

Perfecting the Surgical Journey



*Insert  
Your Institution's  
Name or Logo  
HERE*

# ERAS<sup>®</sup> Cardiac PATIENT EDUCATION

Your Journey to a Successful Recovery  
from cardiac surgery

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# Program Welcome Letter

Welcome to ***Insert name of institution.***

Thank you for trusting us with your care. We want this experience to go as smoothly as possible for you and your loved ones. A positive healthcare journey begins with education.

This book will help you and your caregivers understand what to expect during and after your heart surgery at ***Insert name of institution.***

We are committed to providing the highest quality of care and keeping you well informed about your health. A member of your heart care team will be happy to answer any questions you have before, during, and after your stay with us. We help our patients make successful recoveries using a special protocol called Enhanced Recovery After Surgery (ERAS® Cardiac). It is now a nationally recommended protocol.

Once again, thank you for choosing ***Insert name of institution.***

Sincerely,

Your Cardiothoracic Surgery Team

# Meet Our Team

Cardiac surgery has been shown to improve a patient's quality of life, alleviate debilitating symptoms and increase longevity. On behalf of the ***Insert name of institution*** Cardiac Surgical Team, we want to share our commitment to patient-centric care and safety.

We know how precious life is and pledge to get you through your surgical journey safely and effectively.

***Add Photos & Bios of Team Members***

# Learn About

*Insert name of institution.*

*Content Considerations to insert*

*Patient and visitor information*

*Amenities: Campus map, food options, parking, local hotels, gift shop, ATM, key phone numbers, and pharmacy services.*

*Visitor policy (hyperlink to policy)*

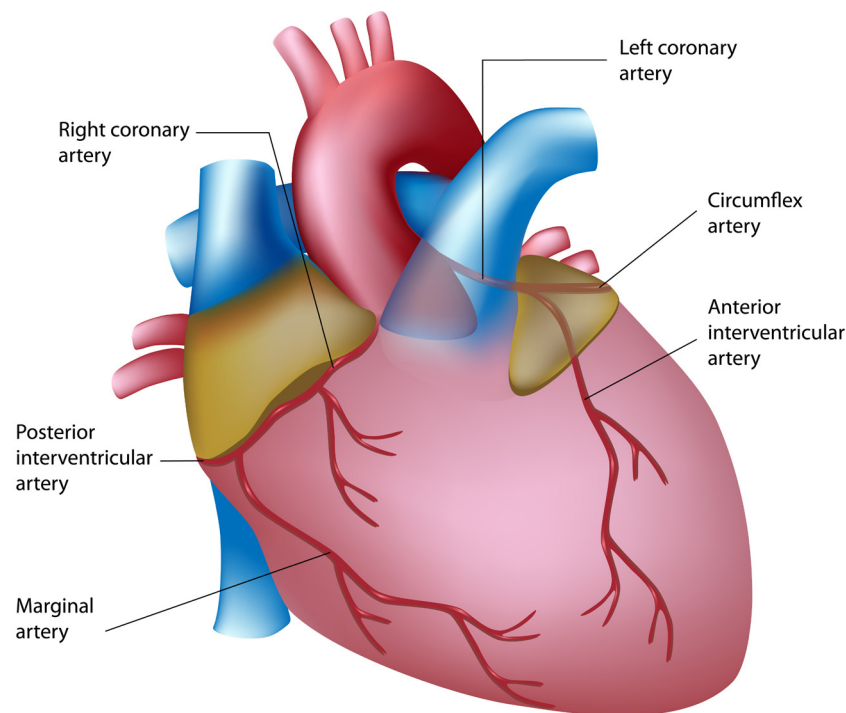
*Spiritual, Integrative Medicine, Holistic Care service available.*

*Insert image of institution here.*

# Understanding Heart Disease

The heart is a muscle about the size of a clenched fist. The heart receives oxygen-rich blood from the coronary arteries on the outside of the heart. The heart needs enough blood supply to pump blood to the rest of your body efficiently.

