

# AWAITING CARDIAC SURGERY

Comprehensive Guide for Patients and Families



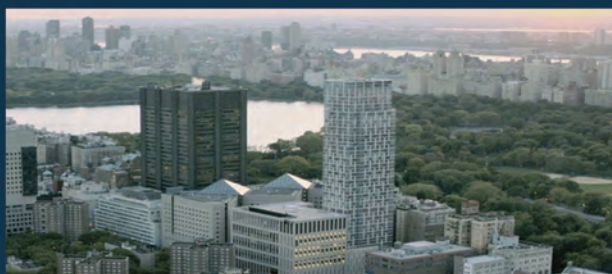
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**Mount  
Sinai**  
*Heart*



MITRAL FOUNDATION

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Department of Cardiovascular Surgery

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This booklet offers detailed information intended to serve as a guideline only and reflects the consensus of the authors at the time of publication. It is imperative to highlight that this guide should not replace consultation with a health care professional. The content has been written to help you and your family understand your heart and what will happen when you undergo cardiac surgery. Keep this booklet with you during your stay and upon discharge. Please remember that our staff will always be available to answer your questions and to assist you and your family whenever possible.

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MITRAL FOUNDATION

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[www.mitralfoundation.org](http://www.mitralfoundation.org)

Leading Education on Mitral Valve Disease



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# 1

## INTRODUCTION AND QUICK OVERVIEW

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## PERIOPERATIVE AGENDA

**SURGEON NAME**  
**CONTACT INFORMATION**  
**PROCEDURE**

### CONSULTATION WITH YOUR SURGEON



/ / 20 at : AM / PM

### PRE-TESTING APPOINTMENT



/ / 20 at : AM / PM

### DENTAL CONSULTATION



/ / 20 at : AM / PM

### DIAGNOSTIC TESTS

CARDIAC ANGIOGRAM "CATH"



/ / 20 at : AM / PM

CARDIAC COMPUTED TOMOGRAPHY ANGIOGRAPHY (CTA)



/ / 20 at : AM / PM

COMPUTED TOMOGRAPHY (CT) OF THE CHEST



/ / 20 at : AM / PM

COMPUTED TOMOGRAPHY OF THE CHEST W/ CONTRAST



/ / 20 at : AM / PM

TRANSTHORACIC ECHOCARDIOGRAM (TTE)



/ / 20 at : AM / PM

TRANSESOPHAGEAL ECHOCARDIOGRAM (TEE)



/ / 20 at : AM / PM

CAROTID DOPPLER ULTRASOUND



/ / 20 at : AM / PM

PULMONARY FUNCTION TESTS (PFTs)



/ / 20 at : AM / PM

OTHER -



/ / 20 at : AM / PM

### OTHER CONSULTATIONS -



/ / 20 at : AM / PM

### OTHER CONSULTATIONS -



/ / 20 at : AM / PM

### ADMISSION DATE AND CHECK-IN TIME



/ / 20 at : AM / PM

### SURGERY DATE AND TIME



/ / 20 at : AM / PM

You will report to the resgistration area on the 5th floor of the Guggenheim Pavilion (GP5), Room 182 (also known as Cardiac Registration Desk, Tel: +1 212-241-6463). Take the West Elevator to the 5th floor.

### FOLLOW UP APPOINTMENTS

CARDIOLOGIST



/ / 20 at : AM / PM

PRIMARY CARE PHYSICIAN



/ / 20 at : AM / PM

SURGEON



/ / 20 at : AM / PM

OTHER -



/ / 20 at : AM / PM

This form is intended to help you organize all the appointments you will have and need to go to before your surgery, during your hospital stay, and after discharge. Please note that the schedule may change due to emergencies or other unforeseen circumstances.



## Dear Patients,

Thank you for choosing Mount Sinai Heart and the Department of Cardiovascular Surgery at The Mount Sinai Hospital as your health care provider. In addition to our solid pledge to assist you with your cardiac care needs, we are deeply committed to guide you through your hospital experience.

This booklet was conceived to help you and your relatives learn more about your upcoming heart surgery while building an invigorating relationship with your surgical team. We strongly believe that excellent decision-making before, during and after

your surgical procedure is crucial to preserve its durability. Therefore, the following medical data and information is mainly focused on assisting you make the right decisions on every step of the way. As you read, please fill out the blanks and think of additional questions. This booklet is not intended to replace a surgical consult nor to keep you from asking questions and we actually encourage you to do so. If you have doubts or concerns after your consult, please do not hesitate to call us. We wish you an expeditious and healthy recovery.



## Dear Families,

You play a significant role in assisting your loved one before, during, and above all, after surgery. Requiring heart surgery may trigger an emotional reaction which is mostly dominated by anxiety. Therefore, patients and families need to have a positive and supportive attitude in every potential scenario. Please help your relative to stay active and to follow a healthy diet, you can also facilitate a smoke free environment and provide continuous support if your family member is an active smoker. During surgery, please read this booklet once more

in order to provide the best possible postoperative assistance. Considering hospital discharge, organize things ahead of time (patients often need full time help for at least a week after leaving the hospital). Furthermore, think about transportation and daily routine activities such as housecleaning or grocery shopping, and attend the discharge class to receive more comprehensive information.

We hope you find this booklet useful in enhancing your capacity to help. Should you have questions, please contact us.













QUICK OVERVIEW

PLEASE BRING THIS GUIDE WITH YOU TO ALL YOUR APPOINTMENTS

If you experience any change in your current symptoms or have any concerns while awaiting surgery, please call your doctor immediately for further assessment. If this is a true emergency, please dial 911 or go to the nearest Emergency Room.

The following is a condensed version of the contents of *Awaiting Cardiac Surgery - Comprehensive Guide for Patients and Families*. If you do not wish to or do not have the time to read the entire guide, at least read this section. Much more detailed information is found on the corresponding sections along the booklet.

PLEASE COMPLETE THE FOLLOWING INFORMATION

CONTACT PERSON	 _____ 
SURGEON	 _____ 
CARDIOLOGIST	 _____ 
FAMILY DOCTOR	 _____ 
PHARMACY	 _____ 

## BEFORE YOUR HOSPITAL ADMISSION

- Have this booklet with you at all your appointments (including hospital admission)
- Complete any additional preoperative testing and SEND US REPORTS AND IMAGES
- Ask your dentist to fax a letter stating that YOU DO NOT HAVE ACTIVE INFECTIONS



You should see a dentist at least 3 months before your valve or aortic surgery to undergo a thorough dental exam and cleaning. Active dental infections may predispose you to develop a heart infection.

- Prepare a detailed list of medications (also OTC), herbal supplements and vitamins
- Establish a postoperative plan and identify who will help you at home after surgery
- Complete our questionnaire about your personal endurance and daily activities
- Talk to other patients who have had heart surgery (share concerns and stress)
- Do not miss your PRE-TESTING appointment
  - Bring a family member or friend with you
  - You are allowed to eat before UNLESS advised otherwise for a specific test
  - Allow 3-5 hours to complete the entire pre-admission testing itinerary

### PRE-TESTING ITINERARY

Thorough history and physical exam  
Review of your current medications  
Can bring all prescriptions in the original bottles  
Anesthesia consult (check insurance participation)  
EKG, chest X-ray, blood drawing  
Preoperative teaching by our nursing staff  
Cardiac Surgical Intensive Care Unit (CSICU) visit  
Plan for Operating Room (OR)  
Informed consent  
Round of questions and clarifications



The Guggenheim Pavilion (GP)  
1190 Fifth Avenue, 5th Floor (5), West (W)  
GP5 West, Room 182 - **Cardiac Registration Desk**  
Telephone: +1 212-241-6463



Some medications might need to be stopped before surgery (e.g. aspirin, clopidogrel, warfarin, antihypertensives) so please double check this with our staff before the procedure.

## THE NIGHT BEFORE SURGERY

- You may eat a regular dinner, no restrictions
- **MUST FAST AFTER MIDNIGHT**, do not eat or drink after midnight
- Take your medications as directed by your anesthesiologist or surgeon
- Antiseptic preoperative bath (supplies provided at pre-testing appointment)
- Sleep well



Please provide the name and contact information of the person who will be your point of contact to your surgeon's administrative assistant and your scheduler.

## ARRIVING TO THE HOSPITAL

- Remove nail polish, do not apply any makeup, do not use fragrances or hair products
- Arrive at the scheduled time at the **Cardiac Registration Desk**
- You will receive information regarding your rights as a patient
- The information on file will be double-checked (contact, insurance, and procedure)
- Your family will head to the Surgical Family Waiting Room (GP 2<sup>nd</sup> floor) and register
- Your family may stay with you until you go to the operating room (OR)
- An escort will take you to the assessment area and you will change into a gown
- A nurse will verify your planned procedure and review your records and tests
- An escort will take you to the pre-surgical holding area
- You and your family will meet the entire team before going to the OR
- Any visible body hair on the site of the surgical incision will be clipped
- Your anesthesiologist will place an intravenous line and administer a relaxant
- You will be wheeled into the OR and will be transferred onto the operating table
- Relatives will head to the waiting room



You are responsible for contacting your surgeon's administrative assistant or your scheduler between 2:00 PM and 3:00 PM the day before surgery to obtain a time of arrival.

## DURING AND AFTER SURGERY

- Overall, surgery may take 4-8 hours, depending on the complexity of the procedure
- After surgery you will go to the CSICU (GP5C, Beds 1-12) Tel: +1 212-241-7344
- One of the surgeons will speak to the family
- If you wish to restrict visits or visitors, please let us know before the procedure

## DURING AND AFTER SURGERY

- CSICU allows 2 visitors per patient, with no exceptions to this rule
- CSICU visiting hours: 09:00 AM to 09:00 PM (no visitors allowed during shift change)
- When you wake up, you will have tubes, catheters and other monitoring devices
- The breathing tube will be removed a few hours after surgery
- If you are stable “off drips”, you will be transferred to the floor (GP, 7<sup>th</sup> floor, West)



Families can expect a call up to 4-8 hours after wheeling the patient to the OR. Preparation for surgery, monitoring after and transportation to the CSICU also require the surgeon's full attention.

## RECOVERY AND HOSPITAL DISCHARGE

- You must be pain-free in order to cough, breathe deeply, move out of bed and walk
- Ask for pain medication at any time to achieve an appropriate comfort level
- Episodes of mild confusion or mood swings are common after surgery, do not worry
- Try to eat as soon as possible (request a consultation with a dietitian at any time)
- Engage in physical therapy, early walking is key to a fast and successful recovery
- Tell us if you have any questions or concerns - education is critical before discharge
- You must have someone to help you at home for the first week or two
- Do not miss your follow-up appointments, particularly If you are on Coumadin®
- Eat well, sleep well, rest if you feel tired (legs elevated above your heart)
- Follow our booklet guide to successful recovery after cardiac surgery

WE WOULD LIKE TO ADDRESS YOUR CONCERNS BEFORE, DURING, AND AFTER SURGERY  
DO NOT HESITATE TO CALL OR EMAIL US FOR IMMEDIATE ATTENTION IF YOU EXPERIENCE

Worse chest pain (at rest or not relieved by medication)  
Non-incisional (or surgical) chest pain, tightness or discomfort  
Unusual chest pain “feels like an indigestion”  
Signs of stroke (numbness, weakness, loss of speech or vision, facial drooping)  
Sudden severe headache with no history of migraines  
Fainting spells or severe dizziness  
Worsening shortness of breath (not relieved by rest)  
Worsening coughing with very easy fatigue  
Unexplained weight gain >2 lbs. daily and worsening leg swelling  
Palpitations or rapid heartbeat (call 911 if your heart rate is > 150 bpm)  
Coughing up bright red blood

**CALL 911 OR GO TO THE NEAREST ER FOR AN EMERGENCY**





## DEPARTMENT OF CARDIOVASCULAR SURGERY AT THE MOUNT SINAI HOSPITAL

### TELEPHONE AND EMAIL DIRECTORY

SURGEONS	TELEPHONE	EMAIL
DAVID ADAMS	+1 212-659-6820	david.adams@mountsinai.org
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ROBIN VARGHESE	+1 212-659-9360	robin.varghese@mountsinai.org

#### TELEPHONE NUMBERS YOU MAY NEED WHILE IN THE HOSPITAL

BILLING SERVICES	+1 212-731-3600	ANESTHESIA BILLING	+1 800-627-4470
CSICU (5 CENTER)	+1 212-241-7344	CSICU BILLING	+1 800-627-4470
CSICU (6 CENTER)	+1 212-241-7955	CVS BILLING	+1 212-987-3100
FLOOR (7 WEST)	+1 212-241-7918	CATHOLIC CH	+1 212-241-7908
INPATIENT REP	+1 212-659-8990	GREEK ORTHODOX CH	+1 212-749-0017
OUTPATIENT REP	+1 212-242-6848	JEWISH CH	+1 212-241-7262
REGISTRATION DESK	+1 212-241-0714	PROTESTANT CH	+1 212-241-5280

#### NURSES - Tel: +1 212-659-6899

JOEL ESTABILLO	Dr. Adams' Team
ROBERTO GALAO-MALO	Dr. Anyanwu
LAURITA HIDALGO	Dr. Stelzer
MEGHAN MURPHY	Dr. Varghese
ELIZABETH OSWALD	Dr. Reddy
JANA PETRIGANOVA	Dr. Stewart
ALLISON WEISS	Dr. Adams' Team
TAMEKA WHITE	Dr. Stewart

#### SCHEDULERS

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THERESE KING	+1 212-659-6805
LETICIA NIEVES	+1 212-659-1383
NINA TORRES	+1 212-659-6821

#### DR. ADAMS' OFFICE

MARIE BADAGLIACCA	+1 212-659-6820
FRONT DESK - TEL	+1 212-659-6800
FRONT DESK - FAX	+1 212-659-6818
KIMBERLY BUSHELL	+1 212-659-6820
TERESA KEARNS	+1 212-659-6820
THERESE KING - TEL	+1 212-659-6805
THERESE KING - FAX	+1 212-426-2050
JOSE LOPEZ	+1 212-659-6820
JUDY QUINONES	+1 212-659-6820
LEEMOR SELITTO	+1 212-659-6826

#### MY NUMBERS

Pacific Interpreters (+1 800-264-1552)



## THE MOUNT SINAI HOSPITAL TELEPHONE DIRECTORY

### MOUNT SINAI HEART

CARDIOLOGY	+1 212-427-1540
CATHLAB	+1 212-241-0935
CORONARY CARE UNIT	+1 212-241-7222
DIRECTOR	+1 212-241-7911
ELECTROPHYSIOLOGY	+1 212-241-7272
HEART FAILURE	+1 212-241-7300
IMAGING (CT-MRI)	+1 855-674-3278
TRANSFER SERVICES	+1 212-241-6467

### ON-SITE AMENITIES

BEAUTICIAN	+1 212-241-5570
INTERNATIONAL	+1 212-241-1100
LIBRARY	+1 212-241-6110
NEWSPAPERS	+1 212-241-2679
NOTARY	+1 212-241-6848
NURSING (PRIVATE)	+1 212-241-7383
PARKING	+1 212-241-5125
ROOM SERVICE	+1 212-241-7200



In case of an emergency or illness that requires cancellation of surgery, speak as soon as possible to the Cardiac Registration Desk at 05:30 AM. Please call +1 212-241-6463.



## THE MOUNT SINAI HOSPITAL RESOURCES FOR YOUR HOSPITAL STAY

### MOUNT SINAI GIFT SHOP

The gift shop is located on the 7th floor, East Atrium in the Guggenheim Pavilion (GP7E), and offers a wide variety of gifts including balloons, greeting cards, stuffed animals and more. Delivery service to the rooms of hospitalized patients is provided free of charge.

### COFFEE STAND "STARBUCKS COFFEE"

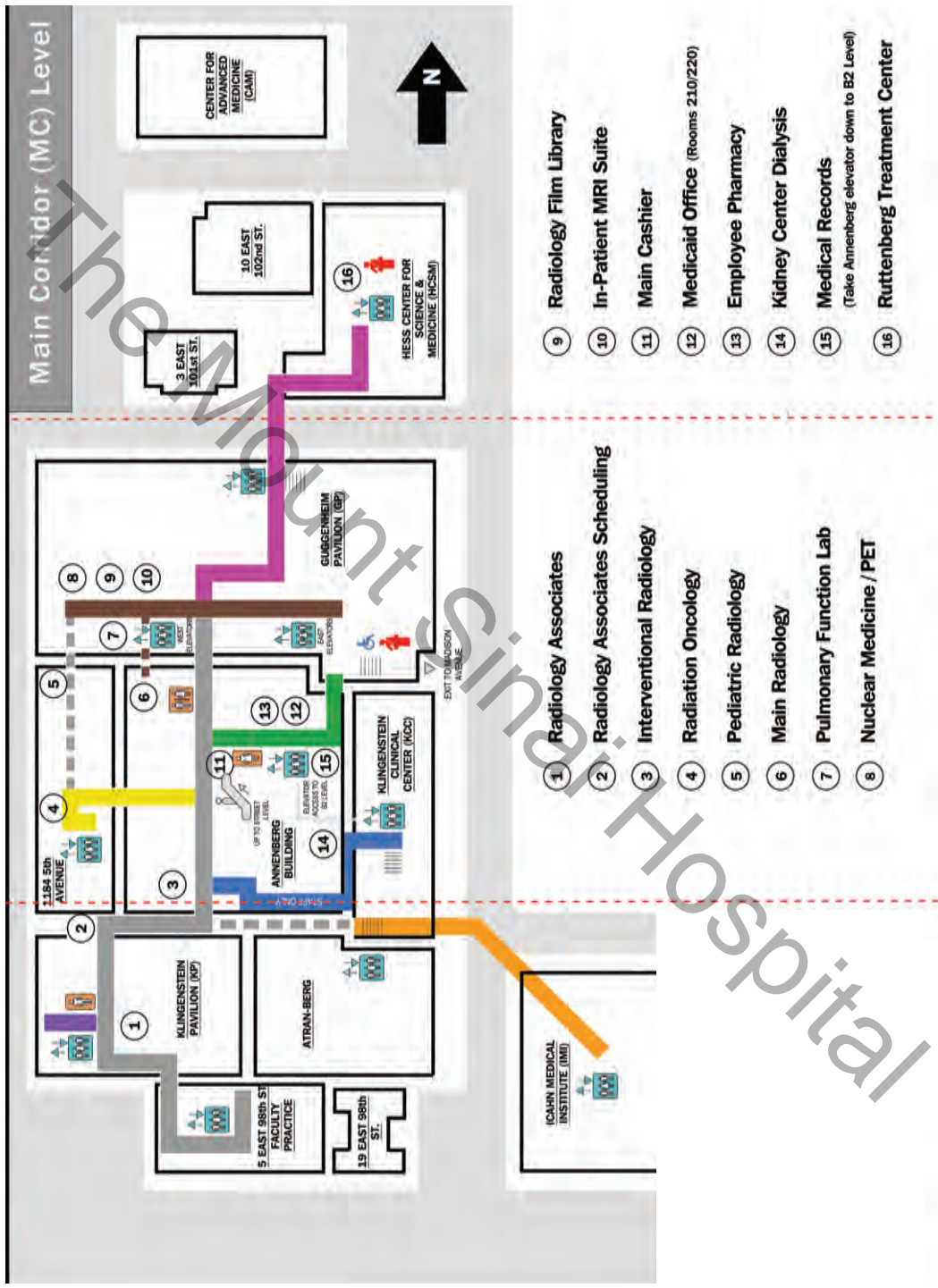
The hospital coffee stand serves Starbucks coffee. It is located in the Guggenheim Pavilion 1st floor (GP1), and opens at 6:30 AM. The stand also serves a variety of grab-and-go items.

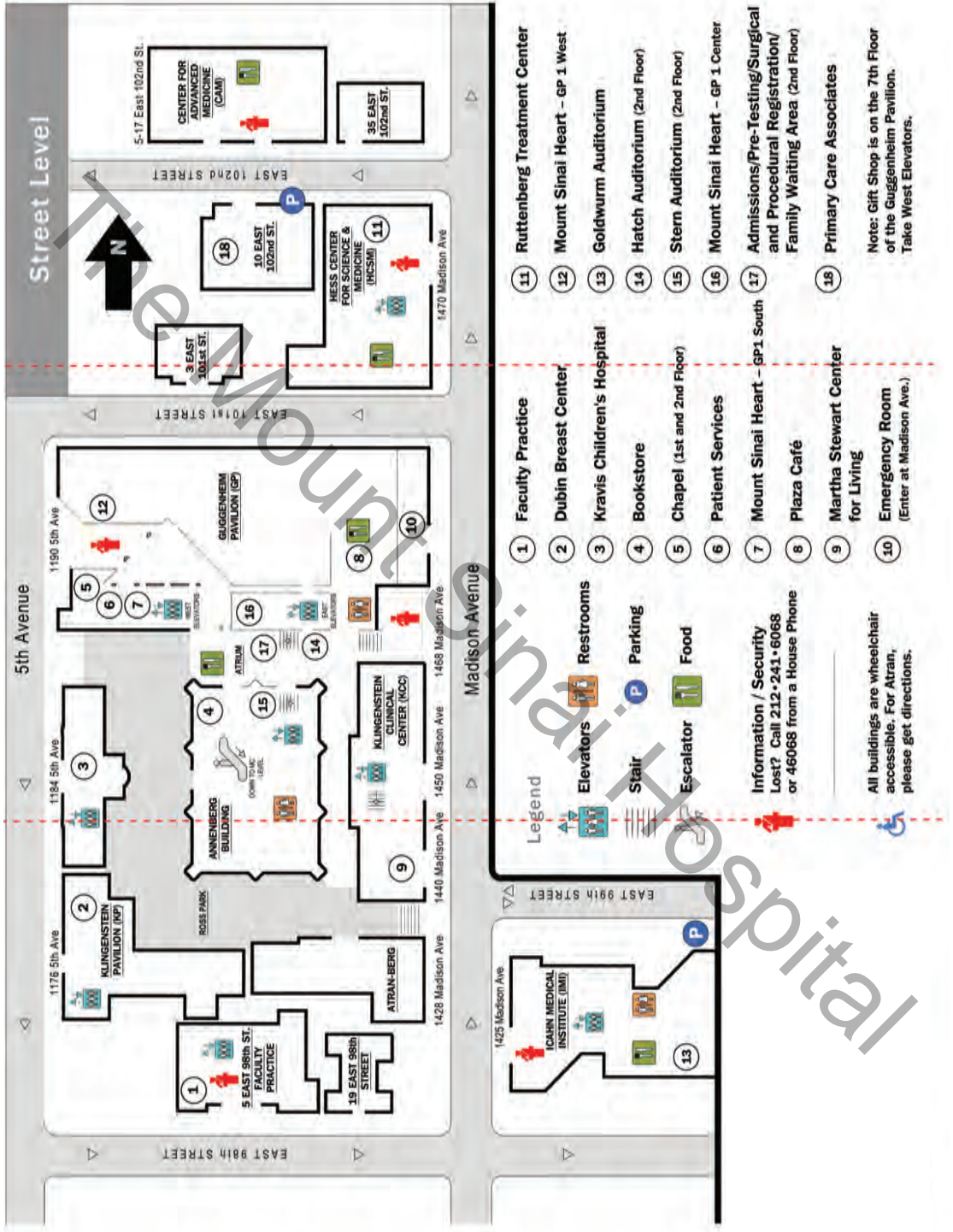
### THE PLAZA CAFE "CAFETERIA"

The cafeteria is in the Guggenheim Pavilion 1st floor (GP1) by the Madison Avenue entrance, and offers a full morning hot and cold breakfast until 9:00 AM. Lunch starts at 11:00 AM and offers a wide variety of daily specials as well as a salad bar, pizza station, assorted desserts and a full selection of grab-and-go items. Kosher food is also provided.

### BOOKSTORE

The bookstore is located right behind the coffee stand. It offers a wide range of popular magazines, best-selling novels, snacks and other necessities including over the counter medications. Mount Sinai merchandising can be found at the bookstore.





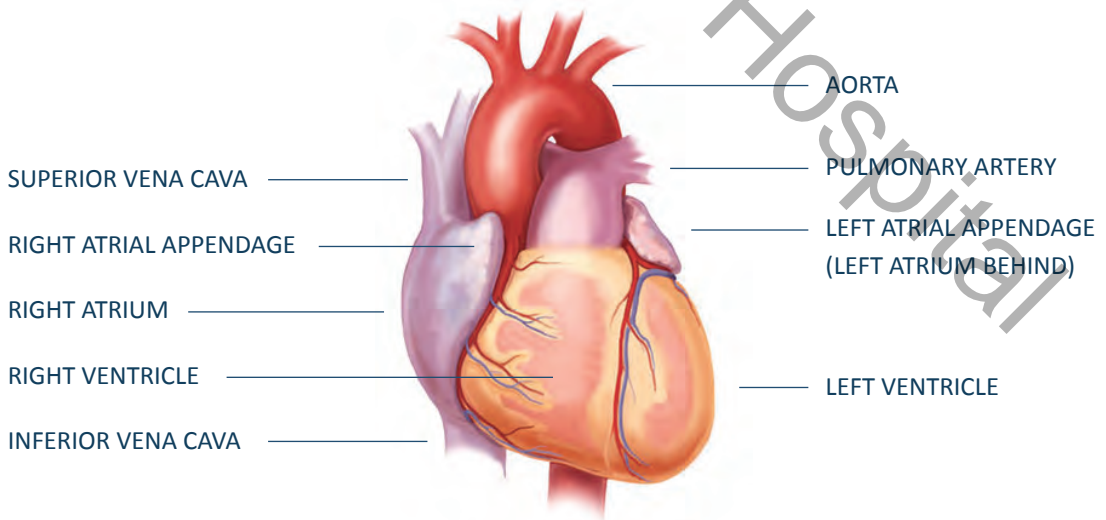
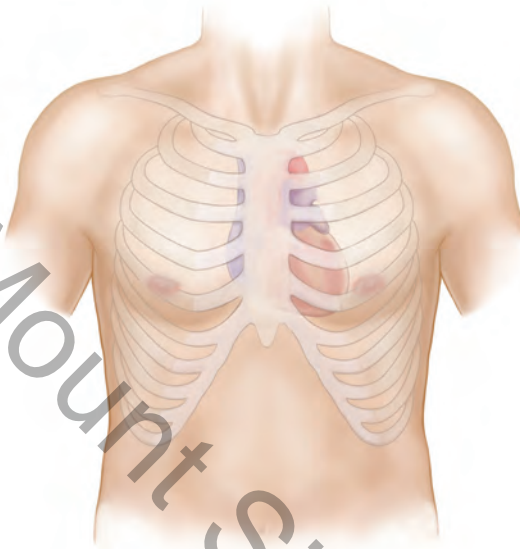


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The Mount Sinai Hospital

## THE HEART

The heart is a muscle located in the middle of the chest under the breastbone (sternum), slightly towards the left side. In normal conditions, the heart is about the size of a fist and its main function is to pump oxygen-rich blood to the body.



## RIGHT HEART

Breathing helps oxygen-poor blood to travel to the lungs and get oxygenated. Oxygen-rich blood gets across to the left heart circulation

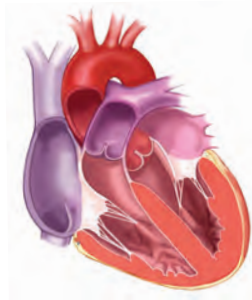


## LEFT HEART

After breathing, oxygen-rich blood (arterial, bright red) travels to the left side of the heart (left atrium)

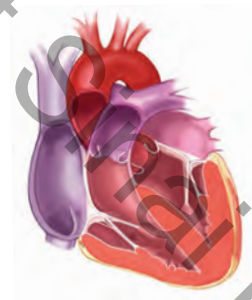
Oxygen-poor blood from the body travels into the right atrium

### DIASTOLE - FILLING



The blood then goes from the left atrium into the left ventricle to be pumped

### SYSTOLE - EMPTYING



During systole, the heart pumps oxygen-poor blood (blueish) from the right ventricle to the lungs through the pulmonic valve

During systole, the heart pumps blood through the aortic valve to the body and organs

The heart is divided into four chambers. The top two chambers (right atrium and left atrium) and the bottom two chambers (right ventricle and left ventricle). The right side of the heart receives oxygen-poor blood from the body and pumps this blood to the lungs where it picks up oxygen. The left side of the heart receives this oxygen-rich blood from the lungs and pumps it out to the entire body and organs. There are four valves in the heart that open and close like doors that direct the blood flow from the right side of the heart through the lungs, from the lungs to the left side of the heart, and from the left side of the heart to the body. These four one-way valves (open to let blood flow through and then close to prevent blood from going backwards or “leaking”) keep blood flowing in only one direction through each chamber as the heart pumps. The blood vessels that provide oxygen -rich blood to the heart are the coronary arteries. The heart also has a pacemaker center which triggers an electrical stimulus that coordinates the contraction of the heart muscle and provides a regular rhythm “regular heartbeats”.



