



## OBSERVATION JOURNAL

**NAME:**

# LIVE FROM THE HEART

The Museum of Science and Industry, Chicago is providing you with access to an operating room at Advocate Christ Medical Center in Oak Lawn, Illinois. Today you will learn about human anatomy, careers in the operating room and your own personal health. You'll watch the surgical team in action and learn about each person's role. You will also learn about the patient's risk factors, diagnosis and treatment.

## *HEART DISEASE*

According to the Centers for Disease Control and Prevention, heart disease is the leading cause of death for both men and women in the United States. Over 600,000 people die each year from heart disease, which accounts for roughly 23 percent of all deaths, or about one out of every four. More than one in three adults has some form of cardiovascular disease, which includes heart valve problems and coronary artery disease.

There are several treatments for heart disease, depending on the type and severity of the condition. Doctors will recommend lifestyle changes, such as exercise and a healthy diet. Medications may slow the progression and alleviate symptoms of a condition, and minimally invasive surgeries, such as valve repair or angioplasty, are also options. However, for many people the best treatment is to have heart surgery.



# RISK FACTORS

Risk factors are conditions or activities that increase a person's likelihood of developing heart disease. Conditions are illnesses or abnormalities that people may have, such as diabetes. Activities are actions people may or may not do, such as smoking or not exercising. Some risk factors are within the patient's control, while others are not. Risk factors include:



