



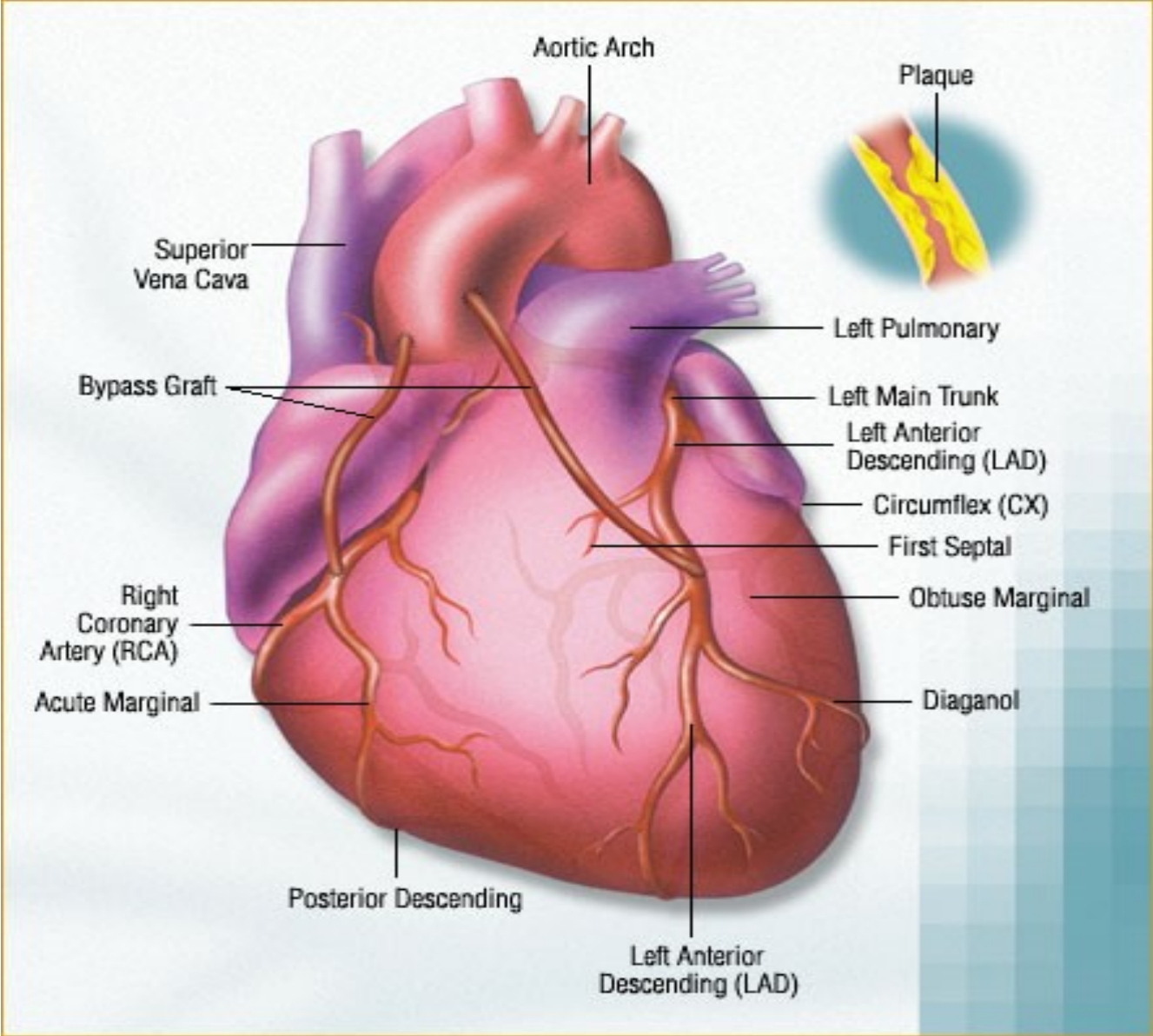
FACULTY OF NURSING SCIENCES

**By- SUDHA BENJAMINI**  
**Associate Professor**  
**Faculty of Nursing**

# Atherosclerosis

# The Heart

- Is a muscle about the size of your fist
- Weighs approximately one pound
- Is located behind and slightly to the left of the breastbone
- Pumps about 5 quarts (4.7 liters) of blood every minute

