

## What are Statins?

- ➔ A group of drugs that block the production of the HMG-CoA reductase enzyme that is used by the body to make cholesterol.
- .....
- ➔ As of 2000, statins have been used in the treatment of elevated cholesterol and triglyceride levels in over 20 million people worldwide.

# The Statin Class of Prescription Drugs

TRADE NAME:

GENERIC NAME:

COMPANY:

FDA APPROVED:

**Mevacor®**

Lovastatin

Merck

1987

**Pravachol®**

Pravastatin

Bristol-Myers Squibb

1991

**Zocor®**

Simvastatin

Merck

1991

**Lescol®**

Fluvastatin

Novartis

1993

**Lipitor®**

Atorvastatin

Pfizer/Parke-Davis

1996

**Baycol®**

Cerivastatin

Bayer

1997

# What is Cholesterol?

- ➔ A **waxy fat** that is present in all human beings.

---

- ➔ Two sources contribute to the amount of cholesterol in the body:
  - **the liver manufactures 80% of it**
  - **humans consume it by eating foods such as meat, eggs and dairy products**

---

- ➔ Cholesterol is carried through the bloodstream by certain proteins called **apolipoproteins**.

---

- ➔ When the apolipoproteins wrap around cholesterol and other types of fats (lipids) to transport them through the bloodstream, the resulting “packages” are called **lipoproteins**.



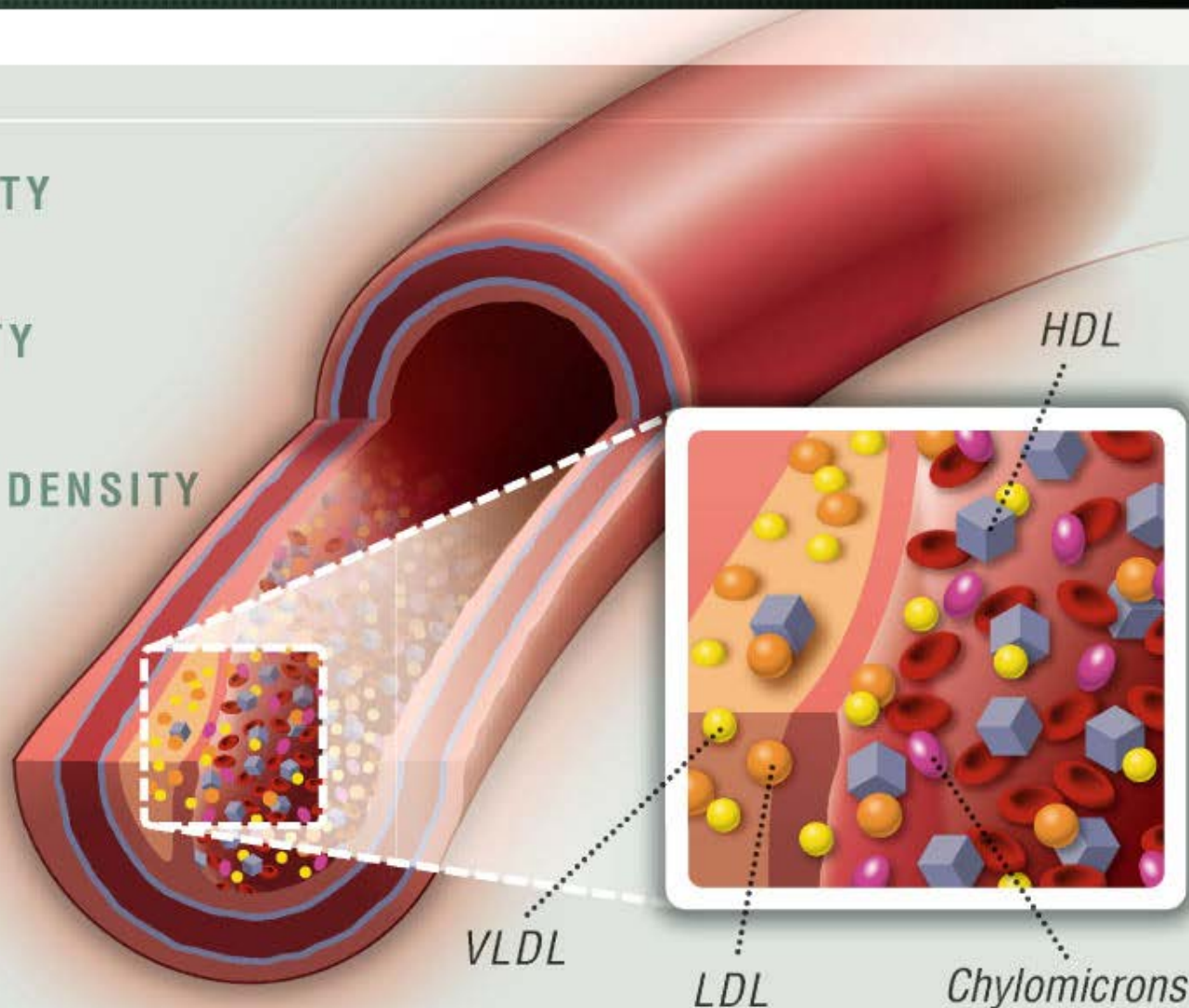
# Four Types of Lipoproteins that Carry Cholesterol Through the Bloodstream