## HEART DISEASE

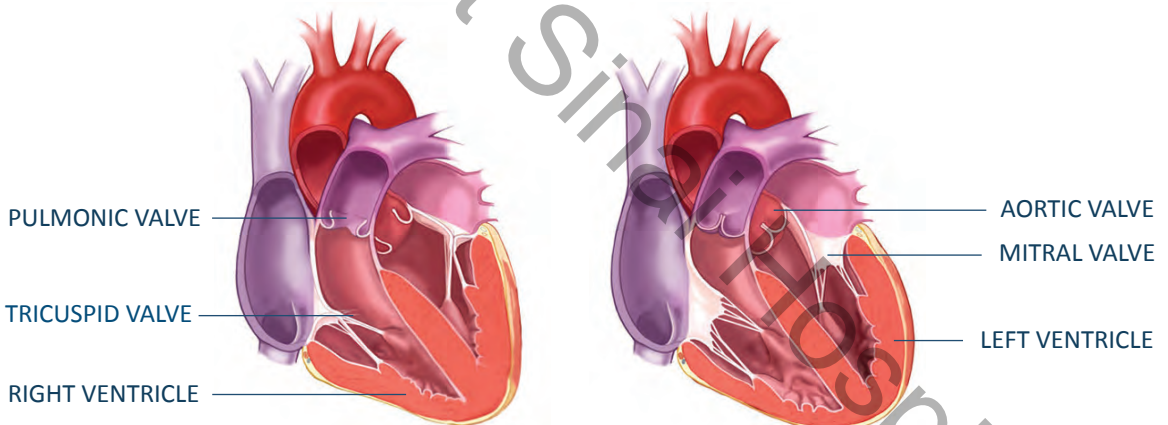
### PROBLEMS THAT AFFECT THE NORMAL FUNCTION OF THE HEART

The function of your heart is determined by how well your heart is pumping blood out of both ventricles (bottom chambers). Remember that this happens every time your heart contracts (with every heartbeat). Your doctor will use the term **EJECTION FRACTION**. This term refers to the percentage of blood leaving your heart each time it contracts. The following are common problems that affect the functioning of your heart:

- Blockage of the coronary arteries (coronary artery disease)
- Damaged heart muscle or ventricles
- Valves that do not open or close properly
- Changes in the heart rhythm such as atrial fibrillation
- Congenital abnormalities (anatomical structures that are not normal at birth)

SYSTOLE - EMPTYING

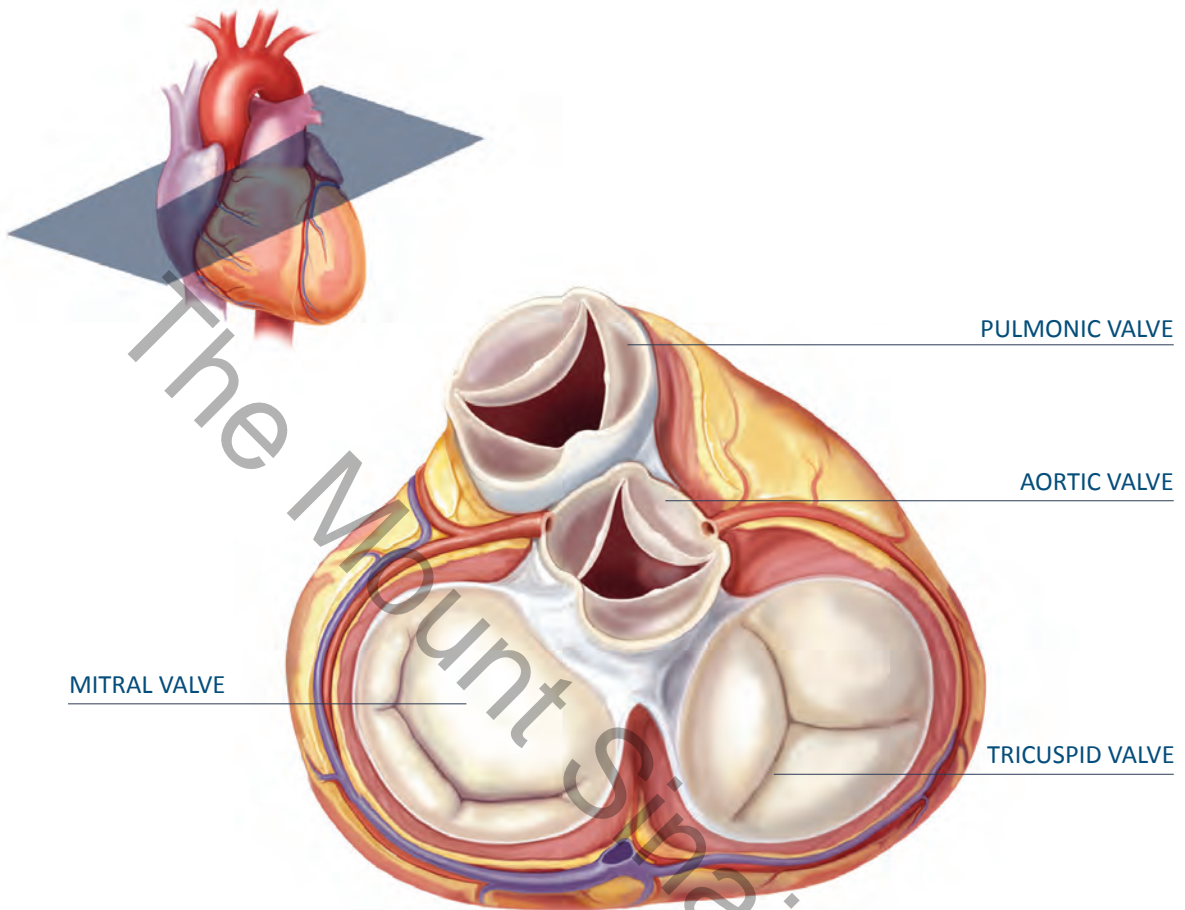
DIASTOLE - FILLING



### CAUSES OF HEART MUSCLE (VENTRICULAR) DAMAGE

- Blockage of the coronary arteries - your doctor will refer to it as ischemia
- Uncontrolled high blood pressure - your doctor will refer to it as ventricular hypertrophy
- Excessive alcohol intake - your doctor will refer to it as dilated cardiomyopathy
- Infections - your doctor will refer to it as myocarditis or endocarditis
- Amyloidosis - your doctor will refer to it as restrictive cardiomyopathy
- Unknown causes - your doctor will refer to it as idiopathic cardiomyopathy

## HEART VALVE DISEASE



Heart valves assure that blood flows in the right direction (an only one way direction) as it is pumped through the heart. Each heart valve has either two or three leaflets that open and close with the flow of blood (due to changes in physiologic pressure). When one of the valves presents an abnormal condition, the blood flow becomes turbulent (as opposed to laminar) and disrupted, and then your heart chambers can get enlarged, with the left ventricle being the most prevalent among them.

The main groups of heart valve problems are:

- The valve does not open properly - your doctor will refer to it as STENOSIS
- The valve does not close properly and “leaks” - your doctor will refer to it as REGURGITATION
- Both - stenosis and regurgitation can coexist in very damaged valves

The main causes of heart valve problems are:

- The valves are not formed normally at birth - your doctor will refer to it as congenital
- The valves torn or become scarred from rheumatic fever or bacterial infections (endocarditis)
- The valves weaken or harden due to the wear and tear of age or a genetic condition

## YOU NEED HEART VALVE SURGERY IF:

- The valve does not function well enough to maintain a regular blood flow
- The heart chambers begin to enlarge or weaken and do not squeeze or pump properly
- Symptoms such as shortness of breath, recurrent dizziness or fatigue appear
- You cannot perform regular activities as you used to due to rapid increasing fatigue

## HEART VALVE SURGERY MAY INVOLVE:

- Valve repair - reconstruction of the valve leaflets to assure proper opening and closing
- Annuloplasty - placement of a supporting ring or band to accommodate the valve leaflets
- Valve replacement - removal of the old leaflets and placement of a valve prosthesis

## MOST COMMON PROCEDURES ACCORDING TO THE AFFECTED VALVE



**AORTIC VALVE, LEFT-SIDED**  
Usually replacement,  
sometimes repair

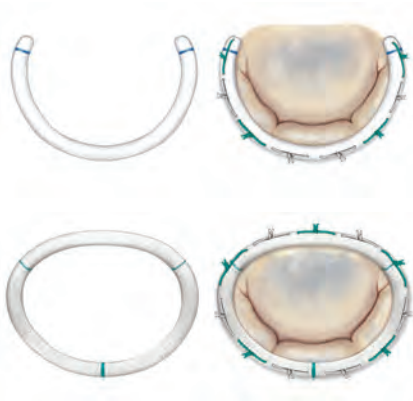


**MITRAL VALVE, LEFT-SIDED**  
Almost always repair,  
sometimes replacement



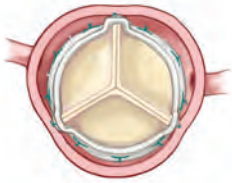
**TRICUSPID VALVE, RIGHT-SIDED**  
Almost always repair,  
sometimes replacement

## ALMOST EVERY REPAIR PROCEDURE REQUIRES AN ANNULOPLASTY RING OR BAND

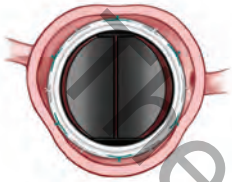


Around 99% of mitral or tricuspid valve repairs require reshaping of the native annulus (tissue that supports the heart valve acting like a door frame), particularly in the setting of mitral or tricuspid valve disease. This is necessary when the annulus weakens or loses its shape, and is often accomplished by performing an annuloplasty using a device called annuloplasty ring or band. The device, made of durable plastic, metal, and fabric may be flexible or rigid, and it is sewn around the base of the heart valve to reshape and hold the natural shape, motion, and flexibility of the annulus. Every annuloplasty ring or band often has a marker that makes it possible to see it on an X-ray.

## HEART VALVE PROSTHESES - TISSUE (BIOLOGICAL) AND MECHANICAL VALVES



Tissue valves come from human (pulmonic autograft or homograft) cow (bovine) or pig (porcine) donors. Tissue valves are not as durable as mechanical valves and may deteriorate over time requiring an additional surgery for re-replacement.



Mechanical valves are made of metal, carbon, ceramic, and plastic. Therefore, they should not have durability issues but require lifetime anticoagulation (commonly warfarin). Your surgical team will discuss options with you.



The implantation of a mechanical valve requires lifetime anticoagulation (commonly warfarin) in order to reduce the risk of blood clots forming around the valve.

## TOP FACTS YOU MUST KNOW ABOUT VALVE REPLACEMENT

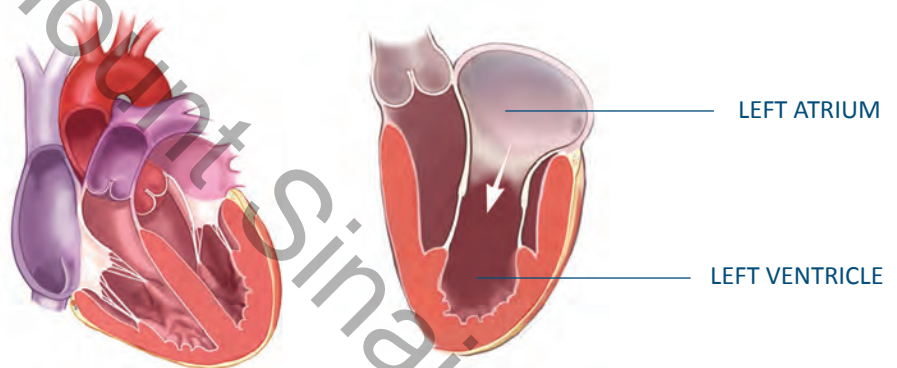
- ☑ VALVE REPLACEMENT IS OFTEN INFERIOR TO VALVE REPAIR
- ☑ VALVE REPAIR IS NOT ALWAYS POSSIBLE, REPLACEMENT MIGHT BE NECESSARY
- ☑ DISCUSS WITH YOUR SURGEON WHICH TYPE OF PROSTHESIS FITS YOU BETTER
- ☑ LEARN MORE ABOUT OPERATIVE MORTALITY, THROMBOGENESIS, AND STROKE RISK
- ☑ CHOOSE YOUR VALVE BASED ON DURABILITY AND OTHER MEDICAL CONDITIONS
- ☑ TISSUE VALVES ARE LESS DURABLE (YOU MAY REQUIRE ANOTHER INTERVENTION)
- ☑ MECHANICAL VALVES ARE MORE THROMBOGENIC
- ☑ MECHANICAL VALVES REQUIRE LIFETIME ANTICOAGULATION (BLEEDING RISK)
- ☑ MECHANICAL VALVE “CLICKS” MAY INTERFERE YOUR ROUTINE, SLEEP...
- ☑ TISSUE VALVES MAY ALSO REQUIRE WARFARIN FOR 3 MONTHS AND LIFETIME DAILY ASPIRIN
- ☑ THE USE OF ANTICOAGULATION REQUIRES FREQUENT INR TESTS UNTIL STABILIZATION
- ☑ MUST PREVENT BLOOD INFECTIONS (INFORM YOUR DENTIST AND AVOID GUM BLEEDING)
- ☑ MAY NEED ANTIBIOTICS BEFORE DENTAL PROCEDURES
- ☑ MAY NEED ANTIBIOTICS BEFORE SPINAL TAPS, ENDOSCOPIES OR SURGERY



## MITRAL VALVE DISEASE

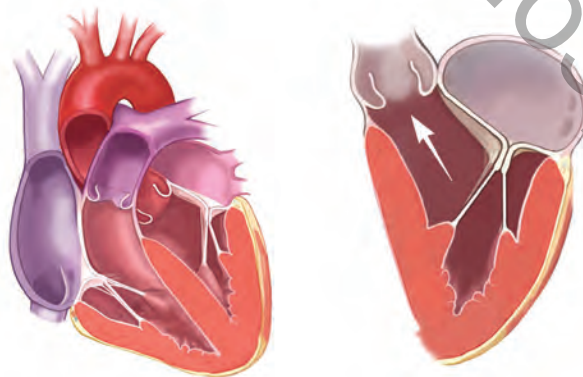
### ■ THE MITRAL VALVE

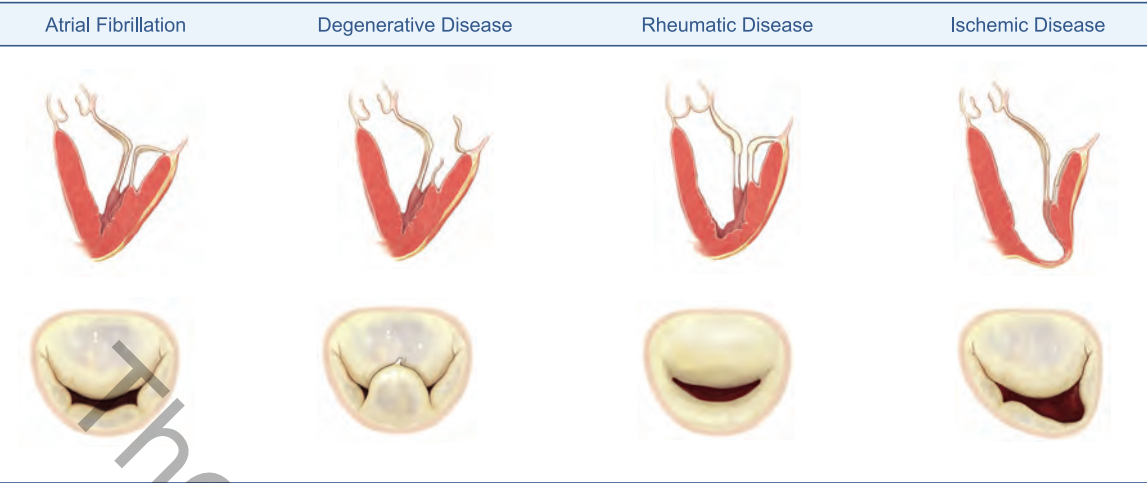
During diastole (filling of the left ventricle), the normal mitral valve permits one way oxygen-rich blood flow from the left atrium to the left ventricle in an efficient nearly frictionless fashion. During systole, a coordinated interaction of all the anatomic structures of the mitral valve apparatus seals the valve against left ventricular pressure. While even a normal competent valve may allow a trivial amount of reversed flow, more than a trace of mitral regurgitation is considered pathologic. Mild to moderate mitral regurgitation is tolerated indefinitely if it doesn't worsen. However, severe mitral regurgitation causes left ventricular damage, heart failure and ultimately death. The natural history of mitral regurgitation depends intimately on its etiology, the severity of left ventricular volume overload as well as its contractile performance, and the appearance of overlapping clinical conditions secondary to reversal flow such as atrial fibrillation and pulmonary hypertension.



DIASTOLE - FILLING

SYSTOLE - EMPTYING





■ MITRAL VALVE REGURGITATION

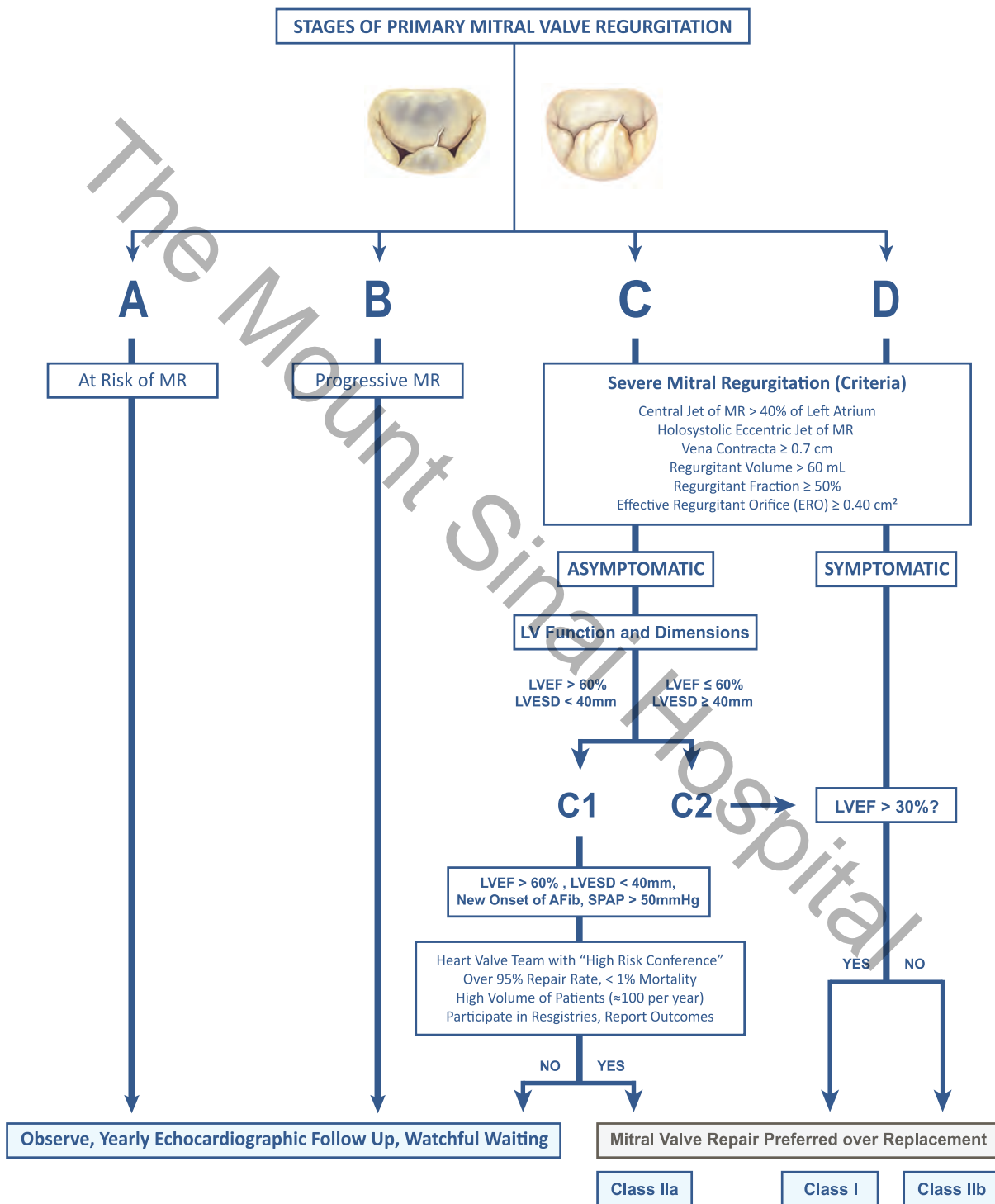
Degenerative mitral valve disease (known as mitral prolapse) is the most prevalent etiology of surgical mitral regurgitation in developed countries (70% of the cases). Other important causes include ischemic cardiomyopathy and subsequent mitral regurgitation (resulting from a myocardial infarction), atrial fibrillation, endocarditis and rheumatic disease. While rheumatic disease is no longer a common or major cause of mitral regurgitation in developed countries, still remains the most common worldwide.

				
	Fibroelastic Deficiency	Fibroelastic Deficiency +	Forme Fruste	Barlow's Disease
Age at Diagnosis	>60 years old	Likely >60 years old	Likely <60 years old	<60 years old
History of MR	<5 years	Likely <5 years	Likely >10 years	>10 years
Annular Dilatation	≤26 mm	Likely ≤32 mm	Likely 32 mm - 36 mm	≥36 mm
Leaflet Tissue	Thin, translucent ○ ○ ○	Translucent, mild thickening ● ○ ○	Moderate excess ● ● ○	Diffuse excess ● ● ●
Segmental Distribution	Single segment (P2)	Single segment (P2)	Posterior segments	Multisegmental
Chordae Tendinae	Thin, ruptured	Thin, ruptured	Elongated, ruptured	Irregular, elongated
Degree of Calcification	○ ○ ○	○ ○ ○	● ○ ○	● ● ●
Repair Phylosophy	Respect tissue	Likely respect tissue	Small resection	Resection
Difficulty of Repair	● ● ○	○ ○ ○	● ○ ○	● ● ●
Repair Techniques	Chordal transfer PTFE neochordoplasty Loop techniques	Leaflet displacement Free edge plication Loop Techniques Triangular resection	Leaflet displacement Triangular resection Limited quadrangular Annular plication Limited sliding plasty Posterior leaflet flip	Leaflet displacement Targeted resections Cleft Closure Quadrangular resection Sliding plasty Commissuroplasty Posterior leaflet flip

Spectrum of degenerative mitral valve disease with all the etiologies and corresponding main pathological features



# ACC/AHA GUIDELINES FOR THE MANAGEMENT OF PATIENTS WITH VALVULAR HEART DISEASE

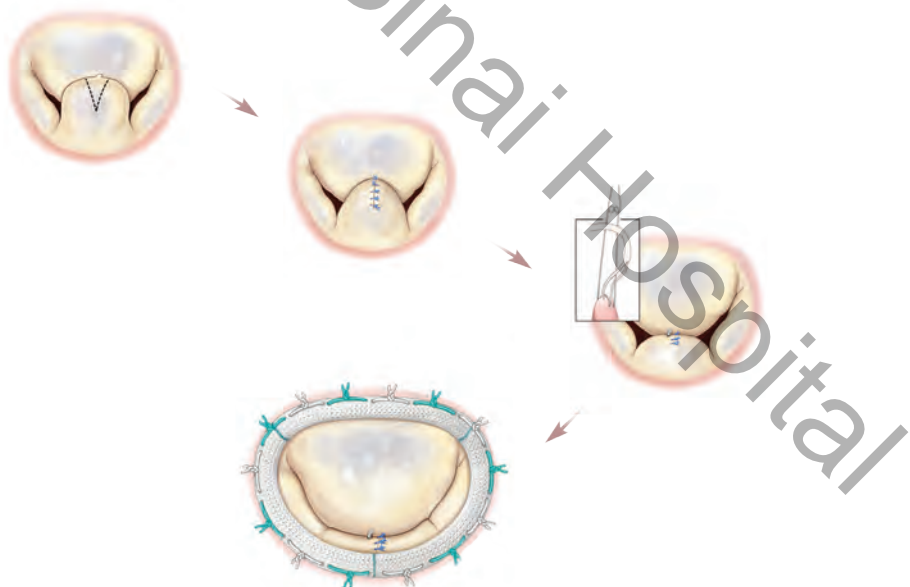


## ■ MITRAL VALVE REPAIR

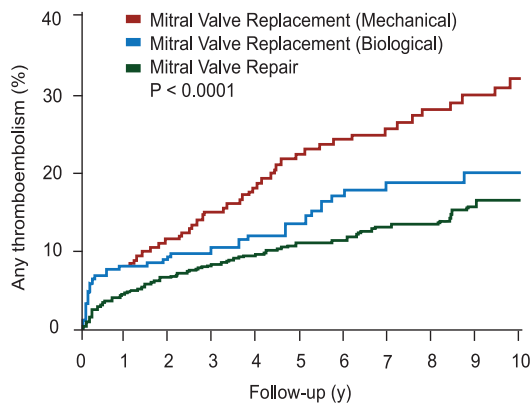
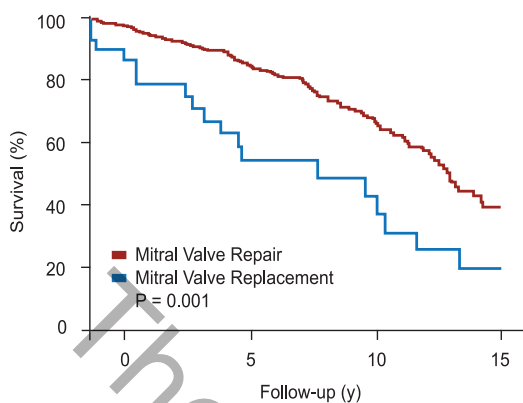
Mitral valve repair is currently recommended in most scenarios as primary surgical therapy versus mitral valve replacement, particularly in the setting of degenerative disease. All prolapsing valve are repairable and mitral valve replacement should not be an option in this setting. Mitral valve repair is favored over replacement for important reasons including a significantly lower perioperative risk, improved preservation of left ventricular function, improved survival in most patients, and greater freedom from prosthesis-related complications such as thromboembolism, and/or fatal anticoagulant-related events.

Mitral valve repair still remains surprisingly underutilized in most medically developed countries (including North America and Western Europe) mainly due to a lack of knowledge of current guidelines as well as surgical expertise. While average repair rates have risen and approach 65%, the application of mitral valve repair remains quite variable with some surgeons performing 5 or less mitral operations per year and repair rates of less than 30%, particularly for more complex scenarios such as anterior or bileaflet prolapse. These numbers are even lower in patients with rheumatic disease which presents with more complex lesions (leaflet thickening, diffuse calcification and fusion of the subvalvular apparatus) and therefore require advanced mitral valve repair techniques.

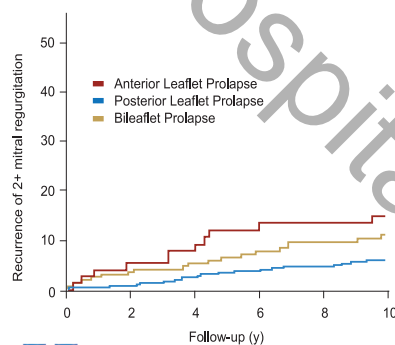
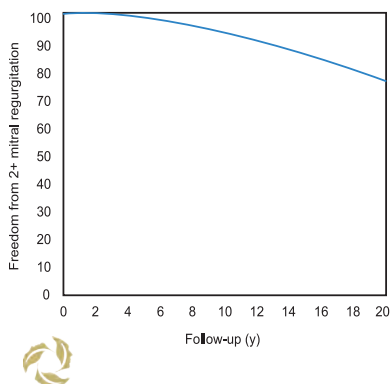
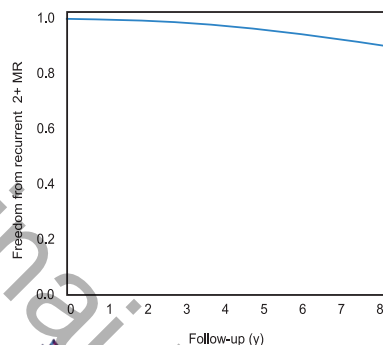
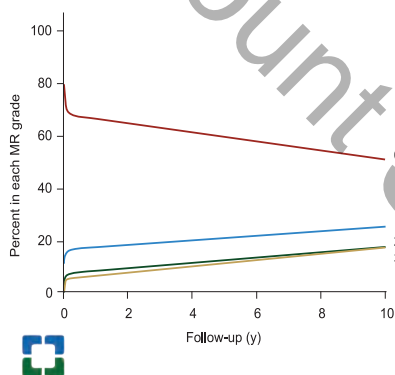
The most frequent mitral valve lesion is posterior leaflet prolapse (P2), which accounts for about 70% of patients, more complex lesions may include involvement of three or more segments, anterior leaflet prolapse, various degrees of calcification or scarcity of leaflet tissue. **In our reference center, all patients with degenerative mitral valve disease undergo mitral valve repair.**



The most common mitral valve repair technique is triangular resection of the posterior leaflet. After leaflet resection, the defect is closed with an interrupted 5-0 polypropylene suture. Leaflet resuspension is achieved with a single 5-0 polytetrafluoroethylene (Gore-Tex®) neochord. A ring or band annuloplasty is performed at the end of every mitral valve repair.



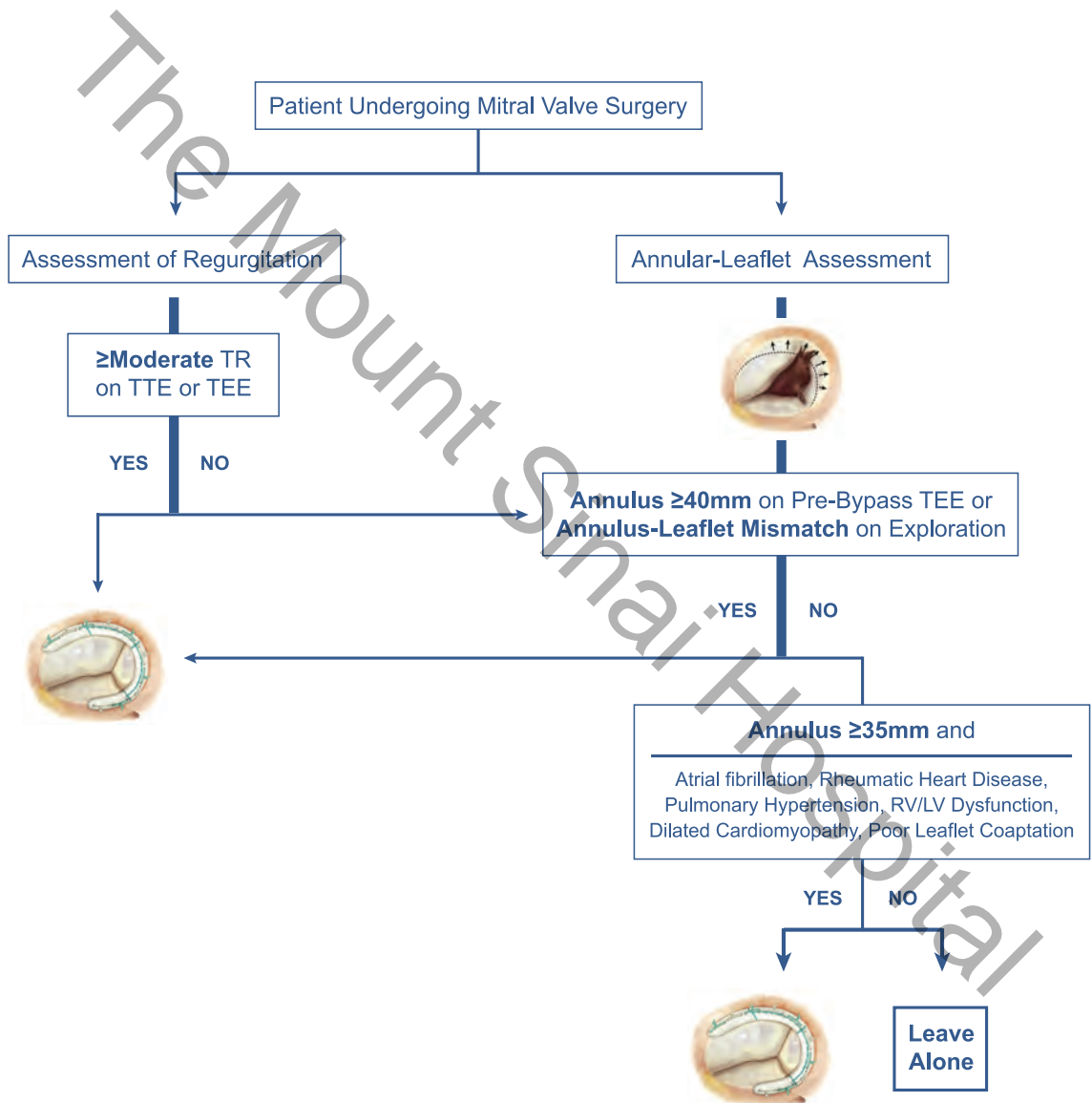
Superiority of mitral valve repair over mitral valve replacement in terms of survival and long-term freedom from thromboembolic events. Adapted from Suri et al. Ann Thorac Surg. 2006;82:819-826 and Russo et al. J Am Coll Cardiol. 2008;51:1203-1211.



Durability of mitral valve repair in reference centers (Cleveland Clinic, The Mount Sinai Hospital, Toronto General Hospital and Mayo Clinic). Adapted from Gillinov et al. Ann Thorac Surg. 2010;90:481-488, Castillo et al. J Thorac Cardiovasc Surg. 2012;144:308-312, David et al. Circulation. 2013;127:1485-1492 and Suri et al. J Am Coll Cardiol 2016;67:488-98.

## TRICUSPID VALVE DISEASE

Tricuspid valve disease can be often caused by an infection (such as rheumatic fever or endocarditis), a dilated right ventricle (enlargement of the annulus), and increased pressure through the tricuspid valve (primary or secondary pulmonary hypertension, common in the setting of mitral valve disease). Tricuspid valve repair using an annuloplasty ring is the preferred surgical approach for tricuspid regurgitation. This procedure may be performed for primary tricuspid disease or for combined cases (in around 60% of patients undergoing mitral valve repair).

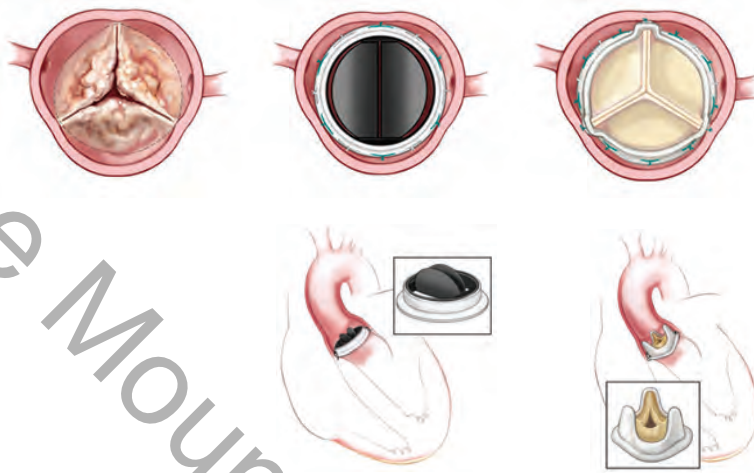


LV - left ventricle, RV - right ventricle, TR - tricuspid regurgitation, TTE - transthoracic echocardiography, TEE - transesophageal echocardiography

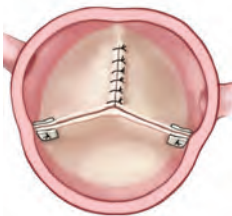


## AORTIC VALVE DISEASE

A surgical procedure to replace the aortic valve (aortic valve replacement) might be necessary in the setting of severe aortic stenosis (very common with severe calcification) or regurgitation (less frequent). During this surgery, the damaged valve is removed and replaced with an artificial valve.



