

A PATIENT'S  
GUIDE TO  
CARDIAC  
SURGERY



St Peter's Hospital  
*Cardiac & Vascular Center*

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ST PETER'S HEALTH PARTNERS



**This teaching booklet is designed to introduce you to heart surgery.** In the following pages, we will try to answer questions that are frequently asked about the procedure and its purpose. We also encourage you to ask questions of your physician and other health care personnel who are involved in preparing you for the procedure. Before your surgery is performed, your doctor will discuss the operation and any possible risks with you. Following the discussion, you will be asked to sign a legal consent form. Staff will provide you with any additional assistance or information you may require.

**Some of the best heart care in the nation is found at St. Peter's Hospital, named one of America's Top 100 Cardiovascular Hospitals.** Independent healthcare quality experts have repeatedly honored St. Peter's Hospital for its documented excellent performance in caring for patients with heart disease. Furthermore, St. Peter's has received awards for patient safety, stroke care and overall clinical services. St. Peter's has also received nursing's highest honor – national Magnet™ Hospital status – for consistent excellence in nursing services. While we are grateful for and humbled by the prestigious awards and accolades, we are even more proud of what they represent – dedicated people committed to a culture of excellence.

# Introduction

## Risk Factors: Heart Disease Prevention

Research shows that certain conditions called risk factors increase your chance of heart disease. There are some risk factors you can change and some you cannot change.

Look at the following list and place an X in the boxes that apply to you. Think about your risk factors and what lifestyle changes you can make.

### Risk Factors You Can Change

- Smoking
- Cholesterol
  - High Total Cholesterol (200 mg/dL or more)
  - Low HDL (45 mg/dL or less)
  - High LDL (140 mg/dL or more)
  - Triglycerides (150 mg/dL or more)
- High blood pressure
- Overweight
- Lack of exercise
- Diabetes/High blood sugar
- Stress

### Risk Factors You Cannot Change

- Age/Gender (man over 45 and woman over 55)
- Family History
- Personal History
- Ethnicity

Discuss your plan with your healthcare providers:

<b>PLAN:</b>

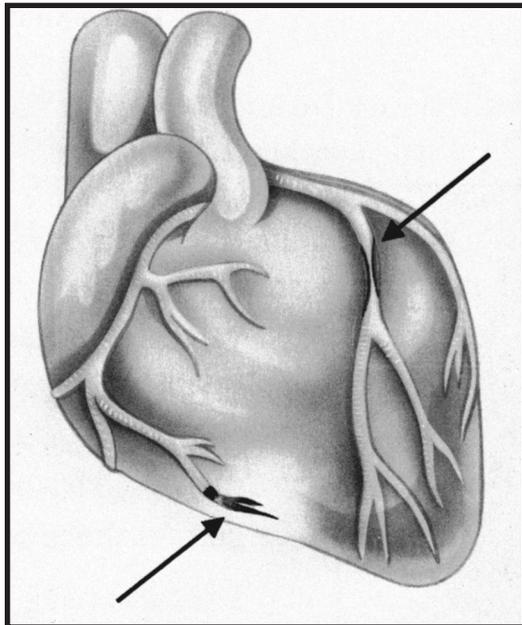
# Coronary Artery Disease

Coronary artery disease is the most common form of heart disease in the United States. A buildup of plaque can clog your arteries. This blocks the flow of blood and oxygen to your heart muscle. When this happens, angina or a heart attack may occur.

**Angina:** Is a short episode of discomfort where no permanent damage to the heart muscle occurs. Symptoms include chest pressure or tightness that can travel down to your arm or up into your neck or jaw. Angina can also give you shortness of breath. You can have angina during exercise, after eating, or at rest. Angina is a warning that your heart is not getting enough blood and oxygen.

**Heart Attack:** A heart attack happens when there is a permanent blockage of blood flow to an area of your heart muscle. This may cause permanent damage to your heart.

The arrows in the drawing are pointing out plaque buildup in the arteries that can lead to serious blockages that, in turn, can lead to a heart attack.