HDL or HIGH DENSITY LIPOPROTEINS

LDL or LOW DENSITY LIPOPROTEINS

VLDL or VERY LOW DENSITY LIPOPROTEINS

CHYLOMICRONS



# Four Types of Lipoproteins that Carry Cholesterol Through the Bloodstream

HDL

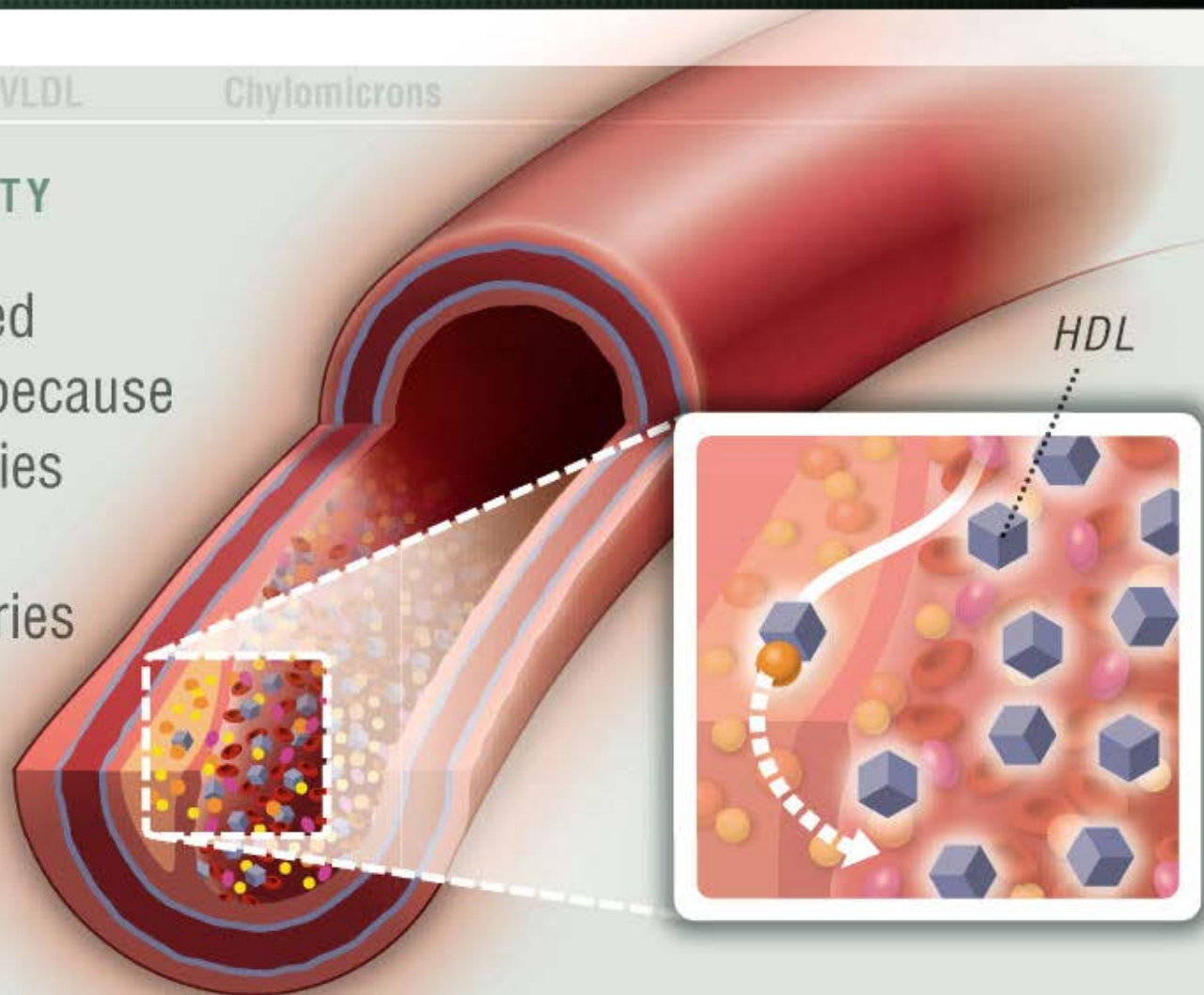
LDL

VLDL

Chylomicrons

## HDL or HIGH DENSITY LIPOPROTEINS

are commonly called “good cholesterol” because it is stable and carries “bad cholesterol” away from the arteries to the liver where it can be broken down.





