Cardiac Rehabilitation
Cardiac Rehabilitation

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Talk to your doctor or health care team if you have any questions about your care.

For more health information, contact the Library for Health Information at 614-293-3707 or e-mail health-info@osu.edu.
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Cardiac Rehabilitation

Recovering your health and reducing your risk of future heart problems

Ohio State’s Cardiac Rehabilitation Program guides you and your family through recovery after a heart-related event. Cardiac rehab reduces your risk of heart problems happening again. It also helps you regain your independence.

While the core of cardiac rehab is exercise, the program also targets nutrition and diet, weight, management of cholesterol and triglycerides, blood pressure, diabetes, smoking/tobacco cessation, and stress. The program starts during your hospital stay and continues on an outpatient basis after your return home.

Your cardiac rehab team understands that it can be hard to return to an active life and living with a chronic heart problem after being in the hospital. We offer classes, counseling, and encouragement to help you. Cardiac rehab is a positive environment to learn, try new health behaviors, have fun, and get better.
All About the Heart

Your heart is a muscle. It is slightly larger than your fist and weighs less than a pound. It is located to the left of the middle of your chest. Your heart pumps blood to the lungs and to all parts of your body. The blood provides your body with oxygen and nutrients. It also carries away waste.

**Structures of the heart**

**Layers**

Your heart muscle has three layers:

- **Myocardium**: This thickest layer is also the middle layer
- **Pericardium**: This outside layer surrounds the myocardium
- **Endocardium**: This thin layer lines the inside of the myocardium

**Chambers**

The normal heart has four chambers. A wall divides the heart into a right side and a left side. Each side of the heart is divided into two chambers.

The upper chamber is called the atrium and the lower chamber is called the ventricle. These chambers are separated by valves that open and close.
Valves
The valves allow blood to flow only in one direction. Valves direct the flow of blood through the heart, to the lungs and to the rest of the body. There are four valves:

- **Tricuspid**: Located between the right atrium and ventricle
- **Pulmonic**: Located between the right ventricle and lungs
- **Mitral**: Located between the left atrium and ventricle
- **Aortic**: Located between the left ventricle and the rest of the body

Blood vessels
Blood vessels carry blood to and away from the heart. Vessels that carry blood from the heart to the body are called **arteries**. Vessels that carry blood from the body back to the heart are called **veins**.

Blood flow through the heart
Your heart acts as a double pump:

- The right side pumps blood to your lungs, where the blood picks up oxygen and then returns it to the left side of the heart.
- The left ventricle then pumps blood out to your body through the large artery, called the aorta.
- Oxygen is removed from your blood by the cells, so it can be used by your body.
- The blood then returns to the right side of the heart through your veins. The right side of the heart once again pumps your blood to the lungs where oxygen is picked up.
- This process occurs with each heartbeat.
Each heartbeat has two phases:
- The resting phase is called **diastole**. During diastole, blood from the atria fills the ventricles.
- Then the ventricles pump blood to your body or lungs. This pumping phase is called **systole**.

Systole and diastole are shown in your blood pressure numbers. Systole is the top number and diastole, the bottom, as in 120/80.

The work of the heart changes with your body’s needs. For example, when you exercise, your body needs more blood and oxygen. Your heart pumps harder and faster to deliver more blood to the body. When you sleep, less blood and oxygen is needed and your heart slows down.

### The heart’s conduction system

Your heart has a normal conduction or electrical system that stimulates the heart muscle to beat. Electrical impulses travel in a normal fashion from the upper chambers to the lower chambers over this conduction system. This diagram shows how the impulse travels over the conduction system.

1. Normal heartbeats begin at the **SA node** that acts as the heart’s “pacemaker.” The SA node is also called the **sinus node**.
2. The electrical impulse spreads across the right and left atria.
3. The impulse travels through the **AV node** to the **Bundle of HIS**.
4. The Bundle of HIS divides into a **left and a right bundle branch**. The impulse spreads through these bundle branches into the **Purkinje** (pür-kin’jē) **fibers** in the ventricles.
Blood supply of the heart (coronary arteries)

The heart muscle itself must receive a constant supply of oxygen. Oxygen is carried in the blood through the coronary arteries. Two main coronary arteries, a right and a left, supply the heart muscle with blood. These arteries are located on the surface of the heart. They divide into many smaller branches that go into the heart muscle. All parts of the heart muscle are supplied with oxygen-rich blood through these small arteries.

Here is how these arteries wrap around from the front to the back of the heart:
In summary

• Your heart pumps blood and oxygen to all parts of your body. With exercise and activity, your body and heart need more blood and oxygen.
• Your heart has valves that direct the flow of blood through the heart, to the lungs, and the rest of your body.
• Your heart has a normal conduction or electrical system that stimulates the heart muscle to beat.
• Your heart muscle itself must receive a constant supply of oxygen.
Heart Problems and Treatments

A healthy heart

Your heart’s main functions are to receive used blood from your body and pump fresh oxygen rich blood to nourish your body. To do this well:

- The heart muscle itself needs a good blood supply.
- The heart must be able to fill with blood and have a strong pumping action.
- The heart valves must be working right.
- The heartbeat should be regular.

Problems with the heart’s blood supply

Atherosclerosis

Atherosclerosis is a build up of fatty deposits inside the wall of arteries. The arteries in the body supply oxygen and nutrient rich blood to the muscles.

When you have too much LDL, or “bad cholesterol”, the LDL gets stuck in the inner wall of the artery. This forms fatty streaks. A plaque, or firm cap, grows over the fatty streak. This buildup of plaque narrows the artery opening and decreases blood flow to the muscle.

When blood flow is decreased in the arteries to the heart, it is called coronary artery disease (CAD). This can cause angina, shortness of breath, or even a heart attack to occur.

Angina

Angina is a pain or discomfort in the chest, arms, or jaw. It often occurs during exercise, stress, or other activities when your heart rate and blood pressure increase. With these activities, the heart muscle needs more blood with oxygen. The pain is a signal that not enough blood is getting through the arteries.

Angina is often brief, lasting a few minutes, and is relieved by rest and/or nitroglycerin. **Angina is not a heart attack.** During angina, the flow of blood to the heart muscle is only reduced temporarily.

Myocardial infarction (MI or heart attack)

A heart attack results from a lack of blood to a part of the heart muscle. This occurs when a blood clot forms in the narrowed artery, and the artery becomes blocked. A blood clot forms when there is a crack in the plaque. A heart attack causes part of the heart muscle to be permanently damaged.

Soon after a heart attack the healing process begins.

- In the first week after a heart attack, dead muscle cells are removed by the body’s white blood cells. There may be a slight fever during this time. The heart muscle becomes thin in that area and may be at risk for more damage.
- After the dead muscle cells are removed, a scar forms in the damaged area of the heart muscle. This scar is formed in the first few weeks, but it takes about 4 to 6 weeks for the scar to become firm and tough.

Recovery from a heart attack begins in the hospital and continues after you go home. Most people are able to return to normal activities, including work, within 6 to 12 weeks after a heart attack. **Daily periods of rest during the first 4 to 6 weeks after a heart attack help prevent complications** and allow healing to take place.

Healing times vary and complete healing from your heart attack often takes 2 to 3 months. Scarred tissue does not help the pumping action of the heart. Therefore, the undamaged part of your heart muscle must work as well as possible.

The rest of the muscles in your body need to become efficient as well.
Coronary artery disease (CAD)

One way to prevent problems is to **know the warning signs of coronary artery disease** and to take action. Knowing the difference between angina and heart attack pain is important, so you do not delay getting help.

<table>
<thead>
<tr>
<th></th>
<th>Angina</th>
<th>Heart Attack</th>
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<tbody>
<tr>
<td><strong>Cause</strong></td>
<td>Temporary lack of blood supply to the heart muscle.</td>
<td>Prolonged lack of blood supply to the heart muscle. Permanent damage results.</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Pain behind breastbone, which spreads across chest. May go to shoulder, arms, neck, or stomach.</td>
<td>Pain is located in the same areas as angina.</td>
</tr>
<tr>
<td><strong>Type of Pain</strong></td>
<td>Pressure, crushing, aching, choking, squeezing, burning, or feeling of heartburn.</td>
<td>Same type of pain as angina, but more intense.</td>
</tr>
<tr>
<td><strong>How long does it last?</strong></td>
<td>Brief, gone within 15 minutes.</td>
<td>Lasts longer than 15 minutes.</td>
</tr>
<tr>
<td><strong>What triggers the pain?</strong></td>
<td>Angina is related to conditions that require your heart to do more work, such as exposure to extreme temperatures, exercise, etc.</td>
<td>Not related to conditions that require the heart to do more work. May occur at rest.</td>
</tr>
<tr>
<td><strong>Relief of Pain</strong></td>
<td>Rest and nitroglycerin.</td>
<td>Only temporary relief with rest and nitroglycerin.</td>
</tr>
<tr>
<td><strong>Other Signs</strong></td>
<td>Mild sweating and shortness of breath.</td>
<td>Severe sweating, shortness of breath, profound weakness, nausea, anxiety, vomiting, and dizziness.</td>
</tr>
<tr>
<td><strong>Actions to Take</strong></td>
<td><strong>1. Stop. Rest.</strong></td>
<td>1. Sit or lie down, propped up if breathing is difficult.</td>
</tr>
<tr>
<td></td>
<td><strong>2. Put 1 nitroglycerin under your tongue every 3 to 5 minutes to a total of 3 tablets over 15 minutes.</strong></td>
<td><strong>2. Call 911.</strong> Do not drive to the hospital or delay by calling your doctor.</td>
</tr>
<tr>
<td></td>
<td><strong>3. If pain is relieved, call your doctor.</strong></td>
<td><strong>3. You may take 1 nitroglycerin under your tongue every 3 to 5 minutes up to a total of 3 tablets over 15 minutes</strong></td>
</tr>
<tr>
<td></td>
<td><strong>4. If pain is not relieved after 3 tablets, call 911 right away.</strong></td>
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No two people have the same signs. People with diabetes may not experience pain due to nerve damage, called neuropathy. Women may have “atypical” signs, such as back pain, unusual fatigue, or shortness of breath. **Recognize and know your signs of angina!**
• **Diagnosing CAD:**

Your doctor may find you have CAD by:

- Changes on an electrocardiogram (EKG or ECG)
- Changes during a stress test
- Doing a cardiac catheterization

A cardiac catheterization is the most accurate way to see if you have coronary artery disease, and if so, how much. A doctor uses a catheter to inject dye to check the chambers, valves, and arteries of the heart. A cardiac MRI may also be done to get images of your heart.

• **Treatment of CAD:**

There are three types of treatment for CAD:

- Medical therapy
- Catheter treatments or repair of artery using a catheter
- Coronary artery bypass surgery

The type of treatment depends on the coronary artery disease a person has. All of these treatments improve blood flow to the heart muscle and decrease the risk of a heart attack. No matter what type of treatment is done, it does not cure coronary artery disease. Treatments must be combined with lifestyle changes to reduce your coronary risk factors for long term success.

**Medical therapy:**

Treatment with medicines is done to decrease the heart’s demand for oxygen and nutrients. Medicines can increase blood flow to the heart muscle by relaxing the coronary arteries, decreasing the heart rate, and decreasing the blood pressure. Medical therapy is often used first or sometimes as a temporary treatment until angioplasty or bypass surgery is done. Common types of medicines used are nitroglycerin, beta blockers, and calcium antagonists. If medical therapy fails, angioplasty or surgery is often the next step.

**Heart catheter treatments (angioplasty):**

These treatments are done to decrease the amount of blockage in the coronary arteries. All of the treatments are done by passing a small tube, called a catheter, into one of the arteries in the leg, up to the heart, and into the coronary artery. **Balloon angioplasty** “cracks” the blockage and pushes it to the side of the wall. Often a **stent**, a small metal tube, is placed at the site to help prevent the blockage from returning. Most of the stents contain medicine that helps to prevent blockage from returning. Sometimes a laser and roto blader is used to decrease the amount of blockage.
Coronary artery bypass surgery:
Coronary artery bypass surgery is done to improve the blood flow to the heart muscle by bypassing the blockages. Surgery should decrease or stop your angina. Bypass surgery is not a cure for heart disease, but it should improve the quality of your life.