### THINGS TO KNOW ABOUT ALTERNATIVE TREATMENTS FOR AORTIC VALVE DISEASE



#### AORTIC VALVE REPAIR

- Possible in isolated annular dilatation
- Possible in the setting of leaflet prolapse or commissural fusion
- Often requires a valve surgeon with advanced surgical skills
- Aortic valve repair does not often include ring or band annuloplasty



#### ROSS PROCEDURE

- Transposition of the pulmonic valve to the aortic position (autograft)
- Replacement of the pulmonic valve with a homograft
- Requires an expert valve surgeon (reference center)
- Indicated only in young patients



#### TRANSCATHETER AORTIC VALVE REPLACEMENT - TAVR

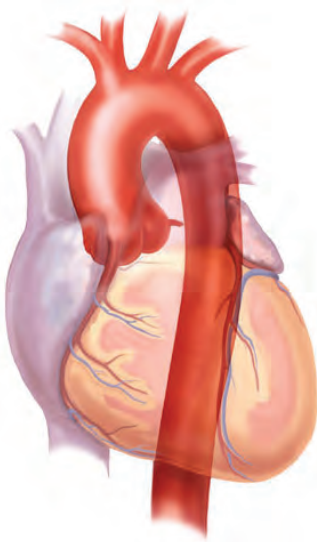
- Performed with a catheter through your groin or upper chest
- Does not require open heart surgery
- Indicated only for non-surgical candidates or high risk patients
- Durability of the valve remains questionable

## AORTIC ANEURYSMS

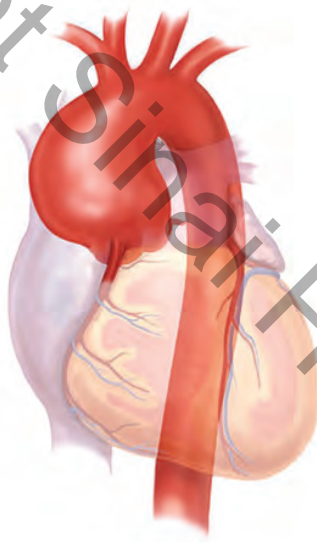
An aortic aneurysm is a dilatation “bulge” of the main artery of the body, the aorta. When a section of the aorta weakens, and overstretches, can tear and subsequently burst. Although aneurysms are most common in the abdomen, can also occur in the chest, known as thoracic aneurysms.

The wall of the aorta is very elastic and can stretch to absorb changes in blood pressure or heart rhythm (e.g. exercising). However, certain medical conditions such as high blood pressure (hypertension) and atherosclerosis (hardening of the aorta), or age (natural wear and tear, narrowing, hardening and calcification of the arteries over time) stiffen and consequently weaken the aortic walls and may lead to bulging.

Most aortic aneurysms do not cause any symptoms unless they present with severe overstretching or tear, triggering back pain and discomfort. If they tear (your doctor will refer to it as aortic dissection), they cause severe pain and possibly bleeding leading to death within minutes or hours (they are an emergency). In addition, blood flow can become turbulent and slow down when going through the bulging section, leading to the formation of blood clots. These clots can break off and travel to the brain resulting in a stroke.



**NORMAL THORACIC  
AORTA**



**AORTIC ROOT (AND  
ASCENDING) ANEURYSM**



**AORTIC ARCH  
ANEURYSM**

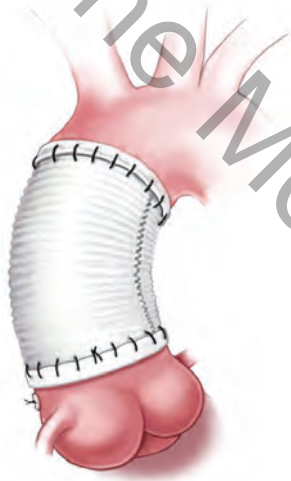
### RECOMMENDED SCREENING

- Ages 65-75 and have ever smoked
- At least 60 years old and have a first-degree relative who has had an aneurysm
- Patients with Marfan syndrome (or any other connective tissue) or bicuspid valve disease

## INDICATIONS FOR SURGERY

- Your aneurysm has torn (your doctor will refer to it as aortic dissection)
- Your aneurysm is causing symptoms or rapidly growing (risk of rupture)
- Repair of thoracic aneurysms is recommended when they reach 5.5 cm
- You are undergoing a different heart procedure and the aneurysm is enlarging

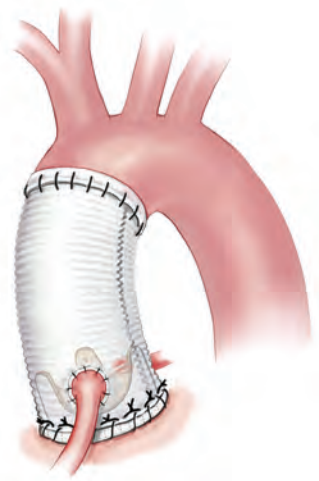
## AORTIC SURGERY (MOST FREQUENT COMBINATIONS AND PROCEDURES)



ASCENDING REPLACEMENT



DAVID PROCEDURE



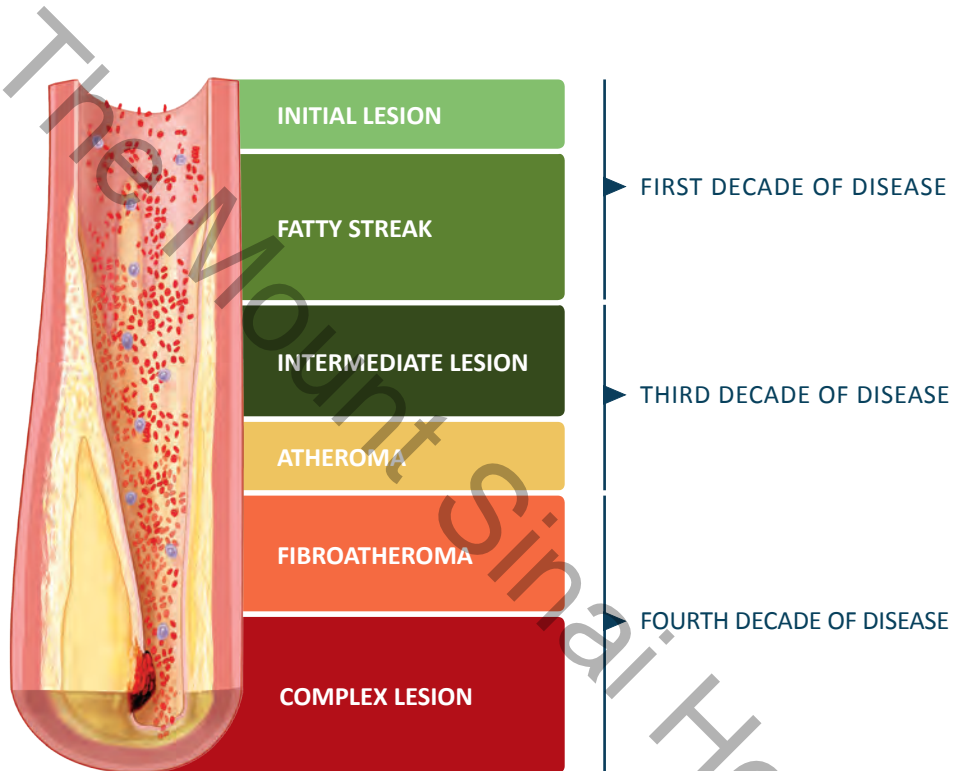
BENTALL PROCEDURE

All aortic procedures consist of replacing the enlarged section of the aorta to avoid further enlargement and potential rupture. A tubular graft made of a polyester material replaces the aorta (white tube in the figures). Occasionally, the aortic valve needs to be repaired or replaced during the same operation. Your surgeon will discuss this with you before the surgery.

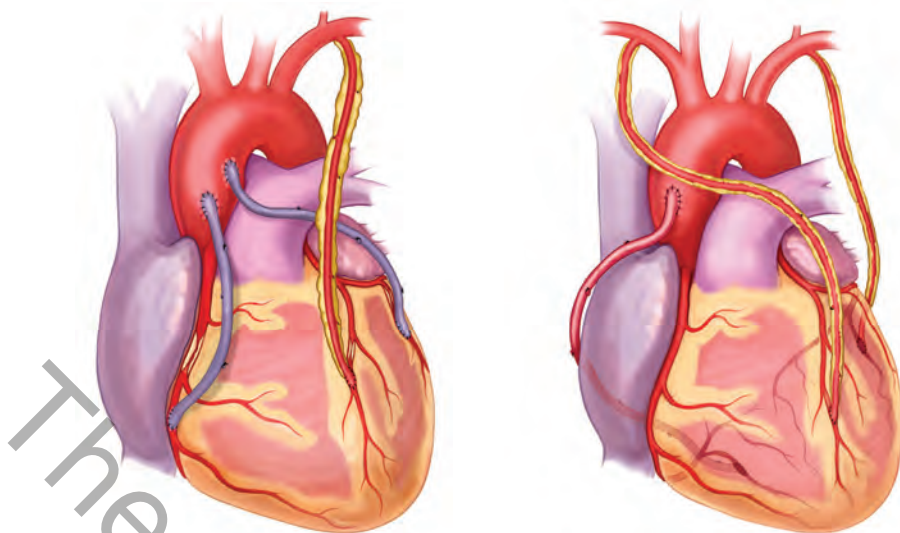
AORTIC SECTION	NEED VALVE REPLACEMENT?	PROCEDURE
ROOT	NO	DAVID (VALVE-SPARING ROOT REPLACEMENT)
ROOT	YES	BENTALL (AORTIC VALVE + ROOT REPLACEMENT)
ASCENDING	NO	ASCENDING REPLACEMENT (SUPRACORONARY)
ARCH	NO	ARCH REPLACEMENT "HEAD VESSELS"

## CORONARY ARTERY DISEASE

Coronary arteries supply oxygen-rich blood to the heart muscle (ventricles). There is a right (RCA) and a left coronary artery or left main (LM). The LM divides further into the left anterior descending (LAD) and the circumflex artery (Cx). Coronary artery disease (CAD) occurs when the coronary arteries become too narrow to supply enough oxygen-rich blood to the heart muscle. This might be due to deposits of fat and cholesterol (plaque) in the artery wall. This condition in turn may trigger chest pain (angina). In addition, a piece of plaque can rupture and cause a blood clot to form and completely block blood flow (myocardial infarction or heart attack).



Some patients with valve disease need concomitant coronary artery bypass grafting (CABG) surgery in order to improve blood flow to the heart. The term “bypass” or “graft” refers to the arteries or veins taken from another part of your body to create conducts around (bypassing) blocked arteries. Your surgeon will decide on the exact number of coronary arteries to be bypassed. The classic CABG operation consist of three bypasses: an artery from your chest wall (left internal mammary artery - LIMA) to the LAD, a vein from your leg (saphenous vein graft - SVG) to the obtuse marginal (OM - branch of the Cx) and SVG to the posterior descending artery (PDA - branch of the RCA). However, CABG experts are currently advocating for total arterial revascularization in younger patients. In this context, your surgeon only uses arteries (no veins are harvested from the legs). In addition to the LIMA, the right internal mammary artery (from the chest wall - RIMA) and the radial artery (from the left forearm) are harvested.



Common configuration for coronary artery bypass grafting - CABG. Use of the left internal mammary artery and two veins (left) and total arterial revascularization using right and left internal mammary arteries as well as the radial artery (right).

## OTHER FREQUENT CONDITIONS

### ■ CONGENITAL DEFECTS

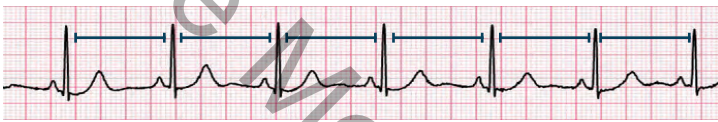
**PATENT FORAMEN OVALE (PFO)** - The foramen ovale, is a small hole located in the wall (septum) between the two upper chambers of the heart. During fetal (from fetus) circulation, the foramen ovale is used to move blood through the heart in a much faster and efficient fashion. The fetus does not use its own lungs but relies on the mother's to obtain oxygen-rich blood from the placenta (organ that attaches to the wall of the uterus and gives origin to the umbilical cord). This way, blood travels from the veins to the right side of the fetus' heart and across to the left side of the heart through the foramen ovale. Normally, the foramen ovale closes at birth when increased blood pressure on the left side of the heart forces the opening to close. If the hole does not close or only closes partially, it is called a PFO. This defect then works like a flap valve, only opening during certain conditions when there is more pressure inside the chest (straining while having a bowel movement, coughing or sneezing). Your doctor will see the presence of a PFO by doing a "bubble study", which consists of injecting saline contrast while doing an echocardiogram. A patent foramen ovale is usually closed primarily during surgery (sewing the opening shut).

**ATRIAL SEPTAL DEFECT (ASD)** - This condition consists of a residual hole in the muscular wall of the atrial septum. This occurs when part of the septum does not form properly before birth. It is the most common congenital heart defect in adults (and are more common in women). In the presence of an ASD (often larger than a PFO), blood from the left and right sides of the heart blend and the heart does not work as efficiently. If the defect is greater than 2 cm, problems such as ventricular enlargement, arrhythmias, and pulmonary hypertension may arise. During surgery, once the septum is exposed, the surgeon may close it primarily or may sew a patch made of tissue or a synthetic material over the opening (secondary closure).



## ■ ATRIAL FIBRILLATION - MAZE PROCEDURE

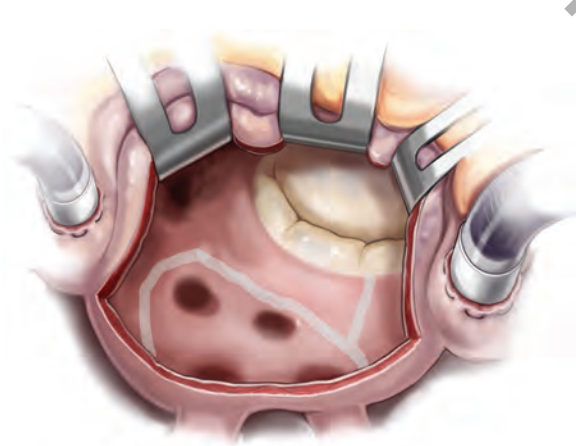
Atrial fibrillation (also known as AF or AFib) is a condition where an erratic and irregular heartbeat develops and may lead to blood clots, subsequent stroke, and ventricular dilatation (with secondary annular dilatation and mitral regurgitation) among other heart-related complications. It is thought that AFib originates around the pulmonary veins, and that isolating this area can keep atrial fibrillation from occurring. This is done by applying heat (radiofrequency or electrical energy) or cold (cryoablation) to the veins, thus creating scar lines (barrier) that interrupt the propagation of impulses that cause AFib (this procedure is known as Maze). It is important to be aware that the longer a patient has AFib, the least significant is the success rate of the ablation procedure. In addition, your surgeon may decide to proceed with closure of the left atrial appendage (sewing it shut from the inside at the time of mitral valve repair or clipping it from the outside of the heart). This is done because the left atrial appendage (small pouch in the muscle wall of the left atrium) is the main source of blood clots in the setting of AFib.



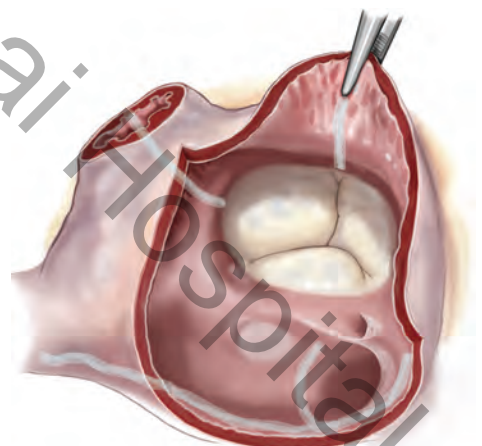
**NORMAL SINUS RHYTHM (NSR)**  
60 to 100 beats per minute  
Regular distance "between peaks"



**ATRIAL FIBRILLATION (AFIB)**  
Irregular rhythm, slow or rapid  
Irregular distance "between peaks"



**LEFT MAZE**



**RIGHT MAZE**



# 3

## CARDIAC CONSULT

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The Mount Sinai Hospital

## CONSULTATION APPOINTMENT

After your phone call to make a consultation appointment with one of our surgeons, you will receive the following electronic mail:



**From:** Your surgeon's administrative assistant

**To:** Your name

**Subject:** Email to upcoming patients

**Date:** Current date

**Attachments:** Pre-Consultation forms and directions

---

Dear Ms./Mr.

It was a pleasure speaking with you. This is to confirm your appointment with Dr. [YOUR SURGEON]

**Location:** The Guggenheim Pavilion, 1190 Fifth Avenue at the corner of 101st Street. Once you go through the revolving door, immediately on the left-hand side you will see the office. Go through the double doors and take the elevator on your left to the second floor or you can take the stairs up to the second floor.

**Parking Garage:** 104th Street and Madison Avenue. Please see attachment.

Please fill out the attached forms. When you have completed the forms, you can either mail them to me at the address below or fax them to my attention (+1 212-659-6818) as soon as possible.

- Find out if [YOUR SURGEON] and The Mount Sinai Hospital participate with your insurance
- Give your insurance Dr. [YOUR SURGEON]'s NPI number and MSH's NPI number: 1932103413
- Recent echocardiogram (images on a CD) and report
- Recent exercise stress test or nuclear stress test (images on a CD and report)
- Any cardiac catheterization done in the past (images on a CD and report)
- Holter monitor report (if any)
- Summary of your Cardiologist last office visit
- Summary of your Pulmonologist last office visit (if any)
- Any computerized tomography (CT) of the chest, abdomen or pelvis (images on a CD and report)
- Last history and physical (if any available)
- List of all medications (including vitamins, herbal supplements, Vitamin E, Garlic and Ginger)
- Copy of your insurance card (front and back)
- If you are from out of state, check with your insurance if you have out-of-network benefits
- If you need a referral, please have your physician fax us the referral letter or bring it with you
- Dental clearance (dentist's letterhead) that states "that you do not have any active infections"



Please mail us all the studies and information by FedEx or UPS. It is important that all CDs and reports are available to us at least 2 weeks before your consultation with Dr. [YOUR SURGEON]

Co-pays are payable at the time of service, and we accept, cash, check or credit card. On your consultation day, you will meet with one of our nurse practitioners (NP) who will do a history and physical. The NP can answer some of your questions, such as how long you will stay in the hospital, etc... Dr. [YOUR SURGEON] will answer your surgical questions. Please prepare a list of questions.

Please be prepared to be in our office anywhere from 2-3 hours. Our team is very thorough and we want to provide you with the best care given. If you cannot keep this appointment, you need to notify us ahead of time so we can reschedule your appointment. Should you have any questions, please do not hesitate to give me a call at 212-659-6820.

Sincerely yours,

Your surgeon's administrative assistant

Mailing Address:

[YOUR SURGEON]

## PRE-CONSULTATION FORMS

CARDIOVASCULAR SURGERY - PATIENT DATA FORM			
Date	ID# Number	Unit Number	Surgeon
<b>PATIENT INFORMATION</b>			
Last Name		First Name	Middle Initial
Address			
City	State	Zip Code	
D.O.B.	Sex	Social Security Number	Home Phone
Email Address	Cell Phone		Business Phone
Contact Person	Relationship	Contact Phone	
<b>REFERRING CARDIOLOGIST</b>			
Name	Contact Phone		Fax
Address		City	State Zip Code
<b>PRIMARY CARE PHYSICIAN</b>			
Name	Phone		Fax
Address		City	State Zip Code
<b>PRIMARY INSURANCE</b>			
Insurance Company		Insurance Phone Number	
Address		City	State Zip Code
Name of Insured		Social Security Number	
Policy Number		Group Number	
<b>SECONDARY INSURANCE</b>			
Insurance Company		Insurance Phone Number	
Address		City	State Zip Code
Name of Insured		Social Security Number	
Policy Number		Group Number	
NOTES:			
<b>FOR SCHEDULING OFFICE USE ONLY</b>			
Transfer:		Procedure:	
Discharge:		Date of Procedure:	
Date of Admission:		Date of Procedure:	

**MOUNT SINAI HEALTH INFORMATION EXCHANGE AND HEALTHIX CONSENT FORM**

The Mount Sinai Health Information Exchange ("Mount Sinai HIE") and Healthix share information about people's health electronically and securely to improve the quality of health care services. This kind of sharing is called health or health information technology ("Health IT"). To learn more about Health IT in New York State, read the brochure, "Better Information Means Better Care." You can ask your health care provider for it, or go to the website [www.healthixny.org](http://www.healthixny.org).

In this Consent Form, you can choose whether to allow the health care providers listed on the Mount Sinai HIE website ([www.mountsinaiconnect.org](http://www.mountsinaiconnect.org)) ("HIE Participants") to obtain access to your medical records through a computer network operated by the Mount Sinai HIE. This can help collect the medical records you have in different places where you get health care and make them available electronically to the providers treating you. The list of HIE Participants on the website will be updated regularly.

You may also use this Consent Form to decide whether or not to allow employees, agents or members of the medical staff of The Mount Sinai Hospital and Icahn School of Medicine at Mount Sinai (together, "Mount Sinai") to see and obtain access to your electronic health records through Healthix, which is a Health Information Exchange, or Regional Health Information Organization ("RHIO"), a not-for-profit organization recognized by the State of New York. This can also help collect the medical records you have in different places where you get healthcare, and make them available electronically to the providers treating you. This consent gives your permission for any Mount Sinai program in which you are a patient to access your records from your other healthcare providers authorized to disclose information through Healthix. A complete list of current Healthix Information Sources is available from Healthix and can be obtained at any time by checking the Healthix website at <http://www.healthix.org> or by calling Healthix at 877-695-4749. Upon request, your provider will print this list for you from the Healthix website.

**YOUR CHOICE TO GIVE OR TO DENY CONSENT MAY NOT BE THE BASIS FOR DENIAL OF HEALTH SERVICES OR HEALTH INSURANCE COVERAGE.**

**PLEASE CAREFULLY READ THE INFORMATION ON THE ATTACHED FACT SHEET, WHICH IS PART OF THIS CONSENT FORM, BEFORE MAKING YOUR DECISION.**

**Your Consent Choices.** You can fill out this form now or in the future. You have the following choices:  
Please check Box 1 or 2:

☐ **1. I GIVE CONSENT TO ALL of the HIE Participants listed on the Mount Sinai HIE website to access ALL of my electronic health information through the Mount Sinai HIE and I GIVE CONSENT TO ALL employees, agents and members of the medical staff of Mount Sinai to access ALL of my electronic health information through HEALTHIX in connection with any of the permitted purposes described in the fact sheet, including providing me any health care services, including emergency care.**

☐ **2. I DENY CONSENT TO ALL of the HIE Participants listed on the Mount Sinai HIE website to access my electronic health information through the Mount Sinai HIE and I DENY CONSENT TO ALL employees, agents and members of the medical staff of Mount Sinai to access ANY of my electronic health information through HEALTHIX for any purpose, even in a medical emergency.**

**NOTE: UNLESS YOU CHECK THE "I DENY CONSENT" BOX, New York State law allows health care providers treating you in an emergency to gain access to your medical records, including records that are available through the Mount Sinai HIE and Healthix. IF YOU DON'T MAKE A CHOICE, the records will only be shared in an emergency as allowed by applicable law.**

Print Name of Patient \_\_\_\_\_ Patient Date of Birth \_\_\_\_\_

Signature of Patient or Patient's Legal Representative \_\_\_\_\_ Date \_\_\_\_\_

Print Name of Legal Representative (if applicable) \_\_\_\_\_ Relationship of Legal Representative to Patient (if applicable) \_\_\_\_\_



If you are from out of state and do not wish to travel to NY before your hospital admission, we will arrange a phone consultation and your surgeon will see you the day before your surgery.



### ACKNOWLEDGEMENT OF RECEIPT OF NOTICE OF PRIVACY PRACTICES (NOPP)

By signing below, I acknowledge that I have been provided a copy of this Notice of Privacy Practices and have therefore been advised of how health information about me may be used and disclosed by the hospitals and the facilities listed at the beginning of this notice, and how I may obtain access to and control this information.

Patient Name \_\_\_\_\_

Signature of Patient or Personal Representative \_\_\_\_\_

Print Name of Patient or Personal Representative \_\_\_\_\_

Date \_\_\_\_\_

Description of Personal Representative's Authority \_\_\_\_\_

I was not able to obtain the patient's acknowledgement of receipt of the NOPP upon registration because:

- ☐ The patient refused to sign despite good faith efforts
- ☐ The patient was unaccompanied and not alert and oriented
- ☐ The patient was unaccompanied and needed emergency care
- ☐ Other, (explain): \_\_\_\_\_

Employee Signature: \_\_\_\_\_ Employee Title: \_\_\_\_\_

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

- ☐ Acknowledgement subsequently obtained, (see above).

MR-205 (Rev 7/13)



Department of Cardiovascular Surgery  
Mount Sinai  
One Gustave L. Levy Place, Box 1028  
New York, NY 10029-6074

T 212-649-6800  
F 212-649-6818

MRN \_\_\_\_\_  
Date \_\_\_\_/\_\_\_\_/\_\_\_\_

### Patient Information & History:

Please print clearly

Mark Circles with an X

1. Patient Name \_\_\_\_\_ LAST \_\_\_\_\_ FIRST \_\_\_\_\_

2. Referring Cardiologist \_\_\_\_\_

3. How did you find out about our program?

- ☒ Cardiologist ☐ Internet Search ☐ Word of Mouth (Family/Friend) ☐ Heart Valve Surgery.com  
☐ MountSinai.org ☐ Other \_\_\_\_\_

4. Date of Birth (MM/DD/YYYY) \_\_\_\_\_ 5. Height \_\_\_\_\_ 6. Weight \_\_\_\_\_

7. Reason for Today's Consultation is:

- ☐ Valve Surgery ☐ Aneurysm Surgery ☐ Repair Congenital Defect ☐ Diagnostic Evaluation  
☐ Bypass Surgery ☐ Other \_\_\_\_\_

8. Use of Tobacco / Cigarettes? ☐ Yes ☐ No

Current # of Years \_\_\_\_\_ # Packs/day \_\_\_\_\_ 9. Use of Alcohol? ☐ Yes ☐ No ☐ Never  
Former # of Years \_\_\_\_\_ # Packs/day \_\_\_\_\_ Quit Date \_\_\_\_\_ How many drinks per week? \_\_\_\_\_

10. Allergies:

- ☐ Penicillin ☐ Contrast Dye ☐ Shellfish ☐ Sulfas ☐ Latex ☐ Iodine  
☐ Other \_\_\_\_\_

11. Please list ALL current medications / vitamins / supplements AND daily dose (if not already provided):

Medication	Dose	Medication	Dose

12. Family Medical History:

Family Member	Deceased?		Age	Mark if Diagnosed with Heart Disease?	Cause of Death
	Yes	No			
Mother	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	
Father	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	
Sibling <input type="radio"/> Brother <input type="radio"/> Sister	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	
Sibling <input type="radio"/> Brother <input type="radio"/> Sister	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	
Sibling <input type="radio"/> Brother <input type="radio"/> Sister	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	
Sibling <input type="radio"/> Brother <input type="radio"/> Sister	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	

13. Have you obtained a dental clearance letter? ☐ Yes ☐ No

If no, when was your last visit to the dentist? \_\_\_\_\_

Page 1 of 2



Department of Cardiovascular Surgery  
Mount Sinai  
One Gustave L. Levy Place, Box 1028  
New York, NY 10029-6074

MRN \_\_\_\_\_  
Date \_\_\_\_/\_\_\_\_/\_\_\_\_

### Patient Information & History:

Please print clearly

Mark Circles with an X

1. Please answer whether you have/had the following:

	Yes	No	If yes, please describe:
Shortness of Breath	<input type="radio"/>	<input type="radio"/>	
Chest Pain	<input type="radio"/>	<input type="radio"/>	
Pallor/Anemia	<input type="radio"/>	<input type="radio"/>	
Arkle Swelling	<input type="radio"/>	<input type="radio"/>	
Easy Bruising	<input type="radio"/>	<input type="radio"/>	
Frequent or Difficult Urination	<input type="radio"/>	<input type="radio"/>	
Fever in Past Two Weeks	<input type="radio"/>	<input type="radio"/>	
Female: Still Menstruating?	<input type="radio"/>	<input type="radio"/>	

2. Cardiac Procedures - Please indicate if you have had the following:

Test / Procedure	Date	Where was the procedure performed?
Echocardiogram		
Stress Test		
Cardiac Catheterization		
Heart Surgery		
Stent		
Pacemaker		
Defibrillator (AICD)		
CT Scan of Chest or Cardiac MRI		

3. General Medical/Surgical History - Please answer whether you have / had the following:

	Yes	No	If yes, please describe:
Surgery of any other kind	<input type="radio"/>	<input type="radio"/>	
Congestive Heart Failure	<input type="radio"/>	<input type="radio"/>	
Heart Murmur	<input type="radio"/>	<input type="radio"/>	
Heart Attack	<input type="radio"/>	<input type="radio"/>	
Irregular Heart Rhythm	<input type="radio"/>	<input type="radio"/>	
Endocarditis	<input type="radio"/>	<input type="radio"/>	
Rheumatic Fever	<input type="radio"/>	<input type="radio"/>	
High Blood Pressure	<input type="radio"/>	<input type="radio"/>	
High Cholesterol	<input type="radio"/>	<input type="radio"/>	
Stroke / TIA	<input type="radio"/>	<input type="radio"/>	
Lung Disease (including asthma)	<input type="radio"/>	<input type="radio"/>	
Diabetes	<input type="radio"/>	<input type="radio"/>	Date of onset: _____ Insulin: <input type="radio"/> Yes <input type="radio"/> No
Cancer / Radiation / Chemotherapy	<input type="radio"/>	<input type="radio"/>	
Kidney Disease	<input type="radio"/>	<input type="radio"/>	
Liver Disease / Hepatitis	<input type="radio"/>	<input type="radio"/>	
Previous Blood Transfusion	<input type="radio"/>	<input type="radio"/>	
Vein Stripping	<input type="radio"/>	<input type="radio"/>	

Page 2 of 2



### CONSENT FOR COMMUNICATION VIA E-MAIL (Provider-Patient)

I, \_\_\_\_\_, hereby consent to have my physician, \_\_\_\_\_, communicate with me or members of his staff, where appropriate or other physicians, nurse practitioners and pharmacists via e-mail regarding the following aspects of my medical care and treatment: [test results, prescriptions, appointments, billing, etc.]. I understand that e-mail is not a confidential method of communication. I further understand that there is a risk that e-mail communications between my physician and me or members of my physician's office staff or between my physician and other physicians, nurse practitioners and pharmacists regarding my medical care and treatment may be intercepted by third parties or transmitted to unintended parties. I also understand that any e-mail communications between my physician and me or members of his office staff or between my physician and other physicians, nurse practitioners or pharmacists regarding my medical care and treatment will be printed out and made a part of my medical record. I understand that in an urgent or emergent situation I should call my provider or go to the Emergency Room and not rely on e-mail.