Stress



Obesity



Hypertension



Diabetes



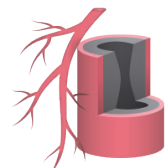
Smoking



Lifestyle



High Cholesterol



Vascular Disease



Family History



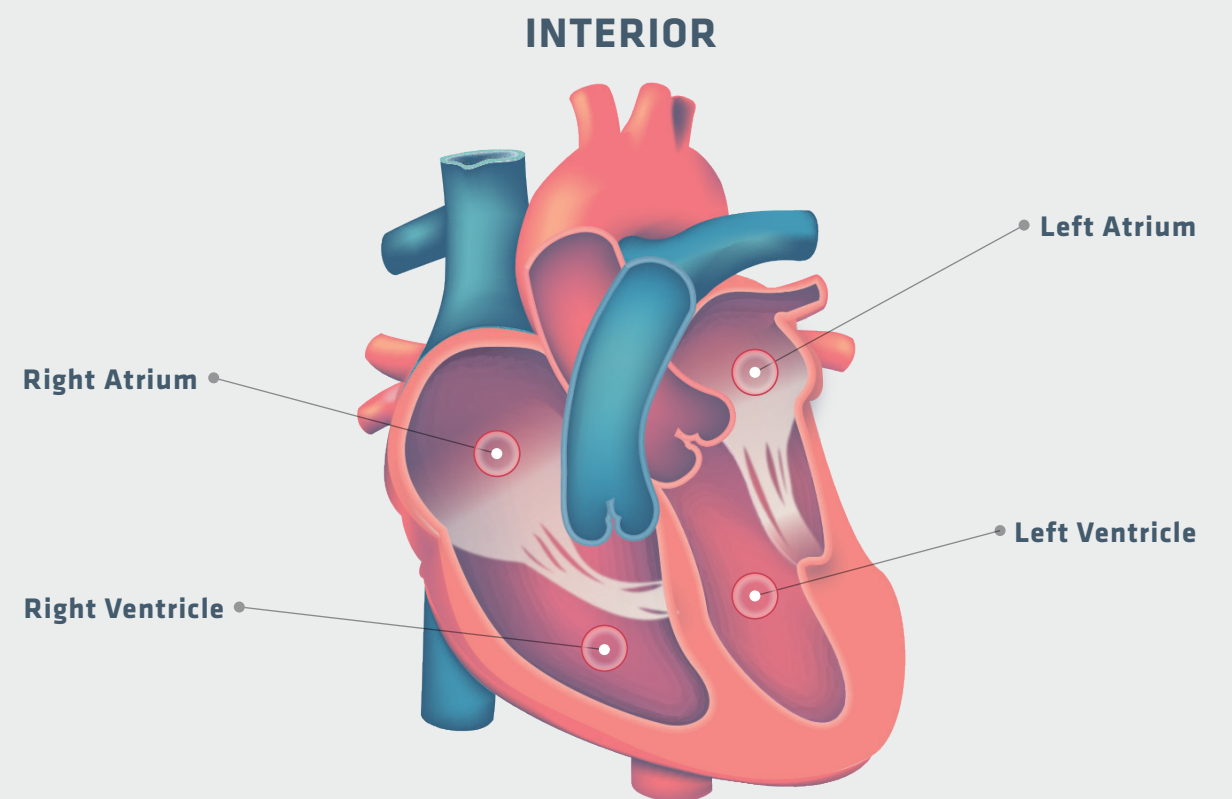
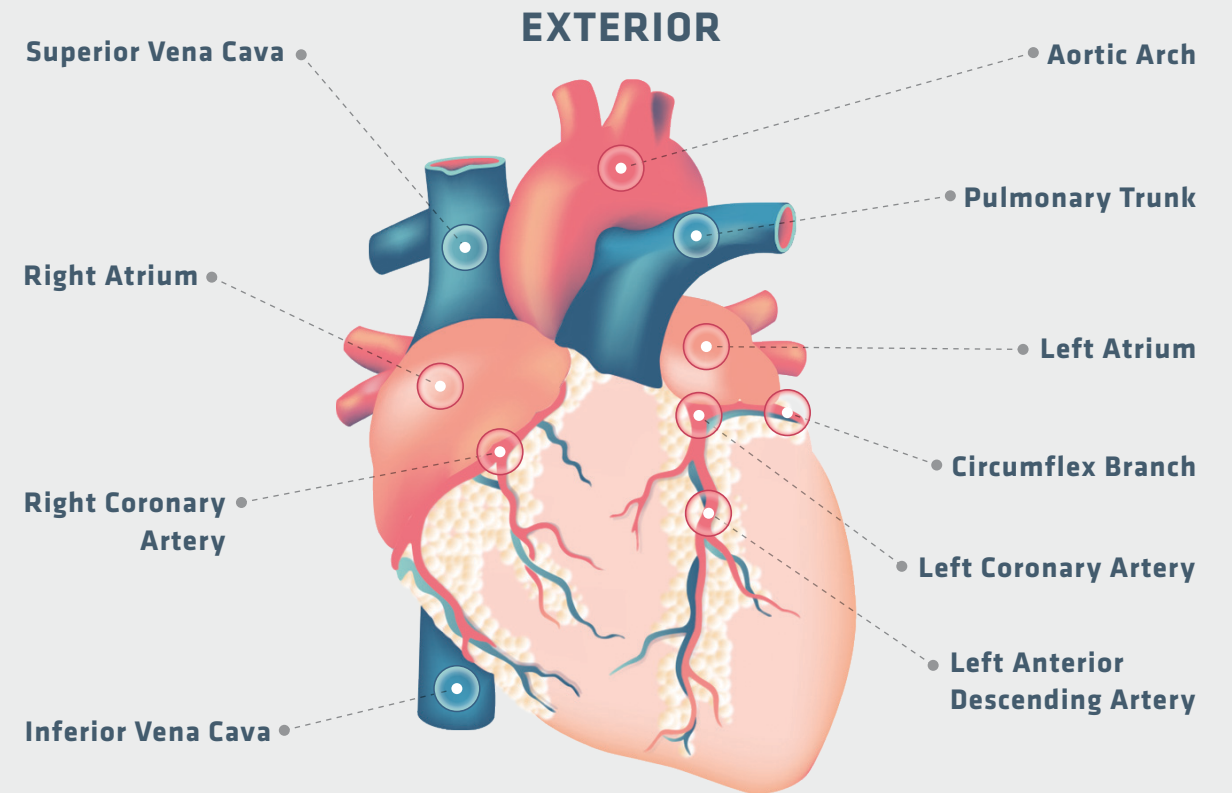
Old Age



Alcohol/Drug Abuse

The good news is even modest lifestyle improvements can have a drastic impact on a person's health. Early prevention is important. It is essential to have good habits for healthy living, such as exercising, maintaining a healthy weight, and not smoking.