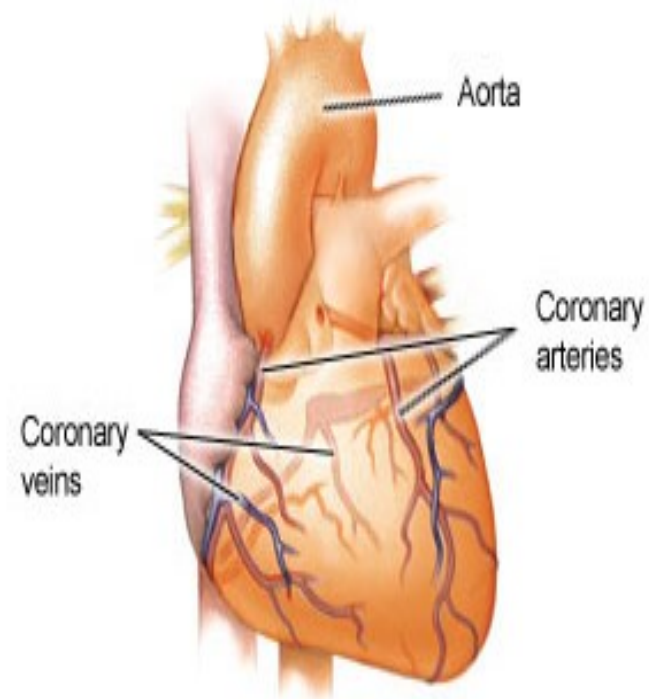


**The function of the heart** is to circulate blood throughout the body by:

- Pumping blood through the lungs removes carbon dioxide and refreshes the blood with oxygen
- The oxygenated blood is pumped to the body to provide oxygen and nutrients and to remove waste products.
- The coronary arteries are the blood vessels that supply blood and oxygen to the heart muscle.

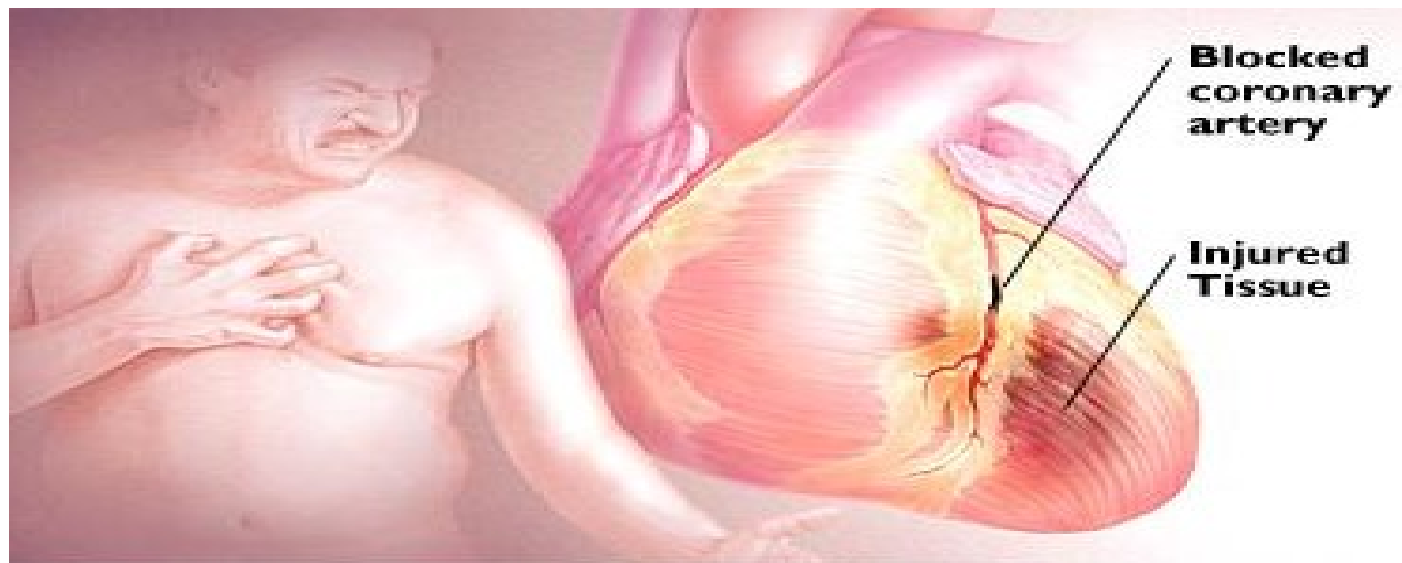
## Blood Supply To The Heart

2 coronary arteries branch from the main aorta just above the aortic valve. “No larger than drinking straws, they divide and encircle the heart to cover its surface with a lacy network that reminded physicians of a slightly crooked crown (*coronary* comes from the Latin *coronarius*, belonging to a crown or wreath). They carry out about 130 gallons of blood through the heart muscle daily.” (Clark, 119)



# Coronary Artery Disease

- Coronary artery disease is one of the most common and serious effects of aging. Fatty deposits build up in blood vessel walls and narrow the passageway for the movement of blood. The resulting condition, called atherosclerosis often leads to eventual blockage of the coronary arteries and a “heart attack”.