During bypass surgery, a blood vessel from your leg or chest wall is used to bypass the blockage in your coronary artery. Most often, one end of the blood vessel is sewn into the coronary artery below the blockage. The blockage remains, but blood is directed around it. This surgery gives the heart muscle a new supply of oxygen and nutrient rich blood.

After your heart surgery, you may have some chest pain. This pain is from the incision in your chest, and it does not often radiate to your arms or jaw. The pain does not go away with rest and gets worse if you push the chest on or near the incision. This pain can be relieved with pain medicines. With time, pain from the surgery goes away.
Problems with the heart’s pumping action

Heart failure

Heart failure means that your heart does not pump as strongly as it should. The blood that should pump forward backs up into your lungs and other parts of your body. It does not mean your heart has stopped.

There are two types of heart failure: left-sided heart failure and right-sided heart failure. They can often occur together.

- **Left-sided heart failure:**
  Signs include:
  ‣ Shortness of breath, called dyspnea, especially when you exert yourself
  ‣ Problems breathing when lying down flat
  ‣ Waking up coughing

- **Right-sided heart failure:**
  Signs include:
  ‣ Swelling, called edema, in your ankles and feet
  ‣ Liver problems
  ‣ Swelling of the abdomen, called ascites
  ‣ Loss of appetite

[Diagrams of left-sided and right-sided heart failure]
• **What causes heart failure?**
  Heart failure often happens when a medical condition makes the heart weak. Coronary artery disease that causes heart blockage is a common cause. Other conditions that can lead to congestive heart failure include:
  ‣ Heart attack
  ‣ High blood pressure
  ‣ Lung disease
  ‣ Infection of the heart muscle
  ‣ Problems with the heart’s valves
  ‣ Alcohol, smoking, and substance abuse

• **What can be done to control heart failure?**
  ‣ Take the medicines ordered by your doctor.
  ‣ Reduce the amount of salt in your diet.
  ‣ Get enough rest. When you can, put your feet up to reduce ankle swelling.
  ‣ Plan your activities. Know your limits. Ask your doctor about exercise.
  ‣ Stop smoking.
  ‣ Get your weight within normal range. Weigh yourself every day.
  ‣ Avoid alcohol.

• **When to call your doctor**
  Call your doctor if you have one or more of these symptoms:
  ‣ Problems with breathing
  ‣ Tightness or pain in your chest
  ‣ Feel more tired
  ‣ Coughing at night
  ‣ Need to prop yourself up straight to sleep comfortably
  ‣ Weight gain of 2 pounds or more in a day or 5 pounds in a week
  ‣ Feel dizzy or faint
  ‣ Urinate less often
  ‣ Feet or ankles swell more than usual (shoes may feel tight)
Cardiomyopathy

Cardiomyopathy means **heart** (cardio) **muscle** (myo) **disease** (pathy). This disease changes the heart muscle and weakens it. The weakened heart muscle may become thin and get larger. The entire heart muscle is weak and pumps less effectively. Over time, the heart goes into a state of pump failure. It cannot supply the body with enough blood flow. Often, it is a long term (chronic) disease, and you will have to adjust your lifestyle.

Treatment rarely cures cardiomyopathy, but may reduce your signs.

- **There are three major types of cardiomyopathy:**
  - Dilated cardiomyopathy - heart muscle is “too thin”.
  - Hypertrophic cardiomyopathy - heart muscle is “too thick”.
  - Restrictive cardiomyopathy - heart muscle cannot relax and fill well with blood.

- **Signs of cardiomyopathy include:**
  - Trouble breathing
  - Tiredness (fatigue)
  - Chest pain
  - Weight gain
  - Dizziness and light-headedness
  - Irregular heartbeat (arrhythmias and palpitations)
  - Swelling (edema)

You can help manage cardiomyopathy by talking to your doctor about your signs. Changes in usual signs may mean that your pump failure is getting worse or is improving. Report any changes to your doctor as your treatment may need to be changed.
• **Treatment of cardiomyopathy:**
  Treatment is directed at the cause of the cardiomyopathy, if known. Treatment, however, is very specific for each person and does not restore your heart to complete normal function. A major goal in treatment is to make your heart work more efficiently.

  Treatment may include:
  - **Lifestyle changes** to manage the cause of your cardiomyopathy. This may include eating a heart healthy diet, maintaining a healthy weight, managing stress, being active, and quitting smoking.
  - **Taking medicines.**
  - Wearing a [LifeVest](#), which is a wearable defibrillator that is worn by people at risk for sudden cardiac arrest. Wearing the LifeVest gives you and your doctor time to make plans for treatment. The LifeVest is lightweight, easy to wear, and worn 24 hours a day. The LifeVest garment, which is worn under clothing, detects arrhythmias and gives a shock to restore a normal heart beat, if needed. Your doctor will re-evaluate the pumping part of your heart (Ejection Fraction) with a heart echocardiogram to see if you can stop wearing the LifeVest or if an ICD (implantable cardiac defibrillator) is needed.
  - A nonsurgical procedure, called **alcohol septal ablation**. The doctor injects ethanol (a type of alcohol) through a tube into the small artery that supplies blood to the thickened area of heart muscle. The alcohol kills cells, and the thickened tissue shrinks to a more normal size. This procedure allows blood to flow freely through the ventricle to improve your signs.
  - **Surgery and implanted devices:**
    - **Septal Myectomy:**
      This is open-heart surgery, which is used to treat people with hypertrophic cardiomyopathy and people with severe signs. Part of the thickened septum that is bulging into the left ventricle is removed to improve blood flow.
    - **Surgically Implanted Devices:**
      There are several types of devices that can be placed into the heart to improve function and signs.
      - **CRT** (Cardiac resynchronization therapy) **device** to coordinate contractions between the heart’s left and right ventricles.
      - **ICD** (implantable cardiac defibrillator) to help control arrhythmias that may lead to sudden cardiac arrest. This small, permanent device is implanted in the chest or abdomen and connected to the heart with wires. If an ICD senses a change in heart rhythm, it will send an electric shock to the heart to restore a normal heart beat.
      - **LVAD** (left ventricular assist device) to help the heart pump blood to the body. It can be used as a treatment for people who are waiting for a heart transplant or to extend life expectancy.
      - **Pacemaker** to help control arrhythmias. A small, permanent device is placed under the skin of your chest or abdomen. It sends electrical pulses to prompt the heart to beat at a normal rate.

  - **Heart Transplant:**
    For this surgery, a surgeon replaces a person’s diseased heart with a healthy heart from a deceased donor. A heart transplant is a last resort treatment for people who have end-stage heart failure. “End-stage” means the condition has become so severe that all treatments, other than heart transplant, have failed.
Problems with the heart’s valves

Heart valve disease

There are four valves in the normal heart. These valves control the flow of blood through the chambers of the heart. Valves open wide enough for blood to flow through then close tightly, so the blood does not leak backward. When one or more of these valves is damaged, the flow of blood changes. Damaged valves may be due to a birth defect, infections, or rheumatic heart disease that scars the valves. Valve damage can occur with aging.

Valve disease often results from a narrowing of the valve opening and/or leaking of a valve. A narrow valve restricts blood flow through the heart. A leaking valve results in less blood being pumped through the heart as blood leaks backward. The valve problems cause strain on the heart as it must work harder. The heart muscle becomes stretched. Irregular beats, shortness of breath, swelling, and the formation of blood clots can result.

In the early stages of valve disease, medicines, diet, and exercise can control signs. When signs worsen, surgery is often needed to repair or replace the diseased valve.
Problems with the heart’s conduction system

Irregular heartbeat (arrhythmia)
Sometimes the heart may become sensitive or irritable after a heart event.

- **Signs of irregular heartbeat**
  Irregular heartbeats may cause you to feel:
  - Palpitations (rapid thumping inside the chest)
  - Short of breath
  - Tired more easily, especially with activity
  - Light-headed
  - Dizzy
  - Faint
  - “Skipped or missed” beats

- **Types of irregular heartbeat**
  - **Atrial fibrillation, also called A-fib**
    The SA node, also called the sinus node, is the normal “pacemaker” of the heart. With A-fib, it does not start the electrical signal in the heart. Instead, the signal comes from the atrial or top heart chambers. This causes rapid, irregular heartbeats that may or may not be felt by the person.
    This condition may resolve on its own, but will need medical treatment if it persists. Be sure to follow up with the doctor, take medicines as ordered, and have any blood work done as needed for treatment.

Normal Conduction

Atrial Fibrillation

Extra electrical signals cause atria to beat irregularly.
› Premature beats - PVCs and ventricular tachycardia

These types of irregular heartbeats may override the SA node and start from the ventricles, the bottom chambers of the heart. This may be noticed as a “skipped” or “missed” beat. These types of premature heartbeats are often not a concern, but be sure to tell your doctor if they happen more often or last for longer periods of time. If the rhythm is uncontrolled or persists, an implantable defibrillator may need to be considered.

› Slow heart rhythm - bradycardia

Sometimes the heart rate may drop below 50 beats per minute causing light-headedness, dizziness, or even fainting episodes. Call 911 if this happens. Medicines may help to control this, but a pacemaker may be another option.

Pacemakers are most often a small device placed into the right or left side of the chest just under the collarbone into a pocket of tissue. Wires (leads) are guided into a large vein that goes to the heart and rests in the right atrium and right ventricle. Through these wires, the pacemaker can control the beating or rhythm of the heart. Some patients may be able to have a leadless pacemaker that does not need wires (leads). A leadless pacemaker is a small device that is inserted into the right ventricle of the heart.

In summary

• Fatty deposits and plaque can buildup inside arteries causing angina and shortness of breath.
• Plaque can rupture and cause a blood clot to form, cutting off blood to the heart muscle to cause a heart attack.
• Do not ignore angina pain or signs of a heart attack. Take action to get help.
• Procedures, like angioplasty and stents, are not a cure for coronary artery disease (CAD). Treatments must be combined with changing your coronary risk factors for long term success.
• Heart failure happens when your heart does not pump as strongly as it should. Know when to call your doctor and how to control it.
• Signs of irregular heartbeats may include: palpitations, shortness of breath, light-headedness, dizziness, or skipped beats. Let your doctor know if you have these.
• Different rhythm problems are treated differently. Possible treatments include: medicines, pacemakers, and internal defibrillators.
Risk Factors for Heart Disease

Risk factors are traits and lifestyle habits that increase your chance of having a disease. There are risk factors for heart disease that you cannot control, such as your age, gender, and family history. Risk factors you can control include:

- High blood pressure
- High blood cholesterol
- High triglycerides
- Tobacco use
- Being overweight
- Inactivity or sedentary lifestyle
- Uncontrolled or poorly controlled diabetes
- Poor diet
- Excessive alcohol use
- Stress and tension

Blood pressure

- Blood pressure is the force put on artery walls when your heart pumps and relaxes with each heartbeat. It is measured with a blood pressure cuff.
- High blood pressure is also called hypertension. It is caused by the narrowing of arteries from plaque deposits. The harder it is for your blood to flow through your arteries, the higher your blood pressure.
- Having high blood pressure puts you at risk for heart disease, kidney disease, and stroke. Most people have no symptoms. The only way to know is to have it checked.

Your blood pressure reading

The top number of your blood pressure reading is called systolic. It is the pressure in the artery when the heart pumps. The bottom number is called diastolic. It is the pressure in the artery when the heart rests between beats.

- Normal blood pressure: systolic less than 120 and diastolic less than 80.
- At risk (prehypertension) blood pressure: systolic 120 to 139 or diastolic 80 to 89.
- High blood pressure: systolic 140 or higher or diastolic 90 or higher.