# Four Types of Lipoproteins that Carry Cholesterol Through the Bloodstream

HDL

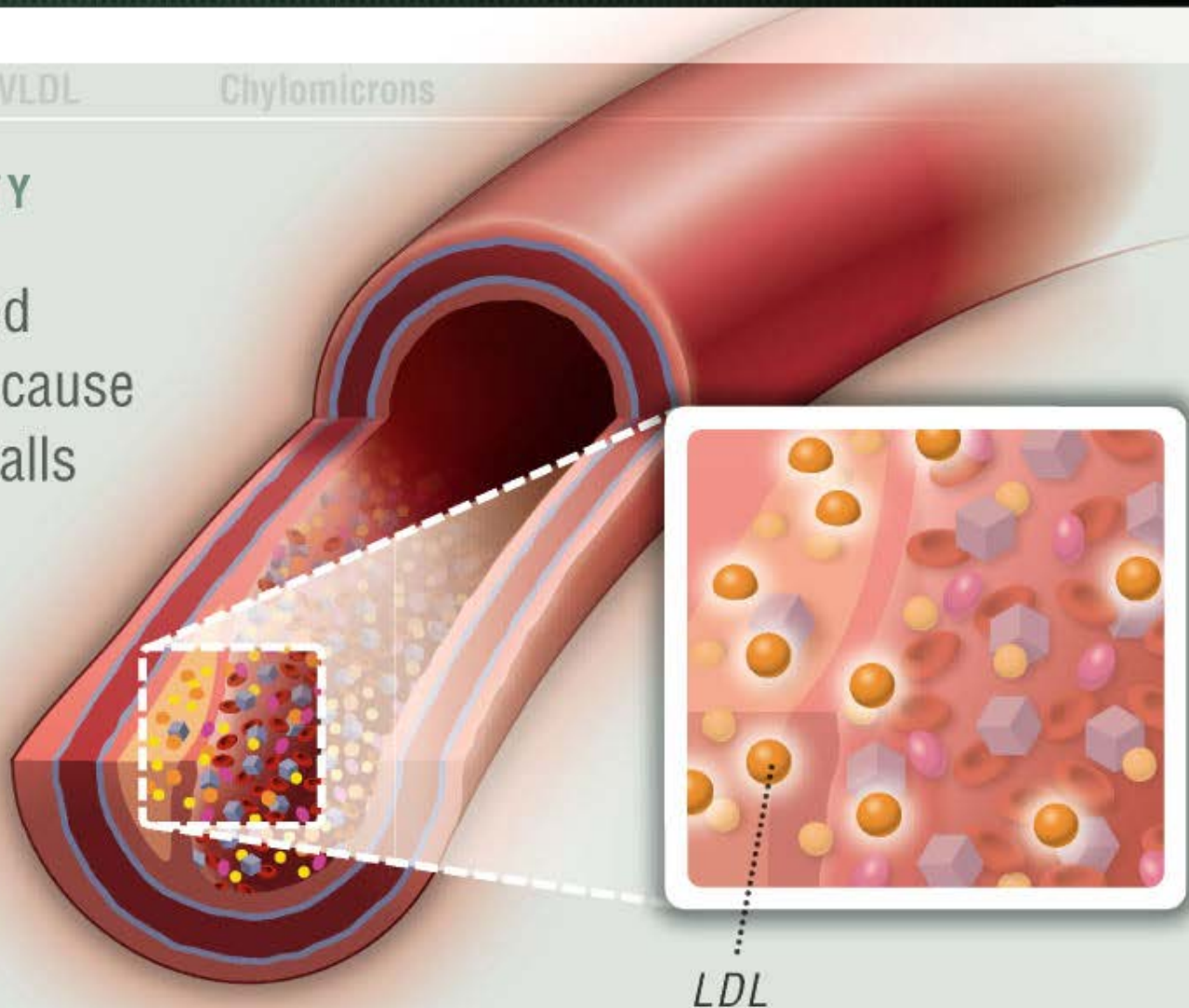
LDL

VLDL

Chylomicrons

## LDL or LOW DENSITY LIPOPROTEINS

are commonly called “bad cholesterol” because it sticks to artery walls and contributes to plaque build-up.



# Four Types of Lipoproteins that Carry Cholesterol Through the Bloodstream

HDL

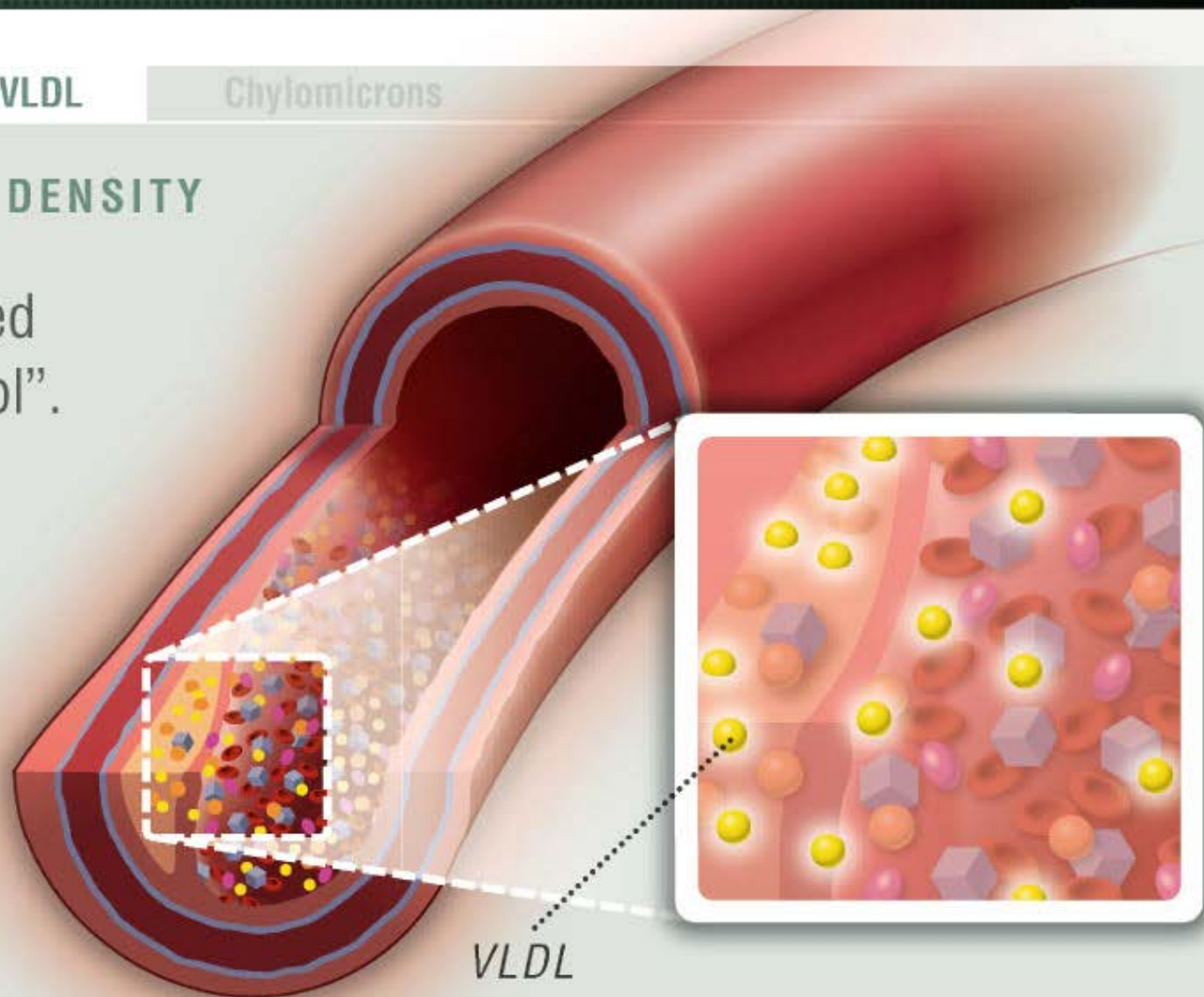
LDL

VLDL

Chylomicrons

**VLDL or VERY LOW DENSITY LIPOPROTEINS**

are commonly called  
“very bad cholesterol”.