# HEART ANATOMY



# CAREERS

## Education, training and responsibilities

**SURGEON**  
Name: \_\_\_\_\_

**PHYSICIAN ASSISTANT**  
Name: \_\_\_\_\_

**ANESTHESIOLOGIST**  
Name: \_\_\_\_\_

**PERFUSIONIST**  
Name: \_\_\_\_\_

**SCRUB NURSE**  
Name: \_\_\_\_\_

**CIRCULATING NURSE**  
Name: \_\_\_\_\_

# PATIENT'S PROFILE

Age \_\_\_\_\_

Sex \_\_\_\_\_

Symptoms \_\_\_\_\_

## RISK FACTORS:

Stress



Obesity



Smoking



Lifestyle



Hypertension



Diabetes



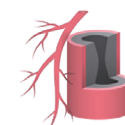
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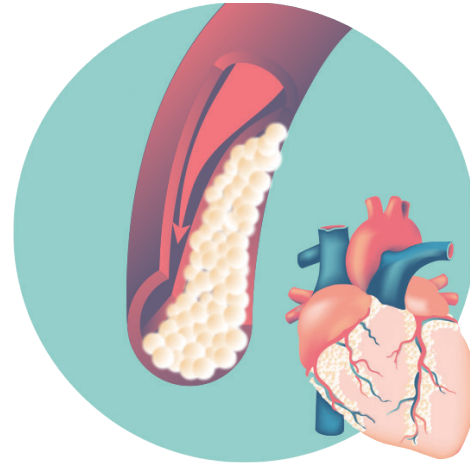
Old Age



# BYPASS SURGERY

## CORONARY ARTERY DISEASE

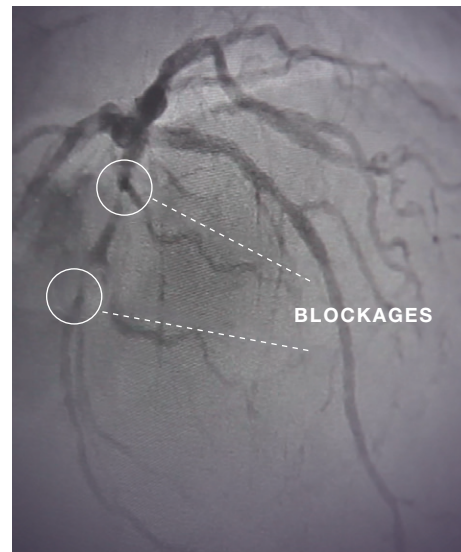
Coronary artery disease (CAD) is the result of atherosclerosis, or “clogging” of the arteries, which is the buildup of cholesterol and fatty deposits (called plaque) in the inner walls of the arteries. Buildup restricts blood flow. If the blood supply to a portion of the heart is cut off, a heart attack may occur.



PLAQUE BUILDS UP INSIDE ARTERY WALLS

## ANGIOGRAMS

A special X-ray called an angiogram determines if the patient has blockages in the arteries of the heart. A long, narrow tube called a catheter is inserted into a leg or arm and guided through blood vessels all the way to the aorta. A contrast fluid is injected and an X-ray machine takes a picture of the heart.



ANGIOGRAMS REVEAL WHERE BLOCKAGES ARE LOCATED AND HOW SEVERE THEY ARE

## BYPASS SURGERY

Describe bypass surgery in your own words

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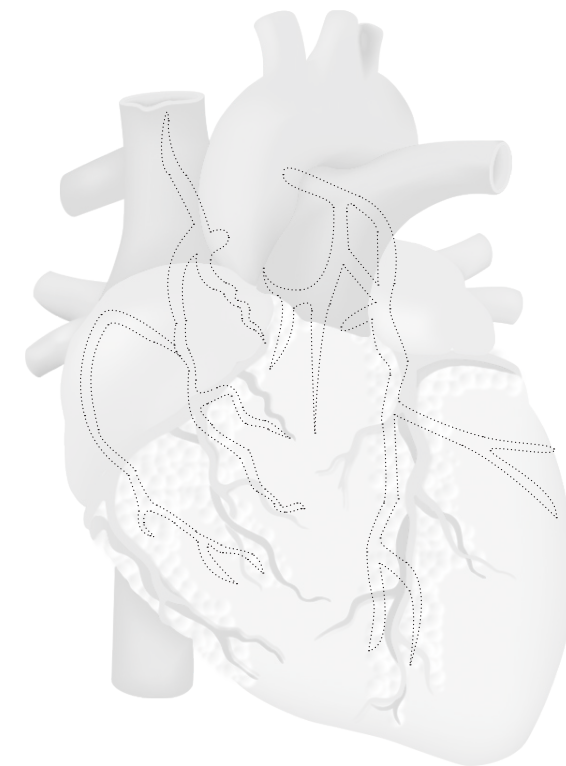
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## BYPASS DIAGRAM

