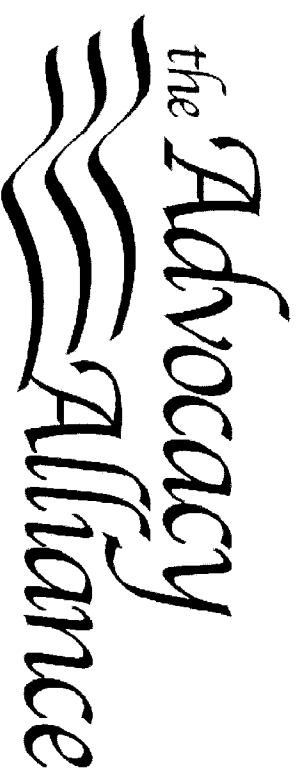


The Cardiovascular System

Function, Diseases and Treatments



Health Care Quality Units

Disclaimer

- The information presented to you today is to increase your awareness.
- It is not intended to replace medical advice or instruction from your health care practitioner or your agency policy.
- If you need medical advice, please contact your physician.

Objectives

The participant will learn:

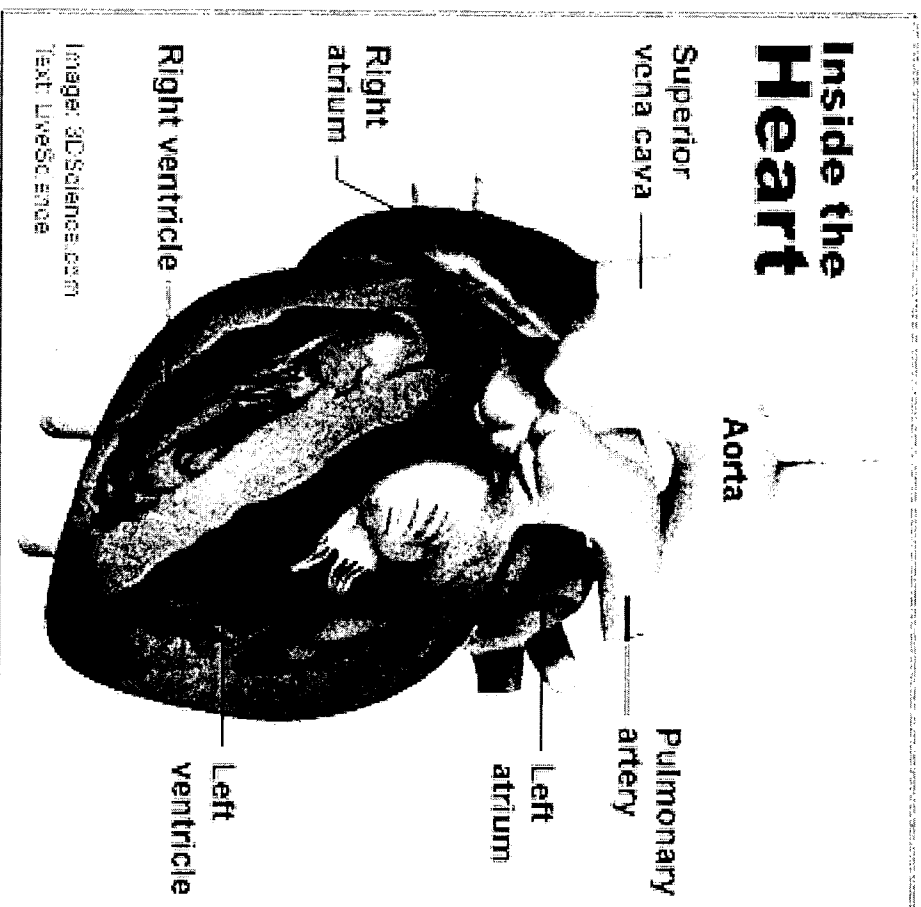
- How the cardiovascular system works.
- The diseases and conditions that can impact on the function of the heart and circulatory system.
- The risk factors that increase the probability of disease.
- The diagnostic studies that are often utilized.
- Treatments that are recommended by health care professionals.