Coronary artery bypass graft surgery (CABG) is completed by taking a vein and/or artery from another part of the body (from the leg or arm) and using it to go around or bypass the blockage. This makes better blood flow to the heart possible.



# Understanding Valvular Heart Disease

The heart has four chambers separated by tissue called the septum. Four valves in the heart assist in pumping blood through the heart to the lungs and body. The valves work much like one-way doors. They allow blood to move in one direction, from one heart chamber to the next.

**Aortic valve:**

between the left ventricle and aorta.

**Pulmonic valve:**

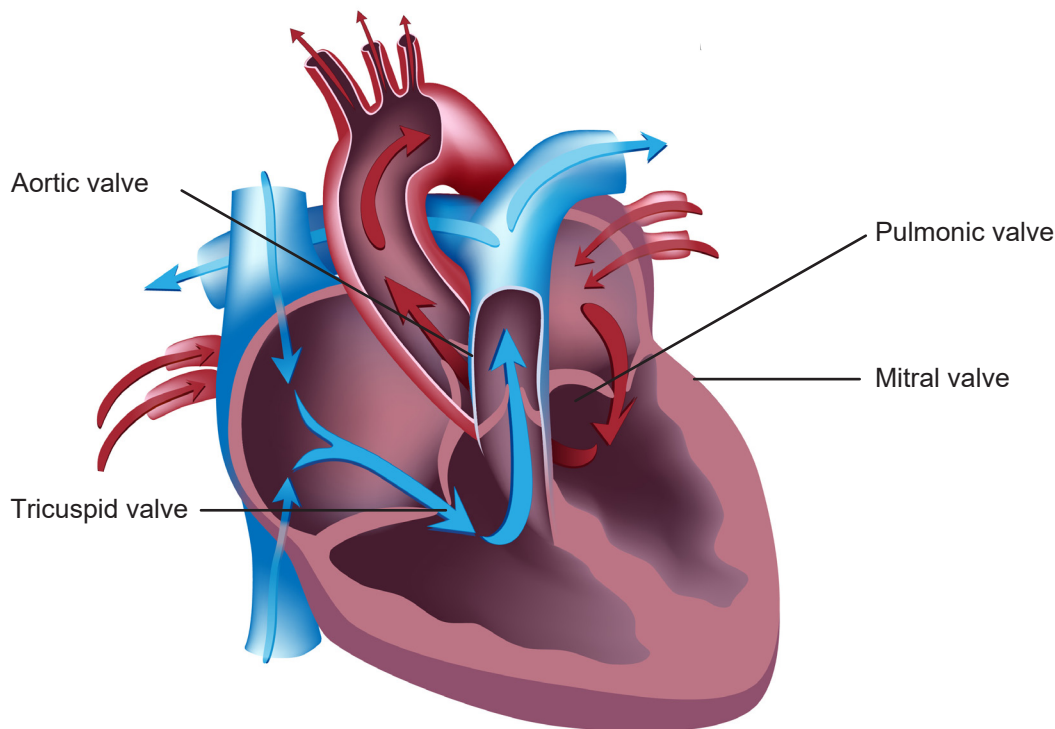
between the right ventricle and the lungs.

**Tricuspid valve:**

between the right atrium and the right ventricle.

**Mitral valve:**

between the left atrium and left ventricle.



# Understanding Valvular Heart Disease

**Stenosis-** the term used for a blocked valve. This narrowing prevents the valve from opening all the way.

**Insufficiency/Regurgitation-** The term used for a leaking heart valve. When the valve from one chamber does not close all the way after each heartbeat, blood leaks backward into the chamber it started from (regurgitation).

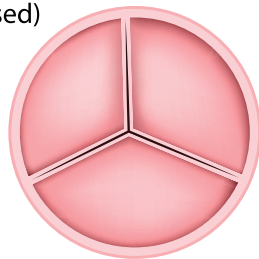
## Treatment of Valvular Heart Disease

Valvular heart disease varies from person to person. Depending upon the type of disease and severity of symptoms, valvular heart disease may be treated with medications, catheter-based procedures, or surgery. Valves can either be repaired or replaced.