# Four Types of Lipoproteins that Carry Cholesterol Through the Bloodstream

HDL

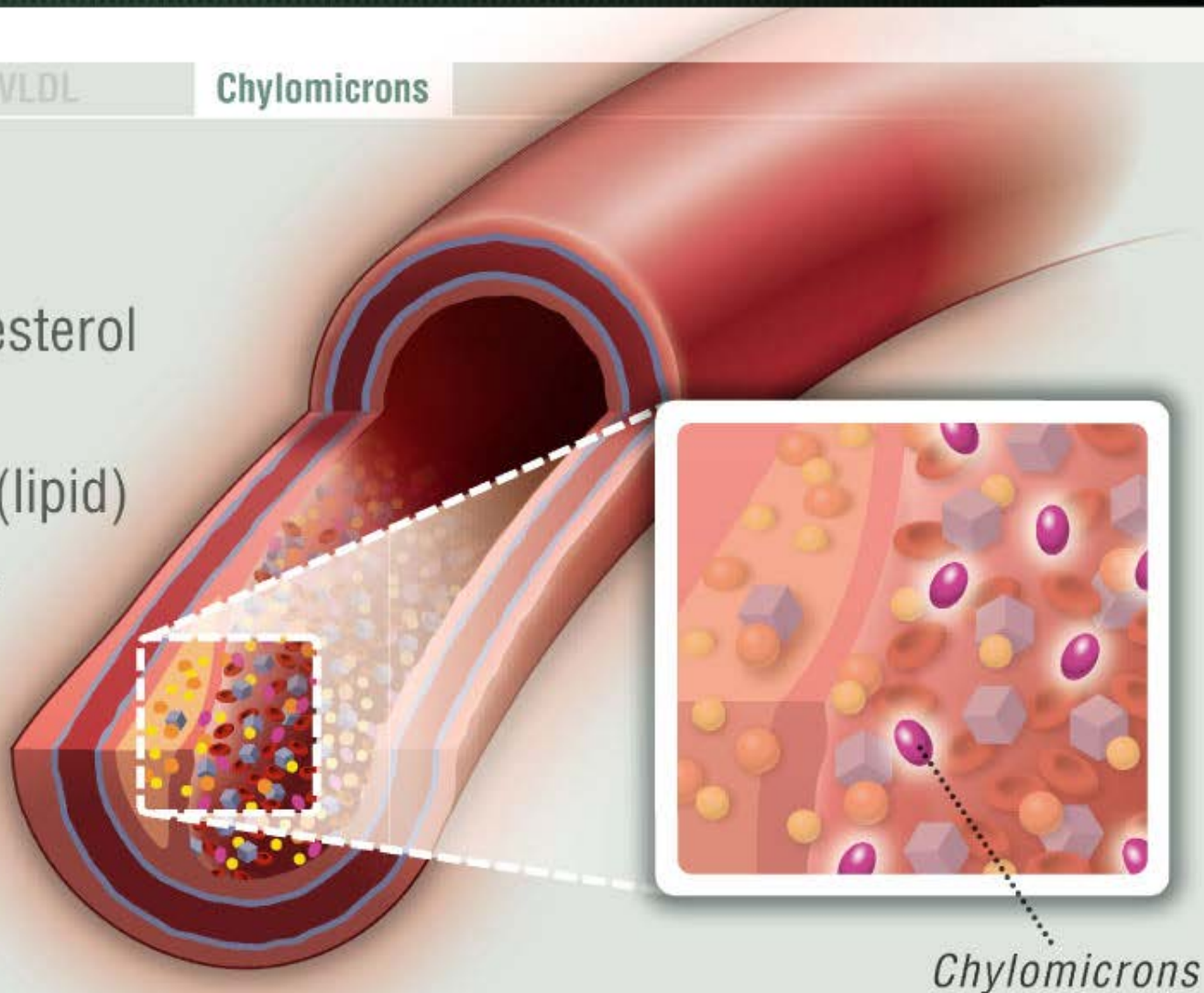
LDL

VLDL

Chylomicrons

## CHYLOMICRONS

- only carry a small percentage of cholesterol
- are mostly rich in another type of fat (lipid) called triglycerides.



*Chylomicrons*



# The National Cholesterol Education Program Classifies Cholesterol Levels as Follows:



## **Total Cholesterol:**

- levels less than 200 are desirable
  - levels of 240 and above are HIGH
- 



## **HDL or “Good Cholesterol”:**

- levels of 40 and above are desirable
- 



## **LDL or “Bad Cholesterol”:**

- levels less than 100 are optimal
- levels greater than 129 are borderline-high
- levels greater than 159 are HIGH