The Cardiovascular System

- The cardiovascular system is a network that delivers blood and nutrients to the body's tissues.
- It is composed of the heart and blood vessels, which include arteries, veins, and capillaries.
- Blood vessels range in size from thick arteries to capillaries that are so thin that they can only be seen through a microscope

The Cardiovascular System

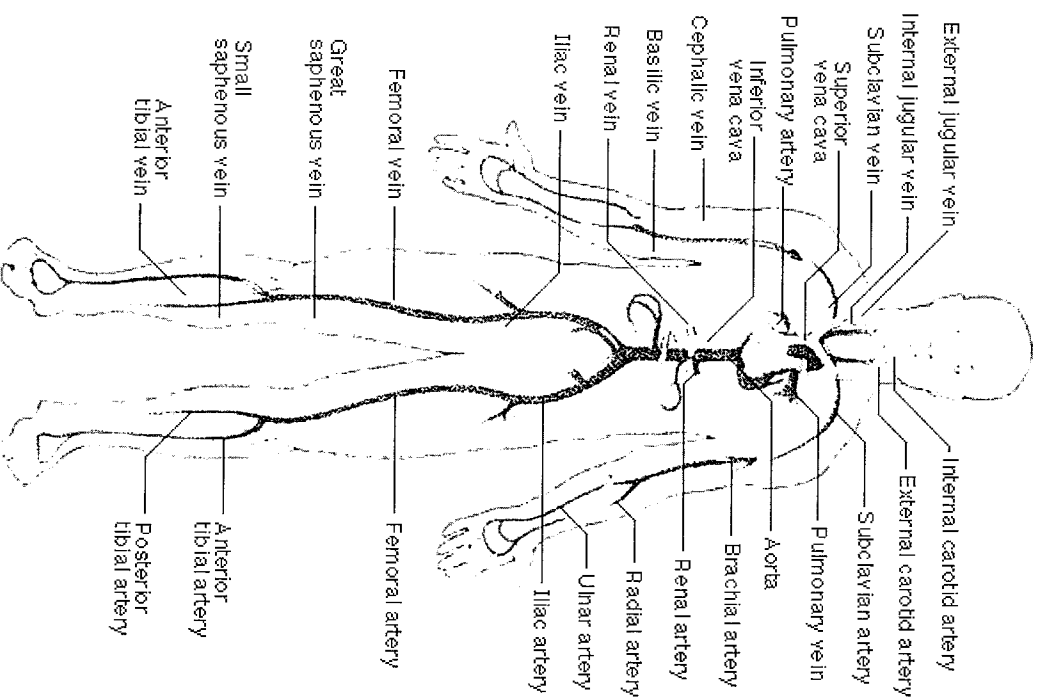
The Heart



- The heart is a hollow, muscular pump which pumps blood through the body.
- It usually beats 60-100 times a minute, and about 2.5 billion times in a 70-year lifetime.

The Cardiovascular System

Blood Vessels



- Each day, 2,000 gallons of blood travel many times through about 60,000 miles of blood vessels.
- These vessels carry blood to the cells of our organs and other body parts.

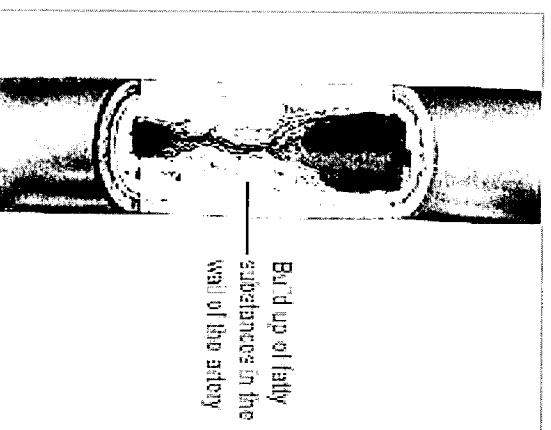
Incidence of Cardiovascular Disease

- The No. 1 worldwide killer of men and women, including in the United States.
- Responsible for 40 percent of all the deaths in the United States, more than all forms of cancer combined.

