will help you regain your strength and endurance.

You might need the help of a nurse when you start to move around. As your activity increases, you might experience some discomfort. Please let your nurse know so you can receive the pain relief necessary to do the things you need to do to recover from heart surgery.



When you report pain, we will ask you to describe it to us according to the following scale:



### Rehabilitation Period

The last phase of your hospital stay involves becoming more independent in performing your regular daily activities. You will be working with members of the rehabilitation team to learn exercises that will help you move around more easily. Your ability to walk up and down the stairs might also be evaluated. We will monitor your heart during your work with the rehabilitation team.

During this time, nurses and other members of your health care team will teach you about your medications and diet and give you instructions to follow when you are at home.

Our physical therapists and nursing staff will show you exercises to help speed your recovery and will provide

information to help you maintain a healthy lifestyle. You will begin exercising as early as two days after surgery.

### Visitors

We understand that visitors have therapeutic value in the healing process; however, we also recognize the need for patients to have time to rest and recover. We ask that visitors keep visits short and limit the number of visitors to only two family members at a time. Children under 12 are discouraged from visiting, and we respectfully ask any visitor with a cold or other contagious condition to stay home. Please refer to our hospital Welcome Guide for more information about visitation policies.

### Getting Ready to Go Home

Before you are discharged from the hospital, your nurse will prepare an instruction sheet, which will include:

- a medication calendar
- a list of what you can do (such as shower every day) and cannot do (such as driving and housework)
- a schedule of when to see your surgeon, your cardiologist and your family doctor. Please ask questions if any of the instructions are not clear to you.

We recommend that you have someone stay with you during your first few days at home. You will also need someone to make sure you have proper meals and transportation to your follow-up appointments with your doctors.

Your case manager will visit you after your surgery to discuss your discharge plan and services available to you after you leave the hospital. Some services and the length of these services might require approval from your health insurance company. Your case manager will review your insurance plan with you to determine what is covered and what is not covered. **Services include:**

### **Home Care**

If you decide to have home health care, your case manager will give you the phone number of your home care agency. The agency will send a nurse to see you the day after you are discharged. Home care nurses ensure that you understand your instructions. They listen to your heart and lungs, look at your incisions, and perform medical treatments as ordered by your physician. If needed, certified nursing assistants; social workers; and speech, physical, occupational and respiratory therapists are also available. Laboratory staff can come to your home to draw blood, if necessary. These visits will not take the place of someone caring for you at home.

### **Alternate Nursing**

If you do not have help available to you at home and feel you might temporarily need a nursing facility, please let us know as soon as possible. Your case manager will work with your insurance company to arrange this. You do not have to arrange your own transportation. This can be an option if you are not quite ready to go home but do not require a hospital stay.

### **Acute Rehabilitation**

If you no longer need to be in the hospital but need more extensive services such as medical treatments, physical, occupational and/or respiratory therapy, you may choose an acute rehabilitation facility. Options include long-term acute care, and skilled nursing facilities. Your case manager will arrange your transfer.

Your case manager will work with your insurance company to arrange for services, if you should need them. Please discuss these options with your family as well as with your health care team. Together, we can help you receive the care you need after you leave the hospital.

### **Insurance and Billing**

At the end of your visit, the hospital will bill your insurance company for all services you received that are covered by your policy. Once payment is received from your insurance company, the hospital will bill you for any balance remaining on your account or for any services not covered by your policy. Payment for deductibles and/or co-payments should be made before you leave the hospital.

Certain charges are not billed by the hospital and will not appear on your hospital statement. These include the fees of your personal physician, specialists who participate in your care and/or private duty nurses. You may receive a separate bill for their services, often under different names. Please be aware that these charges may or may not be covered by your insurance policy.

If you have any questions regarding your hospital bill, please call the telephone number on your bill or contact a customer service representative at 401-444-6966.

### General Instructions

- Take your oral temperature each day.
- Record your weight daily.
- Walk at least twice a day.
- Keep your legs elevated when you're not walking.
- Shower every day with antibacterial soap.
- Women: make sure you wear a bra without an underwire every day. It might be more comfortable to sleep with the bra at night. This helps to decrease the amount of pressure on your chest incision.