# What Is Coronary Heart Disease?

Coronary Arteries

Normal Artery

Unstable Plaque

Stable Plaque

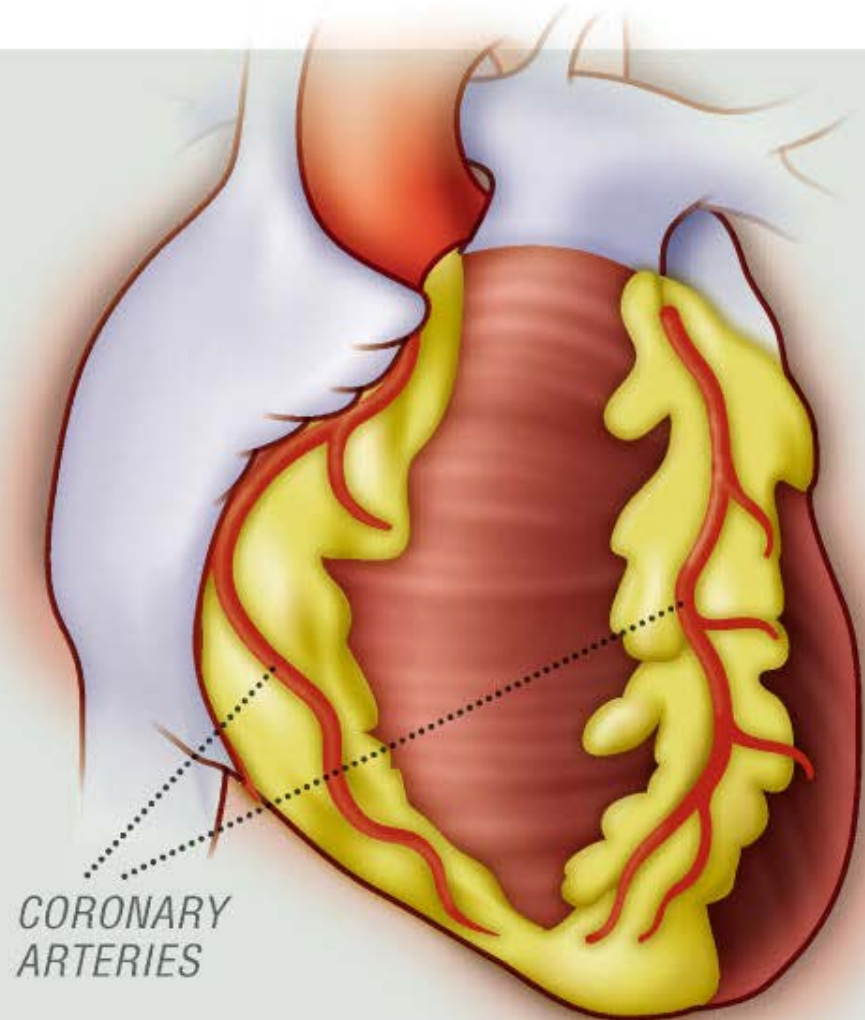
Rupture

Thrombus

Heart Attack

## CORONARY ARTERIES:

The coronary arteries deliver oxygen-rich blood to the muscle tissue of the heart, allowing the heart to pump. If the arteries are blocked, the heart muscle tissue is deprived of oxygen and nutrients, causing the tissue to die, resulting in a heart attack.





# What Is Coronary Heart Disease?

Coronary Arteries

Normal Artery

Unstable Plaque

Stable Plaque

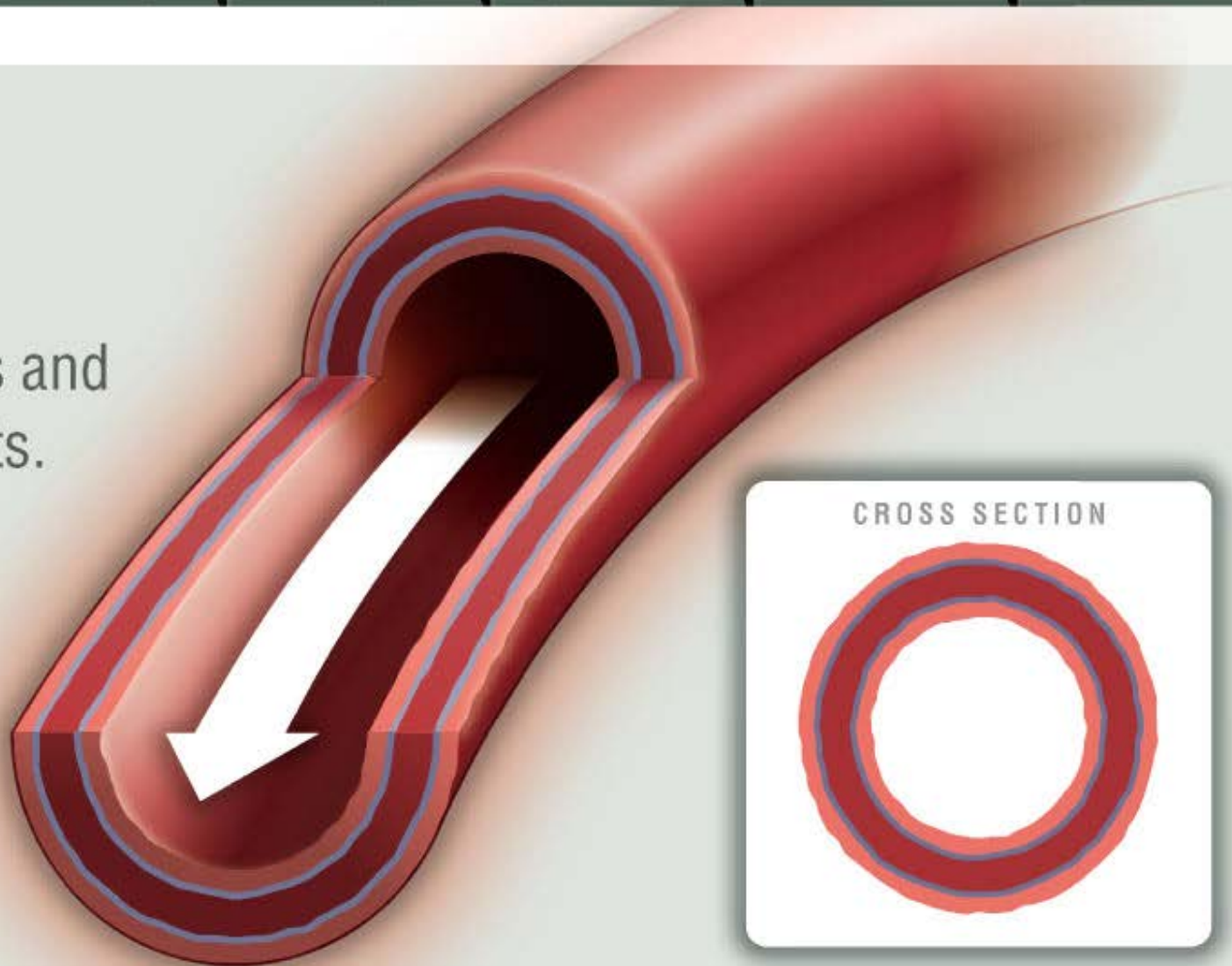
Rupture

Thrombus

Heart Attack

## NORMAL ARTERY:

A healthy artery has vessel walls that are uniform in thickness and clear of fatty deposits.