## Diseased Artery

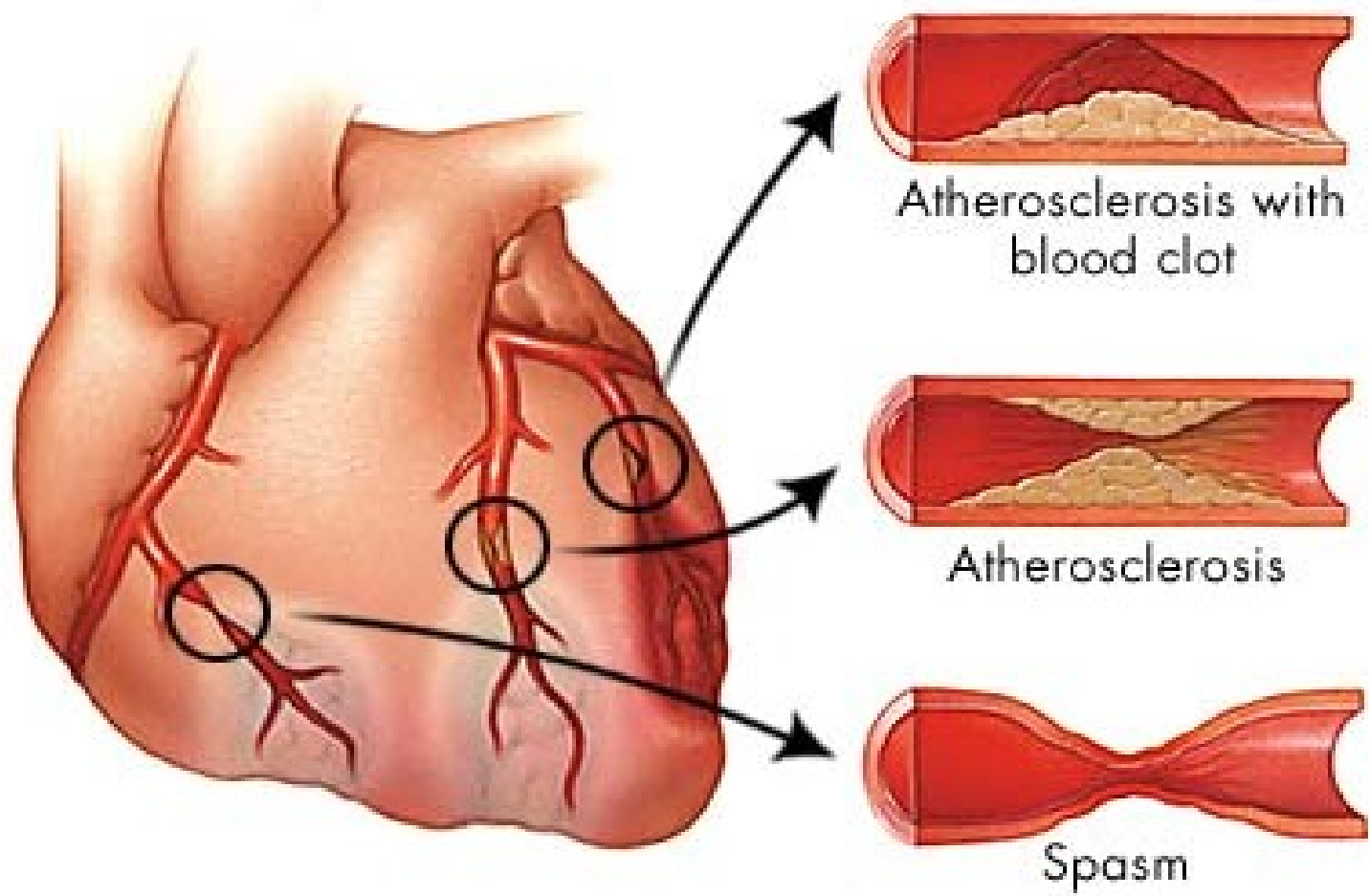


© 2001 Arizona Heart Institute



# Mortality

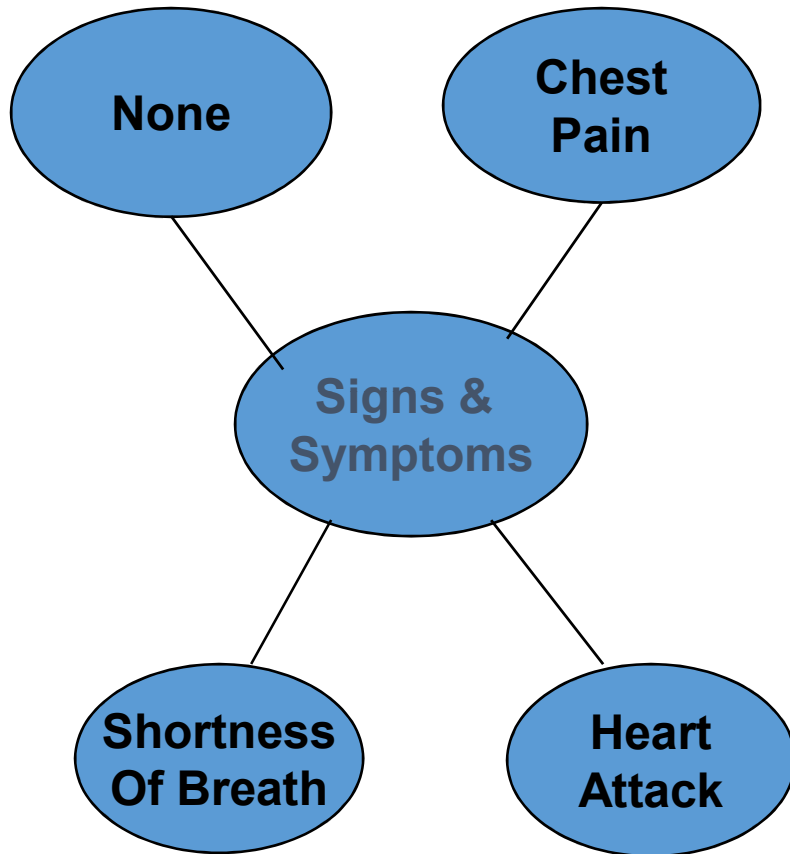
“Cardiovascular disease claimed 39.4 percent of all deaths or 1 of every 2.5 deaths in the United States in 2000. CVD was about 60 percent of “total mention mortality.” This means that of over 2,400,000 deaths from all causes, CVD was listed as a primary or contributing cause on about 1,415,000 death certificates.”  
(American Heart Disease)



# But you didn't know

- Since 1900, CVD has been the No. 1 killer in the United States every year but 1918.
- Nearly 2,600 Americans die of CVD each day, an average of 1 death every 33 seconds.
- CVD claims more lives each year than the next 5 leading causes of death combined, which are cancer, chronic lower respiratory diseases, accidents, diabetes mellitus, influenza and pneumonia.
- Almost 150,000 Americans killed by CVD each year are under age 65.

