

S P R I N G 2 0 1 1

The American Heart Association Walk at SUNY Oneonta



Brought to you by Rebecca Capek, Intern at the
Athletic Trainers Office at SUNY Oneonta

All about the heart and how it works.

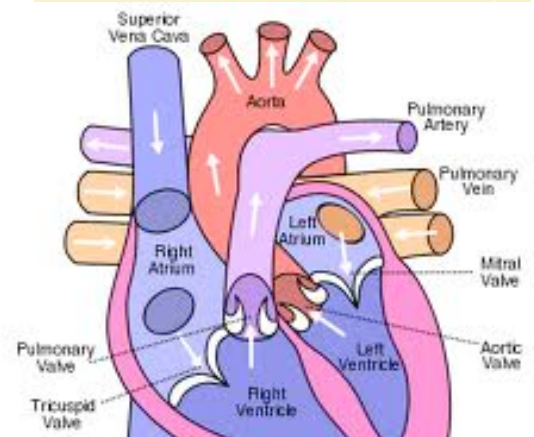
Your heart is really a muscle. It's located a little to the left of the middle of your chest, and it's about the size of your fist. The heart muscle is special because of what it does. The heart sends blood around your body. The blood provides your body with the oxygen and nutrients it needs. It also carries away waste. Your heart is sort of like a pump, or two pumps in one. The right side of your heart receives blood from the body and pumps it to the lungs. The left side of the heart does the exact opposite: It receives blood from the lungs and pumps it out to the body.

Sections of the heart

Blood is pushed from the atrium into the ventricle on each side of the heart. Between them, small valves open and shut. The right side of the heart gets the blood after it has taken oxygen round the body and sends it back to the lungs for some more oxygen. The left side of the heart gets the blood from the lungs where it has collected oxygen.

The Beat

Before each beat, your heart fills with blood. Then its muscle contracts to squirt the blood along. When the heart contracts, it squeezes — try squeezing your hand into a fist. That's sort of like what your heart does so it can squirt out the blood. Your heart does this all day and all night, all the time. The heart is one hard worker!



Saturated Fat

Monounsaturated Fat

Polyunsaturated Fat

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Definitions to know

Trans Fat

Trans fats (or *trans* fatty acids) are created in an industrial process that adds hydrogen to liquid vegetable oils to make them more solid. Another name for *trans* fats is “partially hydrogenated oils.” Look for them on the ingredient list on food packages. *Trans* fats raise your bad (LDL) cholesterol levels and lower your good (HDL) cholesterol levels. Companies like using *trans* fats in their foods because they’re easy to use, inexpensive to produce and last a long time. *Trans* fats give foods a desirable taste and texture. Many restaurants and fast-food outlets use *trans* fats to deep-fry foods because oils with *trans* fats can be used many times in commercial fryers. Eating *trans* fats increases your risk of developing heart disease and stroke. It’s also associated with a higher risk of developing type 2 diabetes. *Trans* fats can be found in many foods – but especially in fried foods like French fries and doughnuts, and baked goods including pastries, piecrusts, biscuits, pizza dough, cookies, crackers, and stick margarines and shortenings. You can determine the amount of *trans* fats in a particular packaged food by looking at the [Nutrition Facts panel](#). You can also spot *trans* fats by reading ingredient lists and looking for the ingredients referred to as “partially hydrogenated oils.”

Triglycerides

Triglycerides are the chemical form in which most fat exists in food as well as in the body. They're also present in blood plasma and, in association with cholesterol, form the plasma lipids. Triglycerides in plasma are derived from fats eaten in foods or made in the body from other energy sources like carbohydrates. Calories ingested in a meal and not used immediately by tissues are converted to triglycerides and transported to fat cells to be stored. Hormones regulate the release of triglycerides from fat tissue so they meet the body's needs for energy between meals.