# What Is Coronary Heart Disease?

Coronary Arteries

Normal Artery

Unstable Plaque

Stable Plaque

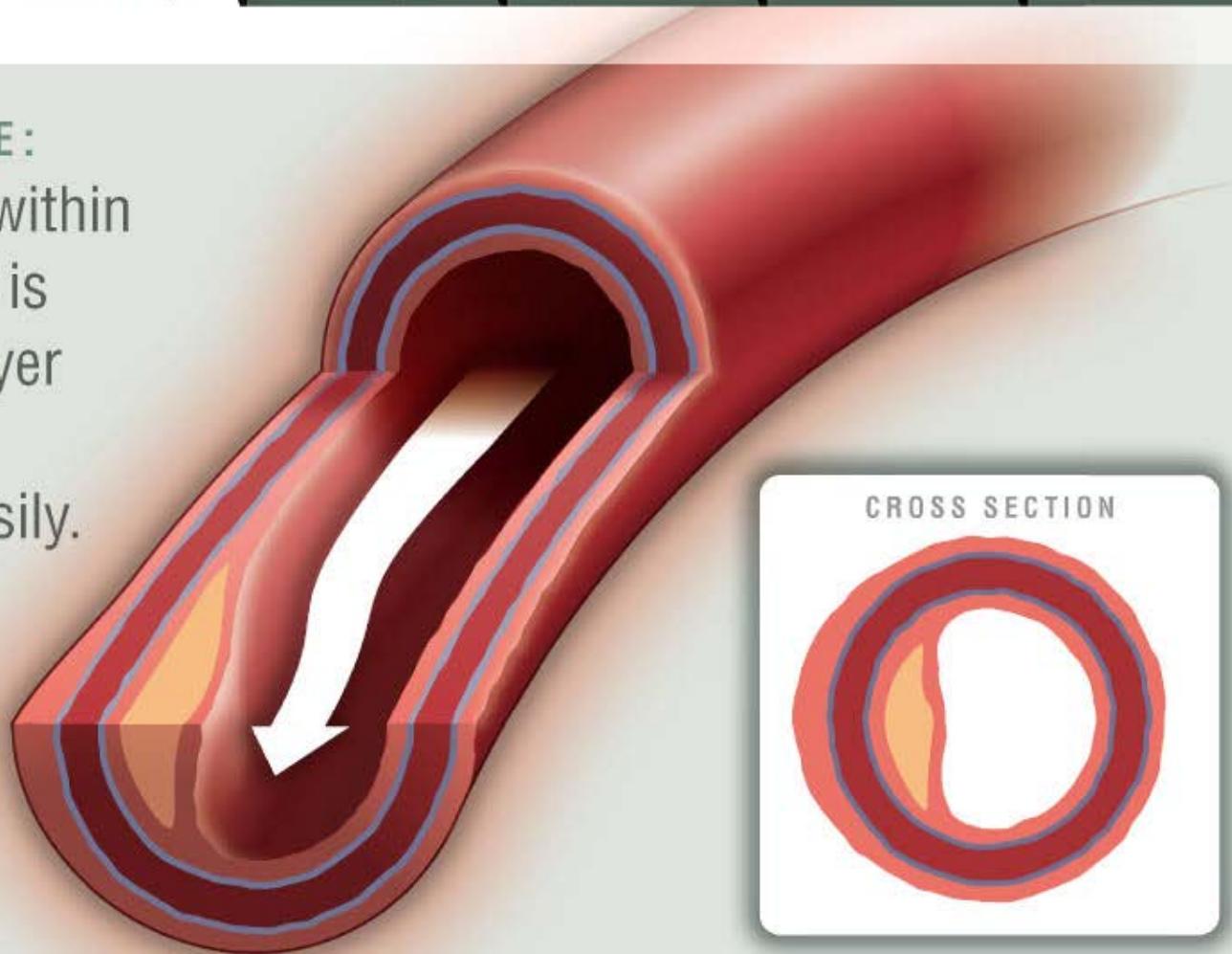
Rupture

Thrombus

Heart Attack

## UNSTABLE PLAQUE:

Soft fatty build-up within the vessel wall that is capped by a thin layer of the vessel lining that can rupture easily.