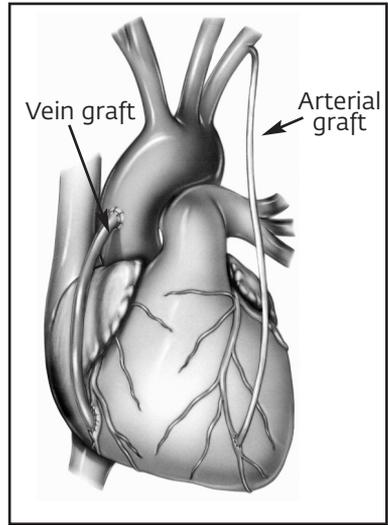
# About Your Heart Surgery

The first step in preparing for heart surgery is learning more about the surgery. Review the information on the pre-operative/post-operative DVD provided to you in your surgeon's office. If you did not receive the DVD or could not view it at home, the content is available on St. Peter's Hospital's internal TV channel. Ask your nurse for assistance. The following pages will help give you an idea of what the surgery will be like.

Coronary artery bypass surgery and valve surgery are the two most common types of heart surgery. Since the heart is a moving organ it must be stopped in order to perform surgery. This is accomplished with the heart-lung machine. This machine pumps blood for your heart and adds oxygen to your lungs to enable surgery to be performed on the non-moving heart.

## Open-Heart Surgery

In many open-heart surgery cases, an incision is made in the center of your chest. It runs from below your neck to below your breastbone, called your sternum. The breastbone is cut for the surgery to take place.



After the surgery has been completed, your surgeon wires your breastbone back together. These specially designed wires will remain in your chest. Your incision will be stitched together and covered with a dressing. Your dressing will be changed by your nurse. Incisions are uncomfortable for a few days and may remain sore for a few weeks. Pain medications will be provided for relief. Please let your nurse know if you are uncomfortable. You will be encouraged to move around and get out of bed after surgery. Over time your discomfort will decrease.

## Coronary Artery Bypass Surgery

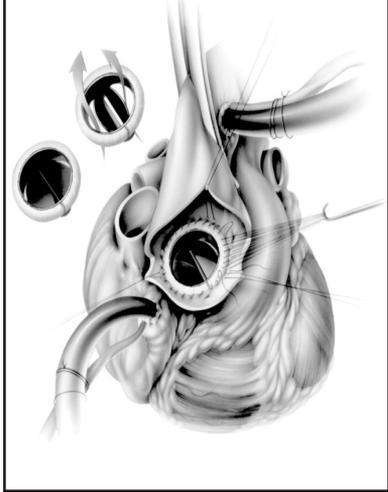
Blood and oxygen flow to the heart muscle through the coronary arteries which surround it. When these arteries are blocked, the heart does not get the oxygen that it needs. Lack of oxygen is felt as angina or chest pain.

To bypass this blockage, the doctor will perform a coronary artery bypass graft surgery (CABG). This involves taking a part of a vein from your leg, and/or an artery from your arm or chest and using it to bypass the blocked artery. After the new artery is grafted, blood flows around the blocked area and again takes blood and oxygen to your heart muscle. If part of a vein is taken from your leg, this will not affect circulation or your ability to walk.

## Valve Surgery

Surgery on the heart valves is the second most common cardiac surgical procedure performed. The heart valves allow the blood to flow in one direction through the heart. Various diseases often will cause these valves to narrow or leak. Once this narrowing or leakage reaches a critical level, it can affect how the heart functions.

The replacement of aortic and mitral valves is sometimes necessary.



Valve surgery involves repairing or replacing the diseased valve.

## Minimally Invasive Cardiac Surgery

Minimally invasive cardiac surgery involves using smaller incisions and different approaches to perform surgical procedures on the heart. Most commonly, this has been utilized for valve surgery. Selection of patients for minimally invasive approaches to cardiac surgery is based on multiple factors that are assessed by the surgeons.



## **Surgery for Other Cardiac Conditions**

Adult cardiac surgical procedures may include, but are not limited to, aneurysms in the chest, cardiac tumors, and rhythm disturbances.

## **The CryoMaze Procedure**

Certain patients with atrial fibrillation who require valve or CABG surgery are candidates for the CryoMaze procedure. This procedure can treat the atrial fibrillation and may restore a normal rhythm.

During the CryoMaze procedure a probe, which gets very cold, is placed on certain areas of the heart to block abnormal impulses. This allows sinus impulses to travel to the atrio-ventricular node (AV node) as they normally should.

# Your Admission

The admission process begins with the activities listed below. During the admission process please feel free to ask questions.