Cardiovascular disease is the leading cause of death in the United States, responsible for 40 percent of all deaths. In the United States, more than all forms of cancer combined, cardiovascular disease is the leading cause of death. In the United States, more than all forms of cancer combined, cardiovascular disease is the leading cause of death.

Causes of Cardiovascular Disease

Arteries become narrowed and blood flow decreases in arteriosclerosis



ADAM.

- Cardiovascular disease can refer to many different types of heart or blood vessel problems, but is used most often to describe damage done to your heart and blood vessels by ***atherosclerosis***.

Causes of Cardiovascular Disease

- **Atherosclerosis** affects the arteries in the body. There is an increase in arterial pressure with the walls becoming thick and stiff. This process eventually can restrict blood flow to your organs and tissues.
- There are some forms of cardiovascular disease that are not caused by atherosclerosis. Some of these are congenital heart disease, heart valve diseases, heart infections, or disease of the heart muscle called cardiomyopathy.

Causes of Cardiovascular Disease

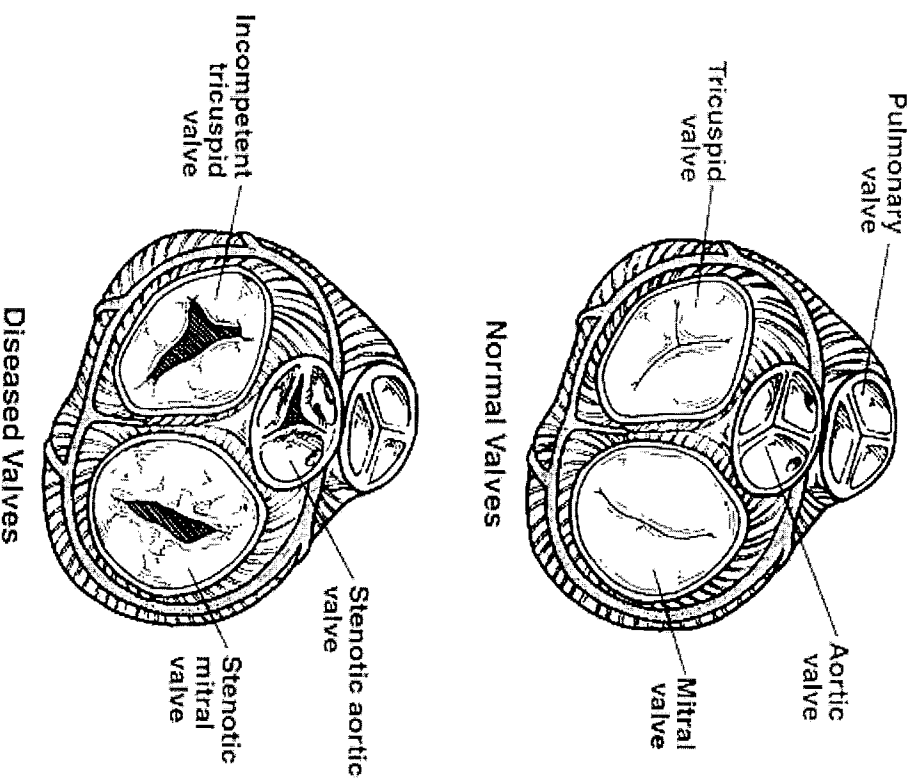
- Unhealthy diet (lots of saturated fat)
- Elevated blood pressure
- Physical inactivity
- Diabetes
- Tobacco
- Overweight and obesity
- Elevated lipid levels
- Socioeconomic status

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Types of Cardiovascular Disease

- Coronary Heart Disease
- Stroke
- Hypertensive Heart Disease
- Hyperlipidemia
- Rheumatic Heart Disease
- Congenital Heart Disease
- Peripheral Arterial Disease
- Aortic Aneurysm and Dissection

Types of Cardiovascular Disease



The diseased valves shown will allow blood to return to the heart chamber it has just come from. The severity of the dysfunction will determine the severity of symptoms.