# What Is Coronary Heart Disease?

Coronary Arteries

Normal Artery

Unstable Plaque

Stable Plaque

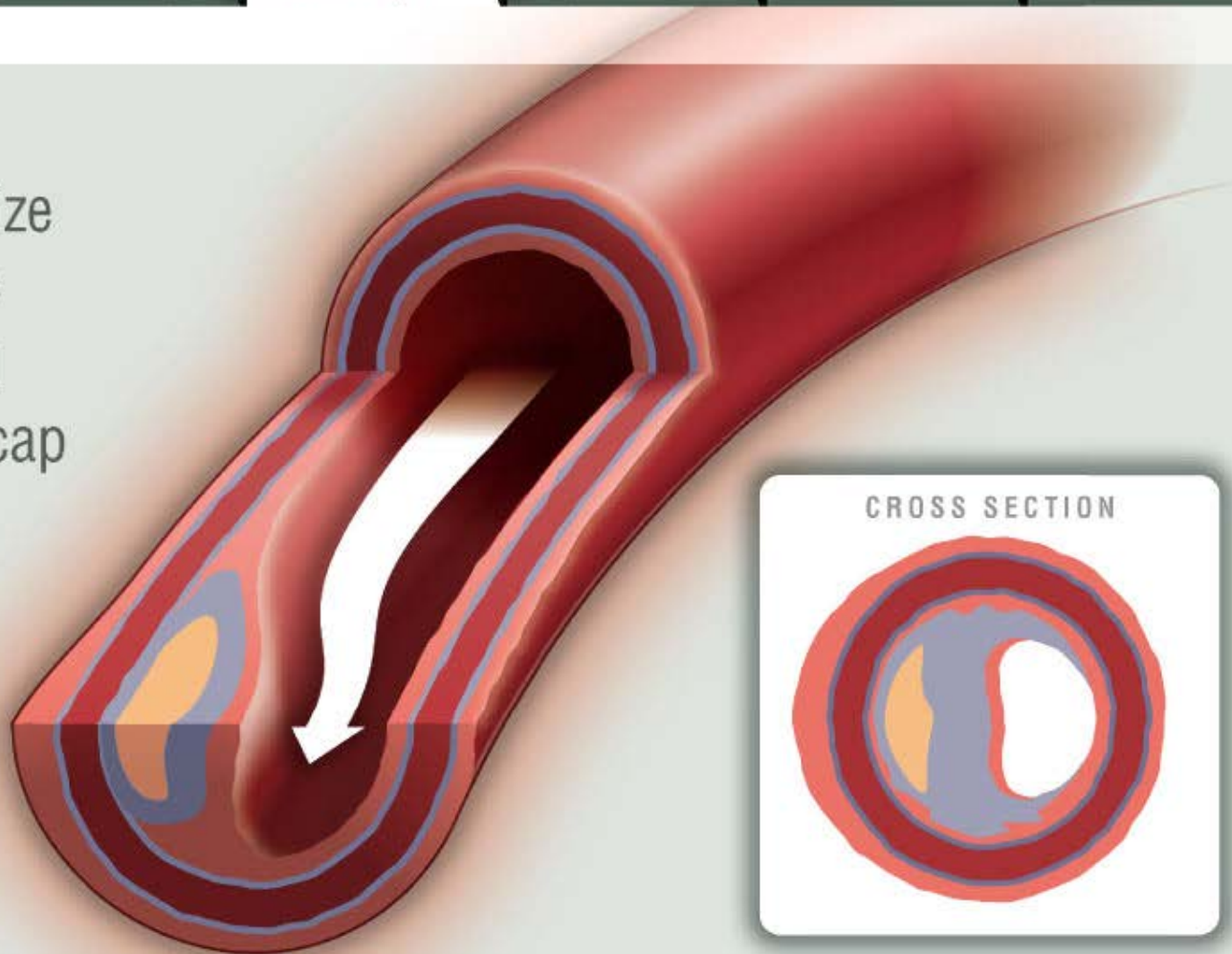
Rupture

Thrombus

Heart Attack

## STABLE PLAQUE:

A plaque can stabilize if the fatty deposits become more solid and the protective cap thickens.