Email: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

MR-240 (7/13)

## ■ TRANSPORTATION TO THE MOUNT SINAI HOSPITAL

Subway 6

Bus M1, M2, M3, M4, M96, M98, M101, M102, M103, M106

Amtrak service to Penn Station and Grand Central Station

Metro North service to Grand Central Station

New Jersey Transit service to Penn Station

PATH system service to New York City



## ■ DRIVING DIRECTIONS TO THE MOUNT SINAI HOSPITAL

### From the East Side of Manhattan

Take the FDR Drive to the 96th Street exit and turn onto East 96th Street. Continue to Madison Avenue and turn right. The Mount Sinai Hospital is on 100th Street and Madison Avenue.

### From the West Side of Manhattan

Travel the West Side Highway to the 96th Street exit. Continue across West 96th Street, through Central Park, to Madison Avenue. Turn left on Madison. Mount Sinai Hospital is on 100th Street and Madison Avenue.

### From Brooklyn and Parts of Queens (Brooklyn Bridge)

From the Brooklyn-Queens Expressway, take the Brooklyn Bridge exit. Follow signs to the FDR Drive North. Exit at East 96th Street and continue to Madison Avenue. Turn right on Madison Avenue. Mount Sinai Hospital is at 100th Street and Madison Avenue.

### From Staten Island (Brooklyn Battery Tunnel)

Take the Verrazano Bridge (Staten Island only) to Brooklyn Queens Expressway. Follow signs to the Brooklyn Battery Tunnel and make a right turn out of the tunnel. Take West Street to West Side Highway, turning off on the 96th Street exit. Travel through Central Park to Madison Avenue. Turn left on Madison Avenue. Mount Sinai Hospital is at 100th Street and Madison Avenue.

### From Queens (JFK - LGA) and Long Island (Triborough or 59th Street Bridge)

Take Grand Central Parkway (West) to Triborough Bridge to the FDR Drive. Exit at 96th Street. Follow until Madison Avenue. Turn right on Madison Avenue. Mount Sinai Hospital is on 100th Street and Madison Avenue.

### From Westchester County and New England

Take the New England Thruway (95 South) to Triborough Bridge to FDR Drive. Exit at 96th Street and turn right onto E. 96th Street. Follow until Madison Avenue. Turn right on Madison Avenue. Mount Sinai Hospital is at 100th Street and Madison Avenue.

### From Upstate New York

Travel the New York State Thruway (I-87 South), which will turn into the Major Deegan Highway. Exit at the Willis Avenue Bridge and bear right. Follow signs to FDR Drive. Exit at 96th Street. Turn right at 96th to Madison Avenue. Turn right again on Madison Avenue. Mount Sinai Hospital is at 100th Street and Madison Avenue.

### From New Jersey

Cross the George Washington Bridge and follow signs for the West Side Highway. Exit at 96th Street and travel across 96th Street through Central Park to Madison Avenue. Turn left on Madison Avenue. Mount Sinai Hospital is at 100th Street and Madison Avenue.



## ■ PARKING

### PARKING DURING YOUR CONSULT AND PRE-TESTING

Discounted parking and shuttle service at the outdoor lot at Madison Avenue and 104th street is provided to all Mount Sinai Hospital patients at a rate of \$20 per day. Parking ticket must be presented at the front desk of the Department of Cardiovascular Surgery office during regular business hours 9:00 AM - 5:00 PM, Monday to Friday to be validated.

### PARKING DURING SURGERY

Parking is available for those arriving by car. Our parking garage is located on 99th street between Park and Madison Avenues. The garage is open every day, 6:00 AM to 1:00 AM. Call +1 212-241-5125 to inquire about hourly and daily rates. Metered parking on streets bordering the Mount Sinai campus is also available.

## ■ ACCOMMODATIONS NEAR THE MOUNT SINAI HOSPITAL

Please inquire about the MOUNT SINAI HOSPITAL (MSH) RATES - many hotels offer discounts for patients and their families. Please note that family members are not permitted to spend the night in Mount Sinai's waiting rooms or in patient rooms (even if the patient has a private room).



The following hotels are only suggestions, not endorsements. There is no shuttle service from any of the hotels to The Mount Sinai Hospital.

### The Carlyle Hotel ★★★★★

Tel: +1 212-744-1600

Please ask for the MSH patient rate  
36 East 76th Street  
New York, NY 10021

### The Mark Hotel ★★★★★

Tel: +1 212-744-4300

Please ask for the MSH patient rate  
77th Street and Madison Avenue  
New York, NY 10075

### Hotel Wales ★★★★★

Tel: +1 212-876-6000

Please ask for the MSH patient rate  
1295 Madison Avenue on 92nd Street  
New York, NY 10128

### The Marmara Manhattan ★★★★★

Tel: +1 212-427-3100

Please ask for the MSH patient rate  
301 East 94th Street  
New York, NY 10128

### Courtyard UES Hotel by Marriott ★★★

Tel: +1 212-241-5431

Please use discount code: M08  
410 East 92nd Street  
New York, NY 10128

### The Franklin Hotel ★★★

Tel: +1 212-369-1000

Please ask for the MSH patient rate  
164 East 87th Street  
New York, NY 10128

### The Hotel Newton ★★

Tel: +1 212-678-6500

Please ask for the MSH patient rate  
2528 Broadway Avenue  
New York, NY 10025

### Stay the Night Bed & Breakfast

18 East 93rd Street , Tel: +1 212-722-8300

### Bubba & Bean Bed & Breakfast

1598 Lexington Ave, Tel: +1 917-345-7914

## CARDIOVASCULAR CONSULTATION



This booklet will be given to you upon arrival and registration at the front desk. Please bring this booklet with you to all your subsequent hospital appointments.

The administrative assistant at the front desk will give you a new set of pre-consultation forms. If you received an email with the pre-consultation forms attached and you emailed, sent or faxed them back to us, please disregard. If you did not, please fill up the forms while in the waiting area.

Please expect to be in the office from 2 to 3 hours. Our consult is designed to be an in-depth review of your important personal case and this will surely require a thorough conversation with questions about your health in the past (medical history) and a physical examination with assessment of your current vital signs (physical). This process is known as cardiothoracic surgery initial consultation or complete history and physical examination (H&P).

PLEASE LET US KNOW IN ADVANCE IF YOU NEED TRANSLATION SERVICES

### ■ MEET WITH THE NURSE PRACTITIONER

Each member of our team is here to help you through the process of getting you and your heart well again. Your nurse practitioner (NP) will ask you several questions about your health in the past (note that some of the questions will be asked several times until your surgery just for security purposes, try to be patient and consistent with your answers). Please be sure to know the following information with as many details as possible:

- History of prior myocardial infarction (it is important to recall when)
- Presentation and symptoms (shortness of breath, palpitations, chest pain, syncope...)
- Characteristics and severity of chest pain (CCS - Canadian Cardiovascular Class)
- History of congestive heart failure (your doctor mentioned your "ejection fraction")
- History of chronic lung disease (asthma, COPD, emphysema, if you are a heavy smoker...)
- History of stroke (it is important to know if you have any residual functional deficit)
- Previous medical history - hypertension, atrial fibrillation, peripheral vascular disease, clotting disease (thrombosis or pulmonary embolism), hypercholesterolemia, renal failure (dialysis), aortoiliac disease, bleeding problems, diabetes, radiation or chemotherapy for a malignancy. **Please note that if you are on a medication for certain condition i.e. high blood pressure, and your blood pressure readings are within normal limits, you still have this condition and this needs to be disclosed.**
- Previous surgical history - we would like to know about any procedures (particularly coronary interventions or cardioversions) or surgeries that you had in the past (with dates if possible).



If you had cardiac surgery in the past, please obtain the surgical report from your surgeon so we can find out what was done and all surgical details (incision, position of grafts, valve or ring size...).

## MEDICATION LIST

Please list all your current prescription medications and over-the-counter (OTC) non-prescription medications such as Aspirin, Tylenol®, vitamins, supplements, and herbals (e.g. ginseng, ginkgo biloba, and St. John's Wort). Please remember to include also prescription medications taken as needed (e.g. nitroglycerin, Viagra®...).

[illegible]

B - breakfast, BT - bedtime, D - dinner, L - lunch

## TELL US ABOUT YOUR DAILY ROUTINE

NAME

DATE OF BIRTH

/ /

PROCEDURE

**PLEASE BRING THIS GUIDE WITH YOU TO ALL YOUR APPOINTMENTS**

---

ARE YOU FORGETFUL? ☐ YES ☐ NO

DO YOU HAVE VISION OR HEARING PROBLEMS? ☐ YES ☐ NO

HAVE YOU FALLEN RECENTLY? ☐ YES ☐ NO

DO YOU NEED MEDICAL EQUIPMENT AT HOME? ☐ YES ☐ NO

☐ COMMODE

☐ SHOWER CHAIR

☐ OTHER:

AMBULATION CAPACITY ☐ WNL ☐ CANE ☐ WALKER ☐ WHEELCHAIR

DO YOU NEED ASSISTANCE AT HOME WITH DRESSING OR YOUR HYGIENE? ☐ YES ☐ NO

DO YOU DO YOUR OWN GROCERY SHOPPING? ☐ YES ☐ NO

DO YOU DRIVE YOUR CAR? ☐ YES ☐ NO

WHAT IS YOUR NORMAL PHYSICAL ACTIVITY?

☐ NO LIMITATIONS

☐ DAILY WALKS

☐ WALKING AROUND THE HOUSE

☐ FROM BED TO CHAIR

---

DO YOU LIVE ALONE? ☐ YES ☐ NO

MUTIPLE LEVELS OR STEPS AT HOME? ☐ YES ☐ NO

IF YOU ARE DISCHARGED TO A REHAB / NURSING FACILITY, PLEASE INDICATE YOUR PREFERENCE:

1)

2)

3)

WHO WILL HELP YOU AFTER SURGERY?

OTHER COMMENTS:



- Social history (occupation, living arrangements, marital status, tobacco, alcohol, drugs, other)
- Family history (heart disease in your family)
- Allergies to medicine, anesthesia or food (penicillin, latex, dye or contrast, shellfish...)
- List of current medications (including vitamins, herbal supplements, and over-the-counter)

REVIEW OF SYSTEMS



	No	Yes	
Constitutional	<input type="checkbox"/>	<input type="checkbox"/>	Anorexia (loss of appetite), fatigue, fever, weight loss
Cardiovascular	<input type="checkbox"/>	<input type="checkbox"/>	See complete cardiovascular H&P
Respiratory	<input type="checkbox"/>	<input type="checkbox"/>	Cough, dyspnea (shortness of breath), pleuritic chest pain, other:
Gastrointestinal	<input type="checkbox"/>	<input type="checkbox"/>	Nausea, vomiting, diarrhea, constipation, ulcers
Genitourinary	<input type="checkbox"/>	<input type="checkbox"/>	Dysuria (pain when urinating), frequency, incontinence, hematuria (bloody urine), impotence
Neurological	<input type="checkbox"/>	<input type="checkbox"/>	Paresthesia (tingling or pricking), dysesthesia (hypersensitivity), headache, dizziness
Skin	<input type="checkbox"/>	<input type="checkbox"/>	Rash, ulcers, other:
Bleeding	<input type="checkbox"/>	<input type="checkbox"/>	Easy bruising, epistaxis (nose), hemoptysis (mouth), melena (dark stools)
Musculoskeletal	<input type="checkbox"/>	<input type="checkbox"/>	Joint pain, back pain, weakness
Endocrine	<input type="checkbox"/>	<input type="checkbox"/>	Polyuria (urinate a lot), polydipsia (abnormally thirsty), heat or cold intolerance
Eyes and Ears	<input type="checkbox"/>	<input type="checkbox"/>	Decreased hearing, blurry vision, loss of vision
Mood	<input type="checkbox"/>	<input type="checkbox"/>	Depression, mood changes, hallucinations

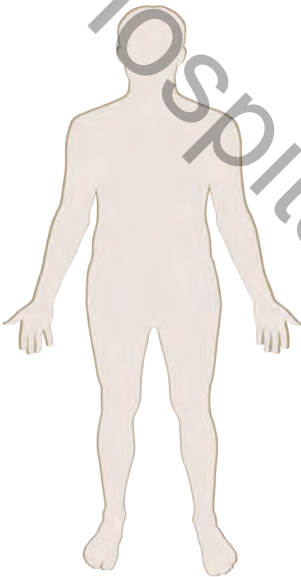
PHYSICAL EXAMINATION

Name  
MRN (medical record number)  
Date of birth  
Date of consult

Temperature  
Height / Weight  
Blood pressure  
Heart rate

Constitutional  
Eyes  
Ears / Nose / Mouth / Throat  
Cardiovascular  
Respiratory  
Gastrointestinal  
Musculoskeletal  
Extremities  
Neurological  
Vascular  
Psychiatry  
Skin

<input checked="" type="checkbox"/> FLU	
<input checked="" type="checkbox"/> PNEUMOVAX	
<input type="checkbox"/> TETANUS	
<input type="checkbox"/> HEPATITIS B	



Your NP will also gather and organize all the information from previous work-up (labs) or diagnostic procedures (TTE, TEE, EKG...) and will present it to your surgeon before the interview.

## ■ MEET WITH YOUR SURGEON

The interview with your surgeon is very focused. Your particular case will be thoroughly analyzed and discussed and you will be guided through the decision-making process. The key points of your surgical consultation are:

- 1) If you really need surgery (if there is a surgical indication according to the current literature)
- 2) If the benefit of surgery outweighs the risk (risk assessment and stratification)
- 3) Timing of surgery (some conditions require immediate surgery and some others can wait longer)
- 4) The type of surgical procedure you need to assure long-term durability
- 5) Surgical approach (location of the incision)

## ■ TTE/TEE/CT/CATH REVIEW

In addition to your surgeon, another fully trained physician might be present during your interview (often a junior surgeon or co-surgeon). Once you are escorted to the surgeon's office, the images you sent in advance (at least two weeks before your consultation) will be loaded and projected to a big screen. The surgical team will then analyze the images with you (and your family) in order to establish a treatment plan.

Once you know and agree with the proposed surgical procedure and timing, your surgeon will also inform you about any additional tests you need before undergoing surgery. As mentioned above, some procedures may allow you to schedule surgery electively (after an important family event, after school finals, after the golf season...). Please do not forget to discuss timing of surgery with your surgeon.



Your surgeon will contact your cardiologist (please know the name and contact details) to provide an overview of the consultation (proposed procedure, timing and required additional tests).

Please feel free to ask as many questions as possible. This booklet is not intended to keep you from asking questions and we encourage you to do so. If you have more questions or concerns after your consult, follow this booklet and do not hesitate to call us if something is not understood.

## ■ BOOKING YOUR SURGERY

After consultation, your surgeon's administrative assistant will help you to schedule your surgery. In addition, you will learn more about additional tests you may need before surgery and will be assisted to schedule them if you wish to have them done at The Mount Sinai Hospital (you are welcome to have the tests done by your local doctors "locally" if this is more convenient for you).



If you are a high risk surgical candidate, you may need hospital admission for comprehensive testing to decide if you would benefit from surgery and optimization. This is called high risk evaluation.

## CARDIOVASCULAR SURGERY BOOKING FORM

Patient: \_\_\_\_\_ MRN: \_\_\_\_\_

Surgery: \_\_\_\_\_

High Risk Evaluation: \_\_\_\_\_

Surgery Date: \_\_\_\_\_ Co - Surgeon: \_\_\_\_\_

Anesthesiologist: \_\_\_\_\_ Admission Date: \_\_\_\_\_

Medication to stop:

<input type="checkbox"/> Clopidogrel (Plavix®)	_____	Stop <b>7</b> days before surgery
<input type="checkbox"/> Prasugel (Effient®)	_____	Stop <b>7</b> days before surgery
<input type="checkbox"/> Aspirin	_____	Stop <b>5</b> days before surgery
<input type="checkbox"/> Warfarin (Coumadin®)	_____	Stop <b>3-5</b> days before surgery
<input type="checkbox"/> Apixaban (Eliquis®)	_____	Stop <b>2-3</b> days before surgery
<input type="checkbox"/> Dabigatran (Pradaxa®)	_____	Stop <b>2-3</b> days before surgery
<input type="checkbox"/> Rivaroxaban (Xarelto®)	_____	Stop <b>2-3</b> days before surgery
<input type="checkbox"/> Edoxaban (Savaysa®)	_____	Stop <b>2-3</b> days before surgery
<input type="checkbox"/> Vitamins, supplements, herbals	_____	Stop <b>14</b> days before surgery
<input type="checkbox"/> Lisinopril or Losartan	_____	Stop <b>2</b> days before surgery
<input type="checkbox"/> Other:	_____	Stop [ ] day before surgery
<input type="checkbox"/> Other:	_____	Stop [ ] day before surgery



The above information assumes the most common scenario. Your surgeon will let you know if you do not have to stop any of the medications due to any particular reason.

Dental Clearance: ☐ The dentist letter should state that "you do not have active infections"

Additional Tests:

<input type="checkbox"/> Cardiac cath (R / L) at MSH	<input type="checkbox"/> Locally
<input type="checkbox"/> CTA of the coronaries at MSH	<input type="checkbox"/> Locally
<input type="checkbox"/> Chest CT w/ contrast at MSH	<input type="checkbox"/> Locally
<input type="checkbox"/> Chest CT w/o contrast at MSH	<input type="checkbox"/> Locally
<input type="checkbox"/> TTE at MSH	<input type="checkbox"/> Locally
<input type="checkbox"/> TEE at MSH	<input type="checkbox"/> Locally
<input type="checkbox"/> Stress exercise at MSH	<input type="checkbox"/> Locally
<input type="checkbox"/> Carotid Doppler at MSH	<input type="checkbox"/> Locally
<input type="checkbox"/> PFTs at MSH	<input type="checkbox"/> Locally

☐ CHF consult (if your ejection fraction is low)  
☐ Neurology consult (if you ever had a stroke)  
☐ Renal consult (if your kidneys do not fully work or you are on dialysis)  
☐ Electrophysiology consult (if you have a pacemaker or defibrillator)

Pre-testing Date: \_\_\_\_\_

Insurance Carrier: \_\_\_\_\_ Tel: \_\_\_\_\_ Authorization: \_\_\_\_\_

## ■ MEET WITH THE SCHEDULER OR ADMINISTRATIVE ASSISTANT

Preparation for surgery is a multi-step process. You will probably meet with several colleagues from administration and various healthcare providers. The scheduler (or administrative assistant in some other instances) will develop a surgical plan with you by organizing all your surgical appointments. Together, you will go over the following points:

- How to use this booklet - **Please bring it to all your hospital appointments**
- Confirmation of surgery date and time
- Scheduling additional tests or consultations with other physicians before surgery
- Medicines that you need to continue or stop before surgery
- Estimated length of surgery and hospital stay
- Location of waiting areas for your relatives
- The high-risk evaluation (HRE) process before deciding about surgery
- Hospital admission before surgery to receive intravenous heparin or nesiritide (Natrecor®)
- Insurance and billing questions
- Dental clearance (letter from your dentist)
- Discharge plan

A dental clearance letter is needed prior to surgery if you are undergoing valve repair or replacement, or an aortic root procedure (Bentall or David). Please fax us your letter before your pre-testing appointment. The letter should state **"PATIENT HAS NO ACTIVE INFECTIONS"** in order for you to be cleared for surgery.

## ■ HOMEWORK

As mentioned before, preparation for surgery starts after talking to your surgeon. Several things need to be taken care of before hospital admission:

- Plan and arrange to be off work for 3 months (per surgeons and insurance plans)
- Learn about and confirm your sick leave benefits (employment insurance, VNS benefits...)
- Read this booklet and fill out the blanks or templates before your pre-testing appointment
- Focus on keeping (or achieving) a healthy lifestyle
- Write a comprehensive list of questions

### ADVANCE DIRECTIVES

Cardiac surgery is a major operation and therefore a serious event. Although unusual, complications may arise (your surgeon will give you more in-depth details depending on the procedure you are receiving). Advance directives are legal forms that allow you to document your decisions and wishes about end-of-life care and to appoint a Power of Attorney (if you do not have a spouse) to manage your personal affairs.

### ORGANIZE YOUR DISCHARGE PLAN ACCORDINGLY (PLEASE READ CAREFULLY)

- You will absolutely need help (even if you do not feel like) when you return home
- Please ask for help to family, friends or a specialized caregiver or private nurse
- Depending on your age and functionality, you will need help 24/7 for 1-2 weeks
- You will not be able to drive for 1 month
- You will need help lifting (cannot lift more than 7-10 lbs.) for 6-8 weeks
- You will need help housecleaning, heavy pushing or pulling for 6-8 weeks
- If you do not have help, consider being discharged to a skilled nursing facility

### HEALTHY LIFESTYLE CHOICES BEFORE SURGERY

If you currently smoke, please quit. Your anesthesiologist will not give you clearance unless you stop smoking 8 weeks before surgery. Smoking triggers a severe inflammatory response of the airway and builds up secretions in your lungs.

If you suffer from hypertension, keep track of your blood pressure readings.

If your cholesterol is high, know well your cholesterol levels.

Rest for 7 hours a day and reduce stress (stress raises your blood sugar levels).

Stay active, take walks and breathe deeply to increase your lung compliance.

Eat a heart healthy and balanced diet, you will recover faster from surgery:

- Focus on your healing, you need to eat plenty of protein
- Eat fresh fruit, fresh vegetables, and fresh meats
- Favor foods low in salt such as dairy, breads and cereals
- If you want to lose weight before surgery, limit your weight loss to 2 lbs. per week
- Rapid weight loss will slow your healing process after surgery
- Heart disease, and heart failure in particular, may decrease your appetite. If you cannot eat or have a low energy level, consider a nutrition supplement such as Ensure® or Boost® (if you have diabetes, try sugar-free supplements such as Glucerna®). Remember to stop vitamins, Supplements, and herbals 2 weeks before surgery.

If you have diabetes, please keep your blood sugar on target (glucose < 130mg/dL). High blood sugar levels have a very negative impact on tissue and wound healing. Additionally, higher rates of infection have been observed in patients with high blood sugar levels.



Call your doctor if you experience worsening chest pain or more severe problems with breathing. If your condition suddenly worsens, please call **911** or go to the nearest emergency department.

## ROUTINE DIAGNOSTIC TESTS

Your individual surgical plan and preparation (optimization) for surgery starts right after meeting with your cardiothoracic surgeon. Over the next days or weeks, you will meet with various healthcare providers in different places. This process will surely demand your understanding and patience, please be as kind and consistent as possible on every step of the way.

Without doubt, one of the most important parts of cardiac surgery is optimization, that is choosing the best time for you to receive surgery. This might require you to have additional tests and treatments before surgery depending on your risk profile (some patients have additional risk factors or medical conditions that need to be addressed). Keep in mind that your surgeon will want to have as much information as possible before proceeding with surgery.



### ■ BLOOD TESTS

Blood tests are a key component to evaluate your readiness for surgery. The most frequently ordered blood tests are the following:

**COMPLETE BLOOD COUNT (CBC)** - Assessment of the blood system. This test interrogates the amount of red blood cells (hematocrit), hemoglobin (necessary to carry oxygen), white blood cells (required to fight potential infections), and platelets (important for making clots and tissue healing).

**BASIC METABOLIC PANNEL (BMP)** - Interrogation of chemicals and electrolytes such as sodium, potassium, glucose and creatinine. These are important in regulating water balance, kidney function, or muscle function among other.

**COAGULATION PROFILE (COAGS)** - Examines clotting function and the factors more often associated with bleeding problems. Often includes INR, PT, PTT, fibrinogen and D-dimer.

Other tests included might be: Lipid panel (cholesterol and triglycerides), LFTs (liver enzymes and liver function), hemoglobin A1C (blood sugar balance over the past 2-3 months).

**BLOOD TYPE AND CROSSMATCH** - Transfusions of blood or blood products might be necessary during surgery. This test is essential to assure that the blood given is compatible with your blood.

Going on bypass (using the heart-lung machine to empty the heart and operate) damage the blood cells (red blood cells, clotting cells and proteins). If this occurs to a certain degree, you may need a blood transfusion. Blood products are only given if it is strictly necessary and you will be informed after surgery. In addition, information from the blood bank will be added to your discharge summary. IF YOU DO NOT WISH TO RECEIVE BLOOD, PLEASE LET US KNOW.



### ■ ELECTROCARDIOGRAM (ECG OR EKG)

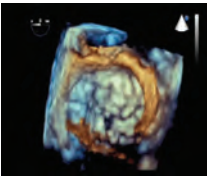
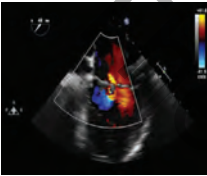
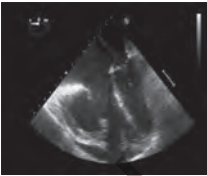
Standard test to analyze your heart rhythm. Sticky patches (electrodes) are attached to your chest, arms, and legs.





## ■ CHEST X-RAY

Your doctor will assess your breastbone (sternum), the size of your heart (particularly in patients with congestive heart failure) and will check for fluid in (pulmonary edema) or around your lungs (pleural effusions).

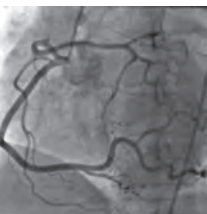


## ■ TRANSTHORACIC OR TRANSESOPHAGEAL ECHOCARDIOGRAM

Also known as echo, this is a cardiac test that uses sound waves (no radiation) sent through a device (transducer or probe) to capture moving images of your heart. This test interrogates the size and shape of the heart chambers, the strength of the heart muscle, as well as the performance of the heart valves. Most patients referred to a cardiothoracic surgeon have had a TTE (non-invasive) in the past. In this context, a transducer with cool gel on it, is moved to different locations of your chest or abdominal wall to acquire different views (no sedation is required for this test). However, in some particular scenarios such as complex valve disease, endocarditis or cardiac masses, a TEE might be of great help in evaluating abnormal findings. For this test, the transducer is passed down (invasive test requiring sedation) the esophagus (tube that connects the mouth to the stomach) instead of being moved over the chest wall (the probe is closer to the heart) thus showing clearer pictures. View modalities of an echocardiogram include Doppler to assess the blood flow through the heart valves (color images), and 3D real-time echocardiography.



Please note that in order to have a test under sedation or anesthesia you must fast since midnight and have someone to accompany or drive you home after (this is a must).



## ■ CARDIAC CATHETERIZATION (ANGIOGRAM)

A cardiac angiogram is a special X-ray test to see the inside of your coronary arteries (the heart's blood vessels) and find out if they are narrowed or blocked. During an angiogram, you will be given medicine to relax you, but you will likely stay awake. The test is done in a specialized dark room (similar to an operating room) with a specialized table (moves in all directions) near a camera. Your doctor will numb a spot on your wrist (if done through the radial artery) or your groin (if done through the femoral artery) and place a needle to pass a wire and then a thin tube (catheter). This procedure is as painful as blood withdrawal. Once the catheter reaches your heart, a special fluid (contrast material or dye) that shows up on the X-ray is injected into the coronary arteries. During the test, you may be asked to hold your breath. It is also important for you to know that you may feel "pressure" as the catheter moves towards your heart, a sudden hot flash sensation from head to toe when contrast is injected or a metallic taste (do not panic, it is normal).

Per current practice guidelines, young patients without significant risk factors for coronary artery disease do not need screening before surgery.



You will be asked about iodine or seafood allergy before contrast material (dye) is administered. If you have ever had an allergic reaction to any kind of contrast, please disclose it.

## WHY OR WHEN DO YOU NEED A CARDIAC CATHETERIZATION?

### SCENARIO 1

Cardiac catheterization is a diagnostic test but your doctor can also perform treatment procedures such as angioplasties (dilatation of the arterial narrowing or blockage with a balloon) or coronary interventions (placement of an expandable tube-shaped device - stent - to keep the artery open) at the same time. Your doctor may recommend this procedure in order to:

- Assess symptomatic coronary artery disease (new or increasing chest pain or a “heart attack”)
- Assess congestive heart failure (narrowing of the coronary arteries is the most common cause)
- Analyze the hemodynamic or clinical impact of a heart defect you were born with

Because cardiac catheterization carries a small risk of complications, angiograms are usually indicated after different non-invasive heart tests have been performed (electrocardiogram, echo or stress test).

In the setting of coronary artery disease, your doctor might find several “too many” narrowings or blockages (particularly in patients with diabetes) or might not be able to open one of the blockages. In this case, coronary artery bypass grafting (CABG) surgery is indicated.

### SCENARIO 2

If you are undergoing any cardiac surgery procedure other than CABG, a coronary angiogram will be necessary in order to:

- Rule out coronary artery disease and the need to add a CABG to the planned procedure
- If your valve disease is leading to pulmonary hypertension or right ventricular failure, a right cardiac catheterization will be necessary to assess your pulmonary pressures and your right ventricular function (important information for your recovery after surgery).

## ADDITIONAL DIAGNOSTIC TESTS

### ■ STRESS TEST

This test is intended to increase your heart rate with either exercise (walking on a treadmill or pedaling on a stationary bike) or by giving you medicine. Simultaneous EKG reading informs your doctor about the quality of blood flow to your heart, performance of your heart medications, and the presence of abnormal heart rhythms. **In addition, some patients may develop significant or severe valve disease (indication for surgery) only when exercising (very useful test to assess the severity of any type of valve disease and clarify the need for surgery).**

- DO NOT eat or drink anything except water for 4 hours before the test
- DO NOT drink or eat anything with caffeine for 12 hours before the test
- Bring your inhaler to the test (if you use one)
- DO NOT take nitrates the day of your test unless your doctor tells you otherwise



When you schedule any test (including blood withdrawal) please kindly ask if you need to fast the night before or need any special preparation.

## ■ COMPUTED TOMOGRAPHY (CT) OF THE CHEST

Non-invasive diagnostic imaging procedure that uses a combination of X-rays and a computer to gather cross-sectional images (often called slices) of the chest. These images can be reformatted in multiple planes, and can even generate 3D reconstructions. Images of internal organs, bones, soft tissue and blood vessels typically provide greater detail than traditional X-rays. You will usually need a CT of the chest if:

- You are undergoing a second cardiac surgery (re-operation)
- You are frail or older than 70 years old (to assess for aortic calcifications)

Avoid wearing metal objects (jewelry, eyeglasses, dentures, piercings and hairpins) since they may affect the acquisition of images. You may also be asked to remove hearing aids and removable dental work. Women will be asked to remove bras with metal underwire.

If you need contrast (need for precise measurements of your aorta, assessment of aortic aneurysms or bulges, or evaluation of a potential blood clots in the lungs) you will require a peripheral intravenous access. Additionally, you will be asked not to eat or drink anything for 4 hours before the test. If you are receiving contrast, always inform your doctor of any history of asthma, diabetes (particularly if you take metformin), kidney disease, thyroid problems or malignancies such as multiple myeloma. Women should always report if there is any possibility that they may be pregnant or they are breast-feeding.



If you are allergic to contrast and must have a test done, you must take 50mg of prednisone 13hs, 7hs and 1h before the test and 50mg of diphenhydramine (Benadryl®) 1h before the test.

## ■ COMPUTED TOMOGRAPHY ANGIOGRAPHY (ANGIOGRAM) OF THE CORONARIES

This test blends advanced CT technology with the peripheral injection of contrast (dye), to obtain high-resolution, 3D pictures of the coronary arteries. The computed reconstruction of all the images enable physicians to determine whether plaque or calcium deposits are present in the arterial walls. Currently, CTA is used as a non-invasive, much faster method for detecting blockages in the coronary arteries. Furthermore, CTA carries less risk and discomfort with decreased recovery time.

Although coronary CTAs are more and more demanded, cardiac catheterization remains the gold standard for detecting coronary narrowings or blockages. Please note that if a significant artery narrowing is found on a CTA (or a narrowing is not completely seen) you will need a subsequent cardiac catheterization.

Your cardiologist or surgeon will determine if you need a CTA or a cardiac catheterization based on your risk profile. Patient selection is key to reduce risks (unnecessary X-ray exposure in young adults, significant allergic reactions to contrast or patients with renal failure) and costs. Your surgeon will often recommend a CTA in:

- Younger patients (<60 years old) **without any modifiable** major risk factors for coronary artery disease such as tobacco use, obesity, diabetes, high blood pressure, high blood cholesterol, sedentarism or physical inactivity, stress, and alcoholism.
- Younger patients (<60 years old) **without any non-modifiable** major risk factors for coronary artery disease such as strong family history of coronary artery disease, and certain ethnicities (Mexican Americans, native Americans, native Hawaiians, and South East Asian Americans).
- Patients with suspected congenital abnormalities of the coronary arteries



If you are having any test that requires injection of contrast material (dye) you will be asked to fast for at least 4 hours before the test. You might take your medicines with small sips of water.