Symptoms of Cardiovascular Disease

Since there are so many different types of cardiovascular diseases, there can also be many symptoms. These symptoms come from a change in how the blood is flowing to a particular area of the body. If there is an interruption in blood flow to the heart the symptoms may be chest or shoulder pain, shortness of breath, a feeling of impending doom, etc. The severity of the symptoms would be related to how severely compromised the blood flow is.

Symptoms of Cardiovascular Disease

- If there is decreased blood flow to an arm or leg there may be severe pain, a change in the color of that extremity, and/or a diminished or lacking pulse.
- If a person has high blood pressure they may or may not have a headache.
- With a transient ischemic attack or TIA an individual may be lightheaded, develop weakness on one side of the body, a facial droop, or difficulty speaking.
- **The symptoms that develop will depend on where the interruption in blood flow is.**

Diagnosing Cardiovascular Disease

- There are many things that your health care provider can do to see if you have cardiovascular disease. Some of these things include:
 - A thorough physical assessment, along with an evaluation of blood pressure, pulse, and heart and lung sounds.
 - Diagnostic tests such as: chest X-ray, electrocardiogram, echocardiogram, stress test, coronary catheterization, CT scan, MRI, coronary angiography, venography, and ankle-brachial index.
- There are also a variety of blood tests that can be done.

Diagnosing Cardiovascular Disease

- This is a picture of an X-ray done during a coronary angiography. It shows the coronary arteries of the heart.