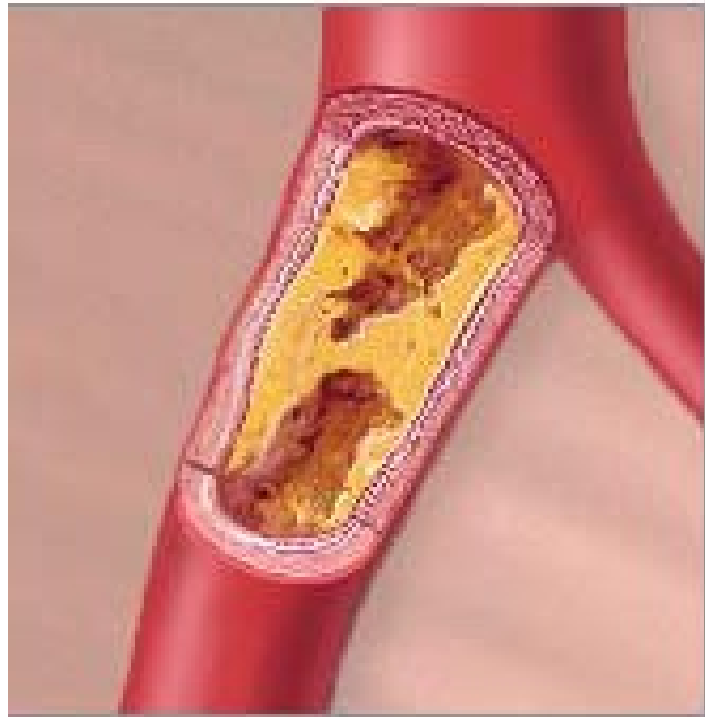
# Signs and Symptoms



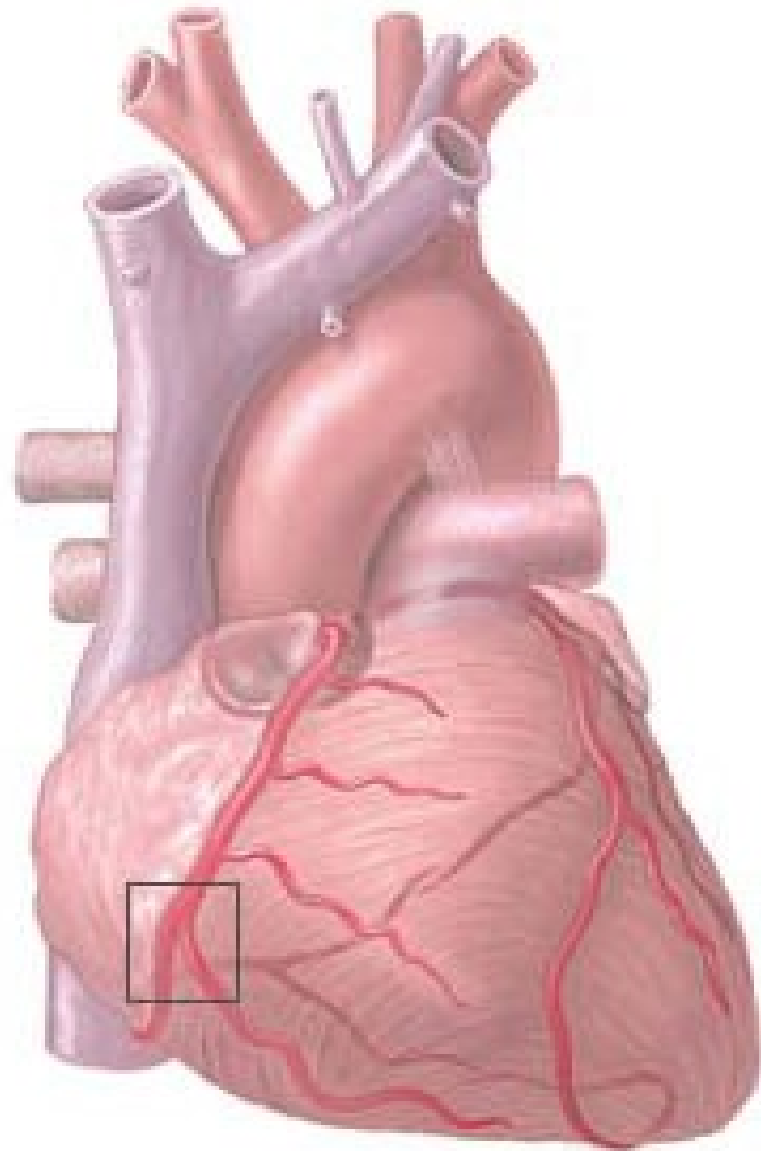
- **None:** This is referred to as silent ischemia. Blood to your heart may be restricted due to CAD, but you don't feel any effects.
- **Chest pain:** If your coronary arteries can't supply enough blood to meet the oxygen demands of your heart, the result may be chest pain called angina.
- **Shortness of breath:** Some people may not be aware they have CAD until they develop symptoms of congestive heart failure- extreme fatigue with exertion, shortness of breath and swelling in their feet and ankles.
- **Heart attack:** Results when an artery to your heart muscle becomes completely blocked and the part of your heart muscles fed by that artery dies.