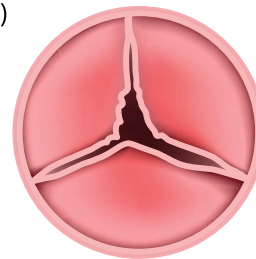
The two types of artificial heart valves used to replace a damaged valve are biological (animal tissue) and mechanical (metal and/or plastic) valves. Your surgeon will discuss which valve type is best for you.

## HEART VALVE DISEASE

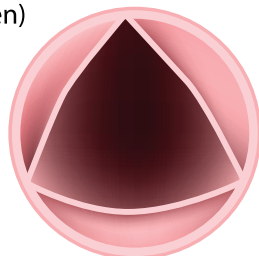
Normal valve  
(closed)



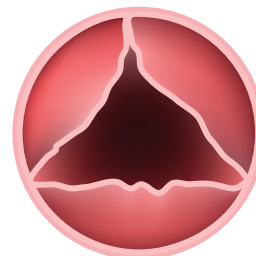
Valve stenosis  
(closed)



Normal valve  
(open)



Valve stenosis  
(open)





# Enhanced Recovery After Surgery (ERAS®)

ERAS® stands for Enhanced Recovery After Surgery. ERAS® for cardiac surgery patients is a modern approach to caring for patients throughout their surgical journey. The surgical journey begins before surgery and continues until the patient has returned to their activity baseline. ERAS® helps promote healing by combining the most up-to-date protocols to help patients prepare for surgery and for their recovery.

With ERAS® patients are active participants in their recovery journey.

## ERAS® to Reduce Complications

### Before Surgery ERAS®

- Stop smoking and drinking excessive alcohol
- Control blood sugar levels
- Reduce anxiety
- Improve exercise level
- Eat a Healthy diet
- Anxiety reduction
- Minimize fasting

### After Surgery ERAS®

- Early removal of the breathing tube, other tubes, wires, lines, and drains. Resume eating & drinking
- Early and frequent out of bed & walking
- Maintain manageable pain
- Return of bowel function
- Minimize use of opioids
- Control blood sugar levels
- Remove tubes and drains

Perfecting the Surgical Journey



# Pre-Surgery Preparation

Your surgery date: \_\_\_\_\_ Hospital arrival time: \_\_\_\_\_  
Stop taking ex: Eliquis 8/1/23 \_\_\_\_\_  
The morning of surgery:  
consume carbohydrate drink at: ex: 4:30-5am \_\_\_\_\_  
ONLY take ex: metoprolol \_\_\_\_\_ morning of surgery.  
Your surgeon: \_\_\_\_\_

## Outpatient (Admitted the same day as your surgery)

You will have your in-office appointment with the surgeon and your surgery will be scheduled. Following the decision for surgery you will need to complete the following testing and have the following meetings with healthcare providers. Examples below to consider include:

- Anesthesia consultation
- Diagnostic testing your surgeon has ordered.
- Nurse assessment & education meeting.
- Receive instructions on what to do the night before and the morning of your surgery.

You will check in at the patient registration desk and be directed to the preoperative area on the day of surgery.

## Inpatient (Admitted prior to your surgery)

Sometimes our patients need to be admitted prior to surgery while others are already in the hospital. Examples below to consider include:

- Orders are placed for diagnostic testing.
- Anesthesiology will discuss the anesthesia for surgery.
- Prehabilitation may be ordered (physical therapy, occupational therapy, nutrition, etc.)
- A healthcare provider will meet with you to discuss plan of care, what to expect and answer your questions.