If you notice any of the following, please contact your cardiac surgical team:

- Redness, swelling, extreme tenderness or drainage from your leg incisions (a small amount of red, pink or clear drainage is normal)
- Any drainage from your chest incision
- Angina symptoms (chest discomfort, shortness of breath, arm numbness, etc.) that you had before surgery
- Pain in chest, neck or shoulder that is worse with deep breathing
- Fever of over 101.5°F, or chills and/or shaking
- Shortness of breath at rest
- Weight gain of over 2 to 3 pounds for 2 to 3 days
- Increased swelling of the legs or feet
- Feeling progressively more tired without improvement for 2 to 3 days
- A fast, slow or irregular heartbeat
- Severe bleeding or bruising (for no known reason)

We encourage you to continue your exercise program after you leave the hospital. Please refer to the Cardiac Rehabilitation Program guidelines. You should discuss outpatient cardiac rehabilitation with your cardiologist at your first postoperative office visit, and see the exercise section in this booklet.

### Bathing Instructions

Beginning on the fourth day after surgery, shower every day with antibacterial soap (such as Dial). Have someone with you the first time you take a shower. If you are unable to shower, please let us know.

- Wash from head to toe, avoiding dirty water on clean skin.
- Wash over incisions lightly (if using a wash cloth, use a clean one for each incision).



- Wash and rinse the groin area well with warm, not hot, water before washing leg incision. Bacteria from the groin are often the bacteria that are found in infected incisions. Therefore, after washing your groin, use a different wash cloth to wash your leg incision.
- Pat dry with a clean towel.

### Incision Care Instructions

- It is important that you inspect your incisions every day.
- Do not put lotion or ointments directly on incision line unless ordered by your doctor.
- Leave incisions open to air, unless they are oozing (you may apply a dry sterile dressing — change as needed, but at least every 24 hours).

### Signs of Normal Healing

- Redness along incision line
- Not tender or slightly tender to touch
- Small amount of thin, bloody or clear drainage on leg incision
- No skin temperature change along incision
- Leg swelling slowly resolving

Call your doctor if you notice:

- Increased area of redness along incision line
- Extremely tender to touch

- Large amount of drainage or any white, green or yellow drainage on leg incision or any drainage on chest incision
- Incision warm to touch
- Sudden increase in leg swelling

### Other Things to Expect

You might experience different feelings and sensations in the early recovery period after surgery. The following information will help both you and your caregiver to sort out what is normal and what is not. Please continue to turn to your health care provider with any questions.

### Sensations

You might feel numbness along your incisions and might notice some soreness or a pulling sensation around your chest incision. Shoulder and neck aches, as well as breast pain in women, are also possible. If the sensations you feel are similar to the chest discomfort (angina) you felt before surgery, please notify your cardiothoracic surgery team.

### Sleeping

You might have difficulty sleeping your first few nights home from the hospital. A regular routine including exercise, a balanced diet, and going to bed at the same time each night will help. It is normal to feel tired for about one month after cardiothoracic surgery. You may rest in between activities and take one or

two 20-minute naps, but avoid frequent napping. Your nurse can show you how to use pillows to reduce soreness from the incision. Some patients sleep in a recliner chair for the first several nights at home.

### Changes in Your Body

When you go home, you might feel tired, sore and unable to move around as well as you did before surgery. Over the next month you will notice that you will gradually begin to feel better and move and sleep more easily. The exercises and walking program you were given in the hospital will help you build up your activity tolerance and improve how you feel overall. It is normal to lose about 10 or 15 pounds after cardiothoracic surgery.

### Nutrition

You might notice a loss of appetite after surgery and food might not taste good to you. It is important to eat a balanced diet so your body can heal itself. A dietitian is available to you while you are in the hospital. Eating small, frequent meals can help you increase the amount of food you eat in a day. Your taste and appetite will gradually return to normal in a few weeks.

The medications you are taking might cause constipation. In addition to the stool softener you are taking, you may try whole grain cereals, fruits and fruit juices (especially prunes and prune juice).

## Mood Swings

After surgery many patients feel sad, depressed, anxious, fearful, stressed and/or emotional. These are very real and very normal feelings. We encourage you to discuss them with your medical team as well as with your family and friends. There are also professionals, in and out of the hospital, who can help you if these feelings become overwhelming. These feelings will go away as your body begins to heal and as you regain your strength and become more independent.

## Sexuality

Resuming sexual relations is a common concern for patients. You and your partner should feel free to openly discuss this with your cardiac surgical team. It is usually fine to participate in sexual activities when you are feeling well and strong and can walk up 2 to 3 flights of stairs without difficulty. If you begin to notice you feel tired, short of breath, have a fast or irregular heart rate or have chest discomfort during sexual activity, you should stop, just as you would with any other strenuous activity.