A CTA of the coronaries may take longer than a regular CT of the chest. Therefore, if you become very nervous in small spaces, you may need a sedative to help you relax during the test. Please remember that if you are given a sedative, you need to have someone to accompany or drive you home after the test.

### ■ CAROTID DUPLEX

This non-invasive test uses ultrasound technology to evaluate the arteries that supply blood to the brain (right and left carotid arteries). It is very similar to an echocardiogram but the probe is rubbed over your neck after cool clear gel is applied. The test is often recommended in older patients, in patients with significant coronary artery disease, and in patients with stroke-like symptoms or previous transient ischemic attack (TIA) or stroke.

### ■ VENOUS DUPLEX

This non-invasive test uses ultrasound technology to evaluate the veins of your lower extremities. It is indicated in patients with significant venous insufficiency (varicose veins) in need of CABG surgery. The test will tell your surgeon if your veins are suitable for use as a donor graft.

### ■ MAGNETIC RESONANCE IMAGING (MRI) OF THE HEART

The MRI machine is a large, tube-shaped machine that creates a strong magnetic field around the targeted body area (your heart in this case). Pulses of radio waves (no radiation is used) are sent from a scanner to a computer to create cross-sectional images of the heart.

Magnetic resonance imaging machines may trigger claustrophobia in some patients, especially because the acquisition of images may take at least 30 minutes. If you are claustrophobic, please notify your physician before or ask for anti-anxiety medication or a sedative.

In some instances, your doctor will order the injection of contrast material to further visualize internal tissues (viability study) and blood vessels. A MRI of the heart is often indicated in patients with congestive heart failure (this test is optimal to detect scarred or non-functional heart muscle secondary to insufficient blood flow or after a heart attack), certain cardiomyopathies, congenital defects, and cardiac tumors.

In order to have this test, you have to change into a patient gown and remove all piercings and jewelry (we recommend you to leave all valuables at home). You must be perfectly still during the acquisition of images. Due to the loud noise of the machine, earplugs will be provided.

You must disclose if you have metal within your body upon making your appointment to avoid delays or cancellations. The term metal refers to pacemakers, heart valve prostheses, implantable pumps or ports, surgical plates or pins, body piercings, medication patches, or tattoos. Please let us know also if you have ever been bullet wounded or have ever worked for a metal industry.

■ PULMONARY FUNCTION TEST (PFTs)

Pulmonary function tests are non-invasive tests that evaluate your lungs. The tests measure lung volume, capacity, rates of flow, and gas exchange. Your doctor will recommend this test in patients who underwent lung surgery, heavy smokers, or patients with severe asthma, COPD or emphysema.

PRE-TESTING APPOINTMENT

Your pre-testing appointment is usually (and ideally should be) made 1 to 2 weeks before surgery (varies per surgeon’s preference). Exceptions to this rule are made with OUT OF STATE or INTERNATIONAL patients. If this is the case, please plan on scheduling your pre-testing appointment at least 3 days before surgery.



The Guggenheim Pavilion  
1190 Fifth Avenue on 101<sup>st</sup> Street, 5th Floor  
**Cardiac Registration Desk - Room 182**  
Telephone: +1 212-241-6463 or +1 212-241-0714



Bring a family member or friend with you if possible (and this booklet). You are allowed to eat (bring breakfast, snacks...). Wear comfortable clothing.

The entire pre-testing appointment is approximately 3-5 hours which consist of:

■ PREOPERATIVE DIAGNOSTIC TESTS

- Blood work
- EKG
- Chest X-ray


■ APPOINTMENT WITH ANURSE PRACTITIONER

- Thorough history and physical exam
- Review of your current medications
- Can bring all prescriptions in the original bottles (and we will help you)
- Reconciliation of medications that must be stopped before surgery
- Surgical Consent (please bring your reading glasses with you)
- Preoperative teaching (special shower kit to use before surgery)
- Round of questions and clarifications


Clopidogrel (Plavix®)	Stop <b>7</b> days before surgery
Prasurgel (Effient®)	Stop <b>7</b> days before surgery
Aspirin	Stop <b>5</b> days before surgery
Warfarin (Coumadin®)	Stop <b>3-5</b> days before surgery
Apixaban (Eliquis®)	Stop <b>2-3</b> days before surgery
Dabigatran (Pradaxa®)	Stop <b>2-3</b> days before surgery
Rivaroxaban (Xarelto®)	Stop <b>2-3</b> days before surgery
Edoxaban (Savaysa®)	Stop <b>2-3</b> days before surgery
Vitamins, supplements, herbals	Stop <b>14</b> days before surgery
Lisinopril or Losartan	Stop <b>2</b> days before surgery

■ OVER THE COUNTER (OTC) MEDICATIONS

Over the counter medications include non-prescription medications, vitamins, herbals, or any other kind of health remedies.




Do not take over the counter medications without previous discussion with your doctor (primary care, cardiologist or surgeon). Medications such as Advil®, Motrin® or Nuprin®, decongestants, cough syrups, or cold remedies (Nyquil®, Alkaseltzer®, Sudafed®) may worsen heart failure.



HERB	POTENTIAL EFFECTS	INTERACTIONS
Aconite	Low BP, palpitations	
Bitter Orange	Palpitations, ischemia, stroke	
Country Mallow	Palpitations, ischemia, stroke	Warfarin
Dan Shen	Bleeding	Warfarin
Ephedra	High BP, palpitations, ischemia	
Flavonoids	Hemolytic anemia	
Feverfew	Bleeding	Aspirin
Garlic	Bleeding	Warfarin
Ginger	Bleeding	Diltiazem, propranolol, warfarin
Ginseng	Bleeding, high BP	
Gingko Biloba	Bleeding	Warfarin
Goldenesal	Chnages in BP, bleeding	Digoxin, caffeine, adenosine
Hawthorn	Bleeding	
Licorice	High BP, low potassium	
Lobella	Low BP, palpitations	Warfarin
Papaya	Bleeding	
Peony	Bleeding	Bromelain
Pineapple	Bleeding	Warfarin
Saw Palmetto	Atrial fibrillation	Warfarin
St. John’s Wort	High BP, palpitations	
Valerian	Palpitations	
Yohimbe	Alters BP, palpitations	

Monosodium glutamate (MSG) is commonly used in the food industry as a flavor enhancer. It is found in Chinese food, canned vegetables, soups and processed meats. MSG can cause sweating, flushing, rapid palpitations, and chest pain.

■ APPOINTMENT WITH A CARDIAC ANESTHESIOLOGIST



Cardiac anesthesiologists are specially trained to administer anesthesia to patients undergoing cardiac surgery. They have additional expertise in transesophageal echocardiography.

- Documentation of the condition(s) for which surgery is needed
- Uncovering of hidden conditions that could cause problems with anesthesia
- Thorough review of systems (some questions will repeat, just double checking) and medication
- Physical exam of ear, nose, throat, mouth and neck (intubation assessment)
- Determination of perioperative risk (ASA)
- Development of an appropriate perioperative care plan (including optimization)



- Patient education about anesthesia, intraoperative care and pain management
- Focused questions: anesthesia within a year, history of difficult intubation, adverse reaction to anesthesia, episodes of malignant hyperthermia, nausea or vomiting after anesthesia, use of steroids in the past year, loose/capped teeth, dentures.


## ■ INFORMED CONSENT

The Department of Cardiovascular Surgery sees the consent as the conclusion of an information process that leads to a discussion and decision making. Patients need to be given time to consider, understand, and clarify the information provided to be able to formulate questions.

<p><b>The Mount Sinai Hospital</b> One Gustave L. Levy Place New York, New York 10029</p>	<p>MRN - _____ V - _____</p>
<p><b>CONSENT TO SURGERY/PROCEDURE/ TREATMENT AND ANESTHESIA</b></p>	
<p>1) I hereby authorize _____ and/or those associates or assistants he/she may designate to perform upon _____ (Physician/Provider) the following treatment(s), operation(s), and/or procedure(s) to include: _____ (Name of Patient or "Me")</p>	
<p>2) _____ (Physician/Provider) has fully explained to me in language I understand the nature of the proposed care, treatment, services, interventions, procedures and/or medications and has also informed me of the potential benefits, risks or side effects, including potential problems that arise during recuperation. I have been informed of the likelihood of achieving the proposed goals and of the reasonable alternatives reasonable to the proposed plan of care. I have been informed of the relevant risks, benefits and side effects related to alternatives including the possible results of not receiving the proposed treatment. I have been given an opportunity to ask questions, and all my questions have been answered fully and satisfactorily.</p>	
<p>3) I understand that, during the course of the above proposed surgery/treatment/procedure, unforeseen conditions may arise which necessitate surgery/treatment/procedure different from those contemplated. I consent to the performance of additional surgery/treatment/procedure which the above-named physician or his/her associates/assistants may consider necessary.</p>	
<p>4) I understand that I may require the administration of anesthetics/sedatives/analgesics deemed necessary under the direction of an authorized provider. I understand that I will be made aware of the risks, benefits of, and alternatives to the administration of anesthetics/sedatives/analgesics prior to the surgery/procedure/treatment by an authorized provider.</p>	
<p>5) I further consent to the transfusion of blood or blood components as deemed necessary for the proposed surgery/treatment/procedure. I have been made aware of the risks, benefits of, and alternatives to the administration of these products.</p>	
<p>6) Any organ(s)/tissue(s)/implant(s)/body fluids surgically removed may be examined and retained by the Hospital for medical, scientific or educational purposes and such tissues, organs and/or body fluids may be disposed of in accordance with customary practice.</p>	
<p>7) I consent to the photographing, videotaping and/or closed circuit televising, and publication thereof of this surgery/treatment/procedure for medical, or educational purposes, provided my identity is not revealed. I also consent to the admission of authorized observers to the Operating or Treatment Room.</p>	
<p>8) I understand that during the course of the surgery/treatment/procedure, a manufacturer's representative may provide technical support.</p>	
<p>9) I acknowledge that no guarantees or assurances have been made to me concerning the results intended from the proposed surgery/treatment/ procedure. I confirm that I have read and fully understand the above and that all blank spaces have been completed prior to my signing.</p>	
<p>10) I have crossed out and initialed any paragraphs to which I do not consent.</p>	
<p><b>Patient, Relative or Guardian:</b> _____ Print Name                      Signature                      Date / Time                      Relationship</p>	
<p><b>Signature Witness:</b> _____ Print Name                      Signature                      Date / Time</p>	
<p><b>Signature Physician/Provider:</b> _____ Print Name                      Signature                      Date / Time                      Dictation #</p>	
<p><b>Interpreter Name and Number:</b> _____ Print Name                      Number or Signature                      Date/Time                      Interpreter Refused (Check box if applicable) <input type="checkbox"/></p>	
<p><b>Telephone Consent (Check box if applicable)</b> <input type="checkbox"/></p>	
<p><b>If the Attending Physician is not the Physician/Provider who signed immediately above:</b></p> <p>I, _____, the Attending Physician, hereby certify that I have explained the nature, purpose, benefits, risks of, and alternatives to, the proposed procedure/operation, have offered to answer any questions and have fully answered all such questions. I believe that the patient/relative/guardian fully understands what I have explained and answered. In the event that I was not present when the patient signed this form, I understand that the form is only documentation that the informed consent process took place. I remain responsible for having obtained the consent from the patient.</p> <p>_____ Print Name                      Attending Physician Signature                      Date / Time                      Dictation #</p>	
<p><b>If More Than Thirty Days Have Passed Since This Consent Form was Signed or the Consent Conversation Was Held:</b></p> <p>I, _____ Physician/Provider, have reaffirmed the patient's understanding and certify that there has been no substantial change to the patient's condition in the time period since the consent form was signed.</p> <p>_____ Print Name                      Attending Physician Signature                      Date / Time                      Dictation #</p>	
<p>* The signature of the patient must be obtained unless the patient is under the age of 18 or incompetent. <b>NOTE: THIS DOCUMENT MUST BE MADE PART OF THE PATIENT'S MEDICAL RECORD.</b></p>	
<p>C2F1 (Rev. 5/15) ENG <span style="float: right;">Page 1 of 1</span></p>	

## ■ PHYSICIANS WITH FINANCIAL DISCLOSURES

Some of the surgeons from the Department of Cardiovascular Surgery at The Mount Sinai Hospital are inventors and consultants for the world leading companies in the field. Therefore, a financial disclosure form is given to the patients during pre-testing. The following is an example:

 <b>The Mount Sinai Hospital</b> One Gustave L. Levy Place New York, New York 10029	MRN - V -
<b>SPECIFIC DISCLOSURE FOR A PHYSICIAN WITH A FINANCIAL RELATIONSHIP</b>	
<p>I am aware that my surgeon, Dr. David Adams, Chairman of the Department of Cardiothoracic Surgery is the co-inventor and inventor of valve repair rings that may be used in my upcoming surgery. It has been explained to me that Dr. Adams and Mount Sinai receive royalties from the sales of these products worldwide. But do not receive any royalties when the devices are implanted in patients at Mount Sinai. I also understand that Dr. Adams has performed consulting services for Edwards Lifesciences and Medtronic, Inc. the manufacturers of the devices.</p> <p>Carpenter-Edwards Physio II Annuloplasty Ring Invented by: Alan P. Carpenter, MD, PhD. And David H. Adams, MD</p> <p>Carpenter-McCarthy-Adams IMR Elliptic Annuloplasty Ring</p> <p>Ti-Ad Adams Triuspid Annuloplasty Ring</p> <p>The aforementioned financial relationships have been reviewed with me and I am satisfied that any personal and/or institutional financial interests have not influenced the decision to use any of these devices for my treatment.</p> <p>Patient Name (Printed) _____ Patient Signature _____</p> <p>Date _____</p> <p>Witness Name (Printed) _____ Witness Signature _____</p> <p>Date _____</p> <p>4001-1000 Page 1 of 1</p>	

## ■ EMOTIONAL SUPPORT - THE JOSEPH F. CULLMAN, JR. INSTITUTE

The mission of the Joseph F. Cullman, Jr. Institute for Patient Experience is to promote a culture of patient-centered care that emphasizes service and compassion from the moment a patient enters the hospital through discharge. Learn more during your pre-testing appointment.

The Institute works in partnership with The Board of Trustees, the health system and hospital leadership, physicians, nurses, trainees, clinicians from other disciplines and all staff members, as well as volunteers and members of the community.

### The Joseph F. Cullman, Jr. Institute for Patient Experience

One Gustave L. Levy Place Box 1238

New York, NY 10029

Telephone: +1 212-659-9321

Email: [thecullmaninstitute@mountsinai.org](mailto:thecullmaninstitute@mountsinai.org)

# 5

## CARDIAC SURGERY

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The Mount Sinai Hospital

## BEFORE SURGERY

The following recommendations will help you to prepare for surgery and more importantly, will accelerate your recovery.

### GETTING READY FOR THE BIG DAY

- If you are currently smoking, quit (you must quit smoking at least 8 weeks before surgery)
- If you drink alcoholic beverages daily, please let us know
- Tightly manage other medical conditions and get to know all “your numbers”
- If you have high blood pressure, keep track of your blood pressure readings for 1 or 2 weeks
- If your cholesterol is high, know your most recent cholesterol levels
- If you have diabetes, please keep your blood sugar on target (glucose <130mg/dL)
- If you have thyroid issues, please strictly follow your medication protocol

You must get to know all “your numbers” before surgery. High blood pressure may increase your surgical risk. High blood sugar levels have a very negative impact on tissue and wound healing (in addition, higher rates of infection have been observed in patients with high blood sugar levels). Thyroid problems may have a negative impact on your heart rate after surgery.

- Stay active - Exercise will help you regain your strength and will avoid positional pain
- Take walks and breathe deeply to increase your lung compliance
- Sleep well (sleep debt decreases muscle strength and healing)
- Reduce stress (stress raises your blood sugar levels)



Discuss further management of your current heart medications with your cardiothoracic surgeon and review the list of medications that must be stopped (and when) prior to your surgery.

### EAT A HEART HEALTHY AND BALANCED DIET

- Favor foods low in salt such as dairy, bread and cereals
- Eat fresh fruit, fresh vegetables, and fresh meats
- Focus on your healing, you need to eat plenty of lean protein
- If you need to lose weight before surgery, limit your weight loss to 2 lbs. per week
- Rapid weight loss will slow your healing process after surgery
- Heart disease, and heart failure in particular, may decrease your appetite. If you cannot eat or have a low energy level, consider a nutrition supplement such as Ensure® or Boost® (if you have diabetes, try sugar-free supplements such as Glucerna®)
- Remember to stop vitamins, supplements, and herbals 2 weeks before surgery

## PLAN AHEAD - ORGANIZE ALL THE SOCIAL ASPECTS OF YOUR SURGERY

- Know your rights as a patient and think about advanced directives
- Identify a spouse, family member or support individual as your contact person
- Plan and arrange discharge transportation
- If you are likely to be discharge to a subacute rehabilitation facility, pick one beforehand
- Arrange for someone to stay with you for the first 1 to 2 weeks after discharge
- If you need assistance to arrange home care, please contact the social worker



Please note that the Health Insurance Portability and Accountability Act - HIPPA - Privacy Rule prevents all staff from disclosing information to anybody other than the primary patient contact. This person will be contacted for updates and in the event of an emergency. All relatives should also know this person's contact so they can obtain progress information.

## ■ IMPORTANT FINANCIAL INFORMATION

Your hospital admission will be preauthorized by the cardiovascular scheduler or coordinator. Preauthorization is not a guarantee of payment, just a notification of your admission with subsequent surgery to your insurance carrier. Payment for your services at The Mount Sinai hospital will be determined with your carrier upon receipt of hospital and doctors' bills.

ALL PATIENTS are responsible for their contractual agreement with their insurance carrier (Deductibles, Co-Insurance, Co-Pays, etc...)

A day or two before your hospital admission, you may receive a telephone call from The Mount Sinai Financial Screening Department (Tel: +1 212-731-3600), concerning your yearly out of pocket expenses with your medical insurance carrier. They will advise if you have any potential financial responsibility prior to your hospital admission. Even though the hospital may participate with your insurance carrier, you are still required to pay your annual deductible/ co-insurance and all out of pockets expenses.

Participation with insurance plans are a department's (surgeon's) choice. Each specialty is considered a separate entity/practice.

Federal Medicare/Medicaid does not need preauthorization. However, if your Medicare/Medicaid is an HMO, preauthorization will be required. In addition, If you have Medicare as your Primary Insurance, you do not need to contact the Anesthesia Billing Department, they do participate with Medicare. Please contact the Mount Sinai Anesthesia Billing Department (Tel: +1 212-987-3100) to check on their insurance participation. This department bills for the anesthesiologist in the cardiac operating room, as well as, the intensivist/pain management/critical care team in the Cardiac Surgical Intensive Care Unit, are two separate bills within the Department of Anesthesia.

If you have billing questions after surgery and hospital discharge, please contact the Department of Billing at +1 212-987-3100.

Telephone & Television service may be requested at x47200 or +1 212-241-7200.



Private Duty Nurses or Companions may be requested at +1 212-241-7383 (check fees and available shifts prior to request). Please note that Private Duty Nurses or Companions are not permitted to provide services in the CSICU. Relatives are not permitted to stay overnight in the CSICU.

Requests for single or private rooms can be arranged by the nursing desk in the CSICU. The differential room charge per day is often above the semi-private room fees usually covered by your insurance carrier. A fee is required upon admission.

## ■ INTERNATIONAL PATIENTS

The International Services Department at The Mount Sinai Hospital takes a personalized approach to providing patients with world class care. The department blends modern hospitality with the gold standard of the most advanced medicine. Patients seeking international medical services at The Mount Sinai Hospital will benefit from convenient and seamless coordination of hospital admissions and subsequent appointments. The following services are available to our international patients and their families:

- Referral to world renowned physicians
- Expedited hospital admissions and medical appointments
- Travel document services (including delivery of medical binder upon treatment completion)
- Remote second opinion, one day executive physicals, and immediate cost of service estimates
- Hotel reservations, apartment rentals, transportation and interpreter services

International patients visiting Mount Sinai Heart, please contact:  
Martha L. Salazar, Licensed Clinical Social Worker (LCSW)  
Director, Quality Control and Patient Satisfaction - International Program Coordinator  
Tel: +1 212-241-7911  
Email: [martha.salazar@mssm.edu](mailto:martha.salazar@mssm.edu)

Mount Sinai International Services  
150 East 42nd Street  
New York, NY 10017  
Tel: +1 212-241-1100  
[international@mountsinai.org](mailto:international@mountsinai.org)

Johnny D'Abbraccio, RN (Senior Director)  
Erica Peltz, MSPT (Director)  
Michael Lindo (Associate Director)  
Juliya Volansky (Patient Liaison)  
Connie Ramirez (Executive Assistant)



## THE NIGHT BEFORE SURGERY

Every patient's situation is unique as it is every surgical procedure. Therefore, some patients will be admitted for surgery one or two days before their operation (inpatient or IP) and some others will arrive to the hospital the day of surgery (day-of-admission surgery or DAS). Regardless, the preparation for surgery is the same.



You are responsible for contacting your scheduler or surgeon's administrative assistant between 2:00 PM and 3:00 PM the day before surgery to obtain an estimated time of arrival to the hospital. You can contact the Cardiovascular Surgery Scheduling Office at +1 212-659-6805 or +1 212-659-6820. Arrival times for surgery can be anywhere from 5:30 AM to 11:30 AM. Please prepare your transportation in advance.

- You may eat a regular dinner, no restrictions
- **MUST FAST AFTER MIDNIGHT, DO NOT EAT OR DRINK AFTER MIDNIGHT**
- Take your medications (as directed by your surgeon) with small sips of water
- Brush your teeth and rinse your mouth with an antiseptic mouthwash
- Try to sleep well (we know it is difficult...)

### PERSONAL HYGIENE BEFORE SURGERY

- Shower with the antiseptic soap (chlorhexidine 4%) given to you at pre-testing
- Avoid face / eye / ear / mouth contact with the antiseptic soap
- Do not use lotion, powder, deodorant, makeup or hair products after using the shower kit
- Mupirocin (antibacterial ointment) might need to be applied to your nostrils
- Shower with the antiseptic soap the morning of surgery
- DO NOT shave or use any hair removal products to remove hair from your neck down



Please understand that the surgery schedule sometimes (although rarely) must be changed due to emergencies, heart transplants, or any other related circumstances. If this happens, the date or time of surgery may need to be moved. We will always inform you as soon as possible.

### PACKING FOR HOSPITAL ADMISSION

- This booklet
- A toiletry kit with your personal preferences
- Pajamas, bathrobe or dressing gown (you will wear a hospital gown most of the time)
- Comfortable underwear (a wireless or sports bra to avoid tension on the wound)
- Your CPAP machine (you will not be allowed to use it in the CSICU)
- Loose clothing and accessories to walk as comfortable as possible (slippers, orthotics...)
- A container for your dentures, eyeglasses, tissues, newspapers, money...
- Label your glasses, dentures and hearing aides
- Medications, supplements, and vitamins (list or in their original containers)
- Bring a copy of your insurance cards and keep it with you

## TOP 10 QUESTIONS PATIENTS ASK



### **Is this open heart surgery?**

Yes, in order to operate on your heart, we need to open your chest, arrest (stop) the heart and then going on bypass to empty it - **PAGES 22-38 & 90**

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### **How long will I stay at the hospital?**

The average length of stay in the hospital after surgery is 5 days, but keep in mind that every patient is different and many factors can delay your discharge - **PAGES 98-103**

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### **How big is the scar?**

The length of the scar (and the number of scars) depends on the procedure you are undergoing. The incision fades over time to a very light color - **PAGES 90, 94 & 110-112**

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### **Is it going to hurt?**

When you wake up in the CSICU, the procedure will be over. We will keep you comfortable throughout your hospital stay. You will not get addicted to narcotics - **PAGES 92-97**

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### **Do I need a hospital bed at home?**

Absolutely not. Talk to the physical therapist in advance regarding your concerns about stairs, bathing or any other activities - **PAGES 115-125**

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### **Am I going to feel the breathing tube?**

You will be sedated until the breathing tube can be safely removed. You will be able to feel the tube but will not experience any pharyngeal (gag) reflex - **PAGES 88-89 & 95**

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### **How long is the surgery?**

The approximate length of surgery (varies according to the procedure) is anywhere between 4 to 8 hours including anesthesia and transfer to the CSICU - **PAGES 88-90**

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### **Am taking supplements and natural remedies in order to...**

Supplements and herbals must be stopped at least 14 days before surgery. Talk to you surgeon or nurse about the rest of medications - **PAGES 60-61**

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### **Can I go to a rehabilitation facility after surgery?**

The physical therapist will determine if you qualify to be discharged to a rehabilitation facility. The medical team has no input on this decision - **PAGES 96-103**

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### **When can I return to work?**

It depends on the type of work you do. If your job is physically demanding, you will need to recover for up to 12 weeks. Desk jobs can be resumed within 6 weeks - **PAGES 115 & 124**

## THE DAY OF SURGERY



In case of an emergency or illness that requires cancellation of surgery, speak to the Cardiac Registration Desk at 05:30 AM. Please call +1 212-241-0714 or +1 212-241-6463.

- Take your heart medications as directed with only small sips of water
- Shower with the antiseptic soap (chlorhexidine 4%)
- Avoid any makeup, skin products or nail polish
- Do not wear hair products, wear hair loose with no clips, barrettes or pins



Although you will have a safety box in your room, it is not advisable to bring jewelry or significant valuables (electronics...) with you. Just have loose change for incidentals.

### ARRIVING TO THE HOSPITAL

- Please report to the **Cardiac Registration Desk** at your estimated time of arrival
- The **Cardiac Registration Desk** is located at GP5W, Room 182, Tel: +1 212-241-0714
- You will receive your ID band and information regarding your rights as a patient
- The information on file will be double-checked (contact, insurance, and procedure)
- An escort will take you to the assessment area and you will change into a gown
- A nurse will verify your identity and planned procedure and review your records and tests
- An escort will take you to the pre-surgical holding area
- Your family may stay with you until you go to the operating room (OR)
- You and your family will meet the entire surgical team

- Any visible body hair on the site of the surgical incision will be clipped
- Your anesthesiologist will place an intravenous line and administer a relaxant
- You will be wheeled into the operating room and will be transferred onto the operating table



A garment bag will be provided so your belongings can be given to a family member. If you are alone, your valuables will be locked up with security.

Relatives will head to the waiting area. Relatives of patients undergoing heart surgery can either wait at the Surgical Family Waiting Room at GP2W (beeper system) or outside of the Cardiac Surgical Intensive Care Unit (dedicated waiting area) on the 5th floor (5 Center).

■ CARDIAC ANESTHESIA AND MONITORING

Waiting while your loved one is in surgery may trigger anxiety and restlessness. Please keep in mind that the approximate length of surgery (varies according to the procedure) is anywhere between 4 to 8 hours (anesthesia and monitoring before surgery may take an hour and preparing for transfer to the CSICU after surgery may take another hour) and an attending surgeon needs to be available the entire time.

The operating room is usually bright and cool, everybody around will be wearing a surgical hat and mask, and there are lots of medical equipment and monitors (please do not feel intimidated, will help you on every step of the way).

The team will help you transfer from the stretcher to the operating room table (narrower) and a safety strap will be applied across your lap. The anesthesiologist then will talk to you from the head of the bed and will guide you through the process:

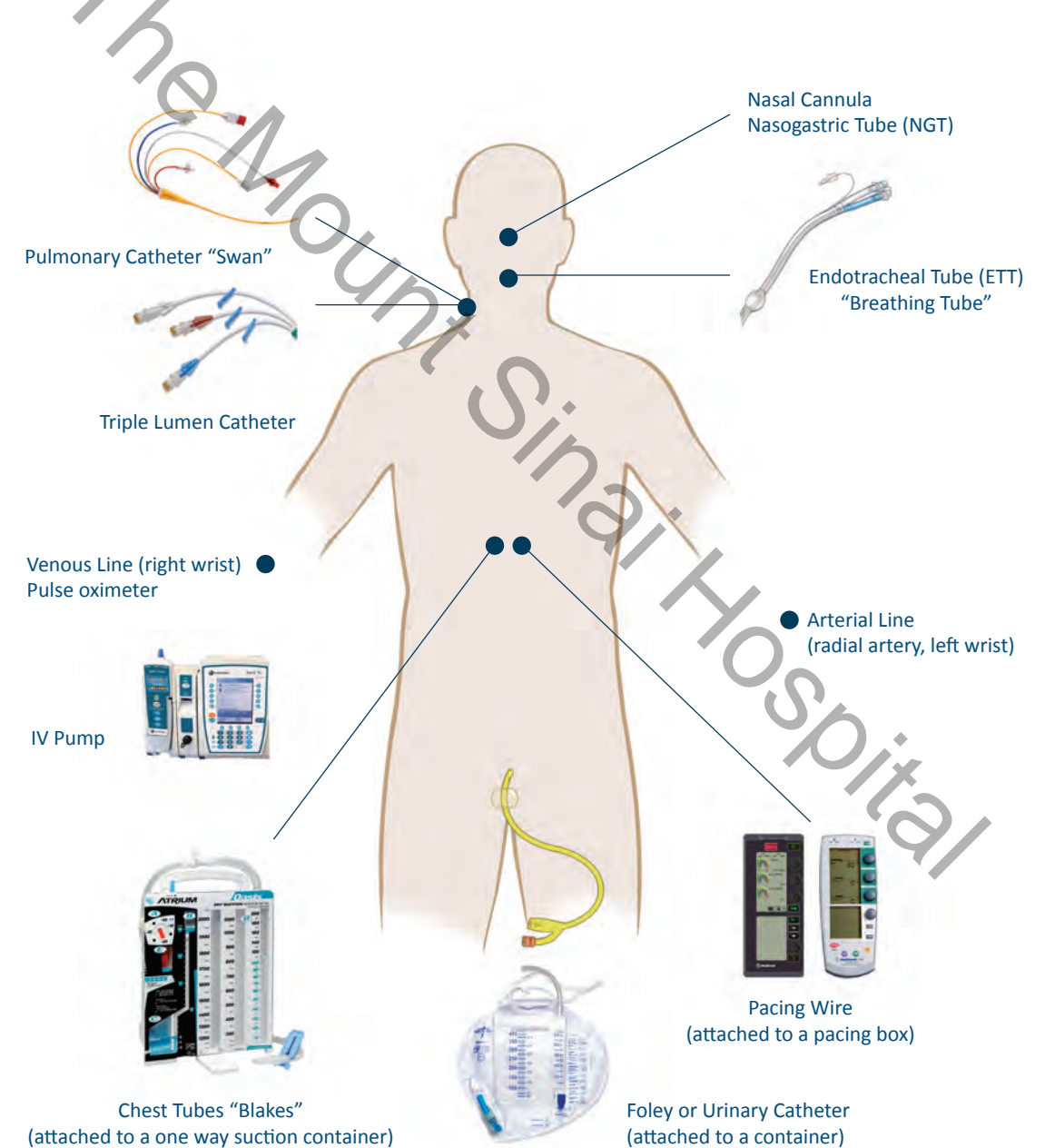
- Stickers (EKG leads) will be placed in your chest
- A device (pulse oximeter) will be placed in your finger to monitor your oxygen levels
- An arterial line will be placed in your wrist to monitor your blood pressure
- The anesthesiologist will give you some oxygen through a face mask
- You will fall asleep. When you wake up, you will be in the CSICU

■ SURGICAL EQUIPMENT YOU MAY SEE OR FEEL AFTER SURGERY

Cardiac anesthesia does not finish once you fall asleep, and several additional things are required (before skin incision) in order to monitor your heart and other vital organs during surgery. The following is a quick review of surgical equipment you may see or feel when you wake up (every piece of equipment is placed by the anesthesiologist or by the cardiothoracic surgeon in the operating room while you are sleeping).