Lowering your blood pressure

- Check your blood pressure often. Call your health care provider if it stays high.
- Take your blood pressure medicine as ordered. Continue to take your medicine even if you feel well and your blood pressure is normal.
- Lose weight if you are overweight.
- Limit sodium in your foods and drinks.
- Stop tobacco use and limit alcohol.
- Aim to be active at least 30 minutes a day.
- Practice relaxation daily to reduce stress.
Cholesterol and triglycerides

Cholesterol and triglycerides are different types of fats found in your blood. Too much cholesterol or triglycerides in your blood can be harmful and increase your risk for heart disease and stroke.

- **Total cholesterol** is a measure of the total amount of cholesterol in your blood and is based on HDL, LDL, and triglycerides numbers (HDL + LDL + 20 percent of your triglycerides level). **A healthy level is below 200.**

- **LDL cholesterol** makes up the majority of your body’s cholesterol. It is known as “bad” cholesterol because it causes plaque to build up on artery walls, making it hard for blood to flow. The higher the level of LDL cholesterol in your blood, the greater your risk of heart disease and stroke. **A healthy level is less than 70.**

- **HDL cholesterol** carries extra cholesterol away from your arteries and back to your liver, which flushes it from your body. It is known as “good” cholesterol because having high levels can reduce your risk of heart disease and stroke. **A healthy level is at least 40 for men and at least 50 for women. An HDL above 60 is optimal for cardiovascular health.**

- **Triglycerides** are a type of fat found in the blood that your body uses for energy. The combination of high level of triglycerides with low HDL cholesterol or high LDL cholesterol can increase your risk for heart disease and stroke. High triglycerides can also be caused by poorly controlled diabetes. **A healthy level is less than 150.**

Your triglycerides may be high if you regularly eat more calories, like carbohydrates and fats, than your body needs for energy. Examples of foods that increase triglycerides include:

- Alcohol: Beer, wine, hard liquor, and liqueurs.
- Sugar: Concentrated sweets, such as sugar, honey, molasses, jams, jellies, and candy. Desserts, such as pies, cakes, cookies, candy, doughnuts, ice cream, frozen yogurt, and sweetened gelatin.
- Starch: Concentrated starchy foods, such as bagels, pasta, rice, potatoes, large rolls, pizza, pretzels, popcorn, chips, many fat-free foods, and ready-to-eat cereals. Choose small portions of these due to their high carbohydrate density. Choose whole grains and legumes (starchy beans) over refined starches.
- Saturated fats: Fats solid at room temperature, including animal fats, lard, butter, and shortening. Also, fried foods, whole milk, whole milk dairy products, cheese, cream cheese, high-fat meats, and fast foods.
- Trans fats: Hydrogenated fats found in margarine, vegetable shortening, fried foods, fast foods, and most commercial snack foods, such as pastries, cakes, pies, and crackers.
Lowering your cholesterol and triglycerides

- Take your cholesterol lowering medicine as ordered.
- Eat a heart healthy diet that is low in fat and cholesterol and high in fiber.
  - Limit foods that contain high amounts of cholesterol, such as beef, pork, butter, cheese, egg yolks, and whole milk.
  - Eat foods high in fiber, such as whole grains, beans, fruit, and vegetables. Fiber helps to block cholesterol and fats from being absorbed through the wall of your intestines and into your blood stream.
  - Bake, grill, or roast foods instead of frying them.
- Exercise at least 30 minutes a day, 5 days a week.

Quitting tobacco use

Cigarettes, cigars, pipes, and smokeless tobacco all expose the body to toxic chemicals and make it harder for the body to get enough oxygen. The more you use, the greater your risk for:

- High blood pressure
- Blood clots that can lead to a heart attack or stroke
- Cardiovascular disease where the blood vessels and arteries of the body get blocked or narrow
- Cancer, including cancer of the lungs, liver, throat, trachea (airway), larynx (voice box), and others
- Diseases, such as emphysema or chronic bronchitis, that make it hard to breathe and get enough oxygen
- Heart disease and heart attacks
- Type 2 diabetes
- Other problems, including vision loss, bone loss, or problems with pregnancy or reproduction

Benefits of quitting - if you quit right now...

- Within 20 minutes, your heart rate and blood pressure drop.
- Within 12 hours, the carbon monoxide level in your blood drops to normal.
- Within 3 months, your circulation and lung function improves.
- Within 9 months, you will cough less and breathe easier.
- After 1 year, your risk of heart disease is cut in half.
- After 5 years, your risk of cancer of the mouth, throat, esophagus and bladder are cut in half. Your risk of cervical cancer and stroke return to normal.
- After 10 years, you are half as likely to die from lung cancer.
- After 15 years, your risk of coronary heart disease is the same as a non-smoker’s.
The 5 steps to quitting tobacco
1. Set a quit date.
2. Tell family and friends you plan to quit. Having support is key to successful quitting.
3. Prepare for your quit date. Buy gum, throw away tobacco products, clean your home and car, and visit your dentist to clean your teeth of tobacco stains.
4. Talk to your health care provider or pharmacist about quit aids, nicotine replacement products, and support groups.
5. Plan a reward system for quitting. Reward yourself for choosing healthy behaviors that replace tobacco use and for meeting certain milestones, such as 1 day, 1 week, 1 month, 3 months, and 6 months.

Tobacco cessation resources
Quit Lines:
- Ohio Quit Line, 800-784-8669
- American Lung Association, 800-586-4872
- BeTobaccoFree.gov Smoking Quit Line, 877-448-7848
Ohio State Clinics:
- Ross Heart Hospital Smoking Cessation Clinic, 614-293-0932
- The Lung Center, Tobacco Dependence Clinic, 614-293-4925
- College of Pharmacy Clinical Partners, 614-293-5075

Quitting Tobacco Use Book:
Available from your health care provider or visit https://patienteducation.osumc.edu/Documents/QuittingTobaccoUse.pdf.

Mobile Apps:
Search your mobile device’s app store for quit smoking apps, such as:
- QuitGuide
- QuitSTART

Maintaining a healthy weight
Maintaining a healthy weight is important for overall health. It can help you prevent and control many diseases and conditions, such as heart disease, high blood pressure, type 2 diabetes, gallstones, breathing problems, and certain cancers. It also helps you to feel good about yourself and gives your body energy.

Am I at a healthy weight?
Body Mass Index (BMI) is an estimate of body fat based on your height and weight. It helps you and your health care team find your ideal weight and create a goal for weight loss, if needed. Ask your team for help to determine your BMI.

Aim for a BMI between 18.5 and 24.9.
My height: ________ My current BMI: ________
My current weight: ________ My goal weight: ________

If you need to lose weight, losing just 5 to 10 percent of your current weight over 6 months will lower your risk for heart disease and other conditions.
**Attend Lesson 12, Weight Management, to learn about safe weight loss.**
Be active every day

Health experts recommend that adults be active at least 150 minutes per week, or 2 hours and 30 minutes. This may sound like a lot, but you can break it up into bouts as short as 10 minutes if needed. Try some of these tips to build more exercise and activity into your day.

Every day

- **Walk and be active.** Park in a space farther away, so you have to walk. Walk with a friend or play with the kids.
- Take the stairs instead of the elevator or escalator.
- Take a stretch break and stand up and move. Do this for at least every 1 hour of sitting.
- Work in your yard or garden.
- Walk your dog or the neighbor’s dog.

4 to 6 days each week

Increase your cardiovascular fitness with aerobic exercise, such as:
Be sure to do stretching exercises after each exercise session.

- Fast walking
- Biking
- Swimming
- Dancing
- Hiking
- Running
- Tennis

Cut down on the time you spend

- Watching TV.
- Working, surfing the web, or playing on the computer.
- Sitting.
If you aren’t very active

- Walk when you can. Even a few steps can make a difference, and they add up over time.
- Try to get active during your free time.
- Set a goal that you can meet in a short time. For example, I will walk 2 blocks at least 3 days a week.
- Build on your success and add a bit more activity each week.

If you are active sometimes

- Try to plan exercise or physical activity into each day.
- Ask a partner, friend, or neighbor to be active with you. You can help to keep each other motivated.
- Keep up your activity.
- Mix up your routine. Try a new activity, so you do not get bored.
- Have fun and challenge yourself.

Activity safety instructions

Cardiovascular precautions:
If any of these signs or symptoms occur or persist at any time during or after exercising, tell your health care provider:

- Chest pain, pressure, or discomfort
- Unusual shortness of breath
- Irregular pulse - too fast or too slow
- Dizziness or light-headedness
- Extreme fatigue that lasts an hour or more after exercise
- Cold sweat
- Nausea or vomiting
- Unusual joint or muscle pain
- Any other unusual signs or symptoms that concern you

General recommendations:

- Do NOT exercise for at least 2 hours following a heavy meal.
- Avoid extreme hot or cold temperatures.
- Avoid exercise when you are not feeling well, especially if you have a fever.
- Avoid drinking caffeinated (coffee, tea, colas) and alcoholic beverages before and after exercise.
- Do NOT take an extremely hot or cold shower before or right after exercise.
- Maintain your heart rate within your prescribed training heart rate range.
Diabetes

Diabetes results in high blood sugar levels (glucose). Diabetes occurs when the pancreas does not produce enough insulin or the body cannot use insulin properly. With diabetes there is an abnormal amount of lipoprotein, which speeds up atherosclerosis and raises the risk of heart attack. Having high blood pressure and being overweight are more common in people with diabetes.

To control diabetes
• Check your glucose levels at home and try to keep them as close to normal as possible.
• Follow your meal plan as prescribed.
• Take medicines as prescribed.
• Control your weight.
• Exercise regularly.

Diet and alcohol use
Eat a healthy diet with fruits, vegetables, whole grains, fat-free or low-fat milk products, and plant-based protein or lean cuts of meat.
• Choose foods low in saturated fats, cholesterol, sodium, and added sugars.
• Read food labels and plan for low sodium meals and snacks. Cook at home and use herbs and spices for great tasting meals instead of pre-packaged meals or processed foods.
Limit alcohol use. If you do choose to drink, limit to 1 drink a day (women) or 2 drinks a day (men).

Stress and tension
Stress is a normal part of our lives. Stress causes the release of adrenalin, which speeds up your heart rate, narrows your blood vessels, and increases your blood pressure. Stress makes you heart work harder. It is not the stressful situation, but your reaction to stress that is important.
People who feel time pressures and who are hard-driving are more prone to heart disease. Those who are calm, unhurried, and easy-going are at less risk.

Suggestions to reduce stress
• Identify events in your life that create stress and how you respond to it.
• Avoid things that cause stress, if possible.
• Learn stress management techniques, such as journaling, yoga, and listening to music.
• When you cannot avoid stressful situations, choose to respond in a way that is less stressful for you.
• Exercise regularly.
Medicines for Heart Disease

There are many medicines to treat heart disease. Ask your doctor, nurse, or pharmacist if you have questions about your medicines.

- Take medicines as directed.
- **Do NOT stop taking your medicines because you feel better or because you have no more refills on the prescription.** Check with your doctor before you stop taking any medicine. Many heart medicines will need to be taken long term.
- Tell your doctor or nurse if you are taking any over the counter medicines or herbal supplements. They may interact with medicines.
- Talk with your doctor or nurse if you have side effects from your medicines. Side effects are an unwanted effect of a drug.

**Anti-platelets**

These medicines prevent platelets in the blood from clumping or clotting. These medicines are often used after a heart attack or stroke, or after stent procedures to prevent platelets from blocking the stent.

**Do not stop taking this medicine without talking to the doctor who ordered it.** Stopping your anti-platelet medicine puts you at risk for forming clots or for the stent to get blocked.

**Side effects may include:** allergic reaction, black, bloody or tarry stools, nausea, vomiting, abdominal pain, skin bruising, dizziness, confusion, hallucinations, loss of hearing, or ringing in ears.