# Atherosclerosis

**can, and does, occur in almost any artery in the body. But in the heart it's effects can be crucial. "The body depends on a strong pumping heart to circulate life-giving blood, and this includes to the heart muscle itself. If the coronary arteries become blocked, the cardiac muscle begins to fail, and so the blood circulation decreases, which includes the circulation to the heart muscle itself." (Thibodeau, 494)**



**Blockage in right  
coronary artery**





# Risk Factors

## Uncontrollable

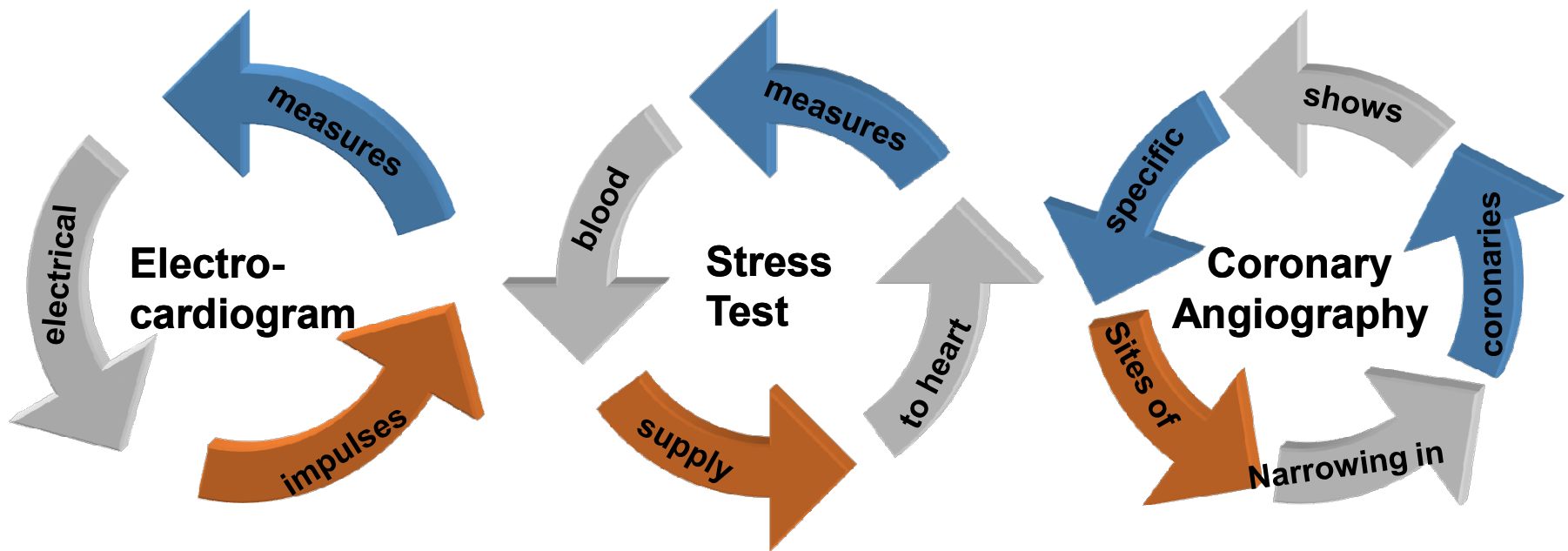
- Sex
- Hereditary
- Race
- Age

## Controllable

- High blood pressure
- High blood cholesterol
- Smoking
- Physical activity
- Obesity
- Diabetes
- Stress and anger