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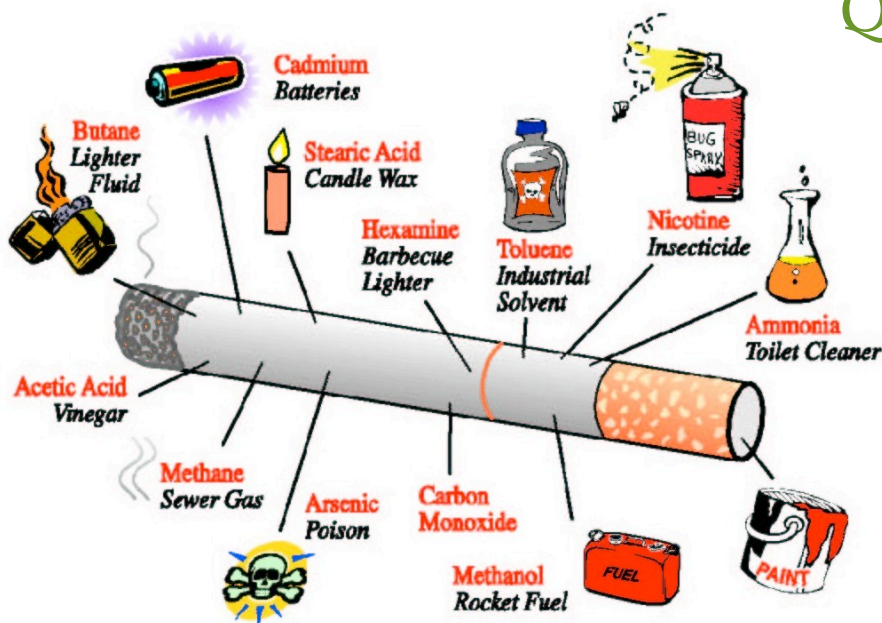


THESE ARE TRANS-FAT FREE, RIGHT?

Quitting Smoking

Reduce your risks

Smoking is the most important preventable cause of premature death in the United States. Smokers have a higher risk of developing many chronic disorders, including atherosclerosis — the buildup of fatty substances in the arteries — which can lead to coronary heart disease, heart attack (myocardial infarction) and stroke. Controlling or reversing atherosclerosis is an important part of preventing future heart attack or stroke.



You can modify or control six major independent risk factors for coronary heart disease:

- Cigarette and tobacco smoke
- High blood cholesterol
- High blood pressure
- Physical inactivity
- Overweight or obesity
- Diabetes

Start the Healing process

If you already have heart disease, you may think, "What good will it do me to quit smoking now?" But don't be discouraged. Your lungs can begin to heal themselves as soon as you stop harming them with more smoke. Heart disease can be prevented and controlled, but you must follow your treatment plan — and quitting smoking is a big part.

Health Problems

Here's why. Factors like high blood pressure can stretch out the arteries and cause scarring. Bad cholesterol, called LDL, often gets lodged in the scar tissue and combines with white blood cells to form clots. The good cholesterol, called HDL, helps keep the LDL from sticking and building up.



Heart Diseases: Hypertension

Hypertension refers to a chronic elevation in blood pressure. A measurement of blood pressure is expressed using the reading for systolic pressure as the first (higher) number and the reading for diastolic pressure as the second (lower number). Hypertension is important, not only because it affects so many Americans, but because it often also goes undiagnosed in its early stages. It is frequently referred to as the “silent killer” because there are typically no symptoms. Hypertension can cause congestive heart failure, kidney failure, myocardial infarction, stroke, and aneurysms if left unattended.

Type of hypertension

There are two types of hypertension. Primary or essential hypertension where there is no known cause and accounts for 90% of all cases. It may be a result of lifestyle factors such as diet, lack of exercise, smoking, stress, and obesity.

Secondary hypertension occurs as a result of another primary problem such as renal disease, other cardiovascular disease, endocrine disorders or neurogenic disorders.

Treatment

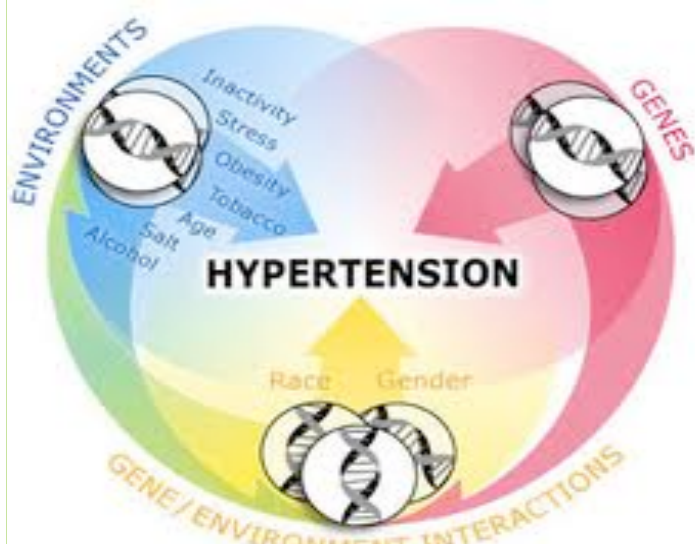
The treatment goals of hypertension include the reduction in the risk of cardiovascular and renal disease and the reduction of blood pressure to less than 140/80 mmHg. This can be achieved through weight reduction, physical activity, nutrition therapy, and pharmacological interventions.