**Medicine names:**
- aspirin (Bayer, Bufferin, Ecotrin, St. Joseph’s or other generic brands)
- clopidogrel (Plavix)
- prasugrel (Effient)
- ticagrelor (Brilinta)
Beta blockers
Beta blockers improve the heart's ability to relax and block the effect of other hormones in the body (adrenaline/norepinephrine). They slow the heart rate and help control blood pressure. These medicines are used to treat high blood pressure, heart failure, angina (chest pain), and may be used after heart attack.

Side effects may include: dizziness, slow heart rate, fatigue, shortness of breath when first starting medicine, and sexual dysfunction.

Medicine names:
- carvedilol (Coreg)
- atenolol (Tenormin)
- metoprolol (Toprol-XL, Lopressor)
- propranolol (Inderal)
- bisoprolol (Zebeta)
- Other ________________________

Angiotensin-converting enzyme (ACE) inhibitors
ACE inhibitors widen the blood vessels and help increase blood flow by blocking the production of a hormone in your body that tightens blood vessels. They help lower blood pressure, lessen the amount of work the heart needs to do, and protect the kidneys. These medicines are used to treat high blood pressure, heart failure, and may be used after heart attack.

Side effects may include: dizziness, weakness, cough, and decreased ability to taste. If you have swelling throughout face, tongue, or lips, stop taking the medicine right away and call your doctor.

Medicine names:
- benazepril (Lotensin)
- captopril (Capoten)
- enalapril (Vasotec)
- lisinopril (Prinivil, Zestril)
- ramipril (Altace)
- other ________________________
**Angiotensin II receptor blockers (ARB)**

ARBs widen the blood vessels and help increase blood flow when a person cannot take an ACE inhibitor. They work like ACE inhibitors by blocking a hormone in your body. These medicines are used to treat high blood pressure, heart failure, and may be used after heart attack.

*Side effects may include:* dizziness and weakness. **If you have swelling throughout face, tongue, or lips, stop taking the medicine right away and call your doctor.**

**Medicine names:**
- candesartan (Atacand)
- losartan (Cozaar)
- valsartan (Diovan)
- other ______________________

**Statins (HMG-CoA Reductase inhibitors)**

Statins block the production of cholesterol in the liver. This lowers total cholesterol and bad LDL cholesterol levels, but raises good HDL cholesterol levels. High levels of bad cholesterol in the body increase the risk of heart disease.

Your cholesterol levels should be checked with blood tests 1 to 2 times each year.

*Side effects may include:* muscle weakness or pain, elevated liver enzymes, and upset stomach.

Your doctor will check your liver function with a blood test before starting a statin. You should also have liver function testing done if you have signs of liver problems while taking a statin, such as feeling very weak or tired, loss of appetite, upper belly pain, dark urine, yellowing of your skin, or the whites of your eyes.

**Medicine names:**
- atorvastatin (Lipitor)
- lovastatin (Mevacor)
- pravastatin (Pravachol)
- rosvastatin (Crestor)
- simvastatin (Zocor)
- other ______________________
Nitrates

These medicines help relax the blood vessels, so blood flows more easily through the body. They open the coronary blood vessels, so more oxygen is supplied to the heart. These medicines are used to treat angina (chest pain) and may be used for heart failure.

Side effects may include: headache, dizziness, light-headedness, flushing of face, or neck, and skin rash.

Medicine names:
Nitroglycerin, also called nitro, may be given to patients who have chest discomfort (angina) due to coronary artery disease (CAD). The blood vessels widen to allow for better blood flow to the heart.

- Sublingual nitro tablets or spray
  - You may feel tingling or a headache when you take nitro.
  - Keep your nitro tablets or spray with you at all times.
  - Keep nitro bottle out of moist areas, such as the bathroom.
  - Check the expiration date and be sure to throw the medicine away after the expiration date. Keep refills up to date.

Use sublingual nitro tablets or spray if you have chest pain:
1. Sit down and rest before using nitroglycerin.
2. If you have nitroglycerin tablets, put one tablet under your tongue and let it dissolve. Do not swallow the tablet. If you use nitroglycerin spray, spray it into your mouth towards the back of your throat.
3. Rest and wait 5 minutes. Take a second tablet under your tongue if you still have chest discomfort or pain or use the spray. At any time if your chest discomfort or pain does not improve or is getting worse even with nitroglycerin, call 911 and seek emergency treatment. Do not drive yourself to the hospital because you may be having a heart attack.
4. Rest and wait another 5 minutes. Take a third tablet under your tongue or use your spray if the chest discomfort or pain has not gone away.
5. If you have taken 3 tablets or sprays and your chest discomfort or pain is still present after 15 minutes, call 911 and seek emergency treatment.

There are other nitrate medicines that are used to decrease chest pain, but should NOT be used for a sudden attack. These medicines include:

- Nitroglycerin patch (Nitro-dur, Minitrin, Transderm-nitro) – place on non-hairy skin and rotate sites.
- Isosorbide dinitrate (Isordil) - short acting
- Isosorbide mononitrate (Imdur) - long acting
Diuretics

Diuretics, or water pills, remove excess sodium (salt) and water from your body by increasing the flow of urine. Your heart can work better, and you may breathe easier when the extra fluid is removed from your body. These medicines are used to treat high blood pressure, heart failure, and fluid build up in lungs, feet, or hands.

**Side effects may include:** dizziness, weakness, muscle cramps, dry mouth, and increased thirst.

**Medicine names:**
- bumetanide (Bumex)
- hydrochlorothiazide (HCTZ)
- furosemide (Lasix)
- metolazone (Zaroxolyn)
- torsemide (Demadex)
- other ______________________

Aldosterone inhibitors

Aldosterone inhibitors are weak diuretics or water pills. These medicines hold on to potassium while getting rid of extra sodium (salt) and fluid in the body by blocking a hormone called aldosterone. This medicine may be given to you after a heart attack or to prevent your heart failure from getting worse.

**Side effects may include:** high potassium, fatigue, or enlargement or breast tenderness of one or both breasts in men may be seen with spironolactone only.

**Medicine names:**
- eplerenone (Inspra)
- spironolactone (Aldactone)

Calcium channel blockers

This type of medicine lowers blood pressure by either slowing the heart rate or widening the blood vessels that lowers blood pressure and lessens the amount of work the heart needs to do. These medicines are used to treat high blood pressure, angina (chest pain), and slow the heart rate.

**Side effects may include:** dizziness, lightheadedness, shortness of breath, slow heart rate, and constipation.

**Medicine names:**
- amlodipine (Norvasc)
- diltiazem (Cardizem, Dilacor, Tiazac)
- verapamil (Calan, Isoptin, Covera)
- other ______________________
Other medicines for your heart

- **Amiodarone (Cordarone)**
  Slows the heart rate to allow the heart's electrical system to beat normally. Used to treat irregular heart rhythms, such as atrial fibrillation or ventricular tachycardia.
  
  **Side effects may include:** slow heart rate, palpitations, fatigue, headache, dizziness, nausea, vomiting, unusual taste in the mouth, stomach pain, constipation or diarrhea, difficulty breathing, rash, and vision problems.

- **Digoxin (Lanoxin)**
  Digoxin can strengthen the heart muscle, so it pumps better. It also helps control the rate of your heart. It is used to treat heart failure and atrial fibrillation.
  
  Digoxin may build up in your body, causing the amount of the drug in your blood to be higher than normal. Your doctor may order a blood test to check your level.
  
  **Side effects may include:** loss of appetite, nausea and vomiting, diarrhea, frequent headaches, changes in vision, and skipped or slow heart beats.

Over the counter medicines for other problems

Check with your doctor or pharmacist before starting any new medicines, whether prescription or over the counter. There are some over the counter medicines that may cause side effects that can impact your heart condition.

- **Acetaminophen (Tylenol)**
  Used for pain, fever, colds, muscle soreness, headache, arthritis, back aches, and toothaches.
  
  Avoid alcohol when taking acetaminophen because it may cause liver damage.
  
  **Side effects may include:** allergic reaction, unusual bleeding or bruising, liver damage, fatigue, nausea, vomiting, and abdominal pain.

- **Non-steroidal anti-inflammatory drugs (NSAIDs)** such as:
  - Ibuprofen, also known as Advil, Ibu-Tab, Midol IB, Motrin, Nuprin, and Rufen
  - Naproxen sodium also known as Aleve
  
  **Patients with a history of heart failure, heart attack, stroke, or stent in their heart should avoid use of ibuprofen or naproxen sodium because it may increase the risk of another heart attack or stroke.**
  
  Work by reducing the hormones that cause pain and inflammation in the body. Used to treat pain, fever, inflammation, stiffness, some types of arthritis, and menstrual cramps.
  
  **Side effects may include:** allergic reaction, increase blood pressure, unusual bleeding or bruising, black, bloody or tarry stools, loss of hearing or ringing in the ears, headache, dizziness, nausea, vomiting, muscle cramps, numbness or tingling, and stomach problems.
Cold and sinus medicines

For upper respiratory congestion, sneezing, or sniffles. These medicines can cause increased blood pressure.

- Pseudoephedrine, found in Actifed Cold and Sinus, Advil Cold and Sinus, Benadryl-D, Drixoral Cold and Allergy, Sudafed Sinus, Mucinex-D, Zyrtec-D, and Claritin-D.
- Phenylephrine, found mostly in inhalers or sprays, like Dristan Advanced Formula, Neo-Synephrine, Nostril, Rhinall, Sinex, and Sudafed PE.
- Epinephrine, found mostly in inhalers or sprays, like Primatene Mist.

Remember

- Take your medicines as directed by your doctor. Do not stop any of these medicines because you are feeling better.
- Please tell your doctor, nurse, or pharmacist if you are taking any over the counter medicines, vitamins, or herbal products since they may interact with your heart medicines.
Diet and Warfarin

Your doctor has prescribed the medicine warfarin (Coumadin®, Jantoven®) for you. There are some foods that can affect the way warfarin works in your body. These include: foods with high amounts of vitamin K, alcohol, and some herbal and dietary supplements.

Foods with vitamin K
The amount of vitamin K in your diet can affect the amount (dose) of warfarin you need to take. Your medicine dose must be balanced with your diet to allow the drug to work correctly.
A few things to remember when taking warfarin:
You want a medium or moderate amount of vitamin K in the foods you eat. You do not need a diet low in vitamin K. In fact, not getting enough vitamin K can lead to weak bones and other problems. It is best to continue your usual diet while the warfarin dose is being established. Let your healthcare provider know if you eat many foods that are high in vitamin K.
It is more important to eat moderate amounts of foods with vitamin K in about the same amount from week to week. Eating more or less of these foods than usual may change the way warfarin works in your body and may increase your risk of bleeding or blood clots. For example: if you eat cooked greens, it is much better to eat ½ cup each day instead of eating 2 or 3 cups once a week.
You can eat foods very high or high in vitamin K, but you should limit the total amounts you eat. This helps to avoid large increases in the amount of vitamin K you take in from food.

Foods very high in vitamin K
You can eat 1 cup raw or ½ cup cooked total per day unless another amount is listed:
- Beet greens
- Collard greens
- Dandelion greens
- Kale
- Mustard greens
- Parsley (½ cup raw or ¼ cup cooked)
- Spinach
- Turnip greens
Foods high in vitamin K
You can eat up to 3 cups raw or 1½ cups cooked total per day:

- Asparagus
- Broccoli
- Brussels sprouts
- Cabbage (sauerkraut, coleslaw)
- Endive lettuce
- Okra
- Romaine lettuce
- Scallions

If you greatly increase or decrease foods very high or high in Vitamin K in your diet, let your health care provider know right away.

Cranberries
Moderate amounts of cranberry products are fine, such as a glass of cranberry juice a day. Avoid eating or drinking large amounts of cranberries, cranberry juice, and cranberry supplements while taking warfarin.

Alcohol
Drinking alcohol is not recommended with this medicine. Talk to your health care provider if you plan to drink alcohol because more than 1 or 2 drinks a day can change the way your body uses warfarin.