# Pre-Surgery Checklists

## Checklist: For Preoperative Testing Day

- ☐ Education packet
- ☐ Skin prep (CHG soap)
- ☐ Carb loading beverage
- ☐ Incentive spirometer and instructions on how to use it
- ☐ Prescription for nasal decontamination
- ☐ Medication instructions (holds prior to surgery)
- ☐ Medication instructions (to take day of surgery)
- ☐ Arrival time for the day of surgery
- ☐ Information up to date
- ☐ Addressed any special needs for the day of surgery

## Checklist: Getting Ready For Surgery

- ☐ Complete nasal decontamination
- ☐ Bathing/shower night prior to surgery (CHG)
- ☐ Given arrival time for the day of surgery
- ☐ Contact information up to date
- ☐ Addressed any special needs for the day of surgery
- ☐ Heart healthy diet
- ☐ Remain active
- ☐ Anxiety reduction

## Checklist: Day Of Surgery

- ☐ No solid food after 12 midnight
- ☐ Clear liquids until 4 hours before surgery
- ☐ Take medication as instructed
- ☐ Consume carb beverage as instructed
- ☐ Nothing to drink after carb beverage
- ☐ Brush teeth
- ☐ Bathing/shower morning of surgery (CHG)
- ☐ Arrive at hospital at instructed time
- ☐ Contact information up to date
- ☐ Leave valuables at home or with family member
- ☐ If you wear contacts, do not wear them the day of surgery, please wear your glasses.
- ☐ Bring insurance card and photo ID to hospital, list of medications
- ☐ Bring CPAP machine if using one

# After Surgery

## Operating Room

During your surgery, you will have a breathing tube, chest tubes, temporary, pacing wires, IV lines, and a urinary catheter (tube in your bladder) placed. Your surgery will take anywhere from three to six hours.

### The Heart-Lung Machine

Traditionally during open heart surgery, a patient is placed on a heart-lung machine and does the work of the heart and the lungs throughout the procedure. The surgeons may choose not use a heart-lung machine for your surgery; that would be called “off-pump” or “beating-heart” surgery. Your surgeon, after careful review your situation, will decide which method is best for you. Each method has benefits and risks.

## Critical Care

Following surgery, you will be brought to a special intensive care unit where you will be closely monitored by a nurse and care team who are highly trained. You will have a breathing tube placed while you were in surgery, and you will have it for at least some of the time while you are in the intensive care unit. This is called being intubated. While you are intubated, you will not be able to speak. Our goal is to have the breathing tube out within 6 hours after surgery. When the breathing tube is removed (extubated), you will receive oxygen through your nose. Once extubated, using your incentive spirometer is important to prevent pneumonia. Taking deep breaths is very important. It will help keep your lungs working well.

Your nurse will monitor your heart rhythm and chest tube drainage, help you safely move, work with you on pain control and talk with you about your plan of care.

The surgeons and advanced practice providers (physician assistants and/or nurse practitioners) will see you daily during rounds on the unit. Your loved ones may be asked to briefly return to the family waiting room.

## Telemetry

Your next move will be to the Telemetry Unit which means your recovery is progressing. A heart monitor will be applied that will remain on until discharge. You will receive a heart-shaped pillow you can hold to your chest when you cough, sneeze, or move. The pillow will help you stabilize your chest.

Some things you can expect during your stay:

- Your care team will round daily
- Drains and lines will be removed
- Your blood sugar will be checked frequently
- Dressings may be removed and replaced
- You may have additional tests ordered
- Mobility to begin the evening of surgery by dangling on the side of the bed
- Walking with assistance on postoperative day one
- Walk in the hall 3-4 times daily
- Out of bed in a chair for all meals
- Use of incentive spirometer to take deep breaths.
- Eating as soon as you can
- Medications will be adjusted for heart rate, blood pressure, and swelling.



# Discharge Planning

Most patients continue their recovery safely at home after heart surgery. When you go home, a hospital case manager will arrange visiting nurse services. Most patients are discharged to home. Some patients may continue recovery at a skilled nursing facility; your hospital case manager will make these arrangements, including transportation to the facility when necessary.

Discharge occurs when the following milestones have been reached:

- Eating and drinking
- Walking safely
- Pain is controlled
- Heart rate and rhythm are regulated.
- Blood tests are stable.
- Fluid retention is resolving.