Nutrition Therapy for Hypertension

Nutrition treatment of hypertension includes both lifestyle modifications and nutrition therapy. Increase physical activity, smoking cessation, and weight loss, as well as reduction of sodium and alcohol intakes are primary strategies.

The DASH diet or the Dietary Approaches to Stop Hypertension is used to help with hypertension. This diet is used to reduce sodium intake, but also increase potassium, magnesium, calcium, and fiber intakes within a moderate energy intake. Potassium, calcium, and magnesium have all positively correlated with reduction of blood pressure and treatment of hypertension.

For physical activity, 30 minutes per day does decrease blood pressure 4-9mmhg.



Categories	Systolic BP (mmHg)	Diastolic BP (mmHg)
Normal	<120	<80
Prehypertension	120-139	80-89
Hypertension, Stage 1	140-159	90-99
Hypertension Stage 2	>160	>100

Heart Diseases: Atherosclerosis

Atherosclerosis is a disease characterized by the deposition of fatty substances called plaque, in the walls of medium and large arteries.

Depending on which arteries are affected it can lead to leg pain, cardiovascular disease, and heart attack, or stroke. It is the main cause of death in developed countries. The disease often starts in childhood and the arteries become clogged over many years, initially without symptoms.

Risk Factors

These risk factors for atherosclerosis are known:

- Having high concentrations of LDL (bad cholesterol) or of triglycerides and low concentrations of HDL (good cholesterol). HDL particles transport cholesterol from the tissues back to the liver
- Aging and being male
- Having close relatives who had heart disease or a stroke at a relatively young age
- High blood pressure
- Having diabetes
- Tobacco smoking
- Having trouble managing stress
- Being obese
- Being physically inactive

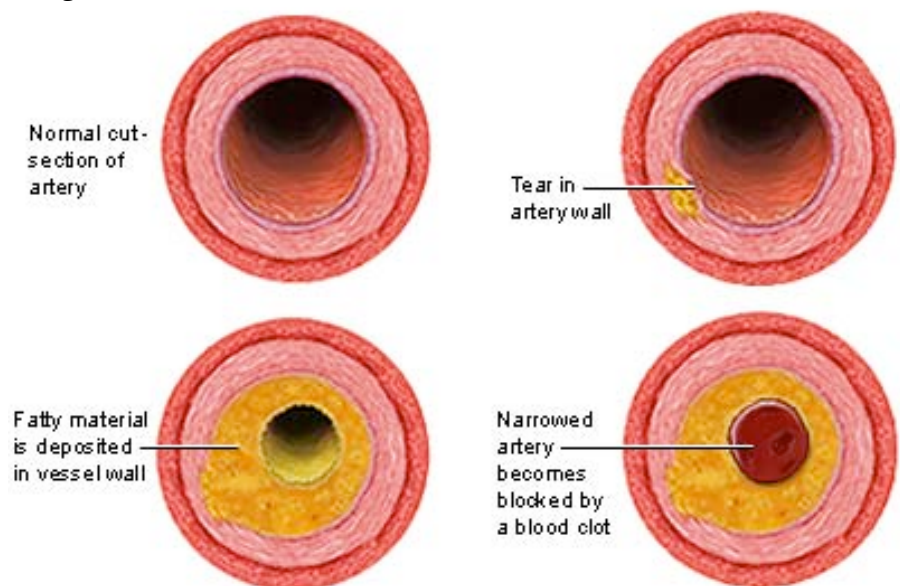
Mechanism of Disease

High blood pressure, cholesterol, smoking, diabetes, sedentary life style and age are all risk factors. These risk factors conspire to cause tears in the lining of arteries, which result in fatty deposits, inflammation and ultimately narrowing of the afflicted arteries. High blood pressure provides the shear force to produce tears in the fragile lining of the arteries.

