

Norma Melchor Heart & Vascular Institute
Mountain View Campus

Cardiovascular Surgery and Recovery



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Welcome

Welcome to El Camino Health, and thank you for choosing us for your cardiovascular surgical care. Our world-class team is dedicated to providing you and your family with the best care and outcome throughout your experience.

We've built our exceptional cardiovascular program to deliver the highest quality in every respect. We offer comprehensive care from education and prevention programs to personalized diagnosis, treatment and rehabilitation. Our specialists are renowned for their experience and expertise and are trained in the latest treatments and procedures. We've invested in world-class technology and facilities, and we adhere to strict protocols that have earned us national recognition for unwavering quality. For example, our echocardiography lab has been granted certification by the Intersocietal Accreditation Commission for exceptional quality standards. As an accredited Chest Pain Center, our clinical outcomes and "door-to-treatment" times are consistently better than the national averages. We have also been recognized by the Society of Thoracic Surgeons as being in the top five percent in the nation for aortic valve replacement surgery.

El Camino Health is the region's most technologically advanced hospital, featuring 10 state-of-the-art operating rooms and five hybrid cardiac catheterization labs where minimally invasive procedures can be combined with more complex surgical procedures to provide the best possible outcome for our patients.

You are very important to us, and each member of the El Camino Health family has a sincere, personal interest in your comfort and well-being. During your stay, you will meet many members of your multidisciplinary care team, including physicians, nurses, technologists, therapists, volunteers and other support members working quietly behind the scenes to ensure you receive high-quality, compassionate care. We encourage you to speak openly and honestly with those caring for you; they are happy to answer questions.

Cardiac surgery patient care is coordinated by a trained cardiovascular advance practice nurse. This nurse, in collaboration with your cardiac surgery team and the staff on the nursing units, will guide you through your hospital experience and recovery post-hospitalization.

We have put together the enclosed information to ensure you have the most comfortable hospital stay possible. Thank you for trusting us as a partner in your return to better health.

Best wishes and good health,



Conrad Vial, MD

Your Cardiothoracic Surgery Team

Physicians

Vincent Gaudiani, MD
Tom Oka, MD
Pei Tsau, MD
Conrad Vial, MD

Physician Assistants

Ed Hahm, PA-C
Maryam Delucia, PA-C
Wilson Kee, PA-C

Nurses

Kathleen Maskett, RN, CNS, MSN
Becky Tam, LVN

Phone Numbers

Medical Questions

Becky Tam, LVN, 650-330-4308

Scheduling Questions – Palo Alto

Mitchell Bennett, 650-853-5745

Scheduling Questions – Mountain View

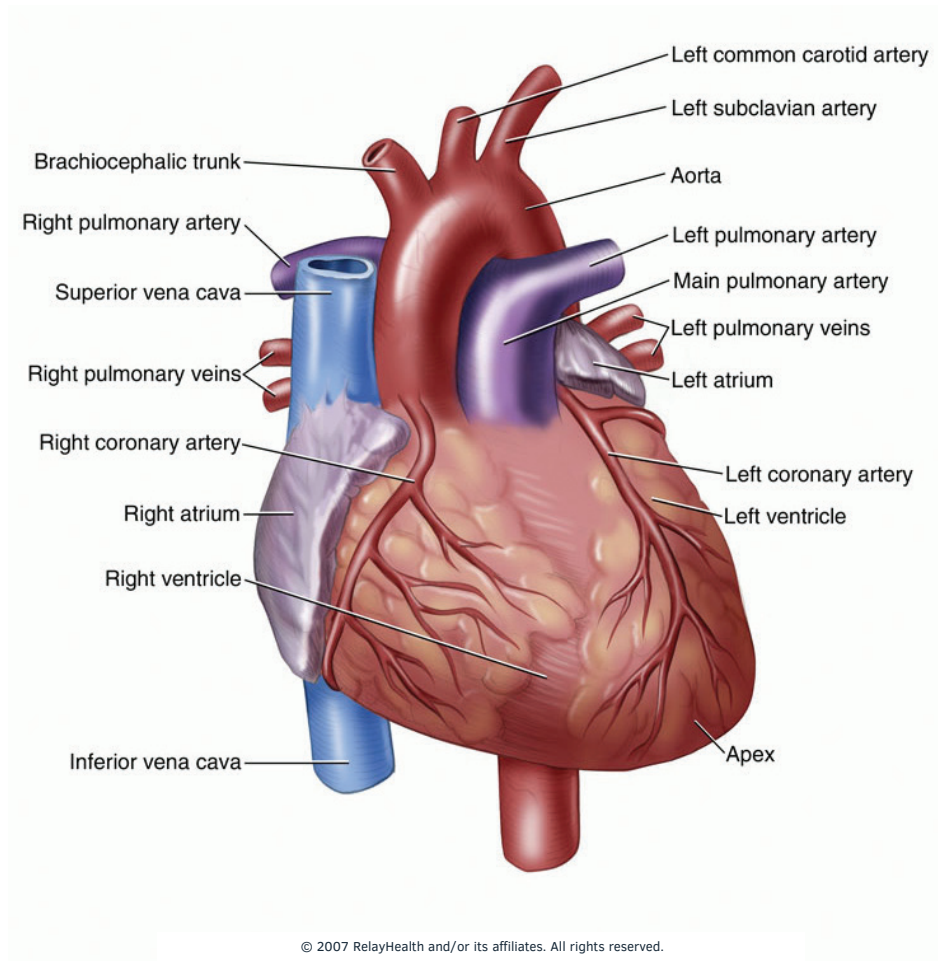
Irene Lopez, 650-404-8250
Antoinette King, 650-404-8250