# Screening and Diagnosis

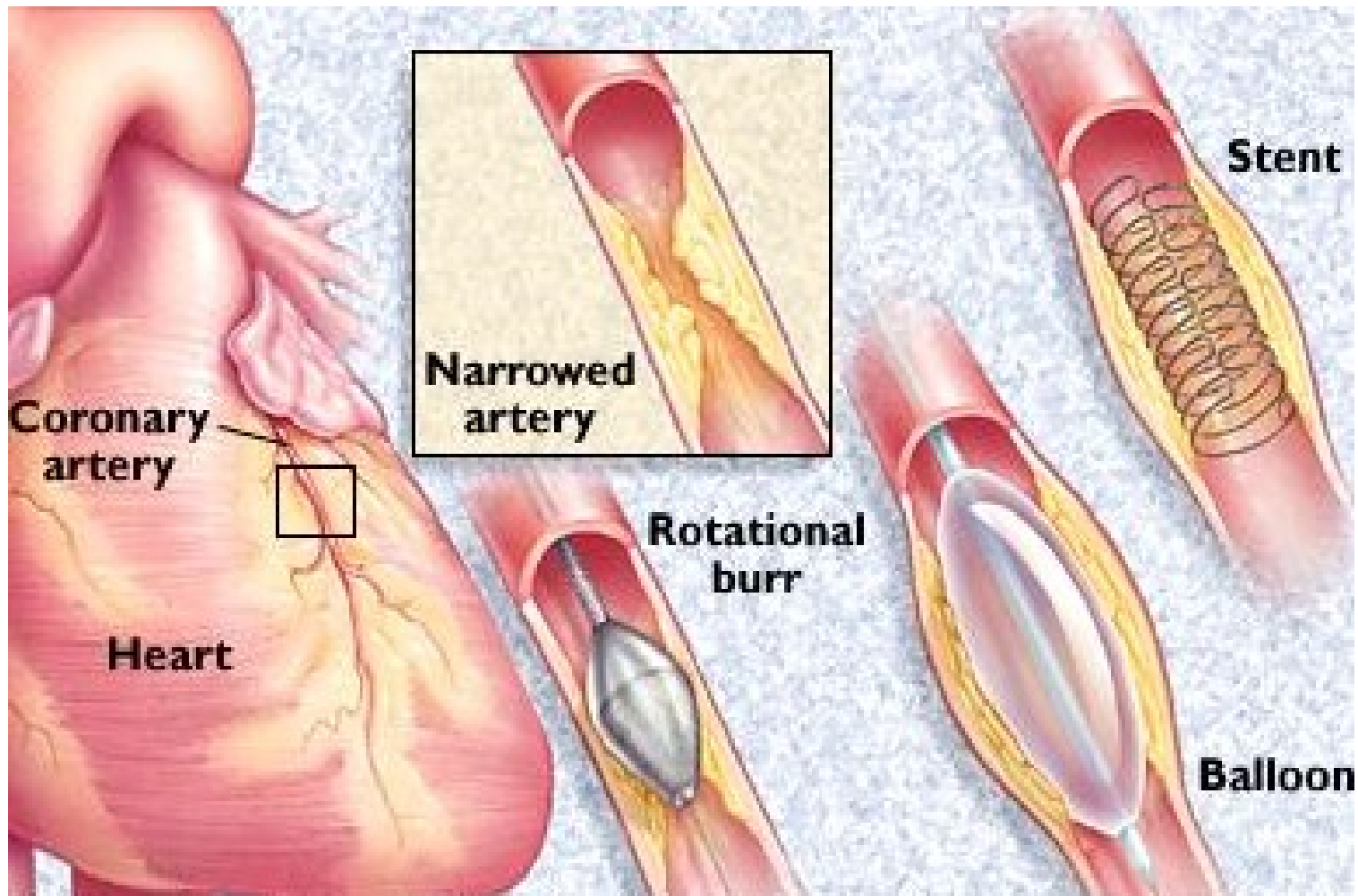


# Other Tests Include...

- Blood tests: used to evaluate kidney and thyroid function as well as to check cholesterol levels and the presence of anemia.
- Chest X-ray: shows the size of your heart and whether there is fluid build up around the heart and lungs.
- Echocardiogram: shows a graphic outline of the heart's movement
- Ejection fraction (EF): determines how well your heart pumps with each beat.

# *Treatment*

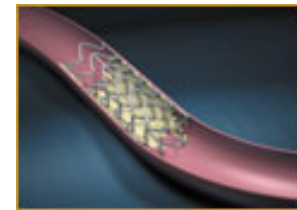
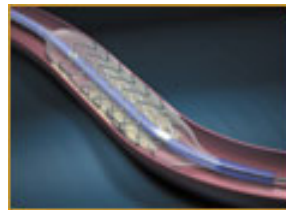
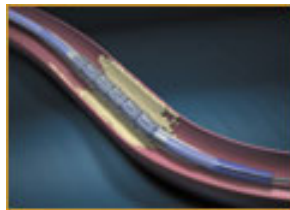
- Many people are able to manage coronary artery disease with lifestyle changes and medications.
- Other people with severe coronary artery disease may need angioplasty or surgery.