Patients are often ready for discharge 3-7 days after surgery. Most patients continue their recovery safely at home after heart surgery.

## Recovering At Home

- Wear compression TED stockings for four weeks.
- Continue coughing and deep breathing exercises with an incentive spirometer for two weeks.
- Take your temperature and weigh yourself at the same time every morning.
- Share your discharge instructions with all your healthcare providers, including the visiting nurse, cardiologist, and primary care doctor.
- Resume a normal daily routine of bathing and getting dressed in the morning.
- Try to get 6-8 hours of sleep every night; avoid stimulants (caffeine, nicotine)
- Talk to your family or friends about your feelings of depression or frustration. If your depression doesn't improve, talk to your healthcare provider.

**Stop any activity immediately if you feel short of breath, notice irregular heartbeats, feel faint or dizzy or have chest pain.**

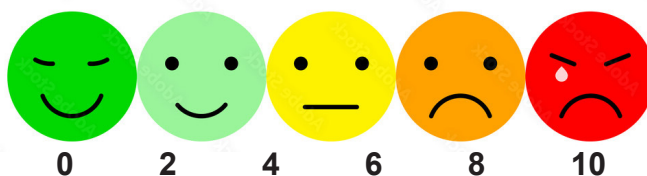
# PAIN MANAGEMENT

## Keeping Pain Tolerable

Uncontrolled pain is associated with increased blood pressure, heart rate. It can also impact appetite ability move and take deep breaths.

Although you will have some pain after surgery, the goal is to adequately control your pain AND minimize negative side effects from commonly used pain medications called opioids. Opioids can lead to nausea, excessive, drowsiness, constipation, confusion, delayed return of bowel function. You will be given multiple medications to help keep your pain tolerable. Some medicines (non-opioids) will be scheduled, and others (opioids) will be reserved for when your pain is not tolerable. You will be asked to rate your pain on a 0-10. 0 being no pain, and 10 being the worst you can imagine. A pain score of 4 is considered a tolerable level.

RATE YOUR PAIN:



### Distractions techniques to help control pain

- Watch TV
- Read
- Do crossword puzzles or games
- Listen to music
- Meditation

### Healing Therapies

Therapies - specially trained staff promote healing, comfort and relaxation, including:

- Healing Touch
- Aromatherapy
- Integrative Medicine consultation
- Breathing/relaxation techniques