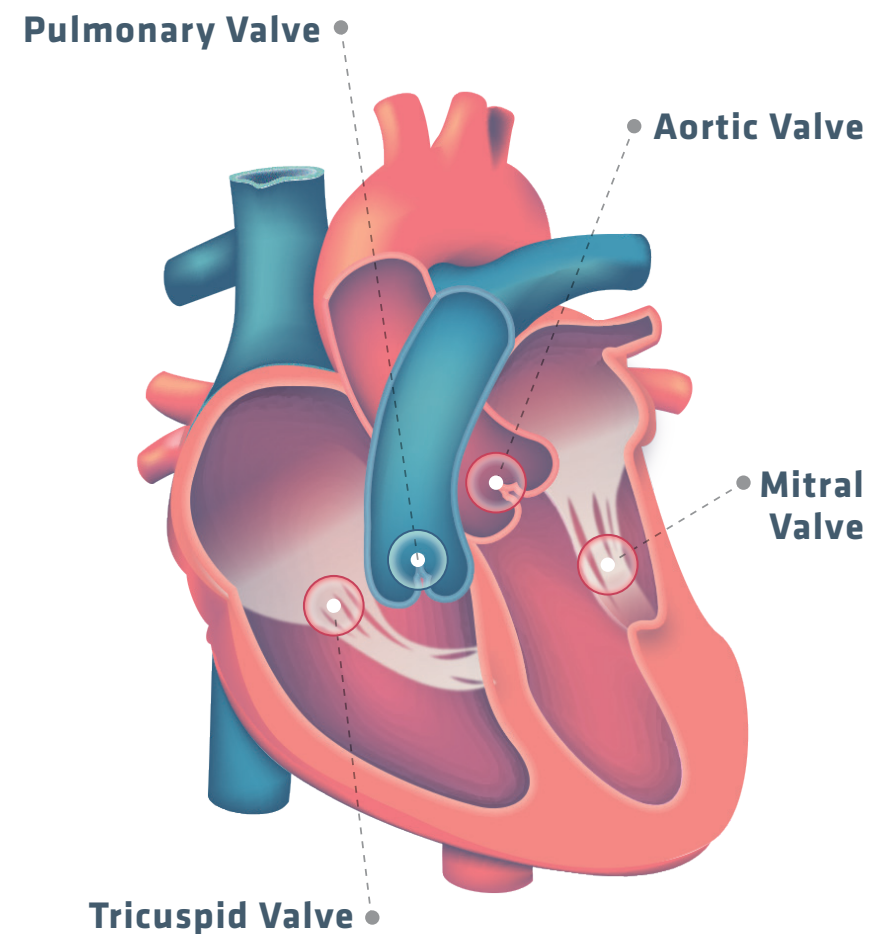
Draw the patient's blockages and bypasses (dotted lines indicate vessels on back side of heart)



# VALVE REPLACEMENT

## HEART VALVES

There are four valves in the heart. When they work correctly, blood moves in a single direction from one chamber to the next. To work properly, valves must open and close all the way to allow the right amount of blood to flow in one direction.



All four valves of the heart can develop stenosis or regurgitation. These conditions can either be congenital or acquired heart defects.

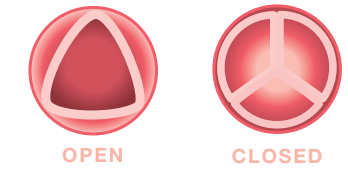
## TODAY'S PATIENT HAS...

(check all that apply)

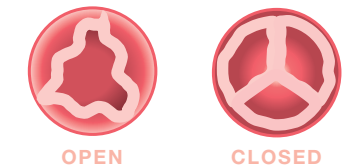
### STENOSIS

A condition where leaflets of a valve thicken and do not open all the way, causing the valve to become narrow. This restricts the amount of blood entering the appropriate chamber of the heart.

NORMAL AORTIC VALVE



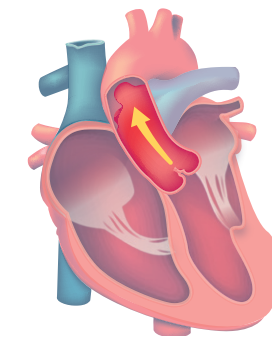
AORTIC VALVE STENOSIS



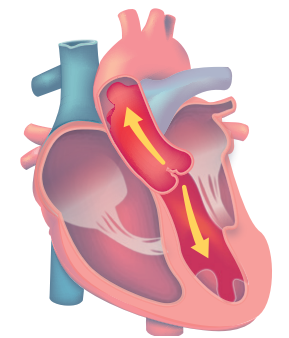
### REGURGITATION

A condition where the leaflets of a valve do not close all the way, allowing blood to leak back into the chamber from which it originated. This is often referred to as a "leaky valve."