Cholesterol migrates into these torn sections when LDL concentrations are high

Treatment

If atherosclerosis leads to symptoms like angina, it can be medically treated. Other treatments include angioplasty, a procedure to open up clogged arteries, surgery such as a bypass. High blood pressure, diabetes, or high cholesterol can be treated as well. Lowering blood cholesterol can slow; stop, or even reverse the buildup of plaque. Cholesterol lowering can reduce the cholesterol content in unstable plaques to make them more stable and less prone to rupture.

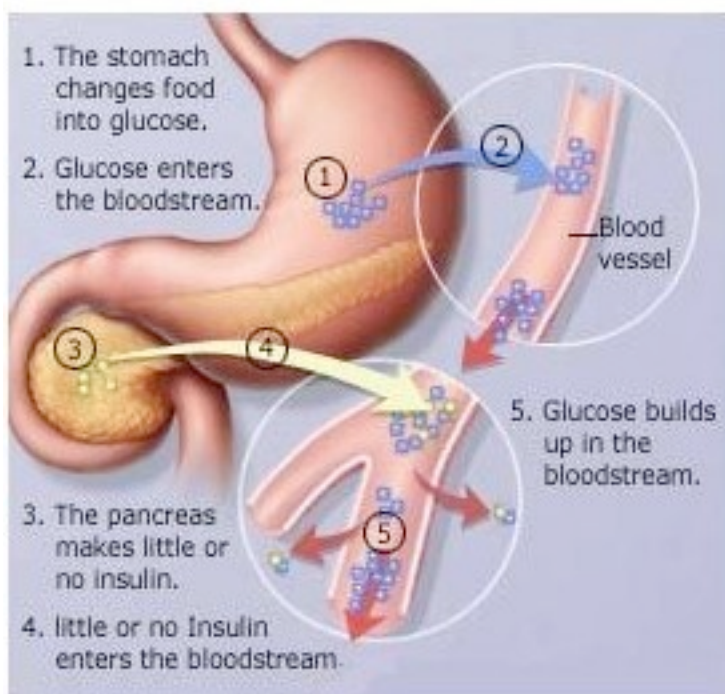


Diabetes and Heart Disease

Everybody has some amount of sugar, or glucose, in his or her blood. We couldn't live without it! Glucose comes from the food we eat. Nearly everything we eat gets broken down into glucose. It helps cells to grow and get the power they need to do their job.

Most people's bodies do an amazingly good job of controlling the amount of glucose in their blood. One of the body's organs, called the pancreas, makes a very important substance called insulin. Insulin does most of the work in moving glucose out of the blood to where it's needed in the rest of the body's cells. In a person who doesn't have diabetes, the pancreas produces just the right amount of insulin needed by the body.

But when someone has the disorder called diabetes, his or her body has trouble controlling the level of glucose in its blood. Either the person's pancreas can't make insulin, or can't make *enough* insulin, or their body has a problem using the insulin it does make.



Your Risk in General

People with Diabetes are

- 2 to 4 times more likely to get heart disease
- 5 times more likely to have a stroke than those without diabetes
- At risk for cardiovascular disease, which causes more than half of the deaths in older people with diabetes

Complications

Most of the cardiovascular complications related to diabetes have to do with a blockage or slowdown of blood flow throughout the body. Diabetes can change the chemical makeup of some of the substances found in the blood, and this can cause the openings in the blood vessels to narrow or clog up completely. This is called atherosclerosis, or hardening of the arteries, and diabetes seems to speed it up

Prevention

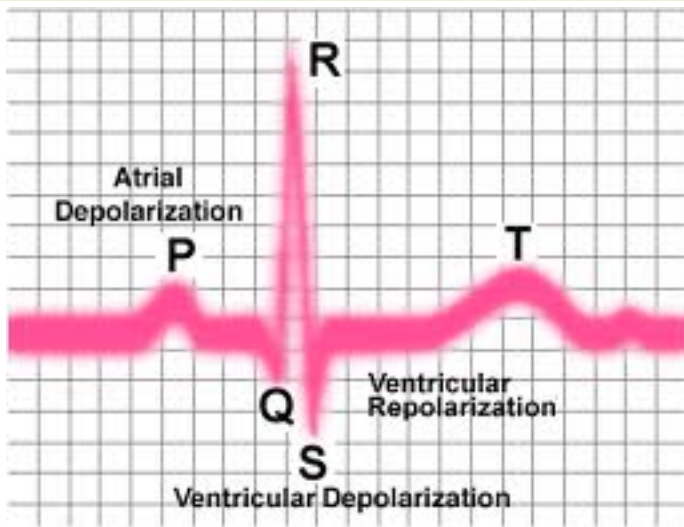
There are six things you can do to prevent cardiovascular disease:

- Stop smoking
- Lower your cholesterol levels
- Lower high blood pressure
- Lower high blood glucose levels
- Exercise
- Ask your provider if taking aspirin will benefit you

All of these actions will help keep your large blood vessels open for blood flow to all your vital organs, and will lower your risk for developing cardiovascular disease dramatically.

Treatment

Some treatments include a low fat diet that is rich in fiber, medications to reduce blood clotting and lower cholesterol, or surgery to remove a blockage to increase the amount of oxygen in the blood system.



ECG/EKG

What is it?

Electrocardiograph, or ECG or EKG, is a transthoracic interpretation of the electrical activity of the heart over time, capture and externally recorded by skin electrodes. An EKG measures the electrical beats of the heart and prints that information out on strips of graph paper. This will then give doctors information about the rhythm of the heartbeat, the size of the chambers, and the amount of blood going to the heart muscle itself. Testing is done using 10 stickers that are placed on your chest, arms, and legs

Heart Issues that can be found

- Enlarged Swollen heart – might be caused by heart defects, high blood pressure, or congestive heart failure, when the heart cant pump all the blood from the heart to the rest of the body
- Ischemia – when not enough oxygen rich blood can get to the heart because of a clog in an artery
- Problems with “conduction” or how the electrical impulses run through the heart, which can make the heart beat too fast, too slow, or at an uneven rate
- Disease or problems in one or more of the heart valves, which may block the flow of blood within the heart

What do the numbers mean?

A normal reading has a heart rate of 60 - 100 beats per minute and the heart rhythm is consistent and even.

When the heart works properly, it's like a well-oiled machine, but when the electrical activity is impaired by drugs, illness, disease, aging or trauma, the result is dropped, blocked or misfired signals that cause the heart to behave erratically, or not at all. The causes of an abnormal EKG usually require medical intervention, but not always.

An abnormal EKG is determined by comparing the results of your EKG graph with a standard or normal heart graph. Spikes and dips within the graph are referred to as P, QR and PR and other similar acronyms. Normal EKG readings show a slight flat-dip in between contractions and relaxations. If these flat-dips are not present, it may be an indication of a more serious problem. Normal EKG readings will have spikes and dips too.

Myocardial defects, heart valve disease, enlargement of the heart, inflammation of the heart, coronary artery disease, and past, pending or impending heart attacks are only a few of the problems that EKG's can

National Start Walking Day is April 6th.

Heart disease is this country's No.1 killer. But by exercising for as little as 30 minutes each day you can reduce your risk. That's what the Start! Movement is all about: Walk more. Eat better. Live a longer, healthier life. Countless people across the country are jumping on board. Join them in the Start! Movement, get walking and start taking a more active role in your health!

You can go online to www.startwalkingnow.org to find local walking paths, tracking your progress, and different motivators

Resources for the information found in this packet was found and extracted from:

American Heart Association. 2011. March 2011
<<http://www.heart.org/HEARTORG/>>.

American Diabetes Association Complege Guide to Diabetes. 4th Edition. 2005.

Nelms, Marcia, et al. Nutrition Therapy & Pathophysiology. Vol. 2. Belmont: Wadsworth Cengage Learning, 2010.

March is National Nutrition Month. Look for the American Heart Association's heart check mark when grocery shopping. It is your assurance that the food is low in saturated fat and cholesterol.



[GO RED FOR WOMEN

In 2004, the American Heart Association (AHA) faced a challenge. Cardiovascular disease claimed the lives of nearly 500,000 American women each year, yet women were not paying attention. In fact, many even dismissed it as an "older man's disease." To dispel the myths and raise awareness of heart disease as the number one killer of women, the American Heart Association created *Go Red For Women* – a passionate, emotional, social initiative designed to empower women to take charge of their heart health.