Dietary and herbal supplements
Use of herbs in cooking, such as garlic and ginger, are safe to eat while you are on warfarin. However, taking herbal supplements like those in pill or tablet forms may cause problems with warfarin. These products may affect how your body uses warfarin:

Some vitamin and mineral supplements in large doses can also affect your body’s response to warfarin, such as large amounts of vitamins A and E. It is safe to take an adult multivitamin each day that contains vitamin K, but do not also take Viactiv calcium supplements as Viactiv also has extra vitamin K.

Always tell your health care provider if you are starting, taking, or changing any herbal supplements, herbal teas, or dietary supplements.
Liquid nutritional supplements

Liquid nutritional drinks like Ensure, Boost, and Glucerna have a low amount of vitamin K added to 8-ounce bottles. If you drink several of these bottles each day, your vitamin K level may increase and require your warfarin dose to be changed.

If you use these nutritional drinks, tell your health care provider that you are taking them since it may affect your warfarin dose.

Remember to tell your health care provider when you plan on changing the amount of foods, drinks, or herbal supplements you consume.
Using Herbs and Dietary Supplements

People have used herbs and remedies to improve their health or treat their ailments for thousands of years. Today stores everywhere sell herbs and special diet products “over the counter” that claim health benefits. While some of these products may help you feel better, they may also affect the treatment given by your doctor. Below are some helpful guidelines about herbs and dietary supplements.

What are herbs and dietary supplements?
- Most herbs are natural or made from natural products. They are often made from plants.
- Many are sold in health food stores, supermarkets, drugstores, and over the internet.
- You do not need a prescription to buy them.
- Some still look “natural” as leaves, bark, stems, or flowers.
- Some may be processed and made into tablets, capsules, gel caps, or liquids.

What information do I need to know?
- Herbs and dietary supplements may not be safe to use even though they come from natural sources.
- They may not work the way they claim to. Many have not yet been tested in a scientific way.
- They may interact with your other medicines and treatment.
- They may be very expensive and may not give you much benefit.

What do I need to know about herbs and supplements?
- Always talk with your doctor, nurse, pharmacist, and dietitian about the herbs and diet supplements you are taking.
- It is helpful to show your doctor and nurse the herbs or nutritional supplements in their original containers.
- Check to see if you are getting a health benefit. If you have not seen results in a few weeks, stop taking it.
- Herbs or dietary supplements may cause complications for people having surgery or other treatments. A few are listed here.
  - Antioxidants
  - Echinacea
  - Ephedra
  - Feverfew
  - Fish Oil
  - Garlic
  - Gingko Biloba
  - Ginseng
  - Kava
  - St. John’s Wort
  - Valerian
  - Vitamin E
• One example, Gingko Biloba may increase the risk of bleeding since it interferes with blood clotting.
• Remember that some herbs are known by other names.

**Does the government regulate these products?**
• Herbs, dietary, and nutrition supplements are not controlled in the same way as prescription medicines. Some herbs manufactured outside of the United States have been found to contain harmful substances.
• Many herbs and supplements have not been studied in a scientific manner.
• Some have been tested on animals or in the lab, but not on people.
• The quality, purity, and strength of the herbs in each dose can be different or have other products in them.
• “Mega Dose” does not mean Mega-Health.
• Be smart and do your research.

**Visit these websites for more information**
• **National Center for Complementary and Alternative Medicine**
  Go to http://nccam.nih.gov for research based information on treatments and conditions.
• **National Institute of Health, Office of Dietary Supplements**
  Go to http://dietary-supplements.info.nih.gov for health information on dietary supplement use and safety.
• **The U.S. National Library of Medicine and the National Institute of Health, MedlinePlus**
A General Guide for Taking Medicines

Use this guide to help you learn about your medicines to take them safely. Ask your doctor, nurse, or pharmacist for more specific information about each medicine you are taking.

Keep a list of all of your medicines
Keep a list of all of your medicines with you so you can show the list to your doctor and dentist at each visit. Be sure to include:

- Prescription and over the counter medicines
- Vitamins and herbal products such as St. John’s Wort, garlic, gingko biloba, or vitamin E
- Dietary supplements and homeopathic remedies such as juices, teas, or other products
- Sample medicines you may have been given by your doctor
- Skin patches, eye drops, inhalers, creams, and ointments
- Medicines delivered by pumps, such as insulin or pain medicine

Keep the list up to date.

Before taking a new medicine, tell you doctor if:

- You have an allergy or ever had a reaction to any medicine, herbal product, food or other substance.
- You are on a special diet, such as a low salt or low sugar diet. Being on a special diet may change how a medicine works.
- You are pregnant, plan to become pregnant, or are breastfeeding.
- You are taking any prescription or over the counter medicines, herbal products, vitamins, or other dietary supplements.

Ask questions to learn about your medicines
Ask questions of your doctor or pharmacist to learn about your medicines and write down the answers so you can refer to them later. Questions you may want to ask:

- What is the generic and brand names of the medicines?
- Why am I taking this medicine?
- What does the medicine do?
- How much do I take and how often should I take it?
• What time should I take it?
• Should I take it with food?
• What food, drink or activities should I avoid while taking this medicine?
• What are the usual side effects and what do I do if they occur?
• What do I do if I forget to take my medicine?
• When should I expect the medicine to start working and how can I tell if it is working?
• Are there any tests I need to have while taking this medicine?
• How long do I need to take it?
• Is it safe to take with other medicines that I am taking?
• Should I stop taking my medicine for any special reasons?

**Use your medicines safely**

• Take your prescribed medicines at the right time for the full length of time your doctor ordered, even if you are feeling better.
• Get refills of your medicine 5 to 7 days before your supply is gone so you don’t miss a dose.
• Do not stop taking your medicines without checking with your doctor.
• If you have any side effects that you did not expect, call your doctor.
• Always read the label before taking any medicine.
• Check the date on the bottle and throw out any medicines that have expired.
• Take over the counter medicines as directed on the label. Ask your pharmacist to help you choose an over the counter medicine.

Child proof caps are required by law to reduce the number of accidental poisonings. If there are no children in your home, you can ask your pharmacist for an easy open cap. You may need to sign a release form.

**Storing medicines**

• Keep your medicine tightly capped and in the original bottle. If you use a pill reminder box, put only enough medicine for the day or week.
• Store your medicines away from heat and direct sunlight. Do not put medicines in the bathroom cabinet because heat and moisture may cause changes in the medicines.
• Store medicines where children and pets cannot get to them.
• Do not store medicines in the refrigerator or freezer unless you are told to do so.
• Outdated medicines or any prescription medicines not used for more than 1 year should be thrown out. Check with your pharmacist about how to safely get rid of them. Do not throw old medicines in the trash can. Watch for community drug take back programs.
Other precautions

- Do not give your prescription medicines to other people. This can be dangerous and it is against the law.
- Use only 1 pharmacy so the pharmacist has a record of all of your medicines.
- Check all of your medicines before leaving the pharmacy. Read the name, strength and instructions on the bottle. Open each and look at the pills. If anything looks different than you expected, talk to the pharmacist before you leave.
- If you have chemotherapy medicines, ask the pharmacist how to safely handle and dispose of those medicines.
- If you take more medicine than prescribed, call the poison control center, your doctor, or pharmacist right away.
Why should I exercise?
Exercise has many benefits to both you and your heart.
• Your heart is a muscle that needs regular exercise.
  › When you exercise, your heart has to pump blood faster to get it to your muscles and lungs, and this makes your heart stronger over time.
  › Regular exercise will improve your recovery and future health.

Things to think about
What are the personal reasons you exercise or want to start exercising?

What benefits will it bring to your life?

What do you like about exercising and being physically active?

Benefits of exercise
Exercise is a treatment like medicine. Exercise can:
• Lower your risk of having another cardiovascular event.
• Lower blood pressure. This can last 12 to 24 hours after exercise.
• Lower blood sugar levels. This can last up to 48 hours after exercise.
• Burn calories to help manage your weight. Being overweight or obese is linked to type 2 diabetes, high blood pressure, and high cholesterol.
• Improve circulation.
• Increase energy.
• Lower stress levels.

Exercise vs. physical activity
There is a difference between being active and exercising:
• Physical activity is any movement of skeletal muscles that requires energy. It involves daily activities that cause the heart rate to increase and decrease.
• Exercise is planned, structured, and intentional movement intended to improve or maintain physical fitness. It causes a constant increase in heart rate that strengthens the heart muscle.

Daily activities are good, but they cannot replace regular exercise.
Are you an “active couch potato”?  
Leading an active lifestyle consists of doing more active behaviors than sedentary behaviors.  
- A sedentary lifestyle is less than 5,000 steps per day despite a planned exercise session.  
- An active lifestyle is greater than 7,500 steps per day.  
It is possible to be a regular exerciser, but still have a sedentary lifestyle or be an “active couch potato”.

Take away message: Engage in regular exercise and SIT LESS!

Types of exercise

In most cases, a complete exercise program consists of all 3 types of exercise.

Aerobic Exercise

Also known as “cardio” exercise, aerobic exercise increases the heart rate for a period of time and promotes increased used of oxygen to stimulate and strengthen the heart and lungs. Examples include: walking, running, aerobic classes, stair climbing, biking, and swimming.

Weight Training

Weight training can improve muscular strength and endurance by contracting a muscle or muscle group against an external force.

Not everyone should do weight training:
- If you have heart failure, avoid high intensity weight training or have a trained clinician provide instruction.
- If not done right, this type of exercise can raise your blood pressure and put more strain on your heart.

**Attend Lesson 5, Principles of Weight Training, to learn more about this type of exercise and adding it into your routine.

Stretching

Stretching increases the length of the muscles, which improves balance and joint health. It can be used as a part of your “cool down” phase at the end of your exercise session.
Recommendations

The American College of Sports Medicine (ACSM) recommends that adults get at least 150 minutes of moderate-intensity exercise per week. This can be met through:

- **30 to 60 minutes of moderate-intensity exercise (five days per week), or**
- **20 to 60 minutes of vigorous-intensity exercise (three days per week)**

FITT Principle

The goal is to **slowly** improve you heart and lungs.

Things to consider (FITT Principle):

- **Frequency**: The number of exercise sessions per week. This is often 3 to 5 per week.
- **Intensity**: How hard you are going to exercise. In cardiac rehab, this is prescribed for you based off of your entry stress test or entry exercise capacity. For more information, read about Talk Test, METs, Heart Rate, and RPE Scale in the next section.
- **Time**: How long you are going to exercise. Time should be divided between various modes of exercise.
- **Type**: What kind of exercises you will do. Change this often, so your body receives more health benefits from exercise.

Always **warm up and cool down** as a part of every exercise session, such as starting and ending with a slower intensity (pace) for at least 5 minutes.

Key concepts: understanding your exercise prescription

Use one or more of these methods to measure how hard the exercise feels to you:

- **Talk Test**
  Exercise at a level that you can hold a conversation without breathing hard.

- **METs (Metabolic Equivalent of Task)**
  This is how much energy it costs your body to do an activity. It is also the **Intensity** part of the FITT Principle.
  1 MET is the amount of energy that is required at REST.
  - 1 to 3 METs = light intensity
  - 3 to 6 METs = moderate intensity
  - Greater than 6 METs = vigorous intensity
Heart Rate

Determine your resting heart rate. Take your pulse before you get out of bed in the morning:

- Find your pulse on your wrist. Use the tips of two fingers to apply light pressure on the thumb side of the wrist.
- Count your pulse for 10 seconds and then multiply that number by 6.
- My resting heart rate is __________.

During exercise:

1. Warm up for 5 minutes then check your heart rate. Exercise at 20 to 30 beats above your resting heart rate. Slow down if your heart rate is too high. My heart rate goal for exercise is _________ to _________.

2. End with a 5 minute cool down and then check your heart rate. Your heart rate should be within 10 beats of your resting heart rate. If it is too high, continue to cool down. My heart rate should cool down to at least _________.