NAME	PURPOSE
Endotracheal Tube	Known as breathing tube, it is connected to a ventilator to help you breathe
Ventilator	Machine that breathes for you (insufflates oxygen) until you do it on your own
Nasal Cannula	Nosepiece that delivers oxygen (seen when the breathing tube is not needed)
Nasogastric Tube	Tube in one of your nostrils that goes into your stomach to keep it empty
Central Line	Venous tube placed in the neck to administer volume (fluids) or medications
Triple Lumen	Catheter with multiple injection ports (through the central line)
Pulmonary Catheter	Known as “Swan”, monitors your pulmonary pressure (through the central line)
Chest Tubes-Blakes	Tube placed during surgery around your heart (and lungs) to drain fluid
Pacing Wire	Ventricular wire placed during surgery to regulate your heart rate
IV Lock	Small venous tube placed in your wrist to administer medication

IV Pump	Machine that gives you exactly the amount of fluid or medication you need
Pulse Oximeter	Rubbery clip or sticker in your finger that monitors blood oxygen
Arterial Line	Known as “A line” - Small tube placed in your artery to monitor blood pressure
Foley Catheter	Rubbery tube placed in your bladder to monitor the amount of urine hourly
Restraints	Soft or mitt wrist straps to keep you away from accidentally pulling equipment
Zoll Pads	Large stickers placed (front and back) if your heart rate is very irregular
Ankle SCD	Sequential compression device to avoid venous thrombosis while bedridden
Ace Bandage	Placed around your leg if vein harvesting for CABG was necessary



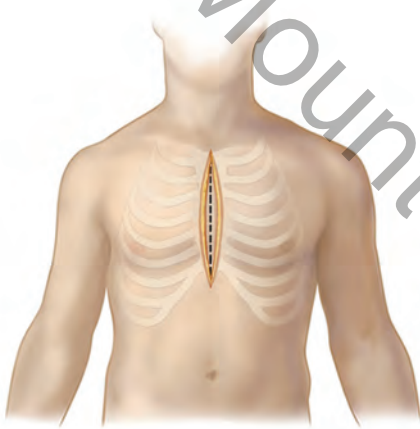


## ■ SURGERY

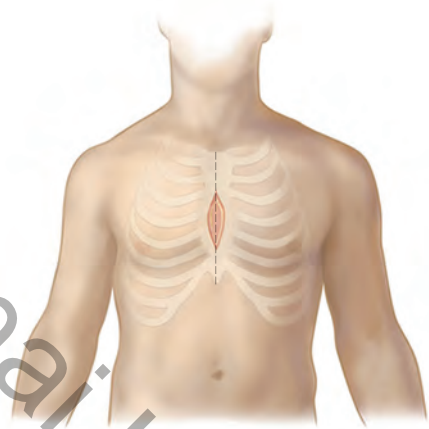
The current gold standard and still most popular approach in heart surgery is sternotomy, which allows central cannulation (as opposed to femoral or groin cannulation), assures direct protection of your heart, and most importantly, permits direct access if a complication occurs. However, cardiac surgery has progressively evolved over the past decade due to the incorporation of minimally invasive techniques. A trend towards more cosmetic incisions has triggered the adoption of minimally invasive surgery with very limited incisions (mini sternotomy) or video assisted surgery (thoracotomy and robotics).



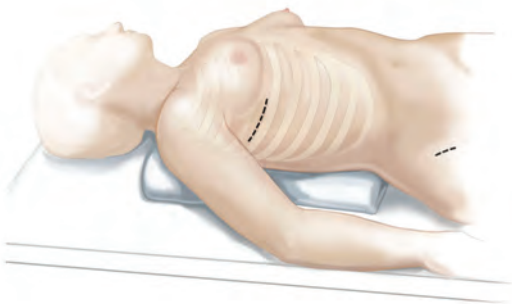
The most important goal for patients undergoing heart surgery is to receive not only a successful surgery but also a durable one. In ideal conditions, these axioms should be met regardless of the surgical approach and the final cosmetic outcome. **Focus on the procedure first!** You can subsequently pick your incision (or your surgeon) if the offered outcomes are equivalent to those achieved with standard incisions.



STERNOTOMY



MOUNT SINAI MINI STERNOTOMY  
3-4 inch (7-9 cm)

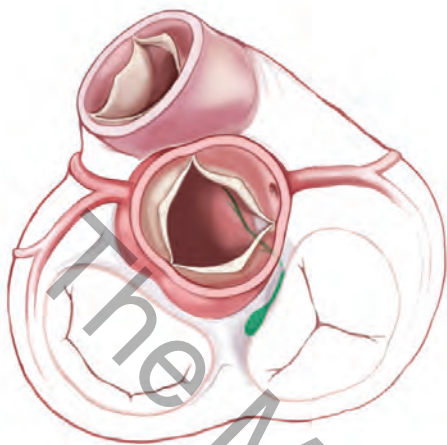


RIGHT OR LEFT THORACOTOMY  
(Femoral "Groin" Cannulation)

In general, you will not be able to have a mini sternotomy if:

- You need additional CABG
- This is your second heart surgery
- You need an extensive aortic surgery
- You have multivalve disease
- Your ejection fraction is very low
- Your tissues are very frail
- You have certain adjuvant conditions

## YOUR OPERATION



### VALVE SURGERY / AORTIC SURGERY

#### MITRAL VALVE REPAIR

☐ BAND ☐ RING SIZE:

#### MITRAL VALVE REPLACEMENT

☐ BIOLOGICAL ☐ MECHANICAL SIZE:

#### AORTIC VALVE REPAIR >

#### AORTIC VALVE REPLACEMENT

☐ BIOLOGICAL ☐ MECHANICAL SIZE:

#### TRICUSPID VALVE REPAIR

☐ RING SIZE:

#### TRICUSPID VALVE REPLACEMENT

☐ BIOLOGICAL ☐ MECHANICAL SIZE:

#### AORTIC REPLACEMENT

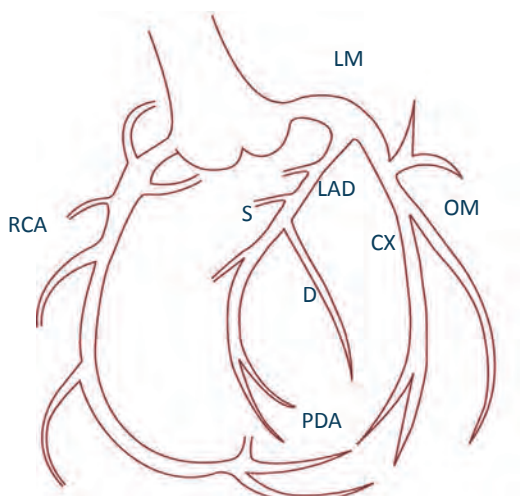
☐ ASCENDING ☐ ROOT ☐ ARCH

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CX - circumflex, D - diagonal, LAD - left anterior descending, LM - left main, OM - oblique marginal, PDA - posterior descending artery, RCA - right coronary artery

### CORONARY ARTERY BYPASS GRAFTING (CABG)

#### LEFT INTERNAL MAMMARY ARTERY (LIMA) TO

☐ LAD ☐ D ☐ RAMUS ☐ OTHER

#### SAPEHNOUS VEIN GRAFT (SVG) TO

☐ D ☐ OM ☐ PDA ☐ OTHER

#### RADIAL ARTERY (RA) TO

☐ D ☐ OM ☐ PDA ☐ OTHER

#### RIGHT INTERNAL MAMMARY ARTERY (RIMA) TO

☐ PDA ☐ RCA ☐ OTHER

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## RECOVERY

After the procedure, you will be transferred to the CSICU - Cardiac Surgical Intensive Care Unit. The CSICU has a total of 12 beds (boxes) and is located at GP5C (Guggenheim Pavilion, 5th floor, Center) and is run by specially trained staff. The CSICU staff includes doctors (intensivists, anesthesiologists, or cardiothoracic surgeons), nurses with advanced training, respiratory therapists, clinical nurse specialists, pharmacists, physical therapists, nurse practitioners, physician assistants, dietitians, social workers, and chaplains.



Your relatives will keep your belongings (glasses, dentures, hearing aids...) and bring them to the CSICU after surgery.

Immediately after surgery, patients require continuous close (intensive) observation and monitoring. Skilled nurses care for one patient at a time "1 to 1" each shift and operate all the special equipment in every single box. As detailed before, the equipment in the CSICU may seem overwhelming, please do not feel that way, it is all routine.

### WELCOME TO THE CARDIOTHORACIC SURGICAL INTENSIVE CARE UNIT

We appreciate your presence, you play a key role in your loved one's recovery  
Although we are flexible, our recommended visiting hours are

9 AM to 9 PM

**STRICTLY NO VISITORS ALLOWED FROM:**

6:00 TO 6:30 AND 7:00 TO 7:30 AM

6:00 TO 6:30 AND 7:00 TO 7:30 PM

A MAXIMUM OF 2 VISITORS AT A TIME

NO FRESH FLOWERS OR PLANTS ARE ALLOWED

VISITORS UNDER THE AGE OF 14 REQUIRE SPECIAL PERMISSION

Please help us reduce the risk of infection by sanitizing your hands (and putting on a yellow gown if necessary) when entering and leaving patient rooms




Family members or friends will not be able to visit you if they currently have  
a cold, fever, cough, or any other signs of infection




The ICU nurse will call the contact person to provide updates the evening of surgery and the morning after surgery.

You are completely asleep when you arrive to the CSICU. Your team (intensivist and nurse) will be at bedside to receive “sign out” or “report” from the surgical team (anesthesiologist and cardiothoracic surgeon). An attending surgeon will talk to your relatives about the surgery and explain what needed to be done. In the meantime, the CSICU nurse continually monitors your heart rhythm, blood pressure, pulse, temperature, oxygenation, and the amount of fluid you have or need. Once the nurse connects and organizes all the monitoring lines, and performs an initial assessment of your condition (this process usually takes 30 to 60 minutes), your relatives can visit you for 10 to 15 minutes.



- Electrocardiogram and heart rate “pulse”
- Blood Pressure
- Pulmonary Pressure
- Central Venous Pressure “right heart”
- CO2
- Peripheral Oxygen Saturation “breathing”
- Respiratory Rate

Your nurse will wake you up for a few seconds just to assess your neurological status: we need to check that you can follow commands and move all extremities. Then you will be sedated until cardiac stability is completely achieved. When you start waking up, you will have the breathing tube in your throat which will prevent you from talking. While you need the breathing tube, the nurse asks you very simple questions (often “yes” or “no” questions) to assess your needs (especially the need for pain medication).



Pain control is crucial right after your surgery. We really need you to sit up, walk, breathe deeply and cough. If you are in pain, this will not occur. Please ask for pain medication.

You will regularly be asked how much pain you are in by using a scale of numbers that goes from 0 to 10 (0 = no pain / 10 = worst possible pain). This scale tells us approximately what type of pain medication you need. comfortable.



**0**  
No Hurt

**2**  
Hurts Little Bit

**4**  
Hurts Little More

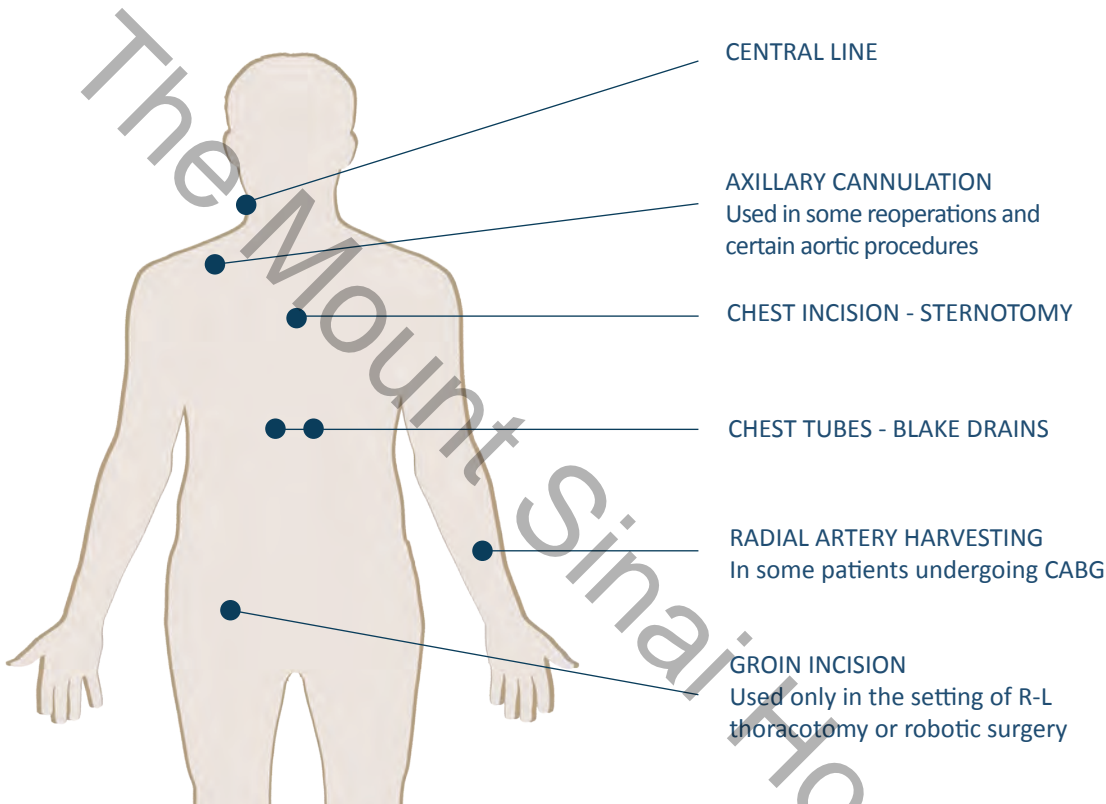
**6**  
Hurts Even More

**8**  
Hurts Whole Lot

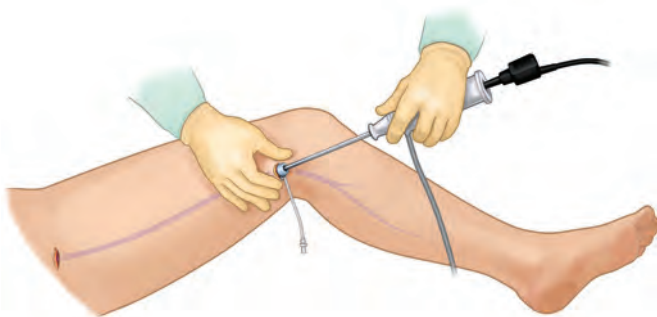
**10**  
Hurts Worst

Between 8 AM and 11 AM the intensive care team will make rounds. This is a team of about 5 to 10 specialists including a board-certified intensive care physician, physician assistants, nurse practitioners, physicians in training, cardiac surgical nurses, physical therapists, respiratory therapists, dietitians, and support staff. The team will introduce themselves and discuss your case in detail (reviewing every single number). They will then examine you, ask questions, listen to concerns and create a specific plan. This plan is always in conjunction with your surgeon (your surgeon is aware of any recommendation or action).

■ POTENTIAL SURGICAL INCISIONS OR WOUNDS



Endoscopic “camera” tools are used to remove or “harvest” veins from a patient’s leg or arm to create a “conduit” to proceed with coronary artery bypass grafting. The success of the procedure may be influenced by the quality of the conduit and how it is handled or treated during harvest.



## ■ INCISIONS AND WOUND CARE WHILE AT THE HOSPITAL

In general, your incisions are normally close with stitches underneath the skin and these will dissolve in 2 to 3 months (they do not need to be removed). Your breastbone (sternum) is held together with stainless steel wires or cables (they will not be removed, they will stay there for life no worries about metal detectors or scanners at the airport).

While at the hospital, the nurse inspects your incisions two times a day and cleans them with an antiseptic solution. As your incisions start to heal, you may experience itching or numbness at the sites. Please remember to not touch or scratch your incisions. Always remove your chest dressing to shower and allow Dermabond® (transparent film over your incision) and scabs to fall off. If staples have been used in any of your incisions (rarely), these will be removed 7 to 10 after surgery.

NECK LINE	Leave the dressing on for 24 hours, leave the dressing to shower
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CHEST TUBE	Leave the dressing on for 24 hours, shower only if dressing is removed
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- Cleanse your wounds daily with mild unscented soap
- Rinse with warm water and pat (do not rub) dry with a clean towel
- Wash your hands before and after touching any wound
- A wound is completely healed only once scabs are no longer present
- If there is mild discharge, apply a clean dry compress (change at least twice a day)
- If there is a hospital dressing upon discharge, remove it when you get home

## ■ TIME TO REMOVE THE BREATHING TUBE

The goal is to remove the breathing tube in the operating room or within 4 to 6 hours from surgery (maximum within 24 hours). The following requirements need to be fulfill in order for your nurse to remove the breathing tube:

- You have good “numbers”, you are hemodynamically stable and your heart is strong
- You can breathe on your own and take deep breaths without any restrictions due to pain
- You are strong enough (your nurse will ask you to hold your head up for a few seconds)
- There are no air leaks around the tube
- After tube removal, oxygen is provided, and breathing-coughing exercises are started

## ■ COMMON HEART MEDICATIONS “DRIPS” YOU MIGHT BE ON WHILE IN THE ICU

- AMIODARONE “AMIO” - Stabilizes and regulates the heart rhythm
- EPINEPHRINE “EPI” - Keeps the heart strong to pump an adequate amount of blood
- MILRINONE - Helps the right side of the heart to pump an adequate amount of blood
- NOREPINEPHRINE “LEVO” - Increases and maintains blood pressure
- VASOPRESSIN “PIT” - Increases and maintains blood pressure



Keep in mind that every patient is different and so many factors (including age) impact on the recovery after surgery. Every timeline given is only a guide.



## ■ PHYSICAL THERAPY, PHYSICAL THERAPY, PHYSICAL THERAPY

Physical therapy will help you regain muscular strength and will also teach you how to preserve energy to return to your normal activity level. In addition, exercise will prevent joint stiffness, formation of blood clots and pulmonary infections. **START AS SOON AS YOU CAN!**

### **BREATHING (10 DEEP BREATHS PER HOUR)**

It is critical to take deep breaths after surgery to get air to the very bottom of both lungs and trigger full re-expansion (this prevents lung collapse and subsequent infections). Breathe in through your nose (your stomach should rise) and slowly blow out through your mouth (purse your lips as though to blow a candle). Our recommendation is to perform 10 deep breaths per hour.

#### **HOW TO USE THE INCENTIVE SPIROMETER**

Put the tube in your mouth and inhale slowly. Try to maintain the inhalation in order to lift the ball and keep it as high as possible (the level of the ball reflects your pulmonary capacity at the time). Repeat 5-10 times every hour. Any position is good to use the spirometer, just keep the device in an upright position. Keep the ball suspended as long as you can (5-15 seconds).

Take deep breaths to displace air to the bottom of the lungs. This will avoid lung collapse (atelectasis) and potential pneumonia. Purse your lips and slowly blow the air out. Use your incentive spirometer hourly (try to reach the 1000 mark as soon as possible!)

### **COUGHING (3 TIMES PER HOUR)**

Coughing helps to clear phlegm from your lungs (preventing lung infections). Hold your “heart pillow” against the chest > take a deep breath in > cough out.

#### **HOW TO USE THE “HEART PILLOW”**

Cross your arms overtop the pillow and reach your elbows with both hands. Hold the cushion firmly against your chest. Cough as needed to clear secretions and achieve a successful chest toiletry. If the “heart pillow” is not within reach, you can follow the same instructions and will achieve a close outcome.

You need to cough up the phlegm from your lungs in order to prevent potential lung infections. It is very common to have extra phlegm in your lungs for the first few days. Hold your “heart pillow” firmly against your chest while coughing. Take a deep breath in and cough out. The “heart pillow” supports your chest bone and helps with discomfort.

### **MOBILITY WHILE IN BED**

While in bed, try to change position every hour. To avoid any tension on your incision, you must learn a specific way to get out of bed or standing up from a chair (ask for help until you are comfortable with these techniques). First, bend your knees and roll towards your side while holding the “heart pillow” against your chest. Then, let your legs over the bed side and pull your legs up to help you get to a sitting position. To stand up from a chair, follow the latter.

While in bed, change position every hour. The earlier you get up the earlier you get out. Sit in a chair > walk in the hallway with assistance > walk around the ward > climb stairs.



## ■ TRANSFER TO THE SURGICAL FLOOR “7 WEST”

Transfer to the floor occurs once you are fully awake and hemodynamically stable (typically around 12 to 24 hours after surgery). If your surgery is a morning case, you might likely be transferred late that night. If your surgery is scheduled in the afternoon, you will likely spend the night in the CSICU.

One of the top priorities is to maximize and speed up your recovery. You may receive oxygen by a nasal cannula as needed and your nurse will focus on teaching you all the postoperative tips you need to achieve this goal as soon as possible.

Try to eat as soon as possible and as much as you tolerate 50% > 75% > 100% (request a consultation with a dietitian at any time).

Episodes of confusion, agitation or mood swings are common, do not worry, continue focusing on your recovery.

### THE FOLLOWING ARE A MUST IN ORDER FOR YOU TO LEAVE THE CSICU

- Your “breathing numbers” are good. You do not need any oxygen or breathing device
- You do not need any more cardiac “drips” (milrinone is an exception)
- You do not need a triple lumen or a pulmonary catheter
- The central line can be removed safely
- You have an adequate urine output and your kidneys work well
- You are fully oriented

The first thing you will notice in your room is a magnetic erasable whiteboard on the wall right in front of your bed. This will have information about your nurse, your physician assistant, your physician and your daily progress. Add content to the board if you need to so you remember to ask questions.

VISITING HOURS 09:00 AM TO 09:00 PM

These are the goals while you are in the floor:

- Being transfer to the floor means that your heart is stable and strong, focus on recovery
- Adequate pain control: anesthesia is not “on board” anymore and you may need pain control
- Recovery after surgery implies physical therapy: breathing, coughing, walking
- Discontinue catheters, tubes, wires...
- Eat as much as you can (we know you are probably not hungry) to get your strength back
- Continue asking questions towards your hospital discharge

## ■ MEETING MILESTONES AFTER CARDIAC SURGERY, DAY BY DAY

### THE DAY OF SURGERY IS POSTOPERATIVE DAY 0 - **POD 0**

- Surgery is over and you will be transferred from the OR to the CSICU (GP, 5th floor, Center)
- The nurse will wake you up briefly to proceed with a neurological assessment
- A chest X-ray is taken daily while you need the breathing tube and before discharge
- If you progress adequately, sedation is weaned off and you start waking up
- You may hear beeps, alarms and water bubbling, all these “noises” are routine and normal
- Anesthesia starts weaning off and you become more and more conscious
- As mentioned before, you might see and feel several tubes, catheters and drains
- The nurse will ask you “yes or no” questions (pain control starts here)
- The breathing tube is removed (you must start coughing and breathing therapy)
- You are allowed to take ice chips or small sips of water
- You are helped to sit up for a few hours (in bed or in chair)
- You may receive a sponge bath
- Your surgeon will inform and keep your family updated

### POSTOPERATIVE DAY 1 - **POD 1**

- Transfer to a step down unit (GP, 6th floor, Center) or to the floor (GP, 7th floor, West)
- The urinary catheter is normally removed 24 hours after surgery
- The neck line is removed if you are transferred to the floor
- Diet is started, usually starting with a liquid diet known as “clears” (eat as tolerated)
- Track of your volume “extra water” status starts here, you will be weighed daily
- Continue breathing therapy (this is crucial for your recovery)
- Please ask for pain medication if you are in pain, oral pain medication might be started
- Daily labs are obtained to monitor blood levels, sugar, electrolytes...
- Physical or cardiac rehabilitation therapy may begin (you must try to sit in a chair)
- You may receive a sponge bath or shower on a chair
- The intensivist will update you (and your relatives) on your progress
- Once in the floor, you are awakened every 4 hours for assessment of vitals

### POSTOPERATIVE DAY 2 - **POD 2**

- All your medications are given orally (including pain medication)
- A beta blocker (usually metoprolol) is started
- The urinary catheter is removed (if remains in place)
- The “wrist” lines are removed
- A “water pill” (commonly furosemide - Lasix®) is started on day 2 or 3 (you will urinate a lot)
- Bowel care is started if you have not passed gas or had a bowel movement
- You may bathe on a chair with assistance
- You will sit in a chair for longer periods of time
- Your diet is advanced to regular food, try to eat at least 50% of the meal
- Some chest tubes are removed (other connected to small containers called J-VACs)
- The goal is to remove as much equipment as possible so you can walk comfortably

The most important part of your recovery is breathing therapy (try to cough up all the phlegm) and take deep breaths every day. Use the incentive spirometer hourly - try to get to the 1000 mark ASAP!

### POSTOPERATIVE DAY 3 - POD 3

- Temporary pacing wires are removed if your heart rate is stable
- All the chest tubes are removed 12 to 24 hours after removing the temporary pacing wires
- You can shower 24 hours after chest tube removal
- Start walking in the hallway
- Discharge teaching starts
- Try to eat at least 75% of the meal

Management of chest tubes and temporary pacing wires may vary according to the type of surgery. In addition, every surgeon may have a different management routine or protocol.

### POSTOPERATIVE DAY 4 - POD 4

- Discharge teaching continues: you and your relatives can go to discharge class
- Teaching to administer medications (e.g. Lovenox® injections) will be done
- If you received valve surgery, a transthoracic echocardiogram will be done
- A chest X-ray will be done before discharge
- Walk in the hallway on your own -2 laps get you ready to go home!
- Complete “stairs” therapy
- Talk to the social worker if you need to be discharged to a rehabilitation facility
- If your recovery has been smooth sailing, you may be discharged on POD4
- The goal for every patient is to be discharged on POD5
- Arrange transportation













### POSTOPERATIVE DAY 5 - POD 5

- Time for questions before discharge
- You are weighed
- Take a shower and put on comfortable clothes (sweat pants, sweatshirts, T-shirts)
- Your incision is examined before discharge (flat hand on your sternum while coughing)
- The physician assistant will proceed with final discharge instructions



















### **YOU MUST MEET THE FOLLOWING BASIC REQUIREMENTS TO BE DISCHARGED:**

- ☐ VITAL SIGNS AND HEART RHYTHM ARE STABLE, NO OXYGEN IS NEEDED
- ☐ YOUR STERNUM IS STABLE WITH NO ABNORMAL CLICKS
- ☐ LABS, CHEST X-RAY AND ECHOCARDIOGRAM ARE WITHIN NORMAL LIMITS
- ☐ YOU ARE 100% SAFE TO GO FROM A MEDICAL STANDPOINT AND PAIN IS UNDER CONTROL
- ☐ YOU CAN WALK, CAN EAT, CAN URINATE, AND HAVE HAD A BOWEL MOVEMENT
- ☐ YOU HAVE A DISCHARGE PLAN (ASSISTANCE WHEN YOU GET HOME)
- ☐ INSTRUCTIONS, PRESCRIPTIONS AND FOLLOW UP APPOINTMENTS ARE UNDERSTOOD

TENTATIVE PATIENT ROADMAP TO SUCCESSFUL CARDIAC SURGERY

	DAY BEFORE	DAY OF SURGERY	POD 1	POD 2
LOCATION	 Surgical floor if <b>IP</b> (GP, 7 <sup>th</sup> Floor, West)	<b>CSICU</b> (GP, 5 <sup>th</sup> Floor, Center)  Possible late transfer to a step down unit (GP6C) or to the surgical floor	Transfer from CSICU or step down unit to the surgical floor	<b>SURGICAL FLOOR</b>  
HARDWARE		Central V Line (Neck) Wrist Lines (A and V) ETT “breathing”, NGT EKG leads, Pacing Wires Chest Tubes Urinary Catheter	<b>DC</b> Central V Line Wrist Lines (A and V) Extubation within 24H EKG leads, Pacing Wires Chest Tubes <b>DC</b> Urinary Catheter	Nasal Cannula <b>DC</b> Wrist Lines Telemetry, Pacing Wires <b>DC</b> Large Chest Tube or connect to J-VAC
HYGIENE	PREOP SHOWER  	Sponge Bath	Wash in bed/Chair	Wash in bed/Chair
DIET	MUST FAST AFTER MIDNIGHT	Ice chips and sips of water when breathing tube is out  Limit fluid intake	CLEARs OR REGULAR  	EAT 50% OF MEALS  
ACTIVITY		  OOB to chair with help	  	
EDUCATION	READ THIS GUIDE  	  Surgeon speaks with family and cardiologist	  Intensivists speak with patient and family	

A - arterial, CTICU - cardiothoracic surgery intensive care unit, DC - discontinue, EKG - electrocardiogram, ETT - endotracheal tube “breathing tube”, GP - Guggenheim Pavilion, IP - inpatient, NGT - nasogastric tube, OOB - out of bed, TTE - transthoracic echocardiogram, V - venous.

POD 3	POD 4	POD 5	HOME	
SURGICAL FLOOR 	SURGICAL FLOOR 	DISCHARGE 	Call your doctor if: Fever, irregular beats, shortness of breath, weight changes, nausea, extremity swelling, refractory pain, infection	LOCATION
DC Nasal Cannula DC Pacing Wires DC All Chest Tubes Continue Telemetry	DC All Chest Tubes Pre-Discharge TTE			HARDWARE
SHOWER 24H AFTER CHEST TUBE REMOVAL 	SHOWER 	SHOWER 	SHOWER, WATCH INCISION 	HYGIENE
EAT 75% OF MEALS 	NO RESTRICTIONS 	NO RESTRICTIONS 	NO RESTRICTIONS 	DIET
 Physical Therapy	 Physical Therapy		 Follow Guidelines	ACTIVITY
	 Discharge Class (Refer to class schedule)	 Discharge Class (Refer to class schedule)	READ THIS GUIDE 	EDUCATION

## ■ SCENARIOS THAT WOULD DELAY HOSPITAL DISCHARGE

Although our goal is to discharge every patient in day 5 after surgery (remember that the longer you stay at the hospital the more time you are exposed to microorganisms and subsequent infections), every patient is different and every procedure is different. In addition, every recovery is not always as smooth as it should be and some conditions may delay your discharge. Here is a list of the most common scenarios:

### ATRIAL FIBRILLATION, ATRIAL FLUTTER, HEART BLOCK - “IRREGULAR HEARTBEATS”

One out of every three (1:3) patients receiving heart surgery will have an irregular heart beat (your doctor will refer to it as arrhythmia). The most common etiologies are atrial fibrillation, atrial flutter, and heart block.

*Atrial Fibrillation* - is the most common rhythm issue after surgery. The upper chambers of the heart beat irregularly “quiver” instead of beating effectively to move blood into the ventricles. Although many times patients do not feel it (rate controlled atrial fibrillation), if the rhythm is fast (rapid atrial fibrillation) patients will refer to it as flip-flops, skips beats, or they may feel like the heart is banging against the chest wall. Most of the times we will control your rhythm with medication (you will be given amiodarone). If you do not convert to a normal sinus rhythm with medication, you will be on a blood thinner (Coumadin®) for three months (atrial fibrillation can lead to clot formation and stroke). Achieving therapeutic levels of Coumadin® will take a couple of extra days at the hospital. Most of the patients have a normal sinus rhythm when they return to clinic for follow up.

*Atrial Flutter* - is a rapid and regular organized type of atrial fibrillation. If you develop atrial flutter (by far not as common as atrial fibrillation) you will likely need cardioversion “a shock”. In this case the anesthesiologist will give you sedation (general anesthesia is not necessary) and after performing a transesophageal echocardiogram to rule out the presence of clots, the electrophysiologist will proceed with cardioversion. As in the setting of atrial fibrillation, you will be on a blood thinner (Coumadin®) for three months.

*Heart Block* - abnormal heart rhythm where the heart beats too slowly (bradycardia). In this condition, the electrical signals that trigger a heartbeat are partially or totally blocked between the upper and the lower chambers. Most of the time there is no need for intervention. However, in the setting of severe heart block, you may need a permanent pacemaker. This will also delay your hospital discharge a few days.