## **Pre-Operative Testing**

- Medical history and physical.
- Nursing interview (a scheduled appointment will be made for a phone interview).
- Medication history (please make sure to bring all your current medications).
- Surgical and anesthesia consents.
- Blood testing.
- Chest X-ray.
- Electrocardiogram (EKG).
- Ask your surgeon's office about pre-op classes and tours of St. Peter's Cardiovascular Unit.
- Spiritual Care visit; ask a nurse for information.
- Lung function (breathing assessment) test.
- Vein mapping.
- Other tests may be ordered by your physician. During this process please feel free to ask questions.

## Night Before Surgery

- Shampoo hair and do not reapply hair products (i.e. hair spray, hair gel, etc.).
- Remove all makeup and nail polish prior to coming to the hospital. If you have artificial nails, remove one from an index finger. Women should not shave their legs prior to surgery – body hair clipping will be done the day of surgery, if necessary.
- Shower as instructed with surgical scrub/soap starting at chin and working down to toes – front and back.
- Do not apply any powders, lotions or deodorant after your shower.
- Do not eat, drink or use any tobacco products after midnight. This includes candy, gum, and breath mints.

## Day of Surgery

- Anesthesia interview.
- Body hair clipping.
- Shower with antimicrobial soap.
- Review of medical data (including Health Care Proxy and medications).

The doctor will instruct you on medications to take before surgery. You may brush your teeth and use mouthwash in the morning, but do not swal-

low any water. Your stomach needs to be empty to keep you from becoming nauseated during the operation. Identify the valuables (glasses, dentures, hearing aids) you must have with you. Your family member will be responsible for these valuables during your surgery. Please leave all other valuables (purse, wallet, jewelry) at home.

You will be admitted to the CV Pre-op area dedicated to cardiac surgery patients. Rarely, the hospital census may necessitate a male/female room. Please make the nurse aware of any concerns or special needs.

You will be interviewed by a member of the anesthesia department. In the CV Pre-op area several monitoring catheters will be placed after you receive local anesthesia.

Your family members should wait in the CVICU area and register with the surgery volunteer. The surgeon will contact your family when your surgery has been completed. There is a phone in this area that visitors should use to call the nursing desk prior to each visit. Once you are settled in your room after surgery your family may visit for a brief time.

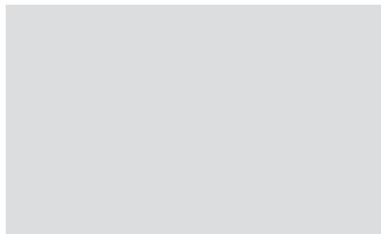
# Cardiovascular Intensive Care Unit – CVICU

The CVICU can be a stressful experience for both you and your family. The nursing staff want to help you through this critical period by providing a clear understanding of your condition. Your status may be listed as “serious” while you are in the CVICU. This should not cause undue concern to your family or friends. Your family may not feel comfortable in this setting. The optional tour will make them feel more familiar with the CVICU.

The nurse in the CVICU will ask for one family member to serve as the family spokesperson during your stay. The nurse will keep this family member informed of your condition, asking him or her to share that information with family members and loved ones. We encourage your family to go home and rest; this is a stressful time for them also. Our nursing staff will work with patients and

their loved ones to develop a visitation plan that meets the needs of the patients, their families and their guests.

A critical care nurse will remain at your bedside while you recover from anesthesia in the CVICU. Your family may visit with you after speaking with the physician. In most cases it takes 60 minutes or longer to get you settled in the CVICU with the monitoring equipment set up. You will be connected to a heart monitor, which records the heart rate and rhythm at your bedside and at the nurses’ station. You will have a breathing tube inserted during surgery that is connected to a ventilator. This provides oxygen and helps the lungs to breathe while recovering from anesthesia. As you wake up, the ventilator settings are adjusted so that you gradually begin breathing on your own. The tube will not be removed immediately.



During this time, you will be unable to speak and it is important to resist the urge to pull on the tube. You need to stay calm and keep your hands at your side. The nurse and respiratory therapist will be monitoring you closely. Once your blood tests indicate you are breathing well, the breathing tube is removed. You will be placed on oxygen via an oxygen mask or nasal cannula (oxygen tube). You will be asked to take deep breaths at frequent intervals.

Chest tubes will be inserted into your body during surgery, which drain bloody fluid from your chest to provide room for your heart to pump. A catheter, which is used to drain urine, will be placed into your bladder. You may feel discomfort when you awake, but the catheter is critical in assessing your kidney function and urine volume. You may require transfusion of blood products and alternatives to transfusion may be discussed with you prior to surgery.