Borg Rating of Perceived Exertion (RPE) Scale

This scale rates how hard you are working. It lets us know how the exercise feels to you.

A rating between 11 and 14 is a safe level of exertion. This means you are comfortably tired after an activity. If your rating is less than 11, it is safe for you to increase your intensity (pace) or exercise longer. If your rating is greater than a 14, slow down.

<table>
<thead>
<tr>
<th>#</th>
<th>Level of Exertion</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>No exertion at all</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>7.5</td>
<td>Extremely light (7.5)</td>
</tr>
<tr>
<td>8</td>
<td>Very light</td>
</tr>
<tr>
<td>9</td>
<td>Light</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Somewhat hard</td>
</tr>
<tr>
<td>12</td>
<td>Hard (heavy)</td>
</tr>
<tr>
<td>13</td>
<td>Very hard</td>
</tr>
<tr>
<td>14</td>
<td>Extremely hard</td>
</tr>
<tr>
<td>15</td>
<td>Maximal exertion</td>
</tr>
<tr>
<td>16</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
</tr>
</tbody>
</table>

9 on the scale is “very light” exercise. It is like walking slowly at your own pace for some minutes

13 on the scale is “somewhat hard” exercise. It still feels okay to continue.

17 on the scale is “very hard” exercise. You can still go on, but you really have to push yourself. It feels very heavy, and you are very tired.

19 on the scale is “extremely hard” exercise. This is the most strenuous exercise you have ever done.

Borg RPE scale
Fuel your body

If you are exercising in the morning, plan to eat breakfast about 1 hour before. Eat light foods, such as:

- Whole grain cereals with low fat milk
- Whole grain bagel or toast with natural peanut butter
- A banana or apple
- Yogurt with low sugar cereal
- Cottage cheese with whole wheat crackers and fruit
- Low fat granola bar or energy bar

If you like to drink coffee, one cup is probably okay. Coffee and other caffeine drinks are diuretic beverages that dehydrate instead of rehydrate. Drink water instead!

Hydration

Drink enough fluids before, during, and after exercise to prevent dehydration. The American College of Sports Medicine recommends:

- 2 to 3 cups of water during the 2 to 3 hours before your workout.
- ½ to 1 cup of water every 15 to 20 minutes during your workout. Adjust for weather as needed.
- 2 to 3 cups of water after your workout for every pound of weight you lose during exercise.

Unless you are exercising more than 60 to 90 minutes, you do not need a sports drink that contains carbohydrates and electrolytes. These drinks also contain sodium and need to be avoided or limited by most heart patients.

If you are on a fluid restriction, talk with your cardiac rehab staff member or doctor about fluids and exercise.

Activity or exercise intolerance

Listen to your body and know your symptoms. Slow down and take rest breaks as needed.

Let cardiac rehab staff know about any symptoms you are having, including:

- Chest pain, pressure, or discomfort
- Dizziness or light-headedness
- Shortness of breath that is not relieved with rest

Minor muscular aches and pains that develop a day or so after starting an exercise program are normal and are often relieved in 3 to 5 days after they begin.
Principles of Weight Training

What is weight training?
It is a form of exercise that is designed to improve muscular fitness by exercising a muscle or muscle group against an external force.
You can use resistance bands, free weights, weight machines, medicine balls, or your own body weight for resistance.
A complete exercise program consists of BOTH cardio and weight training. You do not have to do both types of exercise in the same session.

Recommendations
The American College of Sports Medicine (ACSM) recommends that adults do:
• At least 2 non-consecutive days per week.
• 8 to 12 repetitions of 8 to 10 exercises targeting all major muscle groups.

Benefits
Weight training helps to:
• Maintain and combat the loss of muscle as we age.
• Prevent osteoporosis by enhancing bone mineral density.
• Decrease the risk of heart disease by:
  ‣ Decreasing body fat
  ‣ Decreasing blood pressure
  ‣ Lowering the stress placed on the heart when lifting a load

Getting started
• Things to consider:
  ‣ **Load** is the amount of weight lifted in a given set.
  ‣ **Volume** is the number of exercises, repetitions (8 to 12), and sets (1 to 3).
  ‣ **Frequency** is the number of exercise sessions per week (2 for beginners).
• Pair muscle groups together for training efficiency, such as chest + back + arms or legs + core.
• Rest for at least 24 hours between training sessions to avoid overtraining.
**Key concepts**

- Use correct form. If you have never performed resistance training or used weight machines, please ask any of us for help!
- Focus on your breathing:
  - **EXHALE** when you lift, push, or pull the weight.
  - **INHALE** as you return the weight to starting position.

This prevents increases in blood pressure and ensures the muscle is provided with enough oxygen to perform the task.
- Slow, controlled movements are key. Make your muscles do the work both ways. Don’t let gravity do all of the work!

**Weight training equipment at Upper Arlington**

**FreeMotion Cable Cross**
- Multi exercise machine
- Can perform movements that mimic activities of daily life and sport
- Trains muscles of the body to work together while also improving stability and coordination

**Life Fitness MJ4**
- Offers 3 available spaces for resistance training
- Can lower and raise the pulley starting positions and add different attachments based on desired exercise
- Can move the bench in front if needing a seat for lower body exercises

**Life Fitness Seated Leg Press**
- Can work all muscles of the lower body with one machine.

**Stability Balls**
- Great for core exercise
- Different sizes based on your height (55 cm, 65 cm, and 75 cm)

**Free Weights**
- 1 to 25 pounds

**Resistance bands**
Resistance bands are used in weight training to tone and strengthen the body. The amount of resistance a band has varies by thickness and strength. From least to most resistance:
- Red: 3.7 pounds (light)
- Green: 4.8 pounds (medium)
- Blue: 5.8 pounds (heavy)
Coping with Heart Disease

You may have physical, mental, and emotional effects as you deal with heart disease. Dealing with these normal responses takes different ways of coping. Coping is not a negative word! We “cope” everyday. There is no “one way” to cope, but our goal in this class is to recognize what ways may help you!

**Stress management**
Stress is the response to a perceived demand, internal or external, on our mind, body, or emotions.

**Signs of stress:**
- Muscle tension
- Racing heart
- Headache
- Anxiety
- Depression
- Thought distortions or “should” statements, such as “I should be able to do more”

**Ways to cope with stress:**
- Exercise!
- Deep breathing
- Yoga
- Journaling
- Talking with others
- Balance positive and negative thoughts - your “self talk”
- Progressive muscle relaxation
- Guided imagery

**Self-talk**
- The habitual things we say to ourselves and the way we think of ourselves.
- Negative self-talk can make chronic conditions seem like an uphill battle with new obstacles to overcome each day
• Work to transition negative thought to positive thoughts. Think of “The Engine That Could”: I think I can; I think I can.
  › Negative thought: “My future frightens me. My life will never be the same”
  › Positive thought: “I’m still the same person I’ve always been. I can cope.”

**Progressive muscle relaxation**

• Some people cannot relax due to muscle tension.
• Alternate tensing and relaxing the different muscle groups throughout the body, starting in the feet and moving to head.
• Become fully aware of each muscle and changes in sensations as you let go of the tension and relax.

**Guided imagery**

• It’s like a guided daydream, where you transport yourself to another time and place, picturing yourself in a peaceful, relaxing environment.
• It is best used for fatigue and relaxation.
• Think of a time and place where you felt safe and comfortable. Imagine those surroundings, sights, smells, and sounds. Bring as much of that experience back into the here and now as possible.
• For free guided imagery recordings, visit https://wexnermedical.osu.edu/integrative-complementary-medicine/guided-imagery.

**Depression**

Unhappy feelings or depression often occur with chronic illness. These feelings are part of the normal ups and downs that all paths have.

Although everyone feels down sometimes, signs of depression can linger and interfere with your ability to live your life and cope with stressors.

Recognizing you are depressed is the first step toward feeling better.

**Signs of depression:**

• Loss of interest
• Isolation withdrawal
• Changes in sleep patterns
• Increased or decreased appetite
• Unintentional weight loss or gain
• Low energy or fatigue
• Confusion or lack of concentration
The depression cycle:

Here is how one sign of depression, low energy or fatigue, can start the depression cycle. It can be hard to cope and manage your depression once you find yourself in the depression cycle.

Coping methods:
- Contact with others - call a friend or family member
- Plan ahead for a special event
- Get out of the house
- Do something nice for yourself
- Exercise!

Reversing the depression cycle:

Here is how one coping method, exercise, can help get you out of the depression cycle and feeling better!
Dealing with anger, fear, and frustration

These feelings are among the most common responses to chronic illness. Health is very important to us. When we have a chronic illness, we often feel a loss of control and worry about the future. These feelings and emotions are normal and happen to almost everyone.

Depression resources

Not all depression can be handled through self-management. Sometimes depression is severe and needs professional treatment. Talk to a member of your care team for a referral for counseling or call one of the resources below.

• **The Psychological Services Center (PSC) at the Ohio State University**: 614-688-0968
  1835 Neil Avenue
  Columbus, Ohio 43210
  http://go.osu.edu/dtrc
  Depression Treatment Study—or they can help you find community counseling near you!

• **OSU Harding Outpatient Services**: 614-293-9600
  Provides treatment of mental health issues, including:
  - Adjustment disorder (a group of symptoms, such as stress, feeling sad or hopeless, and physical symptoms that occur after a stressful life event)
  - Anxiety disorders, such as panic attacks, obsessive-compulsive disorder (OCD), and post-traumatic stress disorder (PTSD)
  - Depression

• **Ohio State’s Couple and Family Therapy Clinic**: 614-247-7883
  The clinic can help you adjust to lifestyle changes, manage stress, and connect with resources of support.

• **Beating the Blues US, www.beatingthebluesus.com**
  A self-help, online treatment program for depression using Cognitive Behavioral Therapy. The program consists of 8 weekly online treatment sessions of 50 minutes.

• **Ohio State Employee Assistance Program (EAP) for OSU Faculty and Staff**
  Offers tools and resources to help address complex issues that affect your mental and emotional well-being. EAP services are also available to benefits-eligible faculty and staff’s immediate families, members of their household, parents, and parents-in-laws.
  For more information, call 1-800-678-6265 or visit https://osuhealthplan.com/members/ohio-state-employee-assistance-program-eap.
How do fats affect my lab values?

- Saturated fats: increase total cholesterol and LDL (low density lipoprotein)
- Trans fats:
  - Increase total cholesterol and LDL
  - Lower HDL (high density lipoprotein)
- Unsaturated fats (polyunsaturated and monounsaturated): protect HDL
- Saturated fats and refined carbohydrates: increase triglycerides

Exercise is a way to help increase HDL.

Saturated fat

Saturated fat is most often found in animal products, such as:
- Whole-milk dairy products, like cheese, ice cream, and butter
- Beef
- Pork
- Chicken

It is also found in some vegetable sources, such as coconut and palm oils.

Read the Nutrition Facts on a product’s food label to know how much saturated fat is included in the food per serving. Choose foods lower in saturated fat as part of your healthy eating style.

Eggs:
- New recommendation is one per day.
- They still have saturated fat.
- Try mixing whole eggs with egg whites or egg beaters.

Healthy Lab Values

- Total cholesterol: Less than 200 mg/dL.
- HDL (good) cholesterol: At least 40 mg/dL for men and at least 50 mg/dL for women. Above 60 mg/dL is optimal for cardiovascular health.
- LDL (bad) cholesterol: Less than 70 mg/dL.
- Triglycerides: Less than 150 mg/dL.