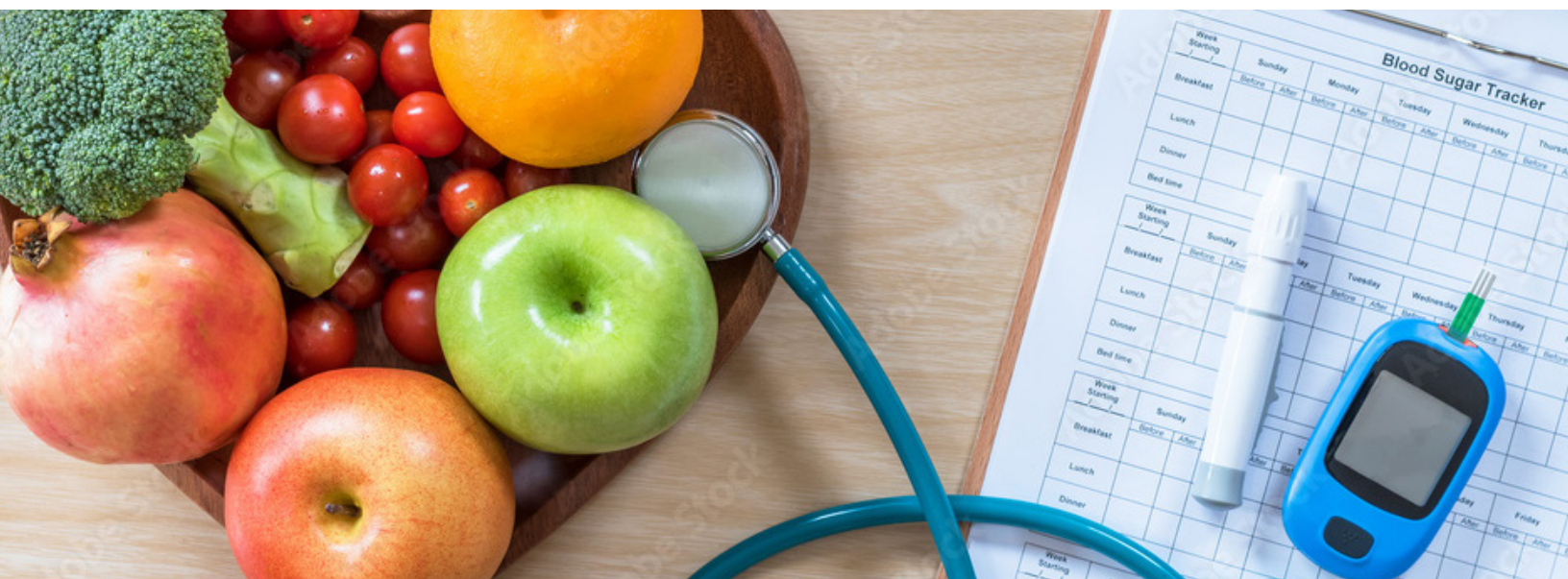
# BLOOD SUGAR CONTROL

## Blood Sugar Goals After Surgery

Controlling your blood sugar levels before and after surgery is important for wound healing and preventing infection.

Being in the hospital can make controlling your blood sugar level difficult for various reasons. Your diet may be different, you are less active, and you may receive medications that can cause your blood sugar levels to rise. To achieve this goal, we would like to partner with you to control your blood sugar levels before, during, and after your hospital stay. During your hospital stay, our goal is to keep your blood sugar levels in the 70-180 range. Please help us work with you to control your blood sugar levels by following the below recommendations:

- Make sure your blood sugar is checked **BEFORE** eating.
- Call your nurse before eating if your meal arrives and your blood sugar still needs to be checked.
- Finish drinking nutrition shakes within 2 HOURS of your meal.
- Talk with your nurse about healthy food options when you are hungry between meals or bedtime.





# ACTIVITY

## Movement After Surgery

Walking and moving after surgery is an important component of recovery after heart surgery.

Early walking after surgery can reduce the risks of complications such as pneumonia, blood clots, and constipation. Walking and moving around may accelerate the healing process and improve overall recovery. Tips to increase mobility include:

- Getting out of bed for all meals.
- Begin with short frequent walks and advance as tolerated to achieve 4-5 walks a day.
- Discuss pain control with your healthcare team if it is making it difficult to walk.



# ACTIVITY

## Getting Back to Normal Activity After Cardiac Surgery

For the next 6 weeks following your surgery, it is important to adhere to the following guidelines and immediately stop an activity if you experience discomfort or hear a clicking/popping sound.