### PULMONARY CONDITIONS

*Pneumothorax* - is an abnormal collection of air between the lungs and the chest wall (pleural space) that causes the lung to collapse. If the pneumothorax is significant, an extra chest tube needs to be placed to suction the air out. This will delay your discharge for a couple of days.

*Pleural Effusion* - is an abnormal collection of fluid between the lungs and the chest wall (pleural space) that causes the lung to collapse. Pleural effusions can result from surgery itself or from fluid resuscitation during your stay in the CSICU. If the effusions are significant, an extra chest tube needs to be placed to drain the fluid out. This will delay your discharge for a couple of days.

## ABNORMAL NEUROLOGICAL ASSESSMENT - DELIRIUM

Although rare, some patients may experience confusion, hallucinations or loss of memory. This is secondary to several factors: age ( $\geq 75$  years), smoking, alcohol withdrawal, cardiopulmonary bypass during surgery, anesthesia, pain medication, poor sleep (hospital units tend to be bright and noisy with multiple alarm systems) and an unfamiliar environment. If this happens, you will be placed on 1:1 monitoring. Relatives, do not worry, these conditions generally resolve in days.

## INFECTION

The presence of an infection during the postoperative period will require you to take antibiotics and this will delay your hospital discharge. The most common sources of infection while in the hospital are:

*Atelectases* - if you do not take deep breaths, your lungs will not fully expand after surgery (during surgery your lungs need to be totally deflated). If some of the bottom areas of the lungs do not receive air, phlegm accumulates and becomes a source of infection and potential pneumonia.

*Urinary Infection* - it is extremely important to remove the urinary catheter 24 hours after surgery. We know you might be in pain and would rather rest still but keeping the urinary catheter for an extended period often leads to infections.

*Phlebitis and Deep Venous Thrombosis* - although all patients receive subcutaneous “belly” heparin injections after surgery, prolonged immobility may lead to deep venous thrombosis (avoid this by walking as soon as possible).

*Wound Infection* - although it is more commonly seen in patients undergoing coronary artery bypass surgery or receiving any kind of ventricular assist device, can occur to any patient undergoing heart surgery. You will have an incision over your breastbone (and might have a smaller one (s) in your leg or arm).

## DISCHARGE TO A REHABILITATION FACILITY

The lack of mobility will for sure delay your discharge. Remember, “the sooner you get up the sooner you get out”. You must stay as active as possible after surgery. If the physical therapist determines that you need to be discharged to a rehabilitation facility after surgery, social work will start arranging your transfer to a facility of your choice (try to pick a facility near home).

### YOUR SOCIAL WORKER MAY HELP YOU WITH

- Arrangements of visiting nurse services or home-based physiotherapy
- Arrangements of a rehabilitation facility and transportation
- Community resources
- Prescription drug coverage
- Any discharge concerns



## HOSPITAL DISCHARGE

Your nurse and your physician assistant will coordinate your hospital discharge and will normally notify you the day before. However, sometimes discharge might be confirmed or cancel the morning of due to abnormal or pending tests or change in medications. Please be understanding if this happens, we are all working towards your safety.

### DISCHARGE TIME IS 11:00 AM

Please arrange transportation and any assistance for your particular discharge time if this is different than stated above. Keep in mind that you will not be able to drive and will be seating in the back seat to avoid airbag deployment.

A discharge packet will be given to you upon discharge. This includes discharge forms, information about and on how to make follow-up appointments, details about your medical condition, medication list, medication education and other (discharge summary, operative report and legal information). Before you leave the hospital, the following information will be verified:

- Discharge instructions have been clearly explained to the patient
- Discharge medications have been reviewed with the patient and explained
- Pain is currently under control and manageable
- The patient counts on assistance at home or has arranged home care
- Potential symptoms and their management have been discussed with the patient
- The patient (and relatives) attended discharge class

- Follow up appointments:
 

CARDIOLOGIST	<b>7-10 DAYS</b> AFTER DISCHARGE
SURGEON	<b>4-6 WEEKS</b> AFTER DISCHARGE
CARDIAC REHAB	<b>6-8 WEEKS</b> AFTER DISCHARGE

ONLY IF YOU ARE GOING TO BE ON COUMADIN

COUMADIN CLINIC **1-3 DAYS** AFTER DISCHARGE

### TOP DISCHARGE INSTRUCTIONS

- Frequent hand washing to reduce infection risk
- Shower daily (have someone with you the first times, sitting on a chair is easier)
- Let warm running water over your incision (use non-drying soap)
- Watch your incision(s) every day (avoid creams, lotions, oils, ointments or powders)

- Walk daily according to your tailored plan
- Take prescription pain medicine only for very severe pain and always at night
- Use your incentive spirometer (at least 4 times per day)
- Use your “heart pillow” to support your chest when coughing or deep breathing
- Elevate your legs to reduce swelling as much as possible
- Weigh yourself daily (contact us if you gain 4 lbs. in a day)
- Check your temperature daily and call us if it is >101° F or >100° F for 24H
- No heavy lifting (no more than 7 to 10 lbs. for the first 6 weeks), push or pull
- Eat a healthy diet and avoid smoking

#### SOCIAL DISCHARGE LIST

- Do you have transportation?
- Can someone fill your prescriptions the day of discharge?
- Do you have someone who will be with you all the time for the next 2 weeks?
- Do you have a scale and thermometer (maybe a fitness band) at home?

#### TAKE THE FOLLOWING HOME

- This booklet
- Incentive spirometer and “heart pillow”
- Medical summary and discharge paperwork
- If you had valve surgery, take your temporary ID card (the final ones will be sent by mail)
- Agenda with follow up appointments

#### ■ FOLLOW UP PHONE CALLS

Your nurse practitioner will schedule phone calls upon your hospital discharge. These calls are often made on day 3 and 10 after discharge and help determine how you are progressing and if there is any issue that requires special attention. The nurse will ask you a series of questions and you will be able to proceed with questions. Please have this booklet with you during the conversation so you can help yourself and provide more accurate information.

#### ■ DISCHARGE MEDICATIONS

Your medication list may change substantially after surgery. You may need new medications to lower your blood pressure, regulate your heart beat, relax your blood vessels, increase iron levels in blood, regulate your bowel movements, or increase your urine output to eliminate excess water.

The charts on the following pages will help you identify the most commonly prescribed medications after cardiac surgery. Continue your medications as prescribed, even if you feel “you are already there”.

# COMMONLY PRESCRIBED MEDICATIONS AFTER CARDIAC SURGERY

The following is a summary of the most frequently prescribed medications for patients with cardiovascular disease. If you do not find one of your current medications or you experience a non-listed side effect, please contact your doctor or pharmacist for more specific information.

GENERIC AND BRAND NAMES	PURPOSE & ACTION MECHANISM	POTENTIAL MAJOR SIDE EFFECTS	FACTS & GENERAL INFORMATION
<b>ACE INHIBITORS</b> Captopril (Capoten) Enalapril (Vasotec) Lisinopril (Zestril) Ramipril (Altace)	<ul style="list-style-type: none"><li>■ Lower blood pressure (BP)</li><li>■ Preserve the heart’s shape and strength</li><li>■ Decrease the risk of heart attacks and strokes</li></ul>	Cough, dizziness, increased potassium levels, stomach pain, diarrhea, constipation, skin rash	Avoid potassium If you experience tongue-mouth-face swelling, <b>call 911 or go to the nearest ER</b>
<b>ARBs</b> Candesartan (Atacand) Losartan (Cozaar) Olmesartan (Olmetec) Valsartan (Diovan)	<ul style="list-style-type: none"><li>■ Lower blood pressure</li><li>■ Decrease the risk of heart attacks and strokes</li><li>■ Alternative to ACE inhibitors or beta blockers</li></ul>	Cough, dizziness, increased potassium levels, stomach pain, diarrhea, constipation, skin rash	Avoid potassium If you experience tongue-mouth-face swelling, <b>call 911 or go to the nearest ER</b>
<b>ANTIARRHYTHMICS</b> Amiodarone (Pacerone) Digoxin (Lanoxin) Dronedarone (Multaq) Sotalol (Sotacor)	<ul style="list-style-type: none"><li>■ Regulate the heart beat</li><li>■ Controls heart rate</li></ul>	Nausea, diarrhea, thyroid issues, fatigue, dizziness, depression, wheezing, muscle weakness, vision changes, photosensitivity	Avoid long periods of time under the sun, avoid if you have a serious liver or lung condition
<b>ANTICOAGULANTS</b> Apixaban (Eliquis) Dabigatran (Pradaxa) Rivaroxaban (Xarelto) Warfarin (Coumadin)	<ul style="list-style-type: none"><li>■ Prevent blood clot formation</li></ul>	Increased risk of bleeding and bruising (risk of hemorrhagic stroke or serious bleeding)	Some of them require close follow up
<b>ANTIPLATELETS</b> ASA (Aspirin) Clopidogrel (Plavix) Prasugrel (Effient) Ticagrelor (Brilinta)	<ul style="list-style-type: none"><li>■ Prevent platelet clumping) (blood clots) in coronary arteries and stents</li><li>■ Decrease the risk of heart attacks and strokes</li></ul>	Increased risk of bleeding and bruising, gastrointestinal issues (nausea, diarrhea, heartburn)	Take enteric-coated forms Take after eating Avoid if you are taking Protonix®
<b>BETA BLOCKERS</b> Atenolol (Tenormin) Bisoprolol (Monacor) Carvedilol (Coreg) Metoprolol (Lopressor)	<ul style="list-style-type: none"><li>■ Lower heart rate and BP</li><li>■ Preserve the heart’s shape and strength</li><li>■ Decrease the risk of heart attacks and strokes</li></ul>	Fatigue, dizziness, depression, wheezing, shortness of breath, weight gain, erectile dysfunction	Take with food Follow-up your blood sugar levels if you have diabetes

ACE - Angiotensin-converting enzyme  
ARB - Angiotensin II receptor blockers











GENERIC AND BRAND NAMES	PURPOSE & ACTION MECHANISM	POTENTIAL MAJOR SIDE EFFECTS	FACTS & GENERAL INFORMATION
<b>CCB</b> Amlodipine (Norvasc) Nifedipine (Adalat) Diltiazem (Cardizem) Verapamil (Isoptin)	<ul style="list-style-type: none"><li>■ Lower blood pressure</li><li>■ Lower heart rate</li><li>■ Prevent chest pain</li><li>■ Prevent arterial spasm</li></ul>	Fatigue, dizziness, headache, ankle swelling (peripheral edema)	
<b>PAIN MEDICATION</b> Motrin® Tylenol® Percocet® Vicodin®	<ul style="list-style-type: none"><li>■ Reduce moderate pain</li></ul>	Constipation, nausea, vomiting	Always start with Tylenol® x3/day for 7 days (4g/day max)
<b>STATINS</b> Atorvastatin (Lipitor) Lovastatin (Mevacor) Rosuvastatin (Crestor) Simvastatin (Zocor)	<ul style="list-style-type: none"><li>■ Lower low-density lipoprotein (LDL) cholesterol level</li></ul>	Indigestion, flatus, mild liver dysfunction. Call your doctor if you have muscle pain / weakness, a skin rash, or dark urine	You need a liver function test before starting this medication
<b>SLEEPING PILLS</b> Alprazolam (Xanax) Benadryl® Lorazepam (Ativan) Zolpidem (Ambien)	<ul style="list-style-type: none"><li>■ Help you relax and sleep</li></ul>	Dizziness, drowsiness, unsteadiness	
<b>VASODILATORS</b> Nitroglycerin Mononitrate (Imdur)	<ul style="list-style-type: none"><li>■ Relax blood vessels (lower blood pressure)</li></ul>	Dizziness, vision changes, headache, confusion	
<b>WATER PILLS</b> Furosemide (Lasix) Hydrochlorothiazide Metolazone (Zaroxolyn) Spirinolactone	<ul style="list-style-type: none"><li>■ Increase urine production</li><li>■ Reduce swelling in lower extremities</li></ul>	Dizziness, increased or decreased electrolytes (particularly potassium), gout, muscle weakness, confusion, leg cramps	Your doctor will refer to it as diuretics Spirinolactone may cause breast enlargement in men

CCB - Calcium channel blockers

## QUICK GUIDE TO WARFARIN (COUMADIN®) THERAPY

### TABLET STRENGTH / COLOR CODE

1.0 mg		4.0 mg	
2.0 mg		5.0 mg	
2.5 mg		6.0 mg	
3.0 mg		7.5 mg	

The 10 mg tablet is white

### INDICATION / TARGET INR (INTERNATIONAL NORMALIZED RATIO) LEVEL

MV Repair	NA	AV Repair	NA
MV Replacement (B)	2.0-3.0*	AV Replacement (B)	2.0-3.0*
MV Replacement (M)	2.5-3.5	AV Replacement (M)	2.0-3.0
Atrial Fibrillation	2.0-3.0	Other:	

\* Warfarin indicated for 3-6 months only at surgeon's discretion, B=biological, M=mechanical

**Warfarin** (Coumadin®, Jantoven®, Marevan®) is used to prevent harmful blood clots from forming in the bloodstream. Blood clots can result in venous thrombosis, pulmonary embolism, heart attack, stroke and malfunction of mechanical valve prostheses. Warfarin causes the blood to take longer to form a clot by blocking the formation of vitamin K - dependent clotting factors. Warfarin therapy decreases clotting tendency but does not prevent clotting completely, therefore requires frequent monitoring.

**Warfarin** might be of critical importance for your condition, particularly if you have a mechanical heart valve prosthesis or long-standing atrial fibrillation. The standardized way of expressing the level or effectiveness of coumadin is the INR (international standardized ratio). It is very important to monitor the INR as often as twice a week (until you find your optimal dose) and then once a month to rule out unexpected fluctuations.

**NEVER DOUBLE A DOSE BECAUSE YOU MISSED ONE**  
**PAY CLOSE ATTENTION TO THE STRENGTH OR COLOR CODE OF YOUR COUMADIN TABLET**

**LIMIT INTAKE OF FOODS HIGH IN VITAMIN K SUCH AS:** kale, spinach, turnip greens, collards, swiss chard, parsley, mustard greens, Brussels sprouts, green leaf lettuce, broccoli, endive lettuce, romaine lettuce.

**USEFUL TIPS:** avoid falls or other traumas, avoid pregnancy unless discussed with your doctor, limit supplements with extra vitamin E, avoid nonsteroidal anti-inflammatory drugs, cold remedies, pain relievers, arthritis medications, and antibiotics. Tylenol® is ok.

#### DOs

MEASURE YOUR INR REGULARLY (CAN EAT BEFORE)  
 THE NURSE WILL CALL YOU TO CONFIRM DOSE  
 KEEP A LOG TO TRACK ANY INR FLUCTUATION  
 TAKE THE TABLET(S) AT THE SAME TIME EVERY DAY  
 IF YOU MISS A DOSE, CALL YOUR NURSE NEXT DAY  
 CALL US IF YOU EXPERIENCE EXTENSIVE BRUISING  
 CALL US IF YOU HAVE FREQUENT NOSEBLEEDS  
 REPORT TAKING WARFARIN TO ALL PROVIDERS

GO TO THE NEAREST ER IF YOU HAVE:

- Prolonged nosebleeds or passed brown urine
- Bloody / black BMs, abdominal bruising and pain

#### DO NOTs

**DO NOT START OR STOP ANY OTHER MEDICATION**  
 Ask your doctor/nurse before changing medications

**DO NOT USE ASPIRIN OR PLAVIX UNLESS INDICATED**  
 Your doctor will clarify if you need to

**DO NOT MAKE SIGNIFICANT DIET CHANGES**  
 Specially regarding greens or foods rich in vitamin K

**DO NOT DRINK ALCOHOLIC BEVERAGES IN EXCESS**  
 You can drink an ounce of alcohol per day

## ANTICOAGULATION LOG

AM TAKING	<input type="checkbox"/> WARFARIN (COUMADIN®)	<input type="checkbox"/> DABIGATRAN (PRADAXA®)	<input type="checkbox"/> RIVAROXABAN (XARELTO®)
CONDITION	<input type="checkbox"/> ATRIAL FIBRILLATION	<input type="checkbox"/> PROSTHETIC HEART VALVE	<input type="checkbox"/> BLOOD CLOTS
PERIOD	<input type="checkbox"/> 3 MONTHS	<input type="checkbox"/> 6 MONTHS	<input type="checkbox"/> FOR LIFE

YOU SHOULD ASK: WHAT IS MY INR? WHAT IS MY DOSE? WHEN IS MY NEXT TEST?

[illegible]

Warfarin takes effect approximately within 24 hours of the first dose and then it lasts 72 to 96 hours. Therefore, several frequent (every 2-3 days) blood tests are necessary until the dosage is established. Then the blood test is done monthly.



Call your doctor if you notice any unusual swelling. Head injuries must be checked by a doctor (headaches, uncontrolled vomiting, blurred vision, or confusion might be signs of internal bleeding). Avoid situations or activities that have a high risk of if injury.

## MEDICATION LIST AFTER CARDIAC SURGERY

LEARN ABOUT YOUR NEW MEDICATIONS AND THEIR POTENTIAL SIDE EFFECTS  
YOUR MEDICATION LIST MIGHT CHANGE AFTER SURGERY  
IF YOU MISS A DOSE, TAKE IT AS SOON AS POSSIBLE  
**DO NOT EVER (UNDER ANY CIRCUMSTANCES) DOUBLE DOSES**  
DO NOT STOP / CHANGE MEDICATIONS UNLESS INDICATED BY YOUR PCP, CARDIOLOGIST OR SURGEON

YOUR MEDICATION LIST MIGHT CHANGE AFTER SURGERY

IF YOU MISS A DOSE, TAKE IT AS SOON AS POSSIBLE

DO NOT EVER (UNDER ANY CIRCUMSTANCES) DOUBLE DOSES

DO NOT STOP / CHANGE MEDICATIONS UNLESS INDICATED BY YOUR PCP, CARDIOLOGIST OR SURGEON

[illegible]

B - breakfast, BT - bedtime, D - dinner, L - lunch, PCP - primary care physician



ANSWERS TO THE MOST COMMON QUESTIONS...

- Never share your medications or take anyone else’s
- Take your medication at the same time each day
- If you miss a dose, take it as soon as possible (do not take an extra dose)
- Do not store medications in hot or humid areas
- Get to know your medications well (name, dose, purpose...) and carry an updated list with you
- Use a pill organizer if you are on more than three medications
- Do not stop (or start) any medication unless indicated by your doctor (PCP, cardiologist, surgeon)
- Do not stop any medication unless indicated, even when the label says “0 refills”
- Bring your medications in their original bottles to your clinic appointments
- Inform care givers if you are on warfarin, have a pacemaker or a mechanical prosthesis
- Always dispose (take to your pharmacy) medications you no longer use

HOME CARE - MANAGING COMMON PROBLEMS

■ INCISION (WOUND) CARE

If you have a sternotomy (incision through your chest bone), you have a symmetric fracture that needs to heal (bone bridges between both sternal plates > callus formation > complete healing). Although both sides of your breastbone are held together with stainless steel wires or cables - they will stay there for life, the bone needs to mend and solidify. That is why it is essential for you to follow all the activity instructions. In addition, your skin incision needs to be carefully monitored.



NORMAL WOUND		
BRUISING	BUMPY	NUMBNESS (MORE AFTER CABG)
SWOLLEN AT THE TOP	ITCHY	LITTLE DRAINAGE OF CLEAR FLUID
TENDER AND SLIGHTLY RED	TIGHTNESS	GENERALIZED PINPOINT PAIN

## ABNORMAL WOUND

THE WOUND BECOMES MORE AND MORE PAINFUL INSTEAD OF LESS  
SWELLING IS MORE SIGNIFICANT THAN IT WAS AT DISCHARGE  
REDNESS AND TENDERNESS PERSISTS OR WORSENS  
THERE IS A LEAKAGE OF LARGE AMOUNTS OF ANY FLUID (ANY COLOR)  
THERE IS PURULENT DISCHARGE OR MALODOUR  
YOU DEVELOP A FEVER OR CHILLS ON TOP OF WOUND CHANGES  
THERE IS AN OPENING, GAP OR A VISIBLE SUTURE REMNANT  
YOU DEVELOP FLU-LIKE SYMPTOMS WITH ANY TYPE OF DISCHARGE FROM YOUR WOUND

If a vein from your leg was used for coronary artery bypass grafting, your thigh will be swollen and a little uncomfortable (the swelling in this area is the last thing to resolve and might take weeks to decrease). Avoid crossing the legs or rubbing from tight clothes and keep your legs elevated whenever you are sitting down.

## ANSWERS TO THE MOST COMMON QUESTIONS...

- The incision should be dry, without open areas, and drainage should be clear in small amounts
- The pectoralis muscles (in front of your chest) might be tender for up to 3 months
- The chest bone starts healing within 6 to 8 weeks after surgery, may take months to fully solidify
- The lump at the top of the incision will disappear over time (it is the last thing to resolve)
- Do not lift, push or pull anything heavier than 7 to 10 lbs. (4.5 Kg)
- Do not raise both arms over your head
- Sit at the back seat of your car (avoid sitting in front of an airbag)
- Hug your heart pillow or a rolled up blanket to support your chest if you cough
- Do not scrub your incision - have warm showers instead of baths (do not submerge the wound)
- Do not let the water hit your chest (turn your back to the shower water)
- Do not apply lotions, creams, or powder (make up) over the incision or scabbed areas
- Do not pick scabs (let them fall off) and do not pull sutures if you see any (they will disappear)
- Your skin must be intact (infection barrier), avoid abscesses, cuts, piercings or tattoos

## ■ FEVER

The following are some tips if your body temperature exceeds 38.0 °C or 100.4 °F. Call your nurse or doctor if fever persists more than 24 hours.


- Take Tylenol® (650 mg)
- Check your temperature every 4 hours
- Ventilate your room
- Rest, take a cool shower and drink plenty of fluids (if you are not on fluid restriction)

## ■ SIGNS OF INFECTION

- Fever
- Coughing up white-yellow-green tinged mucus
- Burning, frequency, urgency or difficulty when urinating
- Chills, weakness and a general feeling of sickness

■ PAIN MANAGEMENT - INCISION, BACK OR CHEST MUSCLES DISCOMFORT

Without doubt, pain will slow down your recovery (pain will interfere with eating, sleeping and above all, with staying active). Do not wait to have severe pain, take your pain medication regularly, before starting any physical activity, and before pain disrupts your daily routine.



You must discern between wound or muscle pain and angina pain. If you have angina pain after surgery (highly unlikely) proceed as follows: stop and rest, take deep breaths, take an Aspirin and nitroglycerin, go to the nearest Emergency Room if pain persists.

- Do not drink alcoholic beverages while you are on pain medication
- Do not drive (or operate a machine) while you are on pain medication
- If you feel dizzy, rest for a few minutes and get up slowly
- Narcotics (such as Percocet®) may cause or worsen constipation (try Tylenol® instead)
- Whenever you cough/sneeze/laugh, protect your chest bone by crossing your arms

■ SWELLING “EXCESS WATER”


Although your surgeon will try to eliminate all the “excess water” before you go home, sometimes you may continue swelling after discharge, particularly your feet and ankles.

- Keep your feet elevated when possible
- Wear compression stockings
- Do not cross your legs or stand in one position for a long period
- Walk daily and continue physical therapy

WEIGHT LOG (1 lbs. = 0.45 Kg / 1Kg = 2.2 lbs.)

	SUN	MON	TUE	WED	THU	FRI	SAT
WEEK 1							
WEEK 2							
WEEK 3							
WEEK 4							
WEEK 5							
WEEK 6							
WEEK 7							
WEEK 8							

PLEASE BRING THIS RECORD WITH YOU TO YOUR FOLLOW UP APPOINTMENTS



Weigh yourself every day for the next 8 weeks (before eating anything and with an empty bladder if possible). If you gain 5 lbs. (3 Kg) over 2 to 3 days, call us. Additionally, please call us if you feel that your legs or ankles are asymmetrically swollen (particularly if the swollen one is red and warm).

## ■ CONSTIPATION

Anesthesia, pain medication, a change in your diet, and the lack of exercise while you are in the hospital cause different degrees of constipation. Although you will not leave the hospital if you have not had a bowel movement, please continue your bowel regimen at home. Do not strain.

- Take stool softeners daily (start by taking one capsule with breakfast and dinner)
- Docusate (Colace® or Soflax®) is a commonly prescribed stool softener after surgery
- Laxatives can be used if needed (Senna - Senokot®, Bisacodyl - Dulcolax®)
- Laxatives may induce cramps
- Oral laxatives take much longer to work than suppositories (hours versus minutes)
- Polyethylene Glycol (PEG) is a stool softener that does not cause as much flatulence
- Eat foods high in fiber: whole grains, fresh fruits, prunes and fresh vegetables
- Keep your physical therapy program
- Drink 1-2 liters of water daily (if you are on fluid restriction, discuss this with your doctor)

You will likely be discharged on iron to help your body replenish the storage of red blood cells. Iron may upset your stomach (take it with a meal or snack) or cause severe constipation or diarrhea. In addition, iron will make your stool black. Please do not get alarmed, it is normal.

## ■ SLEEP DEPRIVATION

Normal sleep patterns and cycles are abruptly disrupted while patients are in the hospital. Most patients report waking up early and frequently.

- Sleep as comfortable as possible (arrange pillows, sit up on a recliner to breathe easy...)
- Avoid naps during the day if you feel strong enough to do so
- If you are in pain while sleeping (particularly back pain), take pain medication 30' before bedtime
- Discuss with your doctor the need for "sleeping pills" the first week or two after discharge
- Avoid caffeinated products (coffee, tea, chocolate, cola...) and alcohol at bedtime
- If you experience sweating without a fever, it is normal, will get better

## ■ MOOD CHANGES AND DEPRESSION

Some patients might feel overwhelmed after cardiac surgery. Feeling tired and weak is not uncommon and might have an impact on your relationships and your capacity to concentrate. Patients may also feel sad, irritable, angry (relatives, please be understanding and patient), frustrated and/or anxious. This should normally not last more than 8 weeks.

- Sleep well (the lack of sleep is correlated to mood variations)
- Take it easy! Organize an easy agenda for the first weeks (we know you feel much better but...)
- Allow others to help you with basic home activities
- Give yourself extra time to do any task

## ■ STRESS

Chronic stress can lead to significant cardiovascular disease by increasing LDL (bad cholesterol), blood pressure, coagulability or blood sugar, as well as leading to poor eating habits and adopting relaxing habits such as smoking. Here are some tips to avoid stress:

- Reserve some time just for yourself (and do things you really enjoy)
- Use relaxation techniques
- Avoid perfection and competition every now and then
- Get enough sleep and rest every day

## ■ FATIGUE

Fatigue is one of the most frequent problem patients report to the nurse practitioner during their first follow up conversation. Low energy and feeling tired are normal up to 3 months after surgery (patients often struggle to conserve energy - please follow the recommended exercise program). In addition, you will probably not be the first patient, certainly not the last one, to return to clinic for follow up and state the following: "Doctor, am not sure about the outcome of surgery, I feel as tired as before". Be aware that some patients may feel this way "windy" for some weeks after surgery, particularly patients undergoing mitral valve surgery, it is normal and you will feel better.



Achieving a full recovery takes longer than most patients think. As a patient, you will experience ups and downs every day. Most patients walk 20 to 30 minutes by 3 weeks after surgery and achieve full recovery approximately 6 to 8 weeks after surgery.

## PHYSICAL ACTIVITY

Returning to your baseline activity level will take a few weeks. After surgery, elementary activities such as climbing a few steps, routine housework or grooming may feel as difficult as working out. Here are some guidelines to overperform:

- Focus on your posture (stretch your back and keep your shoulders straight, avoid slouching)
- Straightening your shoulders allows full lung expansion and an aligned bone healing
- Walk Daily (when traveling, try to walk for a few minutes every hour)
- Follow our table of stretches and exercises

## ■ TIPS FOR CAREGIVERS

The very first days at home might be tedious and stressful (patients might be demanding due to pain, surgery-related problems, or just because of their "frustration" due to inability to do routine and simple things they used to do when they did not have to take care of a surgical wound. Here is some advice:

- Focus on yourself when possible
- Let other family members or friends to visit and help
- Focus on the patient's milestones and "move on" to achieve the next one together
- Write down questions to ask your surgeon (if you do not find the answer in this booklet)

## DO NOTs FOR AT LEAST 6 WEEKS

Lift/push/pull anything (anybody) over 7 to 10 lbs. (4.5 Kg)

Drive for at least 4 weeks (wear your seatbelt, can use a small pillow or towel under the belt)

Do outdoor activities such as gardening, shoveling...

Vacuum (avoid laundry, dusting, bed making, mopping...)

Keep your arms above your head for an extended period

Take a bath (do not submerge your incision - you can shower or sponge bathe on a chair)

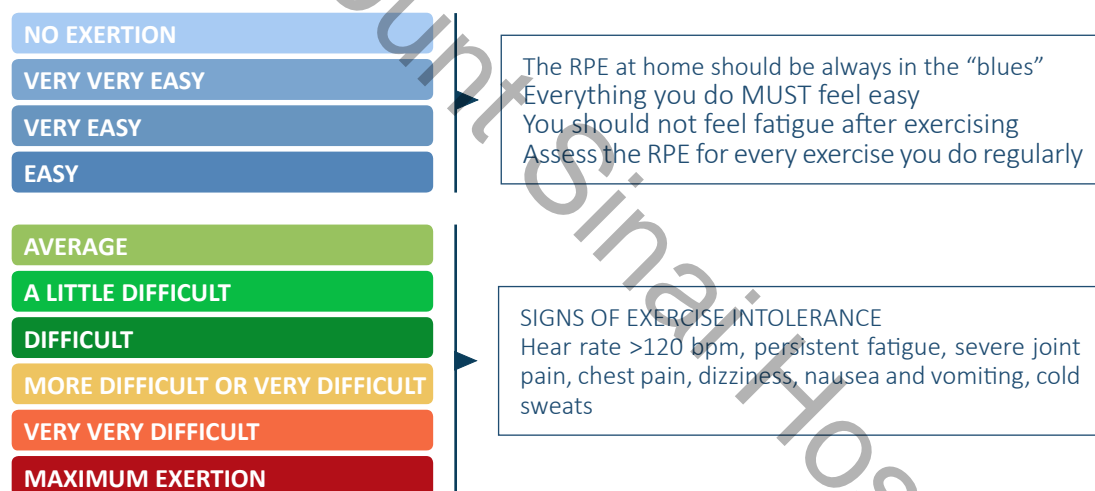
Take a bath (it is hard to get out of the tub without using the arms and stretching your chest)

Go to any kind of spa (avoid steam rooms, saunas, hot tubs...)

THE "MAGIC NUMBER" FOR MOST OTHER ACTIVITIES IS 3-6 MONTHS (GYM, SWIMMING, SPORTS...)

## ■ RATE OF PERCEIVED EXERTION

Our physical therapists recommend to gradually resume your normal daily activities when possible, to continue the morning exercise routine started at the hospital, and to walk daily based on your own degree of intolerance to physical exertion (rate of perceived exertion or RPE).




## ■ WALKING

Walking should be the cornerstone of your recondition exercise routine after surgery. It is acceptable to combine walking with other type of exercises if you rather or feel you are able to, but walking is a must.

- Wear loose comfortable clothes and adequate shoes
- Stretch and warm up before walking (avoid straining and do not hold your breath)
- Pick a flat and very stable surface
- Wearing a wireless (one size larger) bra will decrease the pulling sensation on the incision
- Walk at a comfortable pace (forget about the distance, the time, or your pulse)
- Start walking 2 to 4 times a day and no more than 5 minutes at a time

- As you increase your distance, you can decrease the frequency
- If talking feels hard to do when walking, you should slow down
- Do not walk outdoors if the temperature falls < 35°F (1°C) or rises > 80°F (27°C)
- Never walk or exercise on a full stomach (wait an hour after a meal, digestion requires energy)
- Avoid treadmills for 4 weeks. You may climb stairs slowly
- Do not cross your legs (this slows down venous return and triggers blood clotting)
- Always provide support to your feet when sitting (do not let your legs dangling)



Always walk with someone for the first few times. If you feel dizzy, have palpitations or extra heart beats, if your heart is going too fast (>120 beats per minute), or if you experience shortness of breath, stop walking. If the symptoms persist, call your doctor.