## Other Things You Can Do

There are many risk factors associated with coronary artery disease. You cannot control factors such as gender, age and family history, but there are some factors you can control.

risk factor	what you can do
<b>Cholesterol</b>	Eat a low-fat diet. Use the information about diet in this packet. If you have questions, ask your doctor to refer you to a dietitian. Know your cholesterol numbers. You should aim for a high HDL (good cholesterol) and a low LDL (bad cholesterol).
<b>Blood Pressure</b>	Know your numbers. Check your blood pressure on a regular basis. Ask your doctor what your blood pressure goal should be.
<b>Diabetes</b>	Decrease the amount of sugar you eat. Control your blood sugar. If you have diabetes, your health care provider should teach you how to control your blood sugar.
<b>Smoking</b>	Quit! If you have trouble quitting, talk to your health care provider.
<b>Weight</b>	Maintain your goal weight. If you do not know what your goal weight is, ask your doctor. If you are having trouble losing weight, let your doctor know.
<b>Exercise</b>	Just Do It! You can improve your cholesterol, blood sugar and blood pressure as well as decrease the chance that you will get heart disease just by walking for 30 minutes, 3 to 4 times per week.

### Activities at Home

You will be excited to be at home, but you might be weak and tire easily. It will be tempting to do more than the recommended activity; however, keep in mind that moderation is important. Pace your activities and do not feel discouraged. Allow yourself at least one nap or rest period a day, and try to avoid interruptions by phone or visitors while you're resting.

### Conserving Your Energy

- Plan your time to avoid rushing.
- Space your activities to allow your heart to rest. Do not try to do all your chores in the morning. Do some chores in the afternoon and some in the evening. Rest in between and do not rush.
- Breathe evenly and move slowly throughout any activity
- Plan your work for the day and for the week. Spread out harder tasks; alternate an easy task with a hard one.
- Take rest periods. If you get tired, no matter what you are doing, stop and rest (or nap) for 15 to 30 minutes. Do not push yourself to clip the hedges or mow the lawn (check with your doctor before resuming).
- Avoid prolonged holding or repetitive arm movements.

- Stay in your comfort range for activity. Avoid extended reaching overhead and bending forward.
- Sit to work. Slide items. Avoid excessive lifting, pushing, or pulling. Use wheels to transport.
- If your bedroom is up a flight of stairs, your doctor might suggest that you climb them only once a day, that you take only a few steps at a time and that you rest in between.

### General Tips to Remember

- Do not eat very large meals. Eat slowly; do not rush.
- Try to avoid situations, people and topics of conversation that upset you or make you tense or angry. Your heart works harder when you are very angry, tense or afraid.
- Avoid being in very cold or very hot temperatures. In the summer, plan your outdoor activity during the cooler time of the day. If you go out on a very cold, windy day, cover your mouth and nose with a handkerchief and avoid taking deep breaths of cold air.
- Plan a 20 to 30 minute rest period at least twice a day, once in the morning and once in the afternoon. You do not have to go to bed, just rest.





- Try to get at least six to eight hours of sleep each night. Do not stay up very late one night and try to catch up the next night. However, if you do plan to stay up late, take a nap beforehand.
- Working with your arms above shoulder level is harder on the heart than working with them below shoulder level. Have someone rearrange your cabinets so things you use often are at or below waist level. If you must have things in higher cabinets, place the articles you use most often in the front. Initially, avoid washing windows, hanging clothes on the line and reaching for things above shoulder level.
- Avoid doing anything that tenses your body, such as lifting anything heavy (children, groceries or suitcases); pushing or pulling heavy objects; straining with bowel movements (ask your doctor for a laxative); trying to open a stuck window or unscrew a jar lid.

### Exercise Guidelines

On your first day home, you **should not exercise**. Begin your exercises on the second day after leaving the hospital. These exercises will be familiar to you because they are the same ones you performed during your hospitalization.

### Tips to Remember

- Rest for 15 to 30 minutes whenever you are tired.
- Follow all exercise periods with rest periods.
- Try to do the exercise program in the earlier part of the day when you have more energy.
- Do **NOT** strain with the exercise or stretch beyond what is comfortable.
- Do **NOT** hold your breath while exercising.
- Remember, you are **NOT** competing with anyone while exercising. Don't push yourself!

With exercise it is normal to notice you are breathing faster and your heart rate increases. You can also expect to sweat and to have some muscle fatigue.

HOWEVER, be sure to stop exercising and rest if you have any of the following **symptoms of intolerance**:

- A pounding/racing heartbeat, or a sense of skipped or irregular beats
- Chest discomfort or pressure
- Moderate or profound shortness of breath
- Sudden fatigue, weakness, dizziness or lightheadedness

If you do experience any of these symptoms:

- Stop the activity
- Sit down and rest
- Practice slow breathing

When symptoms subside, you may continue exercising. Check with your doctor if the symptoms persist.