✓	✗
<p>✓ Use both arms and keep them close to the body with elbows in, when:</p> <ul style="list-style-type: none"> <li>- Lifting any object</li> <li>- Standing up from a chair</li> <li>- Getting out of bed</li> <li>- Pushing or pulling</li> </ul> <p>✓ You may move your arms freely if you are not holding something</p> <p>✓ Always support your chest by hugging yourself or a pillow when coughing, sneezing, or laughing</p>	<p>✗ Avoid pushing or pulling with one arm</p> <p>✗ Avoid any activity that puts uneven strain on the breastbone (ex: sweeping, hunting, yardwork)</p> <p>✗ Avoid reaching behind with both arms together</p>
<p>✓ It is okay to reach behind with ONE ARM for self-care activities (ex: toileting, grooming). Be sure to:</p> <ul style="list-style-type: none"> <li>- Rotate from the waist</li> <li>- Keep elbows close to your body</li> </ul> <p>✓ Take a shower daily with antibacterial soap (ex: Dial®)</p>	<p>✗ No tub baths or soaking (ex: swimming) until the incisional scabs are gone and your incision is fully healed</p> <p>✗ Do not apply creams/ointments to incisions until after they are healed</p> <p>✗ Avoid scrubbing your incision</p>
<p>✓ Examples of exercises that are OK to perform:</p> <ul style="list-style-type: none"> <li>- Bicep/arm curls with elbows at your sides</li> <li>- Tricep pushdowns/elbow extensions with elbows at your sides</li> <li>- Lower body exercises (walking, stationary bike, treadmill, squatting)</li> </ul> <p>✓ It is important to be mindful of your breathing and avoid holding your breath, especially when lifting.</p> <ul style="list-style-type: none"> <li>- Pat your incision dry before dressing</li> </ul>	<p>✗ Avoid exercises, sports or activities that involve uneven pushing/ pulling with arms (golf, tennis, pickleball, bowling, skiing running, swimming)</p> <p>✗ Avoid exercises that cause elbows to go behind the body (chest stretch)</p> <p>✗ Avoid resistance exercises with elbows out to the sides (overhead lifting, lat pulldown, pec fly, chest press)</p> <p>✗ Avoid exercises in a pushup (plank) or hands and knees position</p> <p>✗ Avoid arm cycling, elliptical machine, and standing quad stretches</p>
<p>✓ Wear your seatbelt:</p> <ul style="list-style-type: none"> <li>- Rotate from the waist and reach for your seatbelt with both arms.</li> </ul>	<p>✗ Do not drive a vehicle (car, truck, tractor, riding mower) for 1 month or until cleared by your surgeon.</p>

# PREVENTING INFECTION

## Preventing Infections After Surgery

### Incision Care

- It is normal to see bruising and areas of hardness in your leg incisions (a camera was used to remove the vein there); you can elevate the leg and wear compression stockings or ACE bandages to help reduce swelling. Shower daily with a gentle soap allowing shower water to rinse the soap off. Water from shower may directly hit your chest.
- Do not use perfumed soaps or body washes.
- Gently pat incisions dry with a clean towel.
- You may need assistance with showering the first few days.
- If you are unsteady on your feet, use a shower chair.
- Do not take a tub bath until all scabs have healed on all incisions. Do not pick at scabs.
- Do not use creams, lotions, or ointments on your incisions.
- Wear clean clothing every day.
- Brush teeth daily.
- Avoid holding pets and children close to your bare chest.
- Check your incisions daily for drainage, redness, increased tenderness, or edges pulling apart. If you notice drainage from your chest incision, call your surgeon immediately.
- Itching and numbness around your incision are normal after surgery.
- Keep your incisions clean and dry.
- Check your temperature daily for 2 weeks.
- Good hand washing.
- Women: Wear a clean bra daily that you can put on without reaching your arms behind your back.

# Cardiac Rehab

Cardiac rehab is an individualized and personalized treatment plan focused on evaluation and instruction to improve physical activity, nutrition, and stress management. Cardiac rehab is highly recommended for most heart surgery patients

## Cardiac Rehab Services

- Progressive physical activity/exercise
- Monitored exercise sessions
- Control/reduce blood pressure
- Lower cholesterol
- Manage/improve diabetes
- Improve physiological well-being/stress reduction
- Reduction/cessation of smoking/tobacco
- Weight loss and control
- Learn your target heart rate
- Healthy eating habits coaching
- Peer support





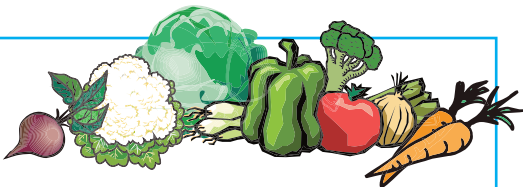

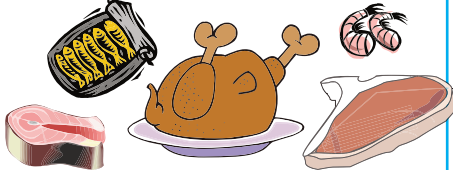

# Follow-up Care

Follow-up care is very important. It is strongly encouraged that you make and keep these appointments.