# Treatment (continued)

## 1) Stenting

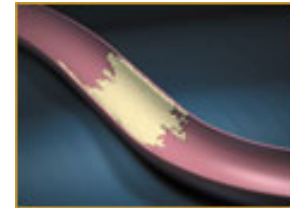
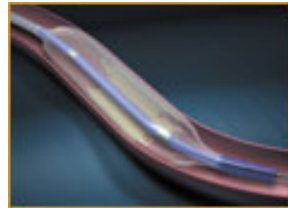
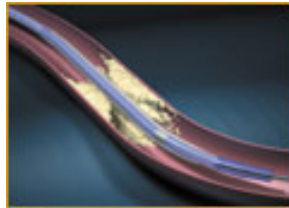
- a stent is introduced into a blood vessel on a balloon catheter and advanced into the blocked area of the artery
- the balloon is then inflated and causes the stent to expand until it fits the inner wall of the vessel, conforming to contours as needed
- the balloon is then deflated and drawn back
- The stent stays in place permanently, holding the vessel open and improving the flow of blood.



# Treatment (continued)

## 2) Angioplasty

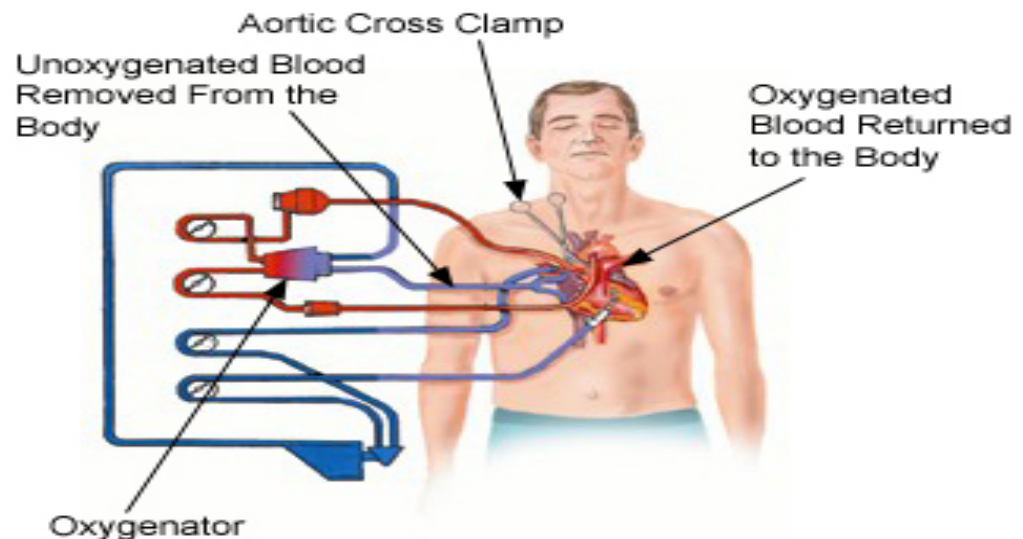
- a balloon catheter is passed through the guiding catheter to the area near the narrowing. A guide wire inside the balloon catheter is then advanced through the artery until the tip is beyond the narrowing.
- the angioplasty catheter is moved over the guide wire until the balloon is within the narrowed segment.
- balloon is inflated, compressing the plaque against the artery wall
- once plaque has been compressed and the artery has been sufficiently opened, the balloon catheter will be deflated and removed.



## Treatment (continued)

### 3) Bypass surgery

- healthy blood vessel is removed from leg, arm or chest
- blood vessel is used to create new blood flow path in your heart
- the “bypass graft” enables blood to reach your heart by flowing around (bypassing) the blocked portion of the diseased artery. The increased blood flow reduces angina and the risk of heart attack.



**P  
r  
e  
v  
e  
n  
t  
i  
o  
n**

- **Get regular medical checkups.**
- **Control your blood pressure.**
- **Check your cholesterol.**
- **Don't smoke.**
- **Exercise regularly.**
- **Maintain a healthy weight.**
- **Eat a heart-healthy diet.**
- **Manage stress.**



# Citations

1. Insel, Paul Core Concepts in Health McGraw-Hill Companies, 2002
2. Clark, John A Visual Guide to the Human Body Barnes & Noble Books, 2001
3. Thibodeau, Gary, Ph.D. Anatomy & Physiology Mosby Books, 2000
4. Marieb, Elaine R.N., Ph.D. Essentials of Human Anatomy & Physiology Pearson Education, 2003
5. American Heart Association, Heart Disease and Stroke Statistics, 2003 Update
6. [www.Guidant.com](http://www.Guidant.com)
7. [www.Webmd.com](http://www.Webmd.com)
8. [www.Spotlighthealth.com](http://www.Spotlighthealth.com)
9. [Mayoclinic.com](http://Mayoclinic.com)
10. [Americanheart.org](http://Americanheart.org)
11. [Azheart.com](http://Azheart.com)