Treatment of Cardiovascular Disease

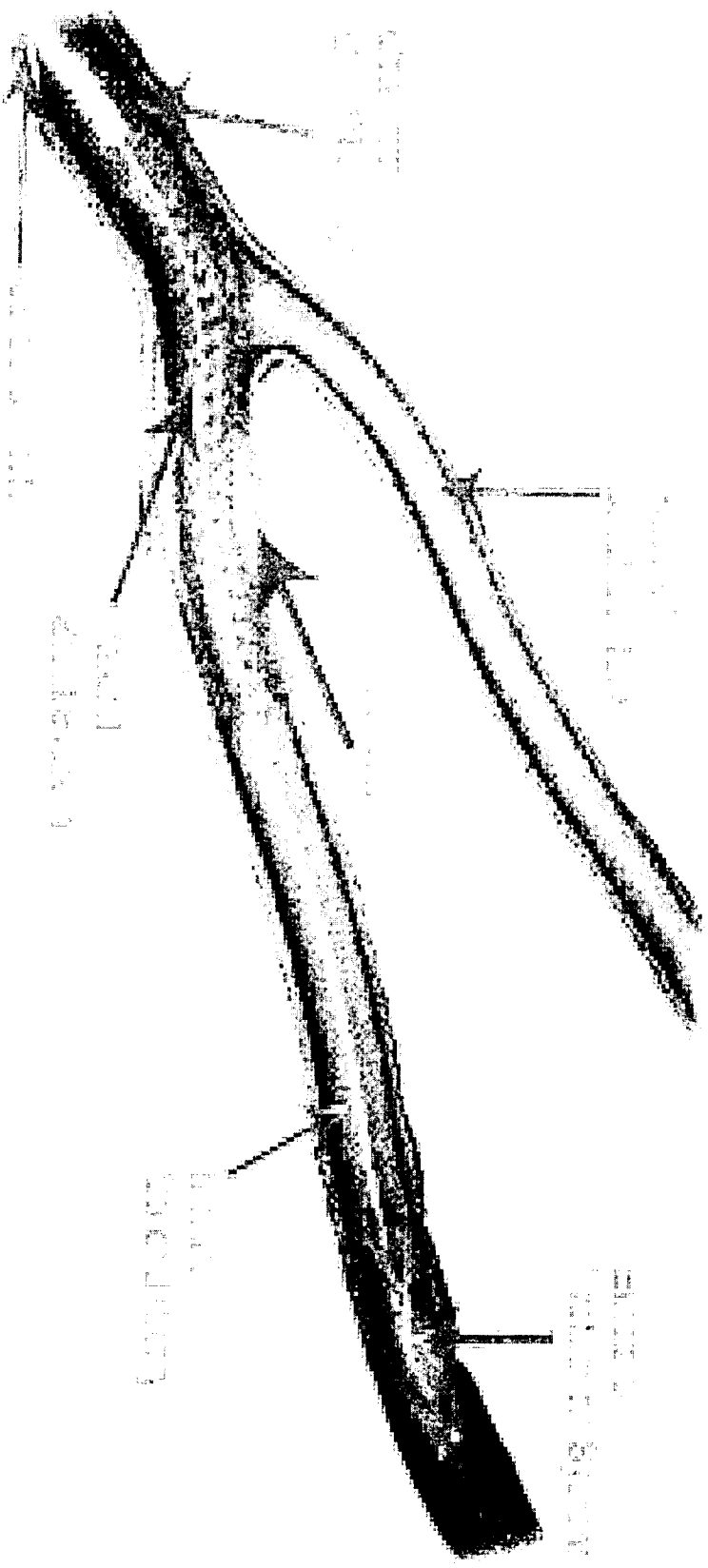
- Medications are often used to treat cardiovascular diseases. The drug chosen depends on the condition the individual has. Some medication groups that are used are:
 - Angiotensin 2 receptor blockers
 - Angiotensin-converting enzyme (ACE) inhibitors
 - Beta blockers
 - Cholesterol-modifying medications
 - Blood thinners
 - Vasodilators
 - Calcium channel blockers
 - Diuretics

Treatment of Cardiovascular Disease

- Sometimes more aggressive treatment is indicated and surgery is needed. Some of these surgeries are:
 - Angioplasty and stent placement
 - Coronary artery bypass surgery
 - Carotid Endarterectomy
 - Rhythm disorder surgery
 - Aneurysm Surgery
 - Embolectomy
 - Thromboaspiration
- In life threatening cases there are additional treatments and surgeries that may be indicated.

Treatment of Cardiovascular Disease

Carotid Artery Stent



Lifestyle Changes and Cardiovascular Disease

We cannot change our genetics, but we can change our lifestyle! There are new habits that can be developed that will promote cardiovascular health. Some of these lifestyle changes are:

- Quit smoking.
- Eat healthy foods.
- Exercise regularly if you are able.
- Lose excess weight.
- Reduce stress, and find positive ways to deal with the stress that you have.

Lifestyle Changes and Cardiovascular Disease

- Get regular check ups with your health professional.
- Learn more about the good fats and eat more of them.
- Find creative things to do as a family that do not involve food.

Understanding Cardiovascular Disease

- Continue to learn about the human body and how to care for it. This will enable you to care for yourself and others.
- Ask questions of your health care provider. You are the most important part of the healthcare team and you need to understand what the problem is and what the plan is to resolve or manage it.

References

- [Arterial Embolism - Symptoms, Diagnosis, Treatment of Arterial Embolism - NY Times Health Information](#)
- [Cardiovascular disease 101: Understanding heart and blood vessel conditions - MayoClinic.com](#)
- [WHO | Cardiovascular diseases](#)
- [WHO | The Atlas of Heart Disease and Stroke](#)