- **Cardiac Surgeon:** Follow-up 1-3 weeks after discharge
- **Primary Cardiologist:** 2-5 weeks after discharge
- **Primary Care Physician:** 2-5 weeks after
- **Cardiac Rehabilitation:** 3-4 weeks after discharge



# Eat More of These Heart Healthy Foods

<b>VEGETABLES</b> 2-3 CUPS PER DAY Eat a Rainbow!	broccoli, cabbage celery, carrots, cauliflower, green beans, field greens, mushrooms, peppers, spinach, summer squash, tomatoes, zucchini	
<b>FRUITS</b> 1.5 - 2 CUPS PER DAY	apples, berries (blueberries, strawberries, blackberries), bananas, cantaloupe, grapes, honeydew, kiwi, mango, nectarines, oranges, papaya, peaches, pears, pineapple, plums, watermelon	
<b>HIGH FIBER GRAINS</b> 3 - 8 SERVINGS PER DAY	oats, brown rice, barley, quinoa, bulgur, whole grain pasta, (1 serving = 1/2 cup) whole grain bread and whole wheat or corn tortillas (1 serving = 1 piece) sweet potatoes, baked potatoes, winter squash, corn (1 serving = 1/2 cup)	
<b>BEANS, NUTS &amp; SEEDS</b> 2 - 3 SERVINGS PER DAY	beans, lentils, nuts, nut butters, seeds 1 serving = 1/2 cooked beans or lentils 1 serving = 2 tablespoons nut butter 1 serving = 1 ounce nuts or seeds	
<b>LOW-FAT DAIRY</b> 1 - 3 SERVINGS PER DAY	low-fat, low-sugar yogurt low-fat milk and cottage cheese small portions	
<b>FISH, SEAFOOD, POULTRY, LEAN MEATS</b> UP TO 7 OUNCES PER DAY Choose seafood 2 -3 times per week. Limit red meat.	seafood: crab, flounder, herring, oysters, salmon, sardines, scallops, shrimp, trout, tuna eggs and skinless chicken turkey 85% extra lean ground beef, loin or flank cuts of meat	
<b>HEALTHY FAT</b> Use sparingly for cooking/dressing	plant oils like olive and canola cooking spray avocados, nuts, seeds	
<b>SPICES &amp; SEASONINGS</b> UNLIMITED	garlic, onions, green onions, ginger, fresh or dried herbs, spices, lemon, lime, vinegar, low-sodium bouillon cubes, mustard, hot pepper sauce	

# Limit or Avoid These Foods

<b>RESTAURANT &amp; FAST FOODS</b>	burgers, cheese dishes, chicken fingers/wings, cream sauces and soups, pizza	
<b>FRIED FOODS</b>	chips, French fries, fried chicken, fried fish, fried seafood, hush puppies, pork rinds	
<b>FATTY MEATS</b>	bacon, bologna, country ham, fatback, fatty ribeye, hot dogs, porterhouse steaks, regular ground beef, ribs, salami, sausage	
<b>SALTY FOODS</b> Limit the addition of salt and seasoned salt to your food	boxed meals, canned soup, country ham, crackers, cured meats, frozen meals, instant mixes, lunch meats, salted nuts, smoked meats	
<b>FATS AND SEASONINGS</b>	butter, fatback, gravy, lard, margarine, meat drippings, mayonnaise, salad dressing, shortening	
<b>HIGH-FAT BAKERY FOODS &amp; SNACKS</b>	biscuits, cake, cookies, doughnuts, muffins, pastries, pie, sweetened granola	
<b>HIGH-SUGAR FOODS &amp; DRINKS</b>	candy, coffee drinks, energy drinks, fruit juice, ice cream, jam, jelly, sherbet, sports drinks, soda, sweet tea, syrup	