After Regular Business Hours

Page operator, 650-321-4121
Ask for the cardiothoracic surgeon on call

The Human Heart

HEART: EXTERNAL VIEW

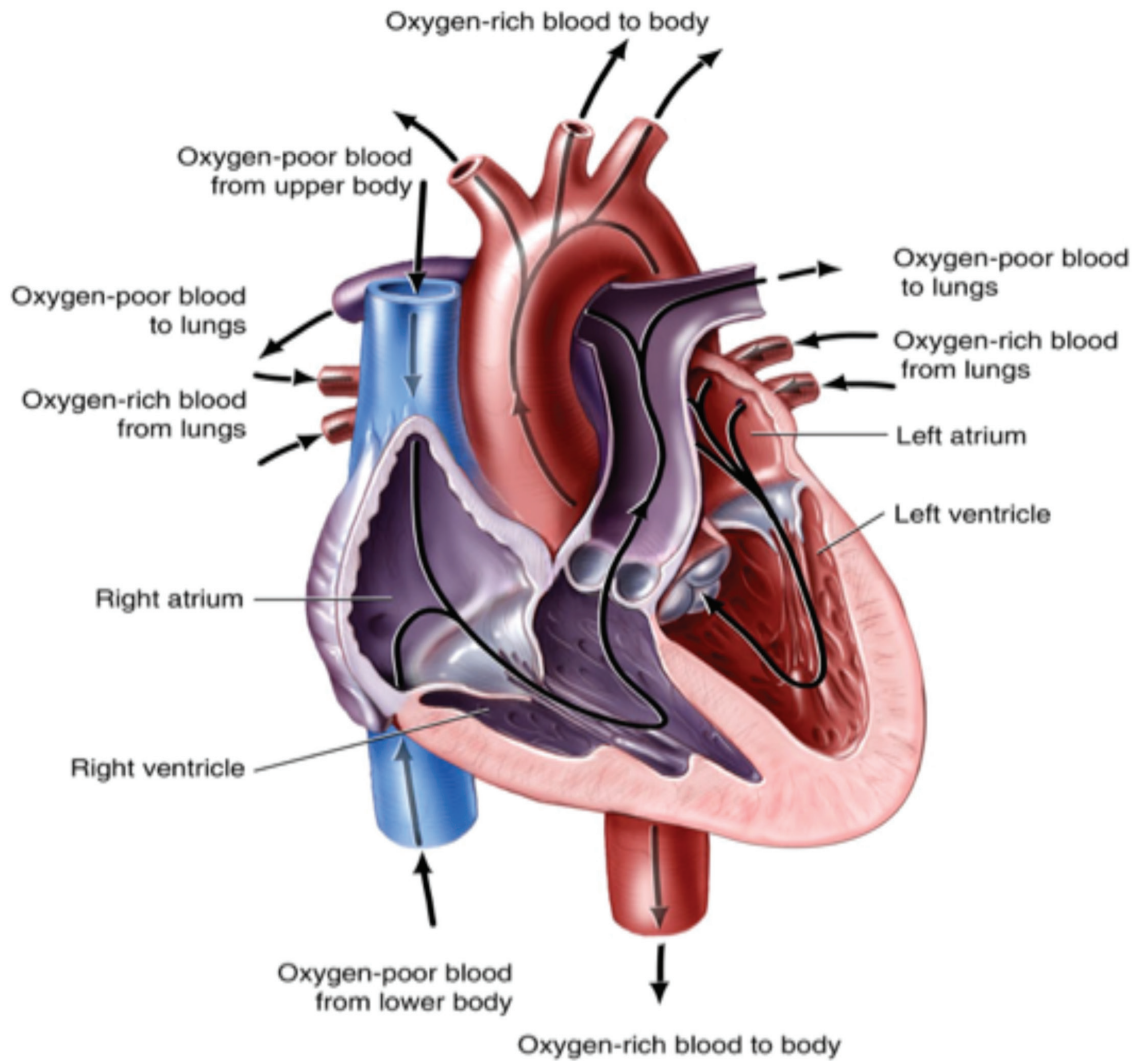


The heart is a complex organ necessary to preserve life. It must constantly pump to distribute blood and oxygen throughout your body. In order for the heart to be effective, its two pumps, called the right and left ventricles, must work efficiently.

The right ventricle of the heart is responsible for receiving oxygen-depleted blood from the veins of the body and pumping it out to the lungs, enabling the exchange of oxygen. The left ventricle receives this oxygenated blood and pumps it back out to the body. Your body uses the oxygen and returns the blood to the right side of the heart.

The left ventricle pumps out large quantities of blood through the aorta. Just before this occurs, the blood must go through a valve called the aortic valve.

BLOOD FLOW IN THE HEART



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The Aorta

The aorta distributes blood to the various branches of the arterial tree, including the right and left coronary arteries that supply the heart with oxygenated blood. In order for the heart to receive this blood, the ventricles of the heart must be able to pump an adequate amount of blood, and the right and left coronary arteries must be unobstructed.

Common Types of Heart Disease and Surgical Treatments

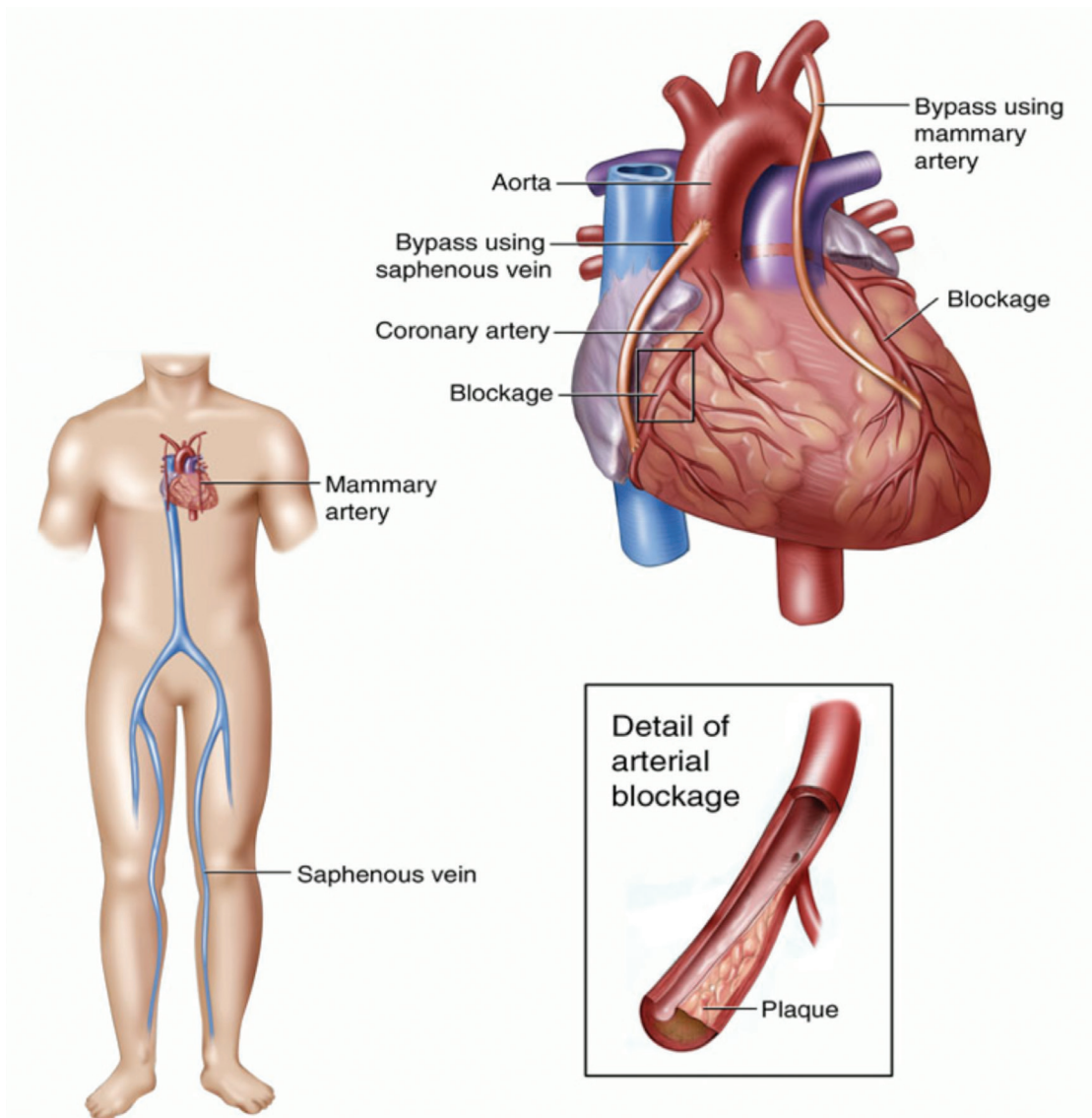
Coronary Artery Bypass Graft (CABG) Surgery

Coronary arteries — the arteries that supply blood and oxygen to your heart muscle — can develop plaque and become narrowed or blocked. If left untreated, this can lead to a heart attack. Risk factors, such as diabetes, high cholesterol,

smoking history, family history of heart disease, a diet high in saturated and trans fat, high blood pressure, inactive lifestyle, stress and obesity, increase your chances of developing heart disease.