Nutrition Facts

8 servings per container

Serving size 2/3 cup (55g)

<table>
<thead>
<tr>
<th>Amount per serving</th>
<th>Calories 230</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fat 8g</td>
<td>10%</td>
</tr>
<tr>
<td>Saturated Fat 1g</td>
<td>5%</td>
</tr>
<tr>
<td>Trans Fat 0g</td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Food & Drug Administration
**Tips for lowering cholesterol**

- Use unsaturated fats (polyunsaturated and monounsaturated) instead of saturated fats.
  - Use oils like olive, peanut, canola, safflower, corn, and sunflower in MODERATION. Limit to 5 to 6 teaspoons a day.
- Butter vs. margarine:
  - Not all margarines are created equal.
  - If opting for butter, use a small amount.
- Increase the amount of fiber in your diet.
  - Eat 5 servings of fruits and vegetables each day.
  - Aim for 25 to 35 grams of fiber each day.
- Decrease the amount of fat you eat:

  **Saturated fat (less than 7% of total calories):**
  - For a 2,000 calorie diet, eat less than 16 grams of saturated fat per day.
  - For a 1,500 calorie diet, eat less than 12 grams of saturated fat per day.

  **Total fat (25 to 35% of total calories):**
  - 30% of a 2,000 calorie diet = 67 grams of fat per day.
  - 30% of a 1,500 calorie diet = 50 grams of fat per day.

---

**Fiber**

**What is fiber?**

- Fiber is a substance in plants.
- Our bodies are unable to digest fiber.
- It slows blood sugar increases.
- It makes you feel full, so you eat less.
- The daily recommendation is 25 to 35 grams of fiber per day (at least 10 grams of soluble fiber).

**Types of fiber**

**Soluble vs. insoluble:**

- Soluble fiber helps lower cholesterol.
  - Sources include: oats, beans, oranges, barley, pears, mangos, and Brussels sprouts.
- Insoluble fiber helps with constipation and regularity.
  - Sources include: wheat bran, brown rice, bananas, and nuts.
Resistant starch:
• A type of starch that isn’t fully broken down and absorbed by the small intestine. It may provide some health benefits, including lowering blood cholesterol and fats, and helping you to feel full.
• Sources include: cooked and cooled pasta, potatoes, and rice, greener bananas, rolled oats, beans, and lentils.

Fiber: sample daily menus

**Example 1:**
- 1 cup Cheerios with ½ cup 1% milk and 1 egg
- 1 package wheat peanut butter crackers
- 1 McDonald’s bacon ranch salad with grilled chicken
- 1 Activia yogurt
- Hamburger on a whole wheat bun with ½ cup green beans and mashed potatoes

Total fiber = 12.9 grams (not enough)

**Example 2:**
- ½ cup microwavable oats with ¼ cup frozen berries, ½ cup 1% milk, and 1 egg
- 1 apple with 1 tablespoon peanut butter
- 1 McDonald’s bacon ranch salad with grilled chicken
- 1 Activia yogurt with 1 tablespoon sesame seeds and 1/4 cup raisins
- Hamburger on an Ezekiel English muffin with ½ cup green beans and 2 baked red potatoes with skin

Total fiber = 30 grams (not too bad!)

Food label basics

**Nutrition Facts**

This part of the food label helps you to make informed food choices. It lists how many servings are in the product, serving size, calories, fat, cholesterol, sodium, carbohydrate, protein, and certain nutrients.

Use the % Daily Value to help you judge how well a food fits into your diet plan.

- **A low % Daily Value = 5 percent or less.** Choose foods low in saturated fat, trans fat, cholesterol, sodium, and added sugars.
- **A high % Daily Value = 20 percent or more.** Choose foods high in fiber, vitamins, and minerals.

Does this food product fit into your diet plan?

**Ingredient list**

Look at a product’s ingredient list to help you make better food selections. The ingredient list tells you what is in the food. Manufacturers list ingredients in order of greatest amount to least amount in the food. It is also a valuable resource for people with food allergies.

Source: U.S. Food & Drug Administration
Food label claims

- Free: under 0.5 grams (g) fat or saturated fat, 2 milligrams (mg) cholesterol
- Low: no more than 3 g fat, 1 g saturated fat, 20 mg cholesterol
- Reduced or less: 25% less of specific nutrient (fat, sugar, cholesterol, sodium, or calories)
- Light: 50% less fat or overall less calories
- Lean: seafood, main dish, or meat under 10 g fat, 4.5 g saturated fat, and 95 mg cholesterol
- Extra Lean: seafood, main dish, or meat under 5 g fat, 2 g saturated fat, and 95 mg cholesterol

Changing how you prepare a recipe

An easy way to make a recipe healthier is to change how you cook the vegetables and meats in it. Healthy types of cooking include:

- Bake
- Poach
- Steam
- Sauté or stir fry (uses less oil)
- Grill
- Roast

Healthy Eating Plate basics

The Healthy Eating Plate is a simple way to guide your eating choices.

Follow these 5 steps to create healthy, balanced meals:

1. Divide an 8 or 9-inch plate in half and fill half of your plate with fruits and vegetables. Choose fresh or frozen fruits and vegetables that have no added salt, sugar, or fat in a variety of colors.

2. Divide the other half of the plate in half again.
   - Fill one section with whole grains, such as barley, brown rice, bulgar, polenta, quinoa, whole wheat couscous, whole wheat pasta, and wild rice.
   - Fill the other section with plant-based protein or lean cuts of meat, such as fish, chicken, turkey, beans, lentils, and nuts.

3. Use healthy plant-based oils in moderation, such as olive and canola oils.

4. Drink water, tea, or coffee. Limit milk and milk products to 1 to 2 servings per day. Limit juice to 1 small glass per day. Avoid sugary drinks.

5. Stay active to support a healthy weight.

Cook at home as much as possible, using low fat cooking methods, such as bake, broil, microwave, roast, steam, sauté, or grill. Restaurant foods and processed foods often have added sugar and more sodium.
HEALTHY EATING PLATE

Use healthy oils (like olive and canola oil) for cooking, on salad, and at the table. Limit butter. Avoid trans fat.

The more veggies – and the greater the variety – the better. Potatoes and French fries don’t count.

Eat plenty of fruits of all colors.

WATER

Drink water, tea, or coffee (with little or no sugar). Limit milk/dairy (1-2 servings/day) and juice (1 small glass/day). Avoid sugary drinks.

Eat a variety of whole grains (like whole-wheat bread, whole-grain pasta, and brown rice). Limit refined grains (like white rice and white bread).

Choose fish, poultry, beans, and nuts; limit red meat and cheese; avoid bacon, cold cuts, and other processed meats.
How do I decide what to cook?

What do you like?

- Start with foods that you enjoy:
  - Favorite food is pasta.
- Get creative. Try your favorite foods in new ways.
  - Whole wheat spaghetti with ground turkey and vegetables.
  - Serve over top of salads.
- Rethink the recipes you love already. How would you redo lasagna? Tacos? Linguini?

Try new recipes

- From cookbooks. Visit your local bookstore or library.
- From websites. Visit:
  - Cookie and Kate at www.cookieandkate.com
  - Damn Delicious at www.damndelicious.net
  - Food52 at https://food52.com
  - Fruits & Veggies More Matters at www.fruitsandveggiesmorematters.org
  - Gimme Some Oven at www.gimmesomeoven.com
  - My New Roots at www.mynewroots.org
  - Naturally Ella at https://naturallyella.com
  - Oh My Veggies at www.ohmyveggies.com
  - Plant-Based Cooking at www.plantbasedcooking.com
  - Skinny Taste at www.skinnytaste.com
  - Sprouted Kitchen at www.sproutedkitchen.com
  - The Full Helping at www.thefullhelping.com
  - The Kitchn at www.thekitchn.com
  - Whole Living Lauren at www.wholelivinglauren.com (OSUWMC dietitian)
- From apps on your mobile device.
Cooking tools

Key tools:
- Cutting board
- Good knife
- Good pan
- Sauce pan with lid
- Can opener
- Vegetable brush
- Colander
- Containers
- Rubber spatula
- Bowls of any kind

Maybes:
- Blender
- Food processor
- Veggetti/spiralizer
- Cookie sheet
- Toaster
- Salad spinner
- Novelty items, such as a tofu press

Knives:
- Pick what works for you.
- Sharper is better and safer. If you have a sharp knife, you need no others.
- Basic knife skills:
  - Grip where handle meets blade.
  - Cut away from you.
  - Use both hands with fingers on the food item curled away from the knife.
- Have a good cutting board and use a towel underneath.

Produce

Picking produce

- For the best deal, buy fresh produce that is in season.
  - For lists of in season fruits and vegetables, visit Fruits & Veggies More Matters at www.fruitsandveggiesmorematters.org.
- Organic: Is it worth the money?
  - The Dirty Dozen: Buy organic for these foods:
    - Apples
    - Blueberries (domestic)
    - Celery
    - Cherries
    - Grapes (imported)
    - Nectarines
    - Peaches
    - Potatoes
    - Spinach, kale, and collard greens
    - Strawberries
    - Sweet bell peppers
The Clean 15: These foods are safe to eat in non-organic (conventional) form:

- Asparagus
- Avocados
- Cabbage
- Cantaloupe
- Eggplant
- Grapefruit
- Kiwi fruit
- Mango
- Onions
- Pineapples
- Sweet corn
- Sweet onions
- Sweet peas
- Sweet potatoes
- Watermelon

- When is it ready?
  - Avocados – thumb pressure
  - Cantaloupe – fragrant

- Use fresh or frozen fruit and vegetables when possible, rather than canned.

**Keeping produce**

- Room temp: tomatoes, potatoes, onions, avocados, stone fruit (peaches), garlic, oranges, pineapple, shallots, winter squash, sweet potatoes, yams, bananas
- Anything sliced or cut - Keep in fridge!
- Cantaloupe, honeydew - Keep at room temperature to ripen. Rinse before cutting. Keep in fridge when cut.
- Radishes - Remove leaves before storing.

**Cleaning produce**

- Cleaning with water:
  1. Clean produce under cold, running water.
     You may use a produce brush to scrub firm produce, such as melons, cucumbers, and potatoes.
  2. Rinse.
  3. Pat dry.

- Cleaning with vinegar:
  Use a water and vinegar solution to kill about 98% of the bacteria on fruits and vegetables.
  1. Pour 1 cup vinegar into a spray bottle.
  2. Add 3 cups of water.
  3. Shake well.
  4. Spray produce with enough solution to coat it well.
  5. Rub produce gently with your hands, so the produce is covered with the solution.
  6. Rinse produce under cold, running water.
  7. Pat dry.

- **Do NOT** use bleach or household cleaners to clean produce.
Cooking produce
- Boil (this method of cooking will lose some nutrients)
- Steam
- Roast or bake
- Grill
- Raw
- Sauté

Other unique things
- Beets – boil until skins can slip off
- Celery and radishes – store in ice cold water to crisp
- Kale – remove ribs
- Head lettuce, cabbage – remove outer leaves
- Greens – store with paper towels
- Berries – don’t wash until about to eat

Grains
- For the best deal, buy grains in bulk.
- Store in an air-tight container in pantry or fridge. You can also freeze.
- Most grains cook the same:
  - Rinse, put in a pot with water, boil, cover, and simmer.
  - Use water, not broth, to reduce sodium.
  - Follow package instructions.
- Can eat hot or store in fridge to make a cold salad.

Protein

Plant protein
- Beans:
  - Soak 2 cups of dried beans in 10 cups of cold water in the fridge for about 8 hours and then drain.
  - Canned are fine. Use “No Salt Added” if available. Rinse canned foods before using to remove some of the sodium.
• Tofu:
  ‣ Firmness (silken, soft, firm, extra firm)
  ‣ Three steps:
    1. Drain and press.
    3. Cook.

Meat
  ‣ Fish and poultry (chicken, turkey):
    ‣ Thaw in fridge.
    ‣ Low temp cooking is best (crock-pot or oven at 200 degrees).
  ‣ Beef:
    ‣ Choose lean cuts, such as loin.
    ‣ Low temp cooking is best.
    ‣ Avoid charring!
  • Marinade meats in vinegar and herbs for more flavor without sodium.
  • Turn meat over constantly on a high heat source.
  • Avoid direct exposure of meat to an open flame, hot metal surface, and prolonged cooking times (especially at high temperatures).
  • Use a microwave oven to cook meat before exposure to high temperatures.
  • Remove charred portions of meat.
  • Do not use gravy made from meat drippings.