NORMAL



REGURGITATION



### OTHER

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# FIRST STEPS OF SURGERY



**PREPARING PATIENT**

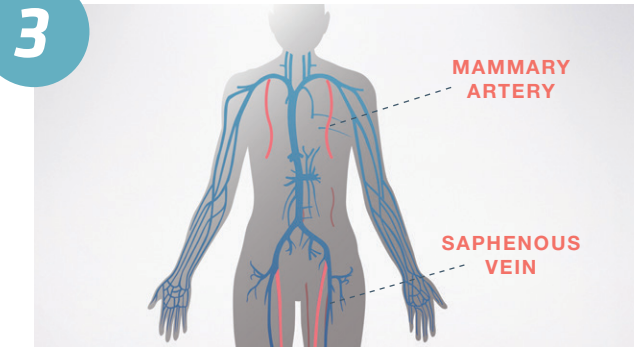
Why is it important to follow sterile technique?



**OPENING CHEST**

How is the chest opened?  
My reaction to the chest being opened is...

# NEXT STEPS OF SURGERY: BYPASS



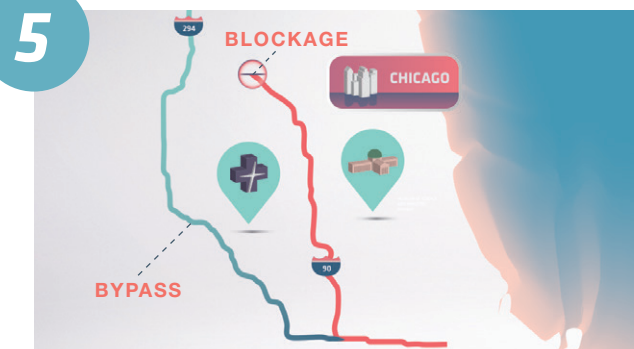
**HARVESTING VESSELS FOR BYPASSES**

Why are the saphenous vein and internal mammary artery used?



**TRANSITIONING TO HEART-LUNG MACHINE**

Why is the heart-lung machine used? How is the heart stopped?



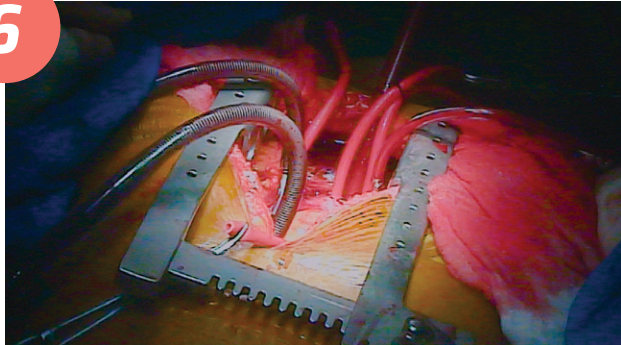
**ATTACHING GRAFT VESSELS**

How are the graft vessels attached to the heart? How will the bypasses improve heart circulation?

# FINAL STEPS

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6



**COMING OFF  
HEART-LUNG MACHINE**

How is the heart started? Why is this a critical point in the surgery?

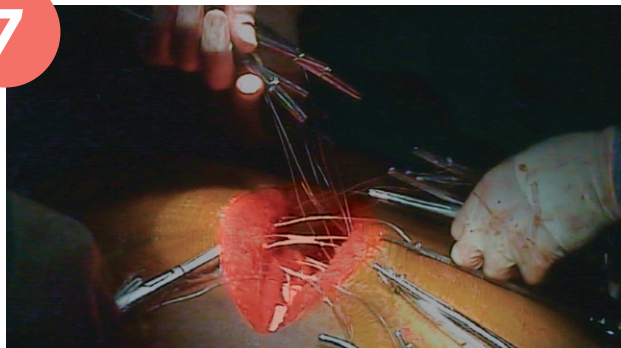
8



**POST-OP CARE**

What is recovery like for the patient? How long will the patient stay in the hospital?

7



**CLOSING THE CHEST**

How is the sternum closed? The wires are made of what materials?

**WHAT LIFESTYLE CHANGES DO YOU RECOMMEND FOR THE PATIENT?**