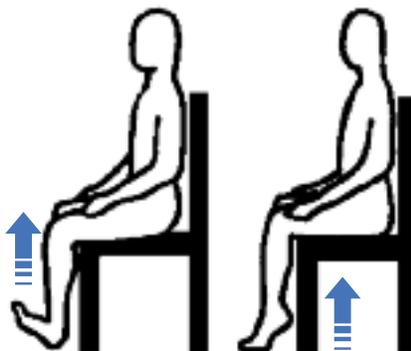
## Warm Up and Cool Down Exercises

On your second day home you should start walking or using a stationary bike.

Prior to doing your walking/biking you need to warm up to prepare the body for exercise by gradually increasing the heart rate and blood pressure, as well as loosen up the joints and ligaments to prevent muscle cramping and strains. You will repeat the warm up exercises after you complete your walking/biking in order to return your body to its resting state (cool down).

Each of these exercises is done 5 to 7 times each up to a total of 10 to 15 repetitions.

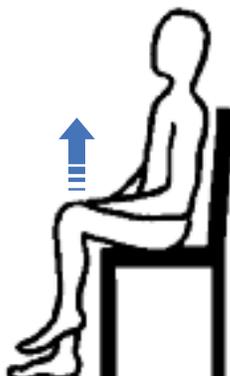
### 1. Ankle Pumps or Heel to Toe



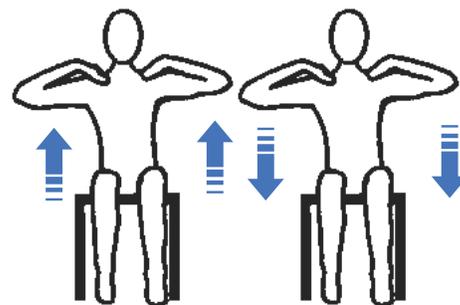
2. **Knee kicks:** straighten one knee, return to the floor and repeat with the other leg.



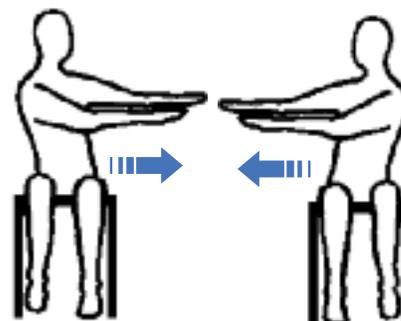
3. **Hip Flexion:** Lift your knee to the ceiling, keeping the knee bent. Return to the floor and repeat with the other.



4. **Arm Circles:** with hands on shoulders (forward and back).



5. **Trunk Twists:** with knees spread apart and feet flat on the floor, reach with both arms (twisting shoulders and upper body) toward the outside of either knee using the sequence: reach right, middle, the left, and middle.



## Walking

When you are at home, walk at least as much the first week as you did in the last few days of your hospitalization. Gradually increase your total walking time in minutes. Stop and rest if you have any of the symptoms of exercise intolerance.

If the weather is pleasant, walk outdoors, but avoid hills and inclines. In bad weather, consider going to an enclosed shopping mall during off-peak hours, where you can walk in comfortable surroundings. You may use a treadmill if it is available, but it must remain level, as it is much more work for the heart to walk uphill rather than on level ground.

## Biking

You may also ride a stationary bicycle instead of walking. Just be sure the resistance (the force you pedal against) is set to zero.

Below is a chart which tells you how to increase your walking/biking. Progress to the second week (and so on) providing you do not have any symptoms of exercise intolerance (weakness, excessive shortness of breath, dizziness, etc).

Don't forget to repeat the pictured exercises for your cool down.

Refer to the Exercise Journal at the end of this section to chart your exercise progress.

For any questions, please call the physical therapy department at 401-444-8632

## Your Next Step

You should have seen your surgeon by the fourth week. At this point, don't forget to ask your doctor about increasing your walking time as well as lifting restrictions/limitations. Most importantly, ask about joining an **outpatient cardiac rehabilitation program**. Cardiac rehabilitation is the next step in your recovery process. You are entitled to these services through your health insurance benefits.

Outpatient cardiac rehabilitation is a program that consists of exercise, education, and behavior modification to assist in recovery from open heart surgery. In addition, you will be given the tools and knowledge needed to lead a healthier lifestyle and prevent future cardiac problems. Refer to the list of outpatient cardiac rehab programs at the end of this section to choose the one closest to you.