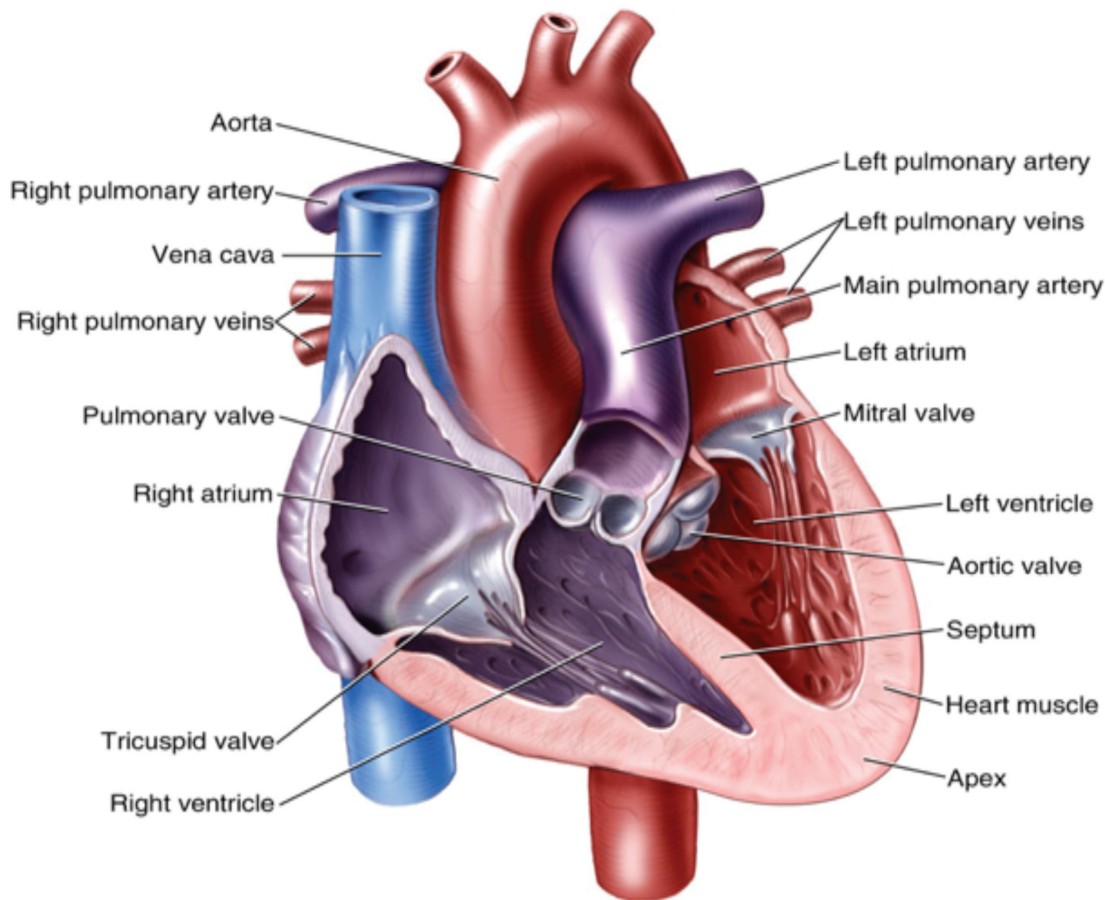
In CABG surgery, the surgeon creates a new route or “bypass” around the blocked arteries using veins from your leg or arm or arteries from your chest. This provides improved blood flow to your heart muscle.

CORONARY ARTERY BYPASS SURGERY



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HEART: INTERIOR VIEW



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Valve Diseases and Surgery

The heart has a set of one-way flap valves that organize the flow of blood through the heart. These valves open and close to keep blood flowing through your heart and out to your body. When these valves do not open (valve stenosis) or close (valve regurgitation) properly, blood does not move through the heart normally. This causes your heart muscle to overwork and may lead to fatigue, decreased exercise tolerance, swelling or fluid retention and shortness of breath.

Mitral Valve Disease

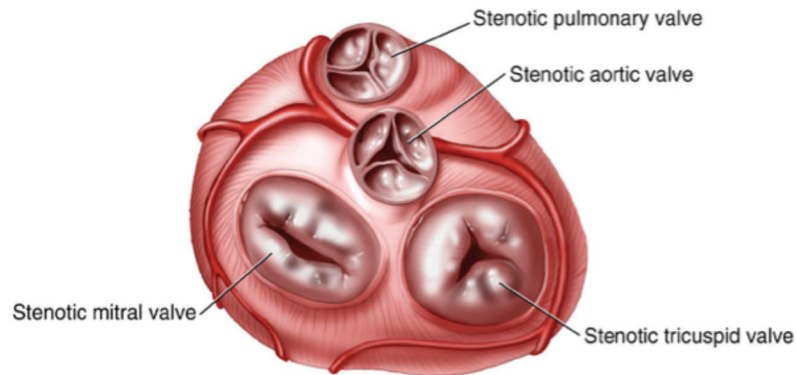
- Some people are born with slightly abnormal mitral valve tissue that causes prolapse and leakage. This is the most common condition leading to mitral valve repair.

- Certain diseases such as rheumatic fever and endocarditis can scar and stiffen the mitral valve, preventing it from opening properly.

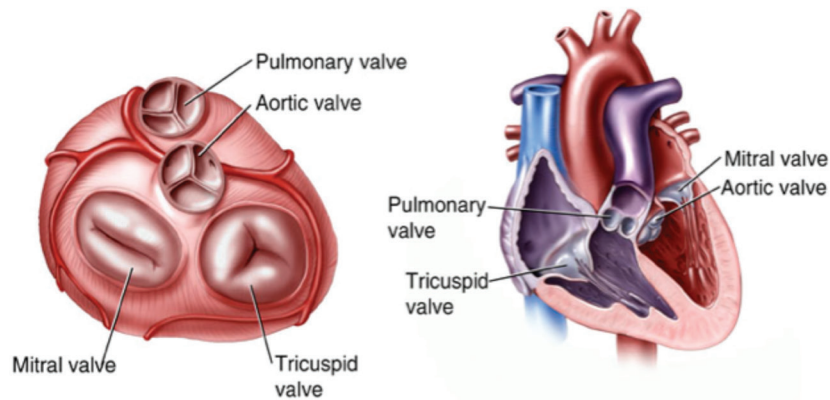
Aortic Valve Diseases

- The most common problem with the aortic valve is progressive calcification of the valve associated with aging. Calcification causes the valve to narrow and stop opening and closing properly.
- Some people are born with two leaflets (flaps) instead of the usual three. This condition is tolerable when one is young, but with age the valve stiffens and cannot perform its normal function.

NORMAL AND DISEASED HEART VALVES



Diseased Heart Valves



Normal Heart Valves

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Surgical Treatment of Valve Problems

During heart valve surgery, your surgeon repairs or replaces the abnormal valves, restoring effective blood flow through the heart.

Repair of the Valve

- Reshaping the leaflets, annulus or both and sewing a ring around the entrance of the valve improves its configuration or function.

Replace With a Tissue Valve

- The replacement valve comes from a pig or cow. Blood does not clot as easily on tissue valves, so patients may not need to take a blood thinner such as Coumadin or Warfarin.

Replace With a Mechanical Valve

- Replacement valve is made of metal or hard carbon. Blood tends to stick to mechanical valves, forming clots, so blood thinning medication is necessary.

Preparing for Surgery

Arrival and Check-In

Your surgery is scheduled for _____ at El Camino Health, 2500 Grant Road, Mountain View.

Please arrive at this time: _____

Check in at Patient Registration (1B), located on the first floor by the hospital's main lobby entrance.

Preoperative Testing

Your surgeon's office will arrange for your preoperative workup and testing. Several appointments will be needed to prepare for your surgery.

Preoperative Physical Exam with Our Nurse Practitioner or Physician Assistant

This appointment will also include a preoperative teaching session with our nursing staff. Please bring all your medications in their original containers for this appointment. Your consent form will be signed and the following tests will be completed:

- Lab work
- Urine test
- Chest X-ray
- EKG
- Carotid ultrasound

Type and Cross

You will need to go to the lab at El Camino Health to have blood drawn for a type and cross. Please complete this task 2-7 days before your surgery. Your result will be sent to the hospital's blood bank to assure blood will be available if a blood transfusion is required.

Insurance Authorization

Insurance authorization is obtained through our Patient Registration Department. Please call your insurance provider to determine your financial responsibility.