Regular physical activity contributes to lower your blood pressure (the most important factor), improves energy level, lowers blood cholesterol, manage obesity and weight changes, and manage stress.




### ACTIVITY LOG

DAY/DATE	AM EXERCISES	AM WALK	PM WALK	STRETCH	COMMENTS
DISCHARGE	REST ALL DAY (NO PHYSICAL ACTIVITIES WITHIN 24 HOURS OF HOSPITAL DISCHARGE)				
/ / 20		min	min		
/ / 20		min	min		
/ / 20		min	min		
/ / 20		min	min		
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/ / 20		min	min		
/ / 20		min	min		
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/ / 20		min	min		





PLEASE BRING THIS RECORD TO YOUR FOLLOW UP APPOINTMENTS







HOME PATHWAY AFTER CARDIAC SURGERY / FIRST WEEK

	DISCHARGE	DAY 1	DAY 2	DAY 3
VITALS		WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:	WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:	WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:
MEDICATIONS	<input type="checkbox"/> LASIX® <input type="checkbox"/> LOPRESSOR® <input type="checkbox"/> COREG® <input type="checkbox"/> COZAAR® <input type="checkbox"/> NORVASC® <input type="checkbox"/> LIPITOR® <input type="checkbox"/> ASPIRIN® or PLAVIX® <input type="checkbox"/> COUMADIN® <input type="checkbox"/> CORDARONE® <input type="checkbox"/> OTHER:	<input type="checkbox"/> LASIX® <input type="checkbox"/> LOPRESSOR® <input type="checkbox"/> COREG® <input type="checkbox"/> COZAAR® <input type="checkbox"/> NORVASC® <input type="checkbox"/> LIPITOR® <input type="checkbox"/> ASPIRIN® or PLAVIX® <input type="checkbox"/> COUMADIN® <input type="checkbox"/> CORDARONE® <input type="checkbox"/> OTHER:	<input type="checkbox"/> LASIX® <input type="checkbox"/> LOPRESSOR® <input type="checkbox"/> COREG® <input type="checkbox"/> COZAAR® <input type="checkbox"/> NORVASC® <input type="checkbox"/> LIPITOR® <input type="checkbox"/> ASPIRIN® or PLAVIX® <input type="checkbox"/> COUMADIN® <input type="checkbox"/> CORDARONE® <input type="checkbox"/> OTHER:	<input type="checkbox"/> LASIX® <input type="checkbox"/> LOPRESSOR® <input type="checkbox"/> COREG® <input type="checkbox"/> COZAAR® <input type="checkbox"/> NORVASC® <input type="checkbox"/> LIPITOR® <input type="checkbox"/> ASPIRIN® or PLAVIX® <input type="checkbox"/> COUMADIN® <input type="checkbox"/> CORDARONE® <input type="checkbox"/> OTHER:
HYGIENE		 GET DRESSED	 GET DRESSED	 GET DRESSED
DIET	Avoid table salt (also baking soda and powder) or foods with a high sodium content (salad dressings and soy sauce, cured foods, cheese, pickles, instant soups, salty nuts and seeds, snacks, fast elaborated foods and canned foods). Balance proteins, fruits, vegetables, and fiber. Drink several glasses of water each day.			
INCISIONS		<input type="checkbox"/> HOT TO TOUCH <input type="checkbox"/> REDNESS <input type="checkbox"/> BLANCHING <input type="checkbox"/> DISCHARGE <input type="checkbox"/> DEHISCENCE	<input type="checkbox"/> HOT TO TOUCH <input type="checkbox"/> REDNESS <input type="checkbox"/> BLANCHING <input type="checkbox"/> DISCHARGE <input type="checkbox"/> DEHISCENCE	<input type="checkbox"/> HOT TO TOUCH <input type="checkbox"/> REDNESS <input type="checkbox"/> BLANCHING <input type="checkbox"/> DISCHARGE <input type="checkbox"/> DEHISCENCE
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DAY 4		DAY 5		DAY 6		DAY 7		VITALS  MEDICATIONS  HYGIENE  DIET  INCISIONS  REHABILITATION
WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:		WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:		WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:		WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:		
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HOME PATHWAY AFTER CARDIAC SURGERY / SECOND WEEK

	DAY 8	DAY 9	DAY 10	DAY 11
VITALS	WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:	WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:	WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:	WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:
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HYGIENE	 GET DRESSED	 GET DRESSED	 GET DRESSED	 GET DRESSED
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DAY 12		DAY 13		DAY 14		DAY 15		VITALS  MEDICATIONS  HYGIENE  DIET  INCISIONS  REHABILITATION
WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:		WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:		WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:		WEIGHT: BP: HEART RATE: TEMPERATURE: MOOD:		
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	GET DRESSED		GET DRESSED		GET DRESSED		GET DRESSED	
Avoid table salt (also baking soda and powder) or foods with a high sodium content (salad dressings and soy sauce, cured foods, cheese, pickles, instant soups, salty nuts and seeds, snacks, fast elaborated foods and canned foods). Balance proteins, fruits, vegetables, and fiber. Drink several glasses of water each day.								
<input type="checkbox"/> HOT TO TOUCH <input type="checkbox"/> REDNESS <input type="checkbox"/> BLANCHING <input type="checkbox"/> DISCHARGE <input type="checkbox"/> DEHISCENCE		<input type="checkbox"/> HOT TO TOUCH <input type="checkbox"/> REDNESS <input type="checkbox"/> BLANCHING <input type="checkbox"/> DISCHARGE <input type="checkbox"/> DEHISCENCE		<input type="checkbox"/> HOT TO TOUCH <input type="checkbox"/> REDNESS <input type="checkbox"/> BLANCHING <input type="checkbox"/> DISCHARGE <input type="checkbox"/> DEHISCENCE		<input type="checkbox"/> HOT TO TOUCH <input type="checkbox"/> REDNESS <input type="checkbox"/> BLANCHING <input type="checkbox"/> DISCHARGE <input type="checkbox"/> DEHISCENCE		
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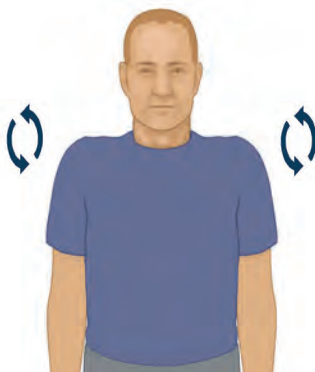
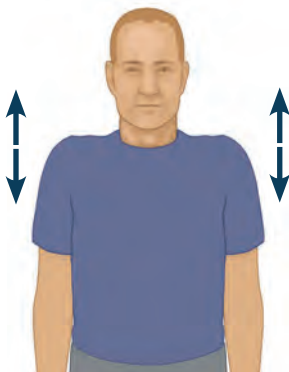
## ■ MORNING EXERCISE ROUTINE (COMBINE WITH A REGULAR DAILY WALKING SCHEDULE)



**BREATHING** - With your hands on your belly, take a deep breath through your nose and let the air out slowly. You can also do this while standing against a wall (keep your buttocks, shoulders, and head against the wall). Keeping a good posture is crucial. **AVOID SLOUCHING AS MUCH AS POSSIBLE!**

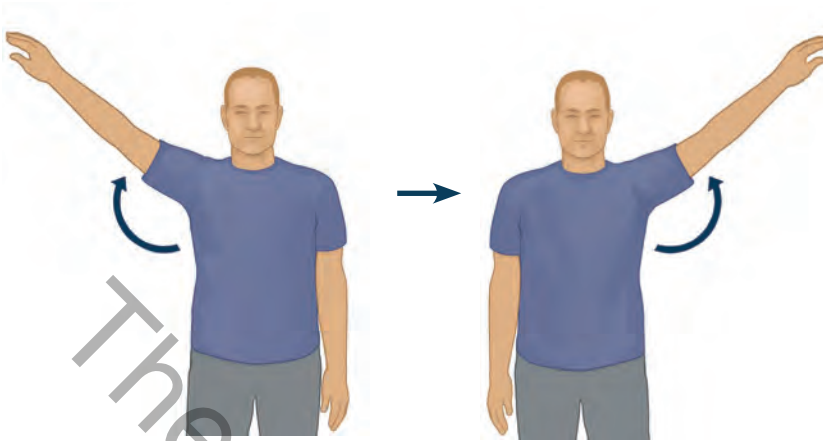


**NECK** - After surgery, you may likely feel pain over your neck and back from laying on the operating table. Tip your ear towards the shoulder and then repeat to the opposite side. You can also turn your head to the side to achieve further muscle stretching and relaxation.

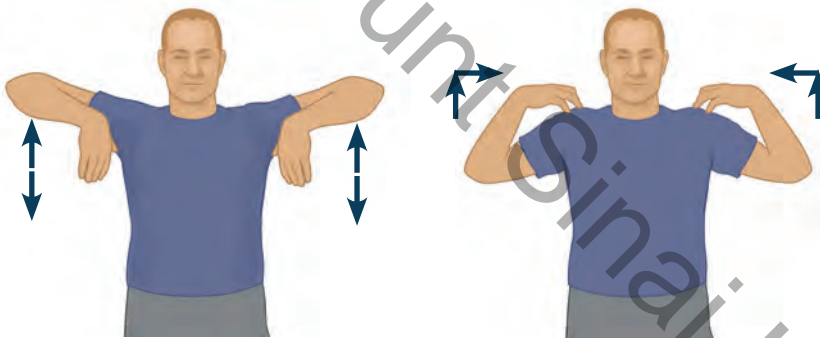


**SHOULDER** - Raise your shoulders up towards the ears as high as you can, hold them there for 3 seconds, and then let them relax down. Slowly lift your shoulders upward, roll them forward, downward and then back. You can do the same afterwards in opposite direction.

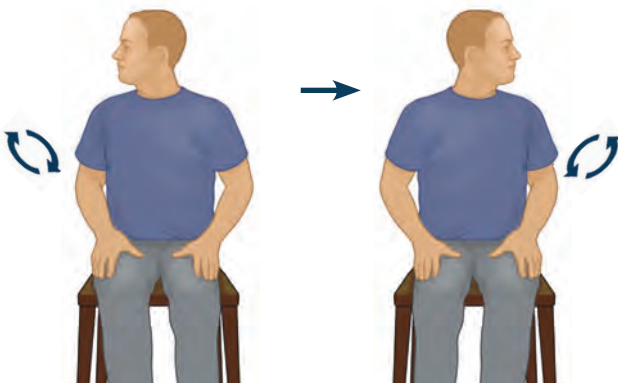
■ MORNING EXERCISE ROUTINE (COMBINE WITH A REGULAR DAILY WALKING SCHEDULE)



ARM - This exercise can help you breathe if you take a deep breath as you lift your arm and breath out while you slowly lower the arm down. NOTE THAT BOTH ARMS ARE NEVER LIFTED AT THE SAME TIME. DO NOT DO THIS EXERCISE UNTIL YOUR TEMPORARY PACER WIRES ARE REMOVED.

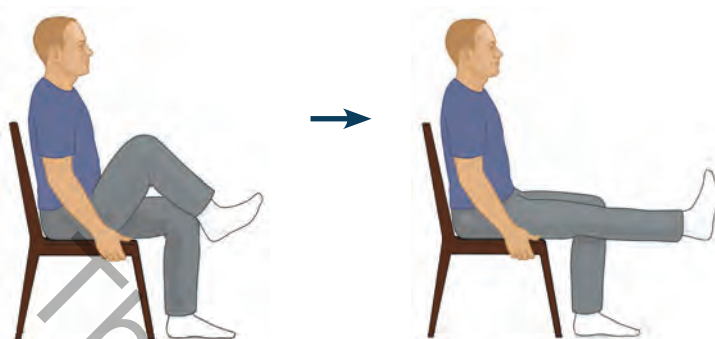


ARM - Bring your hands to your shoulders (elbows are bent) and rise your elbows to shoulder height (never above). You can also put your fingertips on your shoulders and rotate them by making small circles. YOU SHOULD NOT FEEL TENSION OVER YOUR INCISION.

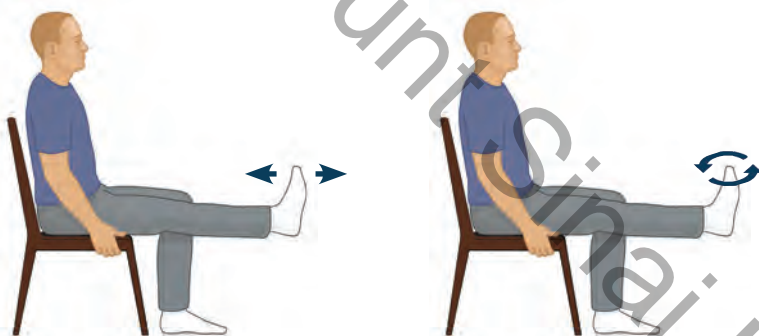


TRUNK - Keeping your hips and buttocks still, slowly turn your upper body to the side. Hold that position for 3 seconds and then repeat the same exercise in the opposite direction. It is very important to keep your lower body still in order to stretch the targeted muscles.

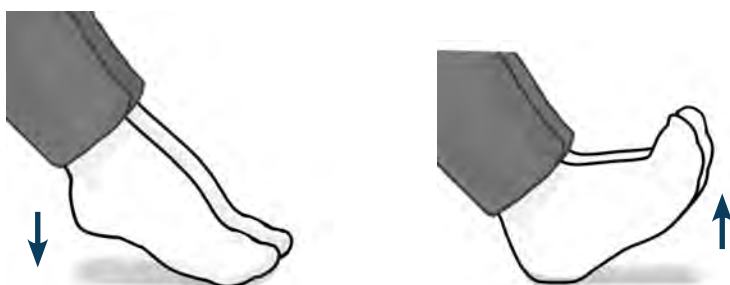
## ■ MORNING EXERCISE ROUTINE (COMBINE WITH A REGULAR DAILY WALKING SCHEDULE)



LEG - Never do this exercises abruptly. Gently bring the knee up towards your chest and then return to the baseline relaxed position. Alternate both legs, always one at a time. Tighten your thigh and straighten your leg. DO NOT USE YOUR ARMS TO HELP YOURSELF.



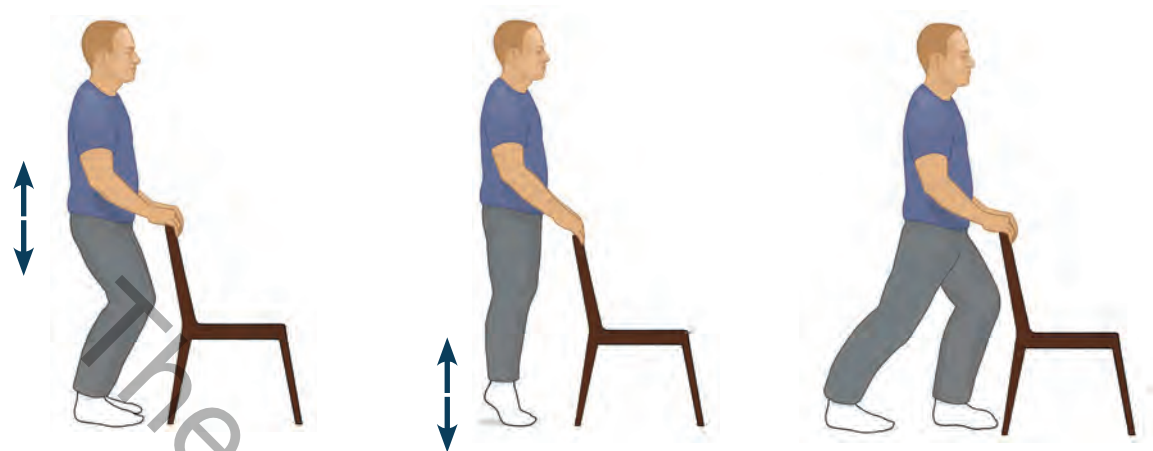
ANKLE - After lifting your leg off the floor, move your foot up and down (point your toes down as far as you can). You can also move your feet in circles both ways. You will feel a pulling in your calf. DO NOT USE YOUR ARMS TO HELP YOURSELF.



FEET - Move your feet up and down “pumping your ankles”. These exercises are very useful to avoid venous stasis and potential thrombosis.



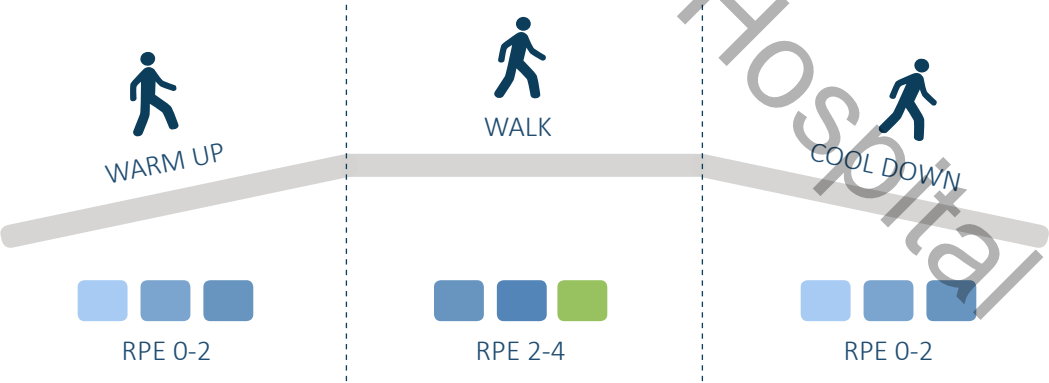
■ MORNING EXERCISE ROUTINE (COMBINE WITH A REGULAR DAILY WALKING SCHEDULE)



SQUATS - Hold a solid still surface, keep your back straight, and slightly bend your knees (45O) while keeping your heels on the floor. Once you have your strength back, you can progress to do toe raises in a standing position. ALWAYS STRETCH BEFORE AND AFTER EXERCISING.

REMEMBER THAT AFTER EACH WALK YOU SHOULD BE IN THE “BLUE RPEs” AND FEEL COMFORTABLE, NOT SHORT OF BREATH OR FATIGUED

Week 1	Follow the hospital schedule, multiple short 5 minute walks
Week 2	10 minute walk, 2-3 times a day
Week 3	15-20 minute walk, 1-2 times a day



In general, you can determine how much effort you require to do a certain exercise program by talking while or after and following the RPE scale. During the warm up and cool down phases you should be able to talk or whistle. While walking, you should be able to have a conversation. SLOW DOWN IF YOU ARE GASPING FOR AIR AT ANY TIME!

## ■ RETURNING TO SEXUAL ACTIVITY

Several factors may play a significant role when returning to have sex after receiving heart surgery: potential little desire for sex after a hospital stay for an invasive surgery (you might be too tired to think about sex), some new medications may interfere with your performance or desire, and there might be concerns about the physical demand. You are welcome to discuss it with your health provider. The following is a list of useful tips:

- You must be comfortable (place, position...) and be rested
- Avoid large meals, alcohol and smoking
- Avoid positions where your arms are under tension (do not put pressure on your chest)
- Avoid pregnancy for 3 months after surgery. Discuss conception with your cardiologist and OBGYN

You can have sex 3-4 weeks after surgery, but keep in mind that during intercourse your heart will beat faster and work harder, therefore, you need to be able to tolerate this. The rule of thumb is that if you can climb two flights of stairs without experiencing shortness of breath, you are ready.



Avoid Viagra® (sildenafil) or Cialis® (tadalafil) for about 4-6 weeks after surgery. Discuss this topic with your doctor upon follow up. If you experience chest pain or discomfort during intercourse, stop and sit or lie down. Avoid taking nitroglycerin if you have taken any medication for erectile dysfunction (the combination may dangerously lower your blood pressure and affect your heart).

## ■ RETURNING TO YOUR DAILY ROUTINE

Your recovery at home can be a lot smoother if you plan ahead. Count on your family, relatives or friends to prepare and accommodate your place.

- You will be discharged only if it is 100% safe (you must be 100% ready)
- You do not need a hospital bed, not necessary for 99.9% of the patients
- If your bedroom is upstairs, plan on sleeping on the ground floor for 2-4 weeks
- Stock your pantry ahead of time (think about the diet you should follow after surgery)
- Think about equipment you may need (walker, shower seat, commode...)
- The social worker will help you arrange a home nurse, a health aid or a rehabilitation facility
- Place night lights in the hallways
- Pace yourself (rest when you need to, do not wait to feel very tired)
- Limit visitors and phone calls (resting is crucial for your recovery)

In general, try to not assume maintenance responsibilities at home for the first month after surgery (home duties usually require an important amount of energy and put stress on your breastbone). Avoid vacuuming, moving any furniture, weeding, raking, mowing the lawn, mopping or hanging out washing.

## ■ RETURNING TO WORK

The right time to return to work really depends on the type of work you do. If your job is physically demanding, it will require you to recover for up to 12 weeks. Office or desk jobs can be resumed within 6 weeks of surgery. Keep in mind that in order for you to return to work you need to recover physically but also mentally (memory and concentration capacity) and emotionally (can handle stressful situations).

## ■ HOW TO GET DRESSED

First, please remember to strictly follow all the sternal precautions and try to not reach behind you. Before getting dressed, select your clothes carefully and lay them out in bed. Favor loose fitting clothing made of elastic fabrics. Sit while dressing and help yourself to put on and take off socks or shoes (long shoehorn) without disproportionate reaching. ONE ARM IS ALWAYS STILL.



## NUTRITION

Nutrition is a key component of your surgery recovery. Food helps your body heal from the stress of surgery. In general, be sure your diet includes protein, fresh fruits and vegetables (vitamins and minerals), and fiber (whole grain cereals and breads).



Do not try to lose weight within 6 weeks of your surgery. You are more than welcome to lose water (particularly right after discharge) but you should eat properly to promote healing.

WHAT	WHY	EXAMPLES
Proteins	Synthesize collagen (scar tissue) Form antibodies to fight infections Build lean muscle	Lean poultry Fish and seafood Legumes, nuts, seeds Tofu Protein supplements
Vitamins	Reduce inflammation Accelerate wound healing	
	Vitamin A - Skin healing	Carrots, sweet potatoes, cantaloupe
	Vitamin C - Forms collagen	Kiwi, oranges, tomatoes, strawberries
	Vitamin D - Repair of bones	Milk, egg yolk, salmon, tuna, sunlight
	Vitamin B - Forms blood	Snapper, spinach, bell peppers, beets, lettuce
Minerals	Reduce inflammation Accelerate wound healing	
	Calcium	Dairy products, dark green leafy vegetables
	Zinc	Whole grains, lean meat, poultry, fish, legumes
	Copper	Shellfish, whole grains, legumes, nuts
Fiber	Prevent constipation	Exercise and hydrate properly Whole grain cereals and breads Dark fruits and vegetables



Prevent constipation (may ruin appetites) by avoiding cheese, milk and dairy products, dried foods (prunes are an exception), red meat, sweets (pastries...), white bread and rice, or processed foods.

The following foods may reduce inflammation and therefore pain: fatty fish (salmon, tuna, trout, sardines, halibut, flounder or sole), nuts, extra virgin olive oil, flaxseed meal or oil, soy products, onion, garlic, green leafy vegetables, dark fruits (berries, red apples, eggplant, red grapes), green and black tea, turmeric (mustard spice).

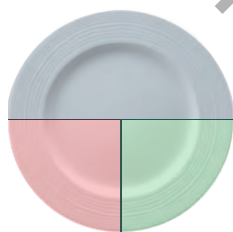
Limit your sodium intake (2g per day) by avoiding: salt (saltshaker), processed meats and cheese (hot dogs, salami), salty snacks, sodium bicarbonate or sodium carbonate.

■ ACCORDING TO PATIENTS, THESE NUTRITION TIPS ARE VERY HELPFUL...

- Add your favorite snacks between meals (small amounts of food every 2 hours)
- Add nutrition supplements (Boost®, Ensure®...) or your own fruit smoothies
- Eat cold foods if smells turn your appetite off
- Avoid constipation and bloating (these conditions ruin your appetite)
- If food tastes different, no worries, this is temporary due to some medications
- Nausea might be caused by having an empty stomach, make sure you eat regularly

■ HEART HEALTHY

Nutrition plays an important role in healing, inflammatory response, pain, immune status, and prevention and management of risk factor for cardiovascular disease. Conditions such as high blood pressure, obesity, diabetes and high cholesterol levels may be controlled by changing your lifestyle, which obviously includes your diet.



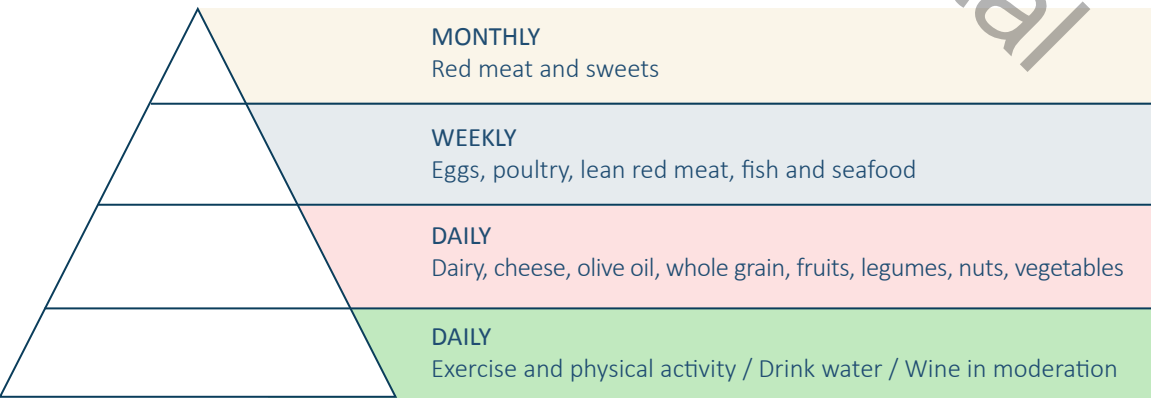
- Vegetables (at least two different kinds)
- Starches (pasta, breads, crackers, cereals, rice, oatmeal)
- Meat and alternatives

Try to have two alcohol-free days every week  
You can safely consume to standard alcoholic drinks a day  
Wine 125mls, Light Beer 250mls, Spirits 30mls

■ MEDITERRANEAN DIET



The heart-healthy Mediterranean (countries that border or by the Mediterranean Sea - Europe and Middle East) diet is an eating plan based on foods and recipes of Mediterranean-style cooking. The Mediterranean diet embraces the basics of healthy eating plus additional flavorful ingredients such as olive oil and red wine. The diet is very well balanced and primarily includes plant-based foods (fruits, vegetables, whole grains, legumes, nuts, avocado, olives), healthy fats (olive oil and canola oil instead of butter), herbs and spices instead of salt and smokes, limited amounts of red meat, fish and poultry, and moderate amounts of red wine.



■ DINNING OUT WHILE IN NEW YORK CITY

FAVOR	AVOID
BASIC, PLAIN OR SMALL BAKED, BOILED, STEAMED, GRILLED OR ROASTED LEMON JUICE, VINEGAR, LITTLE OLIVE OIL OR SPICES	DELUXE, SUPREME, PLATTER OR COMBO FRIED, CRISPY, BREADED, SAUTEED OR BATTERED CREAM, PARMESAN, SAUCE, GRAVY OR MARINATED

FOLLOW UP

TENTATIVE FOLLOW UP APPOINTMENTS AFTER SURGERY

<input type="checkbox"/> COUMADIN CLINIC	1-3 DAYS		_____		_____
<input type="checkbox"/> PRIMARY CARE PHYSICIAN	7-10 DAYS		_____		_____
<input type="checkbox"/> CARDIOLOGIST	7-10 DAYS		_____		_____
<input type="checkbox"/> SURGEON	4-6 WEEKS		_____		_____
<input type="checkbox"/> CARDIAC REHABILITATION	6-8 WEEKS		_____		_____

Your follow up clinic appointment is:  \_\_\_\_\_

 GP1C (Guggenheim Pavilion, First Floor, Center)

 +1 212-659-6820

PLEASE BRING THIS BOOKLET TO YOUR APPOINTMENT

During your follow up appointment, the nurse will get all your vital signs and an EKG. If you are flying to another state or country (your follow up appointment will be advanced to 10-15 days after surgery) you will need a chest X-ray to rule out a residual pneumothorax (this is also done if significant pleural effusions are suspected).

- Bring your updated medication list (your cardiologist might have made some changes)
- Bring a list of questions or concerns
- Bring a family member or friend with you
- Learn about upcoming deadlines (returning to work issues)
- Learn about your limitations (driving, exercise...)
- Learn about cardiac rehabilitation
- Learn about upcoming follow up appointments and necessary tests (echocardiogram)

■ DENTAL QUESTIONS

Follow regular oral hygiene practices like brushing (soft bristle toothbrush) and gentle flossing (prevent gum bleeding as much as possible). Tell your dentist about your surgery and let him see this booklet (so your dentist can learn about your procedure). **Unless it is strictly necessary (urgent), do not have any dental work for 3 to 6 months after surgery. If you have had valve or aortic surgery, you will always take antibiotics before any dental procedure. Try to see your dentist yearly.**



UNLESS IT IS URGENT, AVOID ANY DENTAL WORK FOR 3 TO 6 MONTHS  
YOUR DENTIST MUST KNOW ABOUT YOUR CARDIAC SURGERY  
IF YOU HAD VALVE OR AORTIC SURGERY, YOU WILL NEED ANTIBIOTICS  
FOLLOW REGULAR HYGIENE PRACTICES AND SEE YOUR DENTIST YEARLY

## ■ CARDIAC REHABILITATION

Cardiac rehabilitation “rehab” provides you with the tools (exercise, education and counseling) you need to achieve and maintain a healthy lifestyle after cardiac surgery. It often takes place in a hospital or in the community (rehabilitation facility) and is always performed under medical supervision. Cardiac rehabilitation contributes to speed your recovery and reduce the risk of future heart problems.

The main goal of cardiac rehabilitation is to help change the patient lifestyle and habits through assessment of your personal needs and limitations after surgery, continuous monitoring (EKG, heart rate, blood pressure) while you exercise, cardio exercising (treadmill, bike, rowing machine, jogging track), gradual tailored increase of endurance, and evaluation of timing to start training. Once you complete the program, try to incorporate these lifestyle changes into your daily routine as much as possible.

REHAB PHASE	GOALS AND OBJECTIVES
I	In hospital therapy, minimal limb activity, focus on education
II	First week at home, improve endurance, close monitoring
III	At rehab facility, maintenance, prevention phase, tailored activities
IV	Voluntary programs (many patients continue going to rehab for years)

## IDENTIFY YOUR RISK FACTORS FOR CARDIOVASCULAR DISEASE

### Non-Modifiable Risk factors

- ☐ Age
- ☐ Gender
- ☐ Family History
- ☐ Ethnicity

### Modifiable Risk factors

- ☐ Dyslipemia (high blood cholesterol)
- ☐ Hypertension (high blood pressure)
- ☐ Diabetes (high blood sugar)
- ☐ Smoking
- ☐ Obesity (excess body weight)
- ☐ Sedentarism (lack of exercise)
- ☐ Stress
- ☐ Hormone replacement therapy



## ■ BILLING

After discharge, you will receive bills from all your health providers as well as a bill from The Mount Sinai Hospital. Keep in mind that some of the health care providers who worked with you during your hospital stay (anesthesiologist, cardiologist, endocrinologist...) might not be employed by the hospital and will send you bills separately for their services.



We encourage you to review all your bills after hospital discharge. In general, there is always a phone number printed on the bill for you to call about any unclear charge. If you have any question, call Billing Services at +1 212-731-3600 or International Services at +1 212-241-1100.

question, call Dining Services at 718-212-7511 or International Services at 718-212-2411.

The Mount Sinai Hospital



MITRAL FOUNDATION

Mitral Valve Repair Reference Center at The Mount Sinai Hospital  
Department of Cardiovascular Surgery  
1190 Fifth Avenue, GP2W, Box 1028  
New York, NY 10029  
+1 212-659-6800

[mitralvalverepair.org](http://mitralvalverepair.org) | [mitralfoundation.org](http://mitralfoundation.org) | [mountsinai.org](http://mountsinai.org)