Intravenous solutions assure proper hydration and support blood pressure and heart rate. These solutions will gradually be tapered off depending on your stability. In addition, you may notice monitoring lines have been placed in your neck, wrist or groin. Ongoing assessments

are taken by your nurse to assess your progress. Data from the monitoring lines is shown on the screen above the bed, which may transmit beeps or buzzes. These sounds, although startling to visitors and patients alike, are being carefully monitored by your nurses. In addition to a bulky dressing on your incision, Ace™ bandages are wrapped on your legs for 48 hours for those with leg incisions. You may also have a warming blanket after surgery.

During your surgery, your physician may have attached several wires, known as pacing wires, to the surface of your heart. These may be attached to an external cardiac pacemaker you will wear as necessary during your post-op course of treatment. These wires will be removed before you leave the CV Progressive Care Unit.

Your comfort is a primary concern and your doctor may prescribe medication to reduce discomfort. Complementary therapies are also available. Be sure to let your nurses know if you are in pain. You will remain in the CVICU for 12 to 48 hours for close observation. Chest tubes are removed when the fluid discharge levels decrease to a safe level.

# Cardiovascular Progressive Care Unit

Approximately 12 to 24 hours after your surgery, you will be transferred from the CVICU to the CV Progressive Care Unit. Your heart monitor will be a small box that will fit in the front pocket of your hospital gown. This will allow you to move about while your heart rate and rhythm are constantly monitored. This monitor will be in place until discharge from the hospital.

A nasal cannula (oxygen tube) in your nose will help your breathing. Your nurse will be checking your oxygen levels frequently and soon you will be moving around without the oxygen tube. You may have a hoarse voice or sore throat from your breathing tube, but this will get better in a few days. If at any time you feel short of breath, let your nurse know immediately.

Your IV line will be capped off and flushed multiple times per day by your nurse. Your chest tube may also still be in place. IV antibiotics will continue to be administered for 48 hours or as necessary. When your tubes are removed, a chest X-ray will indicate if your lungs have fully expanded.

Your diet will progress from liquids to a low-salt, low-fat, caffeine free, carbohydrate controlled diet. Due to the medication you will be receiving and the stress of surgery, you may experience a spike in blood sugar levels. This does not necessarily mean you are a diabetic. Your blood sugar levels will be monitored throughout your stay. Eating a well-balanced diet speeds healing. A Registered Dietitian will review with you a diet specific to your needs. A phone number will be provided for any questions after discharge. Early morning lab work and weight will be done daily.

It is normal to experience pain after surgery. The surgical procedure involves cutting into muscle and bone. It is important to take your pain medication regularly. Often, pain decreases once the chest tubes are removed. You need to be comfortable enough after surgery to cough, take deep breaths, get out of bed, and walk. The more you move, the better you will feel. Please let staff know as soon as you have any discomfort or if your pain medication is inadequate. The discomfort or pain should not be the same as the cardiac

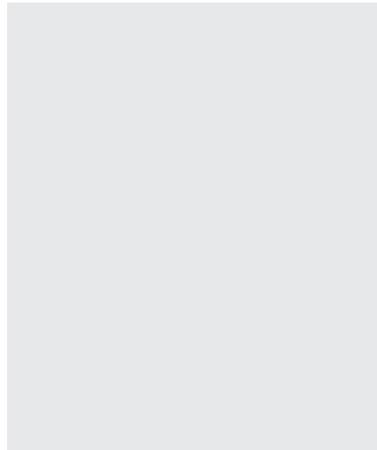
discomfort you may have experienced before surgery. Report to your RN immediately if you experience this type of pre-operative discomfort after surgery.

In the hospital, your nurse will care for your surgical incisions. Dressings will be changed as needed. One of the heart surgeons and an assistant will visit your room every day. They will be checking your progress and needs. Any problems or concerns you are having can be expressed to any staff member.

You will be expected to use your incentive spirometer 10 times an hour while you are awake. This simple breathing device forces you to take a deep breath and may make you feel the urge to cough. Hug a pillow to protect your chest (sternum) while coughing. Coughing is necessary to prevent pneumonia and other health problems. Deep breathing opens up the tiny air sacs in the lungs and coughing helps bring up the mucus.

The first day after surgery you will need to get out of bed and walk. You will progress to four or five short walks a day. At first you will be accompanied by your nurse or exercise physiologist, but you will quickly progress to walking with your family and by yourself.