What to Pack for Your Hospital Stay

Wear comfortable clothing to the hospital. You can wear the same outfit on your return home. A shirt or top that buttons or zips in front is advisable. At the hospital you will receive a gown, pajama bottoms and a pair of non-skid slipper socks. Please pack lightly as storage is minimal, especially in the Critical Care Unit.

Toiletries

- Dental care
- Shaving items
- Lip balm
- Hairbrush and/or comb

Clothing

- Change of underclothing
- Bathrobe if desired
- Non-skid slippers

Prostheses

- Dentures
- Glasses
- Hearing aids with extra batteries

Other Preparations

Stop Smoking

It is mandatory that you stop smoking before your operation. Smoking irritates your lungs, and as a result the body may not receive the correct amount of oxygen. When your lungs are not in top shape, it may take longer for you to recover from your surgery. Stopping smoking may be very difficult for you. This is especially true when you are under a lot of stress. The support of friends and family can make it easier to stop. They can help by not smoking around you or even joining you in the effort to quit.

El Camino Health offers two smoking cessation programs for those who want to kick the smoking habit. Group and individual sessions are offered. For more information or to register for either program, call the Cardiac & Pulmonary Wellness Center at 650-988-8225.

Report New Health Problems

Let the surgery team know as soon as possible if you have any new health problems. This could include a fever, cough, sore throat, cold, urinary tract infection, or if a doctor or dentist has started you on an antibiotic. It is important for you to be in the best possible health at the time of your surgery. As it gets closer to your surgery date, you should stay away from people who are sick.

Advance Health Care Directive

If you have an Advance Health Care Directive or durable power of attorney for healthcare, you should bring this document with you to the hospital. An Advance Directive tells your doctor what care you wish to receive in the rare case that you are unable to communicate or make decisions on your own behalf. If you have not completed this form or discussed these issues with your family, now is a good time to consider it. All adults age 18 and older should have an Advance Directive.

You can download an Advance Directive form from El Camino Health's website at elcaminohealth.org. The Health Library & Resource Center at El Camino Health offers Advanced Health Care Directive assistance.

Please call 650-940-7210 for more information. In addition you will also find resources for advance healthcare planning on the Coalition for Compassionate Care of California website, coalitionccc.org.

Do Your Homework

Practicing Sternal Precautions

Practice getting out of your bed and a chair without using your arms. After surgery you must not lift, push or pull more than 10 pounds of weight for four weeks. One gallon of milk is equal to 8.4 pounds. It will take up to eight weeks for your sternum (breastbone) to heal.

Discontinuing Medications

If you are currently taking any blood thinner medications, such as Coumadin, Plavix, Aggrenox, Trental, Pletal, Pradaxa or Xarelto, you must stop taking them seven days prior to your surgery. Aspirin, up to 81 milligrams daily, is allowed. Over-the-counter supplements such as fish oil, ginseng, ginkgo biloba and Vitamin E, should be stopped one week prior to surgery.

Please stop _____ on _____

Please stop blood thinner _____

on _____

Please start _____ on _____

Surgery Schedule

Please understand that the surgery schedule sometimes must change at short notice. If this happens, we will inform you as soon as possible if the date or time of your surgery has changed.

The Day Before Your Surgery

Shower

Germs normally live on your skin and pose no risk to you. A surgical incision disturbs the normal protection the skin provides. To minimize bacteria, the night before surgery, shower and wipe your chest and legs with an antiseptic wipe. Follow these steps when you shower:

- First, shower with regular bath soap. Rinse off completely. Do not shave any area of the body.
- Allow the skin to dry for about one hour. Do not apply lotions.
- After the skin has dried, use the cloths provided in the following order. Use one cloth for each area:
 - Chest
 - Back
 - Right arm, including armpit
 - Left arm, including armpit
 - Right leg, front and back
 - Left leg, front and back

Allow area to air dry for one minute. After wiping with the cloths provided, do not rinse. It is normal for the skin to have a temporary “tacky” feel for several minutes after the antiseptic solution is applied.

The antiseptic wipe is for external use only. Keep out of eyes, ears and mouth. If contact occurs, rinse with cold water right away. If severe irritation occurs, contact a doctor.

When applied to sensitive skin, there may be skin irritation such as a temporary itching sensation and/or redness. If itching or redness persists, rinse affected areas and discontinue use. When you are done:

- Discard cloths in trash can. Do not flush down toilet.
- Dress in clean clothes or sleepwear after skin dries.
- Do not shower or bathe the morning of surgery.

Mouthwash

Germs live in your mouth as well. You will be given two antiseptic rinses at your preoperative appointment. The evening before your surgery brush your teeth and gargle and spit with the rinse. Do not put your dentures or partials in your mouth once you have used the rinse. Brush your teeth normally the next morning and gargle and spit again with the rinse.

Food and Drink

Do not eat or drink anything (including water) after midnight the night before your surgery. If you are instructed to take any medications the morning of surgery, use only a small sip of water.

Please take _____ the morning of surgery with a small sip of water.

Leave Jewelry and Valuables at Home

Remove all jewelry, makeup and nail polish. Please leave jewelry and valuables at home.

Your Hospital Stay

Before Surgery

- On the morning of your surgery, go directly to Patient Registration (1B) across from the main lobby on the first floor.
- Two family members may stay with you until you go to the operating room. At that point they are welcome to stay in the Surgery Waiting Room, on the second floor (2B) of the hospital. After surgery, the surgeon will meet family members at that location to discuss the operation.
- Just prior to your operation a surgical technician will clip your body hair from your chest to ankles.
- The anesthesiologist will introduce him/herself and answer any questions you may have.
- You will be in the operating room approximately three to five hours. This may vary between patients.

In the Operating Room

- To ensure patient safety, when you enter the operating room, a nurse will greet you and check your name band and other vital information.
- The anesthesiologist will start an IV and give you medication to put you to sleep. Once you are asleep, the staff will apply monitoring devices and insert breathing and drainage tubes.



The monitoring devices and tubes will accompany you to the Critical Care Unit (CCU), where you will be taken immediately after surgery. This equipment is not painful, but it can be an overwhelming sight for family members.

Lines, Tubes and Monitoring Devices

Endotracheal Tube/Mechanical Ventilator

- The endotracheal tube passes through your mouth or nose into your trachea (windpipe) and attaches to a mechanical ventilator (respirator). The ventilator breathes for you until you are awake and can breathe on your own. The tube is usually removed one to six hours after surgery, or when the cardiac surgery team feels that you are ready to breathe on your own.
- You will not be able to talk because the tube passes through your larynx (voice box) and into your trachea. You will be able to nod “yes” or “no” when questions are asked or you can write things down on a pad of paper. Try not to talk while the endotracheal tube is in, as this will cause a gagging sensation.
- While you have the endotracheal tube in place it will be necessary for your nurse and respiratory therapist to clear the tube. This is called suctioning and is important because it cleans the tube of mucous secretions produced by your lungs. A suction catheter is passed down the endotracheal tube to remove the secretions. This procedure only lasts for a few seconds and may cause you to cough. The coughing can be uncomfortable, so your nurse may give you pain medication.
- After the tube is removed you may experience a sore throat, which will disappear after a day or two. You will be expected to use your incentive spirometer every hour to expand your lungs and clear any secretions. This is very important because your lungs were collapsed during your surgery and your alveoli (air sacs) need to “pop” open after surgery. Re-expanding your lungs after surgery prevents pneumonia.

Heart Monitors

You will have five electrodes on your chest that transmit a continuous tracing of your electrocardiogram (ECG) and heart rate onto a monitor. We continuously monitor your heart to watch for abnormal heart rhythms or problems. Each monitor has alarms that are very sensitive to movement, so you and your family should not be frightened if the alarm rings.

Intravenous (IV) Lines

An IV is a small, soft tube that is placed into a vein in your body. Common sites for placement are your hand, arm and neck. You can receive blood, fluids and antibiotics through these IVs.