Any questions regarding outpatient cardiac rehabilitation can be directed to 401-793-5811.

walking / biking guidelines	
1st week	10-15 minutes
2nd week	15-20 minutes
3rd week	20-25 minutes
4th week	25-30 minutes

## Outpatient Cardiac Rehabilitation Programs

### The Miriam Hospital Center for Cardiac Fitness

208 Collyer Street  
Providence, Rhode Island 02903

Tel: (401) 793-5810

Fax: (401) 793-5815

### Newport Hospital Cardiac Rehabilitation Program

(Vanderbilt Rehabilitation Center)

Borden Carey Room 160

Powell Avenue

Newport, Rhode Island 02840

Tel: (401) 845-1179

### Landmark Heart Center

186 Cass Avenue

Woonsocket, Rhode Island 02895

Tel: (401) 769-9355

### South County Hospital Cardiac Rehabilitation Program

100 Kenyon Avenue

Wakefield, Rhode Island 02860

Tel: (401) 782-8020 ext. 3484

### Cardiac Rehabilitation at Memorial Hospital of Rhode Island

111 Brewster Street

Pawtucket, Rhode Island 02860

Tel: (401) 729-2503

Fax: (401) 729-3050

### Massachusetts:

### Sturdy Memorial Hospital Cardiac Rehabilitation Program

211 Park Street

Attleboro, MA 02703

Tel: (508) 236-7390

### Charlton Memorial Hospital Cardiac Rehabilitation Program

363 Highland Avenue

Fall River, MA 02720

Tel: (508) 679-7076

### St. Anne's Hospital Cardiopulmonary Rehabilitation Program

795 Middle Street

Fall River, MA 02720

Tel: (508) 674-5600 ext. 2392



## Exercise Journal

Please use this journal to track your exercise program. Your physical therapist will show you how to fill it out.

shortness of breath scale (SOB)	
0	No shortness of breath
1	Mild - noticeable
2	Mild - some difficulty
3	Moderate difficulty
4	Severe difficulty breathing

rate of perceived exertion scale (RPE)	
How hard are you exercising?	
0	No exertion
1	Very light exertion
2	Mild - some difficulty
3	
4	Moderate exertion
5	
6	Exercising hard
7	
8	Exercising very hard
9	
10	Maximum exertion

week \_\_\_\_\_

day	date	exercise	distance	RPE	SOB	comments
Sunday						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						

week \_\_\_\_\_

day	date	exercise	distance	RPE	SOB	comments
Sunday						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						

week \_\_\_\_\_

day	date	exercise	distance	RPE	SOB	comments
Sunday						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						

week \_\_\_\_\_

day	date	exercise	distance	RPE	SOB	comments
Sunday						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						

week \_\_\_\_\_

day	date	exercise	distance	RPE	SOB	comments
Sunday						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						

week \_\_\_\_\_

day	date	exercise	distance	RPE	SOB	comments
Sunday						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						

## Internet

www.heart.org  
www.nhlbi.gov/health/public/heart  
www.choosemyplate.gov  
www.diabetes.org

## Magazines

*Harvard Heart Letter*  
*Cooking Light*  
*Tufts University Health &  
Nutrition Letter*  
*Nutrition Action Health Letter*

## Books

*The Spectrum: A Scientifically Proven  
Program to Feel Better, Live Longer,  
Lose Weight, and Gain Health*  
by Dean Ornish, MD

*American Heart Association Complete  
Guide to Women's Heart Health:  
The Go Red for Women Way to Well-  
Being and Vitality*  
by American Heart Association

*How to Keep From Breaking Your  
Heart: What Every Woman Needs to  
Know About Cardiovascular Disease*  
by Barbara H. Roberts, MD

*The CalorieKing Calorie, Fat &  
Carbohydrate Counter 2011*  
by Allan Borushek

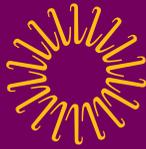
## Cookbooks

*American Heart Association Low-Fat,  
Low-Cholesterol Cookbook, Second  
Edition: Heart-Healthy, Easy-To-  
Make Recipes That Taste Great*  
by American Heart Association

*Diabetes and Heart Healthy Cookbook*  
by American Diabetes Association  
and American Heart Association  
(Oct 1, 2004)

*American Heart Association Low-Salt  
Cookbook, 3rd Edition: A Complete  
Guide to Reducing Sodium and Fat in  
Your Diet*  
by American Heart Association





# Cardiovascular Institute

Rhode Island Hospital • The Miriam Hospital  
*Lifespan Partners*

Cardiothoracic Surgery,  
a program of the Cardiovascular Institute  
at Rhode Island and The Miriam hospitals

593 Eddy Street  
Providence, RI 02903

164 Summit Avenue  
Providence, RI 02906

[CVIRI.org](http://CVIRI.org)