# What Is Coronary Heart Disease?

Coronary Arteries

Normal Artery

Unstable Plaque

Stable Plaque

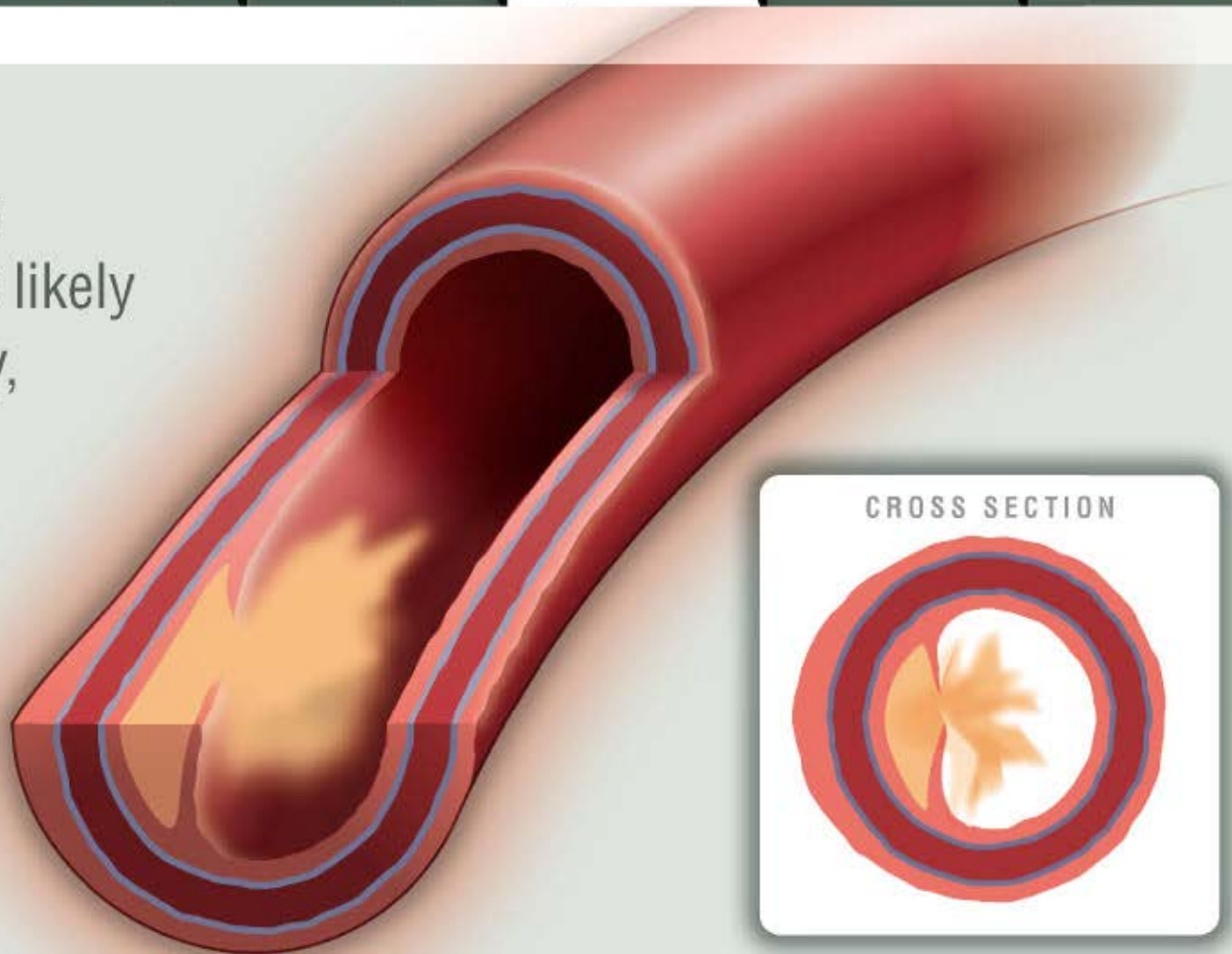
Rupture

Thrombus

Heart Attack

## RUPTURE:

If a plaque remains unstable, it is more likely to rupture suddenly, without warning, and form a clot.





# What Is Coronary Heart Disease?

Coronary Arteries

Normal Artery

Unstable Plaque

Stable Plaque

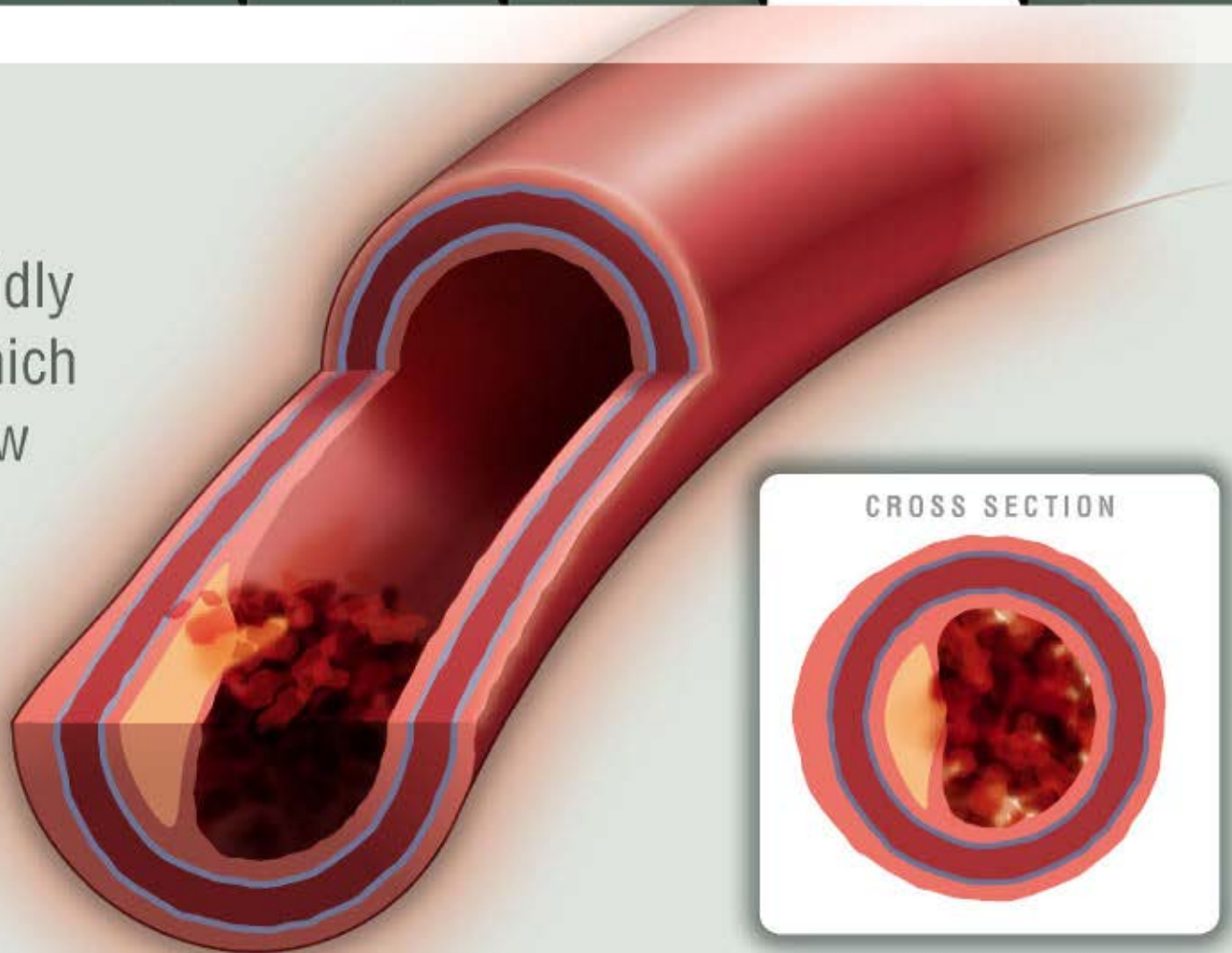
Rupture

Thrombus

Heart Attack

## THROMBUS:

In some cases, a clot develops rapidly into a thrombus which blocks all blood flow through the artery.



# What Is Coronary Heart Disease?

Coronary Arteries

Normal Artery

Unstable Plaque

Stable Plaque

Rupture

Thrombus

Heart Attack

## HEART ATTACK:

When all blood flow is blocked, the muscle tissue does not receive enough oxygen and dies. This results in a myocardial infarction (MI) or heart attack.