Remember to keep good posture and avoid slumping, even if you are sore. Standing straight while you walk gives you better balance and allows you to breathe easier. Be sure to wear slippers that fit and have non-skid soles. Taking your pain medication at regular intervals will help you feel less stiff and sore while you are up and about. Each day you will increase your activity and the length of time you are out of bed. Before you are discharged, you will be walking up stairs with your nurse or exercise physiologist.



# Discharge Planning

Your doctors, nurses, and therapists will all work together to create a plan for your care to make sure your discharge plan meets your needs. You may require rehabilitation or home care. Upon discharge, a phone number will be available for any questions or concerns.

You will receive individualized written instructions when you are discharged from the hospital. These instructions will include information about your diet, activity, medications, and caring for yourself.

## **Coumadin® (Warfarin)**

Some cardiac surgery patients will need to take Coumadin® after discharge from the hospi-

tal. Coumadin® is an anticoagulant. Anti means against, and coagulant refers to blood clotting. In most cases, your surgeon anticipated the use of Coumadin® and will have discussed it with you prior to your surgery.

Approximately 1/3 of cardiac surgery patients in the USA develop a rapid, irregular heart rhythm after cardiac surgery called atrial fibrillation. If the atrial fibrillation does not resolve prior to discharge, you may need to take Coumadin® at home as determined by your healthcare provider. Information regarding Coumadin® dosing, blood tests, and diet will be provided for patients going home on Coumadin®.

# After Your Hospital Stay

During your recovery, things may seem to be moving slowly. Time and activity will help you regain your strength and energy.

## **Emotions**

After heart surgery, you may experience changes in your emotions. During your recovery period you may feel and act differently. Your family may

notice some changes. It is important to remember that these are usually temporary. You may feel angry, depressed, fearful or anxious all at once, or you might experience one or two of these feelings at one time. You should be feeling more like yourself in four to six weeks. If these symptoms are a concern for you or your family, please call your doctor.

Keeping yourself healthy gives you the energy to handle stress you will experience in life. To maintain or improve your health, get enough sleep, eat a well-balanced diet, and walk daily. Know what you value in life and put your energy into it. Make time to do the things you enjoy. You cannot rid your life of all stress, but you can choose how to respond to it.

## Incisions

For the first few weeks you are at risk for infection. Guidelines about wound/incision care and signs of infection will be provided for you at discharge. You will need a thermometer to monitor your temperature after you go home. Most incisions are sealed with a thin layer of glue/sealant. This will peel off over time. Please note that leg incisions take longer to heal and ankle swelling is common. Walking will help to decrease the swelling, as well as elevating the legs when at rest. Incisions on the arm may appear bruised and swollen, but this will resolve itself over time. Make sure you do not have blood pressure measurements or blood taken from that arm for three months. If you have any questions about your care after you return home, call your surgeon.

## Sternum (Breast Bone) Precautions

One of your main concerns after surgery is your broken sternum. Like any other broken bone, this will take six to eight weeks to heal. If you broke your arm or leg, a cast would be applied to help protect your broken bone while it is healing. Since no cast can be applied to your chest, we need to rely on you to protect this healing bone by not pushing, pulling or lifting anything more than 5 to 10 lbs. Avoid upper body twisting and repetitive arm motion (i.e. laundry, vacuuming, washing floors, sweeping, raking, etc.). It will take pre-planning to follow this rule. Guidelines and suggestions will be outlined by your nurse. Feel free to ask questions.

## Bathing

You may take a shower as instructed by your nurse, but remember:

- Take your first shower with someone nearby, if possible.
- Use warm water rather than hot; do not let the shower stream directly onto your incision.
- Use a mild unscented soap and do not scrub your incision.
- Do not use lotions or powders near your incision.

- Pat steri-strips dry (remove them as they begin to fall off).
- You may shampoo your hair.

## Walking

Daily walking is necessary for your recovery. Space your activity and allow plenty of rest throughout the day. Start with a 10-minute walk, four times a day. As you become stronger, increase your walks to 15 minutes and then to 20 minutes. Slowly add to your distance and speed. How far and how fast you walk is what helps the heart get stronger.

Your goal is one mile each day by the end of two weeks. It is recommended to walk on a flat surface as it takes less energy, but if you must walk up and down hills, shorten the total distance. You will get less fatigued and enjoy your walk more if you wear comfortable shoes with non-skid soles and well-fitting socks.