Arterial Line

An arterial line is an IV that is placed into the radial or femoral artery at your wrist or groin and is used to continuously monitor your blood pressure and draw blood samples.

Pulmonary Artery Catheter

A pulmonary artery catheter (PA line) is similar to an IV, placed into a blood vessel in your neck. The PA line is used to monitor pressure inside the chambers of the heart, which helps your nurses assess how well your heart is pumping after surgery.

Chest Tube

Chest tubes are plastic drains that are placed into your chest cavity during surgery. These chest tubes are connected to a plastic drainage container that drains fluids from your chest. Often these tubes are removed the morning following surgery, but sometimes one tube may remain for two to three days.

Temporary Pacemaker

Temporary pacemaker wires are slender wires that are placed on the surface of your heart. The ends of the wires come up through the skin and can be attached to a pacemaker, if needed. A pacemaker is a device used to regulate your heart rate. The wires are usually removed three days after surgery.

Urinary Catheter

A urinary catheter (also called a Foley catheter) is a small, soft tube that is put through your urethra into your bladder. It is then attached to plastic tubing and connected to a drainage bag. The purpose is to monitor your urine output. It may give the sensation of having to urinate even as it is draining. It will be removed within two to three days.

Sequential Compression Device

A sequential compression device (SCD) prevents the occurrence of deep vein thrombosis (blood clot in your leg) after surgery. SCDs are placed on your legs and connected to a pump which inflates and deflates the compartment with air. This prevents blood from pooling in your lower legs.

Dressings

A sterile dressing will cover your incisions for the first 24 hours. After that, it will be removed to expose the incisions to air, which promotes healing.

Waking Up From Anesthesia

Upon entering the CCU, you will still be asleep. Bypass surgery patients usually begin waking up approximately two to four hours after entering the CCU. Once you wake up from anesthesia, it may be an additional two to four hours before you are fully awake.

When you first wake up you may feel tired, confused, nauseated, thirsty, feverish or cold. You also may experience pain and tenderness around your incision. These reactions and feelings are very normal after heart surgery. Your nurse will ask you to move your hands and feet and will also assess whether you need pain medication.

Your Recovery in the Hospital

Family Involvement and Visiting

- Your family may visit you while you are in the CCU.
- Most rooms have pull-out couches if a family member would like to stay overnight.
- If you choose, your nurse will be happy to discuss your progress with your family.
- The staff may request that your family leave during tests or procedures due to concern for patient privacy and safety.
- You family may ask about your condition at any time, day or night, by calling the Critical Care Unit at 650-940-7175 or calling 650-940-7124 after your transfer to the Telemetry/Cardiac Unit, 3B.
- Please designate one contact person to distribute information among family members and friends. If you would like the nurse to call a family member or friend with an update, please provide one phone number. This will help minimize interruptions to your care.

Managing Your Pain

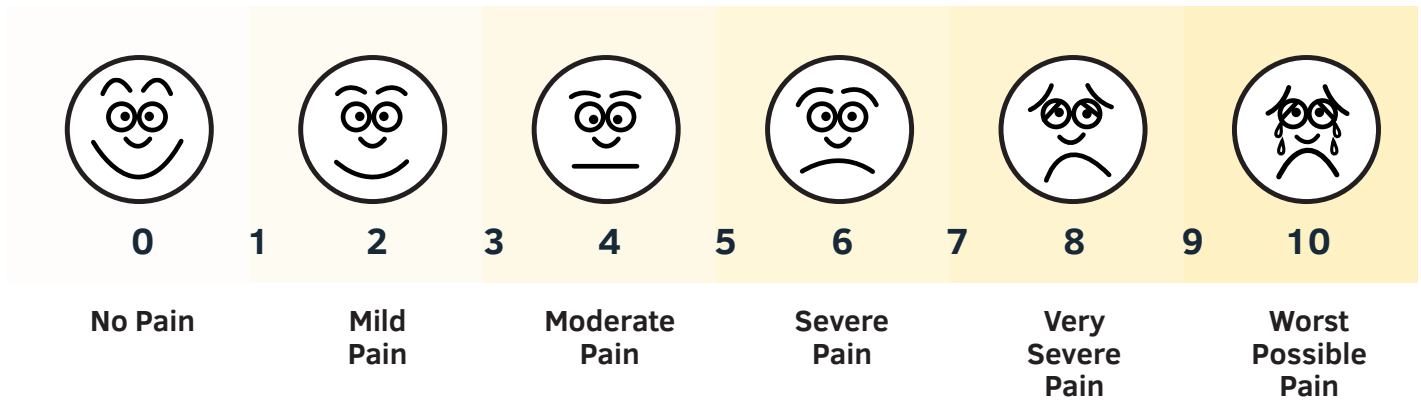
Pain is an individual experience. Our goal is to keep you as comfortable as possible after surgery. With proper pain management you will be able to move around and do your deep breathing exercises. Some patients worry they will become addicted to the pain medications. This should not be a concern as you will only take these medications for a short period of time.

The pain measurement scale will help your nurse determine the effectiveness of the medication. You will be asked to describe your pain or discomfort level in a number (see scale below). There is no right or wrong answer. Adequate pain management is necessary and crucial for your recovery. Be sure to ask your nurse for medication before pain prevents you from actively participating in your recovery.

Deep Breathing and Coughing Exercises

One of the most important factors in your recovery is your ability to breathe deeply and cough effectively. Anesthesia, pain and bed rest can lead to poor lung expansion, causing secretions to collect in your lungs. Completing deep breathing and coughing exercises with an incentive spirometer every hour will promote lung expansion and clear your air passages. This will prevent pneumonia, which is a common postoperative complication.

PAIN MEASUREMENT SCALE



Adapted from Wong-Baker Faces Pain Rating Scale

Splinting Your Incision

Splinting will help support your chest incision and relieve the strain on your sternum that is caused by coughing. You will be provided with a Heart Hugger sternum support harness (pictured below) to wear around your chest. Your nurses and therapists will instruct you in its fitting and use.

Following sternal precautions — special instructions for how to move your upper body — will help reduce pain and promote healing. You should not push or pull with your arms when rising from a chair or bed. During your hospital stay, a physical therapist will teach you how to get out of bed and a chair safely, without stressing your chest incision.

Learn more about sternal precautions in the Recovering at Home section.



Photograph from General Cardiac Technology, Inc.

Bowel Function

It is common for patients to experience difficulty moving their bowels (constipation) after surgery. You will be given a stool softener daily while in the hospital. Bowel function should return within three to four days after surgery.

You will find more information about constipation in the Recovering at Home section.

Atrial Fibrillation

Atrial fibrillation is an irregular heart rhythm that frequently occurs after heart surgery. It can make some people feel weak, tired and fatigued. Atrial fibrillation is treated with medications. You will need to continue taking these medications

until your cardiologist tells you to stop. You may also need to take Coumadin, a blood thinner, to prevent blood clots. This will require routine blood tests after your discharge.

Coumadin Therapy

Coumadin is a medication to prevent blood clots by thinning your blood. If you develop atrial fibrillation you will be placed on Coumadin. Routine blood tests are required to maintain a therapeutic level in your blood.

Appetite

You may not have an appetite for the first few days after surgery, but it is important to eat to build up your strength. Let your nurse and dietitian know if there are any specific foods you would like to have.

Mood Changes

During your postoperative recovery you may experience mood swings. It is common for people to feel very emotional during this time. They may cry very easily or become irritable. Some people may have difficulty remembering things. These feelings may be related to anesthesia, loss of sleep or medications. As you return to your normal activities you will have fewer mood changes. It is important to talk with your nurse or physician if these feelings persist.

Fatigue

Fatigue is very common after heart surgery. Even simple activities such as showering or walking for a short distance may make you tired. It is important to organize your day to include rest periods along with periods of activity.

Participating in Your Recovery

After the endotracheal tube is removed, your nurse will help you sit on the edge of the bed so you can dangle your legs over the side. This may cause you to experience dizziness or lightheadedness initially. This is normal. Typically you will be assisted out of bed to a chair the evening of surgery. The next morning you will begin to walk with assistance.

Each day in the hospital, the amount of time you spend walking will increase. You will be expected to eat all your meals sitting in a chair.

To recover from your surgery, you will be expected to:

- Use an incentive spirometer to practice deep breathing and coughing at least 10 times every hour.
- Walk and increase your activity. Walking and becoming active are an integral part of your recovery and will help you breathe more effectively. Walking strengthens your muscles, helps your body regain function and helps prevent postsurgical complications such as pneumonia or the development of blood clots in the legs. You will take your first walks with a staff member, especially if you have lines or tubes. He or she will let you know when you can walk alone or with a family member.



Transferring to the Telemetry/Cardiac Unit

When you are stable (usually within one to two days after surgery) you will be transferred from the Critical Care Unit to the Telemetry/Cardiac Unit on the third floor. The remainder of your recovery then becomes a shared responsibility between you and your care team. You will be expected to actively participate in your own care.

- You should alternate periods of resting in bed, sitting and walking. Sit for no more than 45 minutes at a time. After periods of sitting, you should take a walk.
- Every day, increase the number of walks in the hall. Distance and speed are not an issue. You will be asked to walk at least five times a day.
- Get out of bed for every meal.

- When in bed, do ankle exercises. Rotate your ankles, point and flex your feet.
- Eat healthy foods that nourish your body with proteins, vitamins and minerals so you can heal faster. For a short time after surgery you will consume only fluids, and a regular diet will be introduced later. Even if you are not hungry, we encourage you to eat and drink.

Cardiac Rehabilitation – Inpatient and Outpatient

Cardiac rehabilitation is a program that flows from your inpatient hospital stay to the outpatient setting. During your hospital stay we will gradually increase your activity in preparation for your discharge.

We strongly encourage our patients to attend an outpatient cardiac rehabilitation program to assist in their recovery. A referral will be placed prior to your discharge from the hospital. A member of El Camino Health's Cardiac Rehabilitation Program team will contact you to schedule an initial evaluation. Your outpatient program will begin four weeks after surgery or as soon as your physician feels you are ready.

Cardiac rehabilitation provides individualized education and monitored exercise to facilitate a safe recovery. All classes are supervised by a registered nurse and an exercise physiologist. The Cardiac Rehabilitation Program can be reached at 650-940-7130.



Getting Ready to Go Home

After cardiac surgery, you can expect to stay in the hospital for four to seven days.

We will prepare you to transition back to your home by ensuring:

- Your pain is controlled by oral pain medication.
- You are walking five to six times a day with little or no assistance.
- You can get in and out of bed without the use of side rails.
- You are passing gas, have had a bowel movement and do not feel bloated.
- Your heart rate and blood pressure are normal.

Depending on your health prior to discharge, you may benefit from a short stay in a skilled nursing facility until you are strong enough to return home, or you may go home with the support of home services. These services can include a visiting nurse for assessment and teaching, a home health aide for bathing, and physical and/or occupational therapists. Each of these professionals can visit two to three times per week for about an hour each visit depending on your insurance. A friend or family member will need to stay with you at home around the clock for approximately one week after your surgery.

Medications

- Your care team will provide you with a list of discharge medications. These medications may be different from the ones you took prior to surgery.
- Have a friend or family member pick up your prescriptions as soon as you are discharged.
- Some medications may need to be gradually discontinued.
- Please follow the instructions for all medications and bring all your medications with you to your follow-up appointment with your cardiologist.

Special Note for Valve Surgery Patients

Bacterial endocarditis is an infection of the heart lining. It may cause destruction or scarring of the heart valves. People who have had a repair or replacement of any heart valves must be protected from this kind of infection.

Bacterial endocarditis may be caused by dental work, skin infections or major or minor surgery. Usually it can be prevented by antibiotic medication given before and possibly after these procedures. Make sure your doctor and dentist know you have had valve surgery so you can be given the appropriate antibiotic if you require dental work or other surgery.

You should obtain a MedicAlert bracelet to ensure your healthcare providers are aware of your valve replacement.

Recovering at Home

Here are some general guidelines to assist you during your home recovery.

Follow-Up Care

- Schedule an appointment with your cardiologist for five to seven days after leaving the hospital.
- A cardiac surgery nurse will call two days after discharge to assess your progress and answer your questions. At that time we will make your seven- to 10-day follow-up appointment with our nurse practitioner or physician assistant. Prior to this appointment you will have your blood drawn and a chest X-ray if necessary.
- Your final appointment will be with a cardiac surgery nurse one month after your discharge.



Activity

- Get dressed and groomed every morning.
- Stay in the living areas of your home.
- Continue to alternate between resting, sitting and walking. Lie down for no more than one hour at a time. Sit down for no more than 45 minutes at a time. Avoid crossing your legs. This

will prevent sluggish circulation in the legs that can lead to blood clots.

- Daily exercise is a key part of your healing process. Regular exercise will help strengthen the heart muscle, allowing it to pump more efficiently.
- Take daily walks outside on level ground when the temperature is comfortable. Start with five minutes out, five minutes back. Walk at your own pace. If you feel up to it, repeat your walk later in the day.
- Increase your walking time by two minutes every two days, as tolerated. A good goal is to walk continuously for 30 minutes a day by the end of one month. You may walk more if you feel able.
- Take time to stretch your muscles before and after exercising for maximum efficiency and to prevent injuries.
- Wear comfortable, flat shoes and loose clothing. Any garment that restricts your movements may interfere with your breathing.
- Avoid being out on very hot or cold days during your recovery. Extreme temperatures add to heart stress. In winter, walk in the afternoon or during the warmest part of the day. During the summer, walk in the morning or during the coolest part of the day.
- Stairs are okay, taken slowly, especially if you were using them prior to surgery.
- Continue using your incentive spirometer hourly, 10 breaths each time. This will help keep your lungs clear until your activity level is back to normal.
- Avoid crowded public places during cold and flu season and close contact with anyone who is ill.
- Take your temperature and weigh yourself every day.

Upper Body Movement (Sternal Precautions)

During surgery your breastbone (sternum) is divided down the middle and then wired back together with permanent, stainless steel wires or cables. These wires will not rust, dissolve or set

off metal detectors. Your breastbone will take eight weeks to fully heal. It may take longer if you are diabetic. Following these sternal precautions will help reduce pain and promote healing:

- Do not lift, push or pull more than five to 10 pounds for the first four weeks after surgery. One gallon of milk equals 8.4 pounds. You may do light household tasks. No vacuuming, mowing the lawn or yard work.
- You should not push or pull with your arms when rising from a chair or bed. Have someone help you get up or roll to your side and push off with your elbow to get out of bed.
- Computer work is fine. Keep your shoulders relaxed and your elbows low with the keyboard close to you. This will minimize use of your chest muscles and prevent pain.
- Do not drive for four weeks. Your sternum is not stable enough to handle the demands of driving, even with power steering. Remember your reaction time will be slower because of anemia, fatigue, pain and/or new medications.
- You may ride in a car in the front seat. Do not disable the airbags. Please wear your seatbelt.
- Canes and walkers may be used only for balance. Do not place your full weight on any of these devices until the sternum is completely healed, usually two months.
- We recommend you initially sleep on your back to facilitate optimal sternal healing.

Hygiene

- You may shower and wash your hair as soon as you like after surgery. Warm water rather than hot is best for the first couple of weeks. Do not soak in a tub or pool or hot tub for one month.
- Place a small, stable chair or stool in the shower stall in case you feel tired or dizzy. Make sure you are able to move around safely.
- For the first few days, have someone nearby in case you need help.