Remember that walking can be done almost anywhere but extreme hills and inclement weather makes exercise more difficult. Exercise indoors if necessary (mall, grocery store, museum, or a local school in the evening). Do not use exercise equipment until cleared by your healthcare provider.

When walking, you should avoid:

- Very hot or cold weather.
- Humid weather.
- Strong winds.
- Sun – if outside be sure to wear a shirt and do not use sunscreen near your incision.
- Sand and deep snow.
- Icy conditions.
- Stairs – climbing stairs takes more energy than walking, so take your time and go slowly. Plan your day so that you are going up and down the stairs less often. There is no need to change where you sleep if your bedroom is upstairs. Stop and rest if you become short of breath or dizzy.

## Cardiac Rehabilitation (Outpatient)

Your doctor may suggest you join a cardiac rehabilitation (rehab) program. These monitored exercise programs are found at a hospital, clinic, or sites in the community. You will learn what your risk factors are and how to control them. Additional information regarding outpatient cardiac rehab programs will be provided at discharge.

## Sexual Intercourse

Be honest with your partner. You are encouraged to cuddle, focusing on the importance of communication of feelings and concerns. It takes about the same amount of energy to have intercourse as climbing two flights of stairs. Do not get too tired. Do not lie on your chest for the first six weeks. Lie on your back or use the side-to-side position instead during sexual intercourse.

## Nutrition

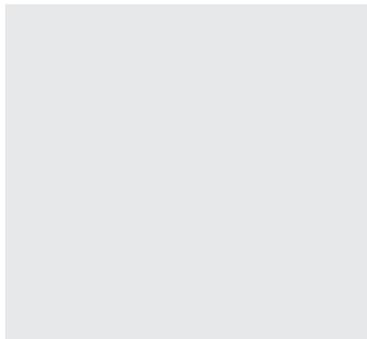
Remember to follow the specific diet guidelines provided by your Registered Dietitian while in the hospital. Here are some general recommendations:

- Eat fruits, vegetables, whole-grain breads/cereals, and fat-free milk and milk products (i.e. yogurt).
- Avoid the salt shaker and salty foods.
- Introduce lean meats, poultry, fish and beans in your diet.
- Limit saturated fats and trans fats (read food labels).
- Fluids, grains, and fruit skins all help promote bowel regularity.
- Remember, color/variety/moderation.

Should you have any additional questions about your specific dietary needs contact the Registered Dietitian (refer to the phone number on your written nutrition materials).

## Pain

Pain medication will be discussed at discharge. You can expect some pain around the incision for several months after you get home. Sneezing, coughing, sudden changes in body position, and sitting around for long periods of time may cause pain. This happens because pain starts in the muscle and bone rather than in your heart. Do not be surprised if the location and amount of your pain changes from day to day. Six weeks after surgery, you will feel much better and after three months, you will be well on the road to recovery. If you need refills on your pain medication, please call your doctor's office.



## Sleeping

Do not sleep on your stomach until cleared by your surgeon. If you are experiencing difficulty sleeping:

- Take your pain medication at bedtime.
- Continue gradual exercise (do not exercise within three hours of bedtime).
- Minimize naps during the day.
- Avoid caffeine.
- Utilize relaxation techniques.

## Driving

No driving is allowed until you have physician approval. Riding in the car is allowed. A seat belt is always recommended for your safety. It may be more comfortable to place a small towel between the shoulder belt and your chest incision. For longer trips, get out of the car and walk around for a few minutes every hour. This improves circulation and helps prevent dangerous blood clots in your legs. Anticipate being able to drive in approximately four weeks.

## Smoking and Alcohol Use

If you smoke or use tobacco products, you need to stop for your health. If you think you will

have difficulty eliminating tobacco from your daily routine, please inquire about smoking cessation resources. If you have tried to quit smoking before but were unsuccessful, do not despair. Most people have tried to quit several times before they are successful. So try again.

Alcohol consumption should be discussed with your physician.

## Health Maintenance

Please discuss with your health-care provider before receiving any flu or pneumococcal vaccines.

## Returning to Work

Your return to work depends on your recovery, type of surgery, and job characteristics. Be sure to ask your physician during your follow-up visit. You need to contact your surgeon's office for any paperwork provided to you by your employer for your medical leave.

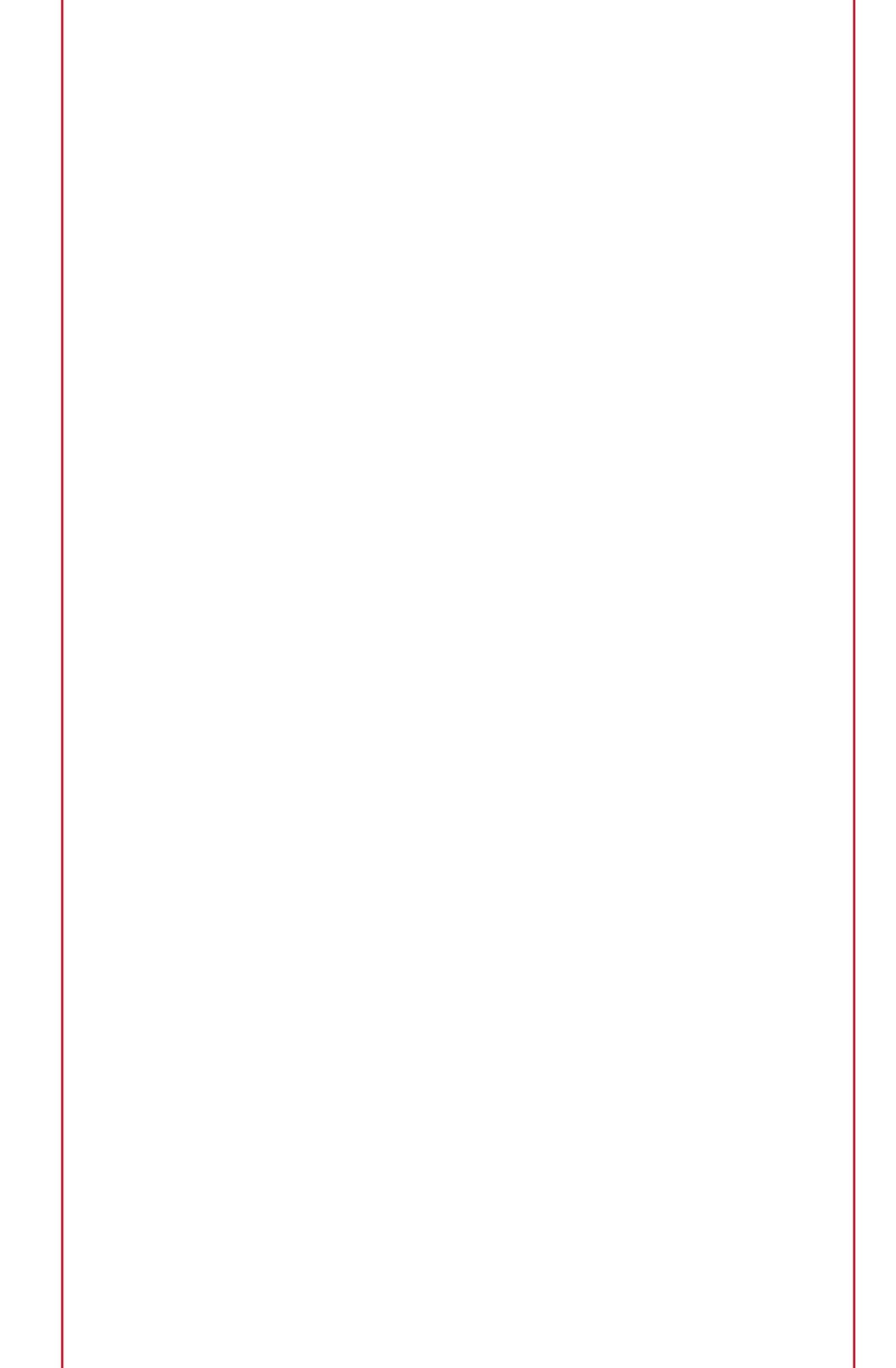
# Medical Information

## **Patients' Medical Information is Confidential**

Under the Health Insurance Portability and Accountability Act (HIPAA) all hospitals must inform patients how their medical information is used, and give patients the right to ask to alter or withhold certain information. Patients must also be told how to inquire or complain about privacy issues.

These elements are explained in detail in the Notice of Privacy Practices provided to each patient. To see a copy, ask your nurse or other staff member. Inquiries or complaints should go to:

Patient Representative  
St. Peter's Health Partners  
315 South Manning Boulevard  
Albany, NY 12208  
(518) 525-1192





**St Peter's Hospital**  
*Cardiac & Vascular Center*

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