Caring for Your Incisions

- Use gentle soap and water to keep your incisions clean. Carefully clean your incisions first, and then wash the rest of your body.
- Gently pat your incisions dry.
- Check your incisions daily. Watch for increased redness, swelling or oozing. Contact your surgeon if this develops. Do not wait until your follow-up visit.
- Plumpness at the top of your incision is normal and will disappear within a couple of months.
- An occasional clicking or rubbing feeling in the breastbone is normal especially in the first week. If you experience this, decrease upper body activity. This sensation will go away in a couple of weeks. If it persists or is frequent, call your surgeon.
- Wear clothes that will protect your incisions from the sun as they sunburn easily and can become darker.
- Do not apply lotions, creams or ointments to your incisions unless instructed by your physician.
- If you have leg incisions, it is important to keep your legs at heart level or higher when sitting or lying down. You can accomplish this by using pillows or elevating your legs on a stool or coffee table. This minimizes swelling that can cause tension on the incisions and slow healing. Do this several times a day. Note that some swelling in the surgical leg is normal and will go away.

- Your incisions may feel numb to touch. This numbness will go away in time.
- If you have diabetes you may heal more slowly. You also have more risk of developing an infection. It is very important to keep your blood sugar levels in control. You also need to put extra effort into caring for your incisions.
- Women should wear a supportive bra that does not have an underwire. This will reduce pulling and tension on your incision and promote healing. You may add extra padding to protect the incision site.
- Please contact the physician monitoring your diabetes to discuss appropriate blood sugar control.

Compression Stockings

You may continue to wear the knee-high compression stockings that were given to you at the hospital. Patients with leg and ankle edema should wear compression stockings until edema is gone. If you had the coronary artery bypass graft procedure with the removal of vein graft from the leg, you are instructed to wear the stocking for four weeks after surgery. It is important to put compression stockings on in the morning and remove them at night. The stockings can be washed and air dried as needed.

Managing Pain at Home

- When you are discharged from the hospital you will receive a prescription for pain medication.
- As you increase your activity, you may experience some increased discomfort in the muscles around your incision. Pain in the chest is expected after surgery and increases with movement, coughing, laughing or sneezing.
- Expect to use pain medication for four weeks following your surgery. As your pain diminishes, you can decrease the pain medication. Try taking half the dose or stretching the amount of time between doses.

- You should take your pain medication as needed to ensure comfort with activity and your ability to take deep breaths and cough effectively.
- We recommend taking medications at the start of the day when your activity begins and at bedtime to ensure a comfortable night's sleep.
- Alternate prescription medications with over-the-counter medications such as Tylenol or Motrin.

Constipation

Constipation is common following surgery. Pain medication, anesthesia, lying in bed, a poor appetite and poor fluid intake can lead to constipation.

You will be sent home with a stool softener, which will make it easier to have a bowel movement. You should not be straining or pushing hard when you go to the bathroom. If you are having difficulty, there are things you can do to help:

- Eat more fiber (fruits, vegetables, whole grains).
- Drink sufficient fluids, approximately six cups per day. Warm fluids are helpful.
- Increase activity, especially walking.
- Decrease use of pain medications.
- Take a laxative of your choice. We recommend warm prune juice in the morning or milk of magnesia at bedtime. Miralax and Metamucil may also be helpful.

Diet

- It may take up to four weeks for your appetite to return to normal. Until it returns, eat what appeals to you.
- If you are a diabetic, always follow your diabetic diet.
- Follow a diet low in sodium and fat.
- Eat fresh foods as often as possible, as they are best for your recovery. It is best to remove processed food from your diet.
- Eating a heart-healthy diet will minimize the development or recurrence of blockages in the coronary arteries.
- Refer to Food as Medicine Guide on pages 26-27.

Sleep

A common complaint during recovery is difficulty falling or staying asleep. Your regular sleep pattern will return in a few weeks, but may be the last thing to return to normal. The following tips may be helpful:

- Take your pain medication 30 minutes before going to bed.
- Avoid taking naps.
- Get sufficient exercise and fresh air.
- You may still need to sleep with your head elevated. Use a foam wedge or large pillows.
- Some people sleep in their armchair or sofa for a couple of days after returning home. If you do, make sure you lie as flat as possible to avoid blood clots in your legs.
- If you can't sleep due to shortness of breath that is not improving or is getting worse, please call your doctor.

Resuming Sexual Activity

It is normal to have some concerns about your return to sexual activity after heart surgery. These concerns are best handled by talking openly with your partner. Sexual intimacy provides important physical and psychological satisfaction.

There is no reason to avoid sexual activity. Increased heart rate and rapid breathing are normal during arousal. During orgasm, the heart rate may increase about the same as briskly climbing two flights of stairs.

Sexual intimacy can take many forms. Touching, holding and caressing without intercourse are ways to share intimacy during the early weeks of recovery if you are afraid or still feel very tired. As your activity level and endurance increase, you can judge when it is best to return to full sexual activity.

Some Guidelines

- You may resume sexual activity when you are comfortable and ready.
- For six weeks, you should avoid positions that result in pressure on your chest or put full weight on your elbows or arms.
- Sexual activity will be less stressful when both partners are relaxed. If you are upset, fatigued or stressed, sexual activity should probably be avoided. Talking with your partner about any fears or concerns may help you relax and get in touch again.
- Wait one hour after meals or alcohol before beginning sexual activity. This will allow your digestion and other bodily processes time to work without competing for blood and oxygen.

Returning to Work

Most patients are able to return to full employment within two months after surgery.

Emotional Ups and Downs

- Emotional ups and downs are very common during the home recovery phase. People can experience deep feelings of helplessness, vulnerability, sadness and depression. These emotions affect men and women alike.
- There may be good days and bad days. Be kind to yourself. You have undergone a major surgery that has physically and emotionally drained you. In time, you will return to your old self.
- Spread your activities throughout the week. Do not over schedule one day while devoting the next day to rest. Visits from friends and family can be helpful, but should be limited. These visits must fit in your recovery schedule and allow you time to exercise and get plenty of rest.

Recognize Signs of Depression

- Feelings of sadness or emptiness
- Loss of interest or pleasure in daily activities
- Changes in eating habits
- Sleeping too much or too little

If you are experiencing depression, a support group like Mended Hearts may be helpful. They have volunteers who have undergone heart surgery and are ready to listen as well as share their personal experiences with you. You can get more information by going to mendedhearts.org.

If these measures do not lift your spirits or prevent you from actively participating in your recovery, please contact your primary care provider.

When Do I Call My Doctor?

Call your surgeon if you experience any of the following:


- Fever higher than 101 F/38.3 C or shaking chills.
- Changes in incisions.
- Wound separation.
- Redness that extends more than one inch from the incision edge.
- Increased warmth in the skin around the incision.
- Large amount of clear or pinkish drainage.
- Sudden increased amount of drainage.
- White, yellow or greenish drainage.
- Increased swelling, tightness or pain around the incision.
- Tenderness in your calf.
- Long lasting extreme tiredness (fatigue).
- Frequent grinding, clicking or popping in your breastbone.
- One or both legs become cool, pale, numb or painful, especially if this suddenly occurs.
- Fast or irregular heartbeat.
- Shortness of breath/winded while resting or with very little exertion.
- Dizziness or lightheadedness.
- Weight increase of more than two pounds overnight or more than five pounds in a week.
- Increased swelling your legs.

Portions of this handbook are adapted from information from Palo Alto Medical Foundation.




Food as Medicine

GUIDE TO HEALTHY EATING

	NON-STARCHY VEGETABLES	STARCHY VEGETABLES	FRUIT	GRAINS	HEALTHY FATS
GO!	<p>Fresh, frozen, or canned NO added salt</p> <p>All leafy green vegetables: Spinach, kale, collards</p> <p>All orange, yellow, red, green, white non-starchy vegetables: Carrots, tomatoes, red peppers, summer squash, green beans, mushrooms, broccoli, cauliflower, cabbage, Brussels sprouts</p>	<p>Winter squash: Acorn, butternut, pumpkin</p> <p>Potatoes: White potato with skin, sweet potato, yams</p> <p>Other: Corn, green peas, Lima beans, rutabagas</p>	<p>All whole fruit: Fresh or frozen, unsweetened</p>	<p>All whole grains: Barley, oats, brown rice, wild rice, bulgur, quinoa, millet, whole wheat pasta and couscous, brown rice pasta, whole wheat and whole grain bread, buns, tortillas, pitas</p> <p>Cereals (look for more than 4 grams of fiber per serving): Bran flakes, steel cut or old-fashioned oatmeal, most Kashi® cereal, Uncle Sam® Wheat Berry Flakes</p>	<p>Nuts, seeds, and nut butters</p> <p>All nuts and seeds: Walnuts, almonds, pistachios, Sunflower, pumpkin, chia, ground flax seeds, all natural peanut butter (only ingredients peanuts and salt), almond butter, tahini</p> <p>Other healthy fats: Avocado, olives</p>
CAUTION!	<p>Limit due to high sodium content</p> <ul style="list-style-type: none"> • Sauerkraut • Kimchi • Tomato juice • Pickles 	<p>Mashed potatoes: Be mindful of added fat and salt</p>	<ul style="list-style-type: none"> • Applesauce, unsweetened • Canned fruit, natural juices • Dried fruit, sweetened • Frozen fruit, sweetened 	<p>Breads: Made with white flour/enriched</p> <p>Cereal: Cream of Wheat®, granola, grits, rice cereal</p>	<p>Be mindful of portions</p> <p>One serving = 45 calories and 5 grams of fat</p> <p>1 teaspoon: Extra virgin olive oil, canola oil, flaxseed oil, avocado oil, sesame oil, safflower oil, sunflower oil, grapeseed oil, regular mayonnaise</p> <p>1 tablespoon: Pesto made with olive oil, light mayonnaise</p>
 <p>Healthy Eating Tip</p> <p>PORTION CONTROL: Make at least half your plate vegetables for better portion control and weight management.</p>					
STOP!	NON-STARCHY VEGETABLES	STARCHY VEGETABLES	FRUIT	GRAINS	OTHER FATS
	<p>None that are deep fried</p>	<p>Mashed potatoes with added butter, cream, and salt: French fries, tempura vegetables</p>	<ul style="list-style-type: none"> • Applesauce, sweetened • Canned fruit with syrup • Cranberry sauce • Fruit juice 	<p>Breads: Biscuits, cornbread, croissants, foccacia</p> <p>Cereal: Less than 4 grams of fiber per serving, more than 8 grams of added sugar per serving</p>	<p>Butter, cream cheese, coconut, half and half, lard, margarine, gravy, shortening, sour cream, ghee, whipped cream</p>

Choosing a whole foods, plant-based diet has been shown to prevent and reverse chronic disease. Focus on the foods in the green **GO!** column for the best protection, slow down on the foods in the yellow **CAUTION!** column, and avoid or sparingly use the foods in the red **STOP!** column.

PROTEIN/ LEGUMES	DAIRY SUBSTITUTES	CHIPS/SNACKS/ SWEETS	SWEETENERS	OTHER
<p>All beans and legumes: Garbanzo, kidney, black, navy, lentils, edamame, tofu, tempeh</p>	<p>Choose unsweetened: Almond milk, soy milk, flax milk, cashew milk, coconut almond milk, soy yogurt, almond milk yogurt, non-dairy cheese</p>	<ul style="list-style-type: none"> • Popcorn (air-popped) • Rye crisp breads • Whole grain crackers (Triscuits®) • Whole grain pita chips • Soy crisps • Brown rice cakes 	<ul style="list-style-type: none"> • Stevia • Monk fruit extract • Dried, unsweetened fruit such as dates, apricots, figs 	<p>Cooking ingredients: No-salt-added canned diced tomatoes, low-sodium or no-salt-added tomato sauce, vinegar, salsa, dried herbs and spices and salt-free blends, fresh herbs, cocoa powder (unsweetened), lemon and lime juice, broth (low-sodium)</p> <p>Beverages: Seltzer water, unsweetened tea</p>



Healthy Eating Tip

HEALTHY FATS: Whenever possible choose whole food forms of fat: nuts, seeds, avocados, or olives over processed oils.

PROTEIN	DAIRY	CHIPS/SNACKS/ SWEETS	SWEETENERS	OTHER
<p>Limit to 3 ounces per meal (size of a deck of cards or smart phone)</p> <p>All fresh seafood: Wild salmon, tuna, trout, crab, shrimp</p> <p>Canned seafood packed in water: Tuna, wild salmon, sardines</p> <p>Lean meat: Skinless, white poultry, grass fed beef such flank, roast, round, sirloin, wild game, pork such as tenderloin, nitrate/nitrite free lean cold cuts such as turkey breast, chicken breast, ham</p> <p>Eggs: Limit to 3 yolks per week</p> <p>Cheese: Limit to 1 ounce per day</p>	<p>Recommended: 2 cups per day if not using dairy substitutes</p> <ul style="list-style-type: none"> • Skim milk • 1% milk • Nonfat yogurt • Low fat yogurt <p>Limit due to sodium content: Vegan cheese</p> <p>Limit portion to a light topping on food: Cheese</p>	<p>Chips, snacks, baked: Chips, wheat crackers, pretzels, white rice cakes, graham crackers</p> <p>Sweets: 70% cocoa or higher dark chocolate when limited to 1 ounce, fruit juice bar, fat free pudding, sorbet</p>	<ul style="list-style-type: none"> • Honey • Natural maple syrup • Agave nectar 	<ul style="list-style-type: none"> • Ketchup • Mustard • Soy sauce (low-sodium) • Tabasco® sauce • Worcestershire® sauce <p>Limit to 1 serving per day for women, 2 servings per day for men:</p> <ul style="list-style-type: none"> • Beer (12 ounce serving) • Wine (6 ounce serving)

PROTEIN	DAIRY & DAIRY SUBSTITUTES	CHIPS/SNACKS/ SWEETS	SWEETENERS	OTHER
<p>Canned seafood packed in oil: Anchovies, tuna, sardines, salmon, herring</p> <p>Fatty cuts of meat: Beef such as Porterhouse, prime rib, ribeye, dark meat poultry with the skin, hot dogs, lunch meat, pork such as bacon, ribs, sausage, etc, high fat cold cuts that contain nitrate/nitrites such as salami, pepperoni, bologna</p>	<ul style="list-style-type: none"> • Coconut milk • Whole milk • Full fat yogurt • Kefir 	<p>Chips, snacks, fried: Potato chips, tortilla chips, corn chips</p> <p>Crackers: Saltines, oyster, buttered type, made with enriched flour</p> <p>Sweets: Milk chocolate, soda, sweet tea</p>	<ul style="list-style-type: none"> • Sugar/brown sugar • Corn syrup • High fructose corn syrup • Malt syrup • Powdered sugar • Invert sugar • Molasses 	<ul style="list-style-type: none"> • Salt • Creamer, powdered and liquid • Whipped topping

About El Camino Health

El Camino Health provides a personalized healthcare experience at two not-for-profit hospitals as well as primary care, multi-specialty care, and urgent care locations across Santa Clara County.

Bringing together the best in technology and advanced medicine, our network of physicians and care teams delivers high-quality, compassionate care.

elcaminohealth.org



Mountain View Campus

2500 Grant Road
Mountain View, CA 94040



Need a doctor referral? Visit our website or call the El Camino Health Resource Line at 800-216-5556.