Seasonings
It can take time to get used to less salt in your diet. Be adventurous by adding herbs and spices to meals for added flavor.
• Dried herbs = 1/3 of fresh herbs.
• To prolong the life of fresh herbs, wash, dry, and keep them in the fridge.
  ‣ Herbs to keep fresh in water (like flowers): parsley, cilantro, dill, basil, and mint.
  ‣ Herbs to keep fresh in a moist paper towel: rosemary, thyme, chives, sage, and oregano.
• For a guide of the most common herbs and spices, visit www.thekitchn.com and search for “Quick Guide to Every Herb and Spice in the Cupboard”.
Common conversions

- 1 cup = 16 tablespoons (tbsp)
- 1 tablespoon = 3 teaspoons (tsp)
- 1 cup = 240 mL
- 240 mL = 8 ounces
- 1 pint = 2 cups
- 1/8 cup = 2 tablespoons
- 2/3 cup = 10 tablespoons

Who has the time?

- Cook in batches, such as with grain salads.
- Use a la carte items, such as salads, vegetables, greens, grains, low sodium canned protein (tuna, beans), and good bread.
- Use a crock-pot to slow cook food with liquid.
- Think about back up meal ideas, such as Luvo frozen meals and very low sodium canned soups.

When not to cook

Certain foods may not be worth your time to prepare from scratch, such as hummus, guacamole (unless eating all of it), artichoke hearts, beans, and tuna. Look for healthy, low sodium versions at your local grocery.
Carbohydrates in Your Diet

About carbohydrates (carbs)
Your body uses carbohydrates for energy. The three main types of carbohydrates in foods are starch, sugar, and fiber. Your body needs all three types to function well. A product’s total carbohydrate, dietary fiber, and sugars are listed on Nutrition Facts food labels. You will need to read food labels to know how many carbohydrates are in a serving of food.

Carbohydrates are simple or complex
• **Simple carbohydrates**, also called simple sugars, are easily digested, so they are a quick source of energy. Some, like fruit and milk, are healthy. Others, that are processed or refined, are not.
  ‣ **Processed or refined carbohydrates** have been stripped of healthy fiber and other nutrients, leaving behind only sugars. Examples include white bread and white rice.
• **Complex carbohydrates**, also called dietary starch, are foods that are rich in vitamins, minerals, antioxidants, and fiber. Complex carbohydrates take longer to digest and are more filling.

Most carbohydrates eaten should be complex instead of simple.

Complex carbohydrates sources
Complex carbohydrates are often found in whole plant foods.
• Whole grain or whole wheat breads
• Whole grain cereals, like oatmeal
• Whole grain or whole wheat pasta
• Brown rice
• Quinoa
• Beans, lentils, and peas
• Potatoes
• Vegetables

Source: U.S. Food & Drug Administration
Source: Centers for Disease Control and Prevention (CDC)
Simple carbohydrates sources

Simple carbohydrates, like fruit and low fat milk (fat free skim and 1%), are healthy for you. They have vitamins and minerals your body needs.

Limit other simple carbohydrates in your diet. They lack nutrients your body needs, can lead to weight gain, and increased risk for heart disease, diabetes, and fatty liver disease.

Avoid these foods most of the time:

- Baked goods, such as cakes, cookies, muffins, doughnuts or pies. They are made with white flour and not whole wheat flour, like complex carbohydrates.
- Dairy-based goods, such as ice cream, pudding, frozen yogurt, fudgsicles, chocolate milk, hot chocolate, and regular yogurt
- Fruit juices, drinks or products, such as orange juice, fruit punch, lemonade, Kool-Aid, frozen juice bar, gelatin, popsicles, pop tarts, or fruit bars
- White rice
- Sweetened cereals
- Granola. Some products are high in sugar, so check the nutrition label before buying.
- Sweetened tea
- Regular soft drinks
- Sugar products, with molasses, corn syrup, table sugar, syrup, or honey
- Jam and jelly
- Sweetened cereals
- Candy

How many carbs should I eat?

- 45 to 65% of your calories should come from carbohydrates.
  - For a 2,000 calorie diet, eat 225 to 325 grams of carbohydrates per day.
  - For a 1,500 calorie diet, eat 169 to 243 grams of carbohydrates per day.
- Limit added sugars to 10% of your calories.
  - For a 2,000 calorie diet, eat less than 50 grams (4 tablespoons) of sugar per day.
  - For a 1,500 calorie diet, eat less than 38 grams (3 tablespoons) of sugar per day.
  - 1, 12-ounce can of Coke has 39 grams of sugar!
What are added sugars?

Added sugars are sugars and syrups that are added to foods and drinks when they are processed or prepared. This does not include naturally occurring sugars, such as those found in fruits and milk products.

Read the ingredient list label on food products to help you identify added sugars. Names for added sugars on food labels include:

- Agave
- Anhydrous dextrose
- Brown sugar
- Confectioner’s powdered sugar
- Corn syrup
- Corn syrup solids
- Dextrose
- Fructose
- High fructose corn syrup
- Honey
- Invert sugar
- Lactose
- Malt syrup
- Maltose
- Maple syrup
- Molasses
- Nectars, such as peach or pear
- Pancake syrup
- Raw sugar
- Sucrose
- Sugar
- White granulated sugar
- Cane juice
- Crystal dextrose
- Evaporated corn sweetener
- Fruit nectar
- Glucose
- Liquid fructose
- Sugar cane juice

You may also see other names added for sugars, not recognized by the FDA as an ingredient name. These include:

- Agave
- Anhydrous dextrose
- Brown sugar
- Confectioner’s powdered sugar
- Corn syrup
- Corn syrup solids
- Dextrose
- Fructose
- High fructose corn syrup
- Honey
- Invert sugar
- Lactose
- Malt syrup
- Maltose
- Maple syrup
- Molasses
- Nectars, such as peach or pear
- Pancake syrup
- Raw sugar
- Sucrose
- Sugar
- White granulated sugar
- Cane juice
- Crystal dextrose
- Evaporated corn sweetener
- Fruit nectar
- Glucose
- Liquid fructose
- Sugar cane juice
Sodium and High Blood Pressure

High blood pressure

- High blood pressure, also called hypertension, forces the heart to work harder. It can damage blood vessels and organs, increasing your risk of heart disease, kidney disease, and stroke.
- A diet that is high in sodium can increase your blood pressure.
- Blood pressure normally rises with age, so limiting sodium intake becomes even more important as you age.

Good news:
Eating less sodium can help to:
- Lower your blood pressure.
- Reduce your risk of developing serious medical conditions.

About sodium

- The words “salt” and “sodium” do not mean the same thing, but they are often used to mean the same thing.
- Table salt, also known as sodium chloride (NaCl), is a crystal-like compound found in nature and used to flavor and preserve food. Sodium (Na) is one of the chemical elements found in salt.
- Salt is the main source of sodium for most people.
- Salt has been used as a food preservative for centuries. It is also used to cure meat, bake, retain moisture, cover up less desirable flavors, and even enhance the flavor of other ingredients, like making sweets taste sweeter.
- Other food additives also contain sodium, including monosodium glutamate (MSG), sodium nitrite, and sodium bicarbonate (baking soda). Look for these terms in a food product’s ingredient list.

Sodium guidelines
The American Heart Association recommends 1,500 mg or less of sodium per day for:
- People with high blood pressure, diabetes, or chronic kidney disease.
- African Americans.
- People ages 51 and older.

1 teaspoon of salt = 2,400 mg of sodium
Your body does need a small amount of sodium (about 500 mg) to balance body fluids, keep muscles and nerves running smoothly, and help certain organs work properly.
**Water softeners**

Water softeners add sodium to drinking water. The amount added depends on how much “hardness” is in the water. The amount of sodium is often low and within the FDA’s definition of very low sodium. If you have concerns or are directed by your dietitian or doctor to reduce the amount of sodium in your water, you can have your kitchen cold water tap taken off of the water softener.

**Americans and sodium**

About 90% of Americans eat too much sodium. Most are not aware of how much sodium is in the foods they eat and drink. Americans average about 3,300 mg of sodium a day:

- 77% is from packaged and restaurant food.
- 12% is naturally occurring in foods.
- 11% is from adding salt to food while cooking or at the table.

**More than 40% of the sodium consumed by Americans comes from these foods:**

- Breads and rolls
- Cold cuts and cured meats, such as deli or packaged ham or turkey
- Pizza
- Fresh and processed poultry
- Soups
- Sandwiches, such as hot dogs, hamburgers, and submarine sandwiches
- Cheese (natural and processed)
- Mixed pasta dishes, such as lasagna, spaghetti with meat sauce, and pasta salad
- Mixed meat dishes, such as meat loaf with tomato sauce, beef stew, and chili
- Snacks, such as chips, pretzels, popcorn, and crackers

**For example:**

Turkey sandwich:

- 2 slices of Giant Eagle 100% stone ground wheat bread*
- 4 slices of Boar’s Head oven roasted turkey breast*
- 1 slice of Sargento Swiss cheese*
- 1 tablespoon of Miracle Whip
- Tomato, onion, and lettuce

* Higher sources of sodium

This turkey sandwich has 1,125 mg of sodium.
Read food labels

1. Check a product’s Nutrition Facts label for the amount of sodium per serving in the product.

2. Compare sodium in different brands of similar products. For example: 4 ounces of Kroger brand boneless, skinless chicken breasts have 230 mg sodium, and 4 ounces of Gerber’s Amish Farm boneless, skinless chicken breasts have 55 mg of sodium.

3. Choose the food product that has lower sodium.

This Nutrition Facts label shows how quickly salt adds up in your diet:

- This package has 8 servings. Each serving has 160 milligrams (mg) of sodium.
- If you ate the entire package, that is 1,280 mg of sodium.
- To stay with your heart healthy diet, find another product with less sodium in it or cook at home where the amount of salt can be controlled.

What sodium labels mean

Look for these labels when shopping or eating out:

- **Sodium free**: less than 5 mg per serving
- **Very low sodium**: 35 mg or less per serving
- **Low sodium**: 140 mg or less per serving
- **Reduced sodium**: It has 25% less salt than the original product. These products still may have high levels of sodium in them.
- **Light in sodium or lightly salted**: It has at least 50% less sodium than the regular product.
- **Unsalted, no salt added or without salt added**: It is made without added salt, but there may be natural salt or sodium in the product.

Be careful with salt substitutes:

Many salt substitutes have high amounts of potassium. Ask your provider if you can use a salt substitute or if you need to be “salt free”. Many products called lite salts still have too much sodium for a low sodium diet.
Cooking low sodium

Prepare your own food to control the amount of sodium in your diet.

• Don’t salt foods before or during cooking.
• Limit salt shaker use at the table.
• Buy fresh or frozen poultry, pork, and lean meat rather than canned, smoked, or processed meats, like lunch meats, sausages, and corned beef. Check the label on fresh meat and poultry to see if salt water or saline have been added.
• Buy fresh or frozen (no sauce) vegetables.
• Buy low sodium or no salt added canned vegetables.
• Rinse canned foods before using to remove some of the sodium in tuna, vegetables, and beans.
• Use salt-free spices and flavorings to enhance flavors of meats, fish, and vegetables, such as:
  ‧ Basil
  ‧ Cinnamon
  ‧ Curry powder
  ‧ Dry mustard
  ‧ Fresh garlic
  ‧ Fresh lemon or lime
  ‧ Fresh onion
  ‧ Oregano
  ‧ Paprika
  ‧ Pepper
• Choose snacks, such as nuts, seeds, chips, and pretzels, that are unsalted, low sodium, or no salt added.
• Choose lite or reduced sodium condiments, such as less sodium or lite soy sauce and no salt added ketchup.
• Add oil and vinegar to a salad rather than use bottled salad dressings.
• Use only a small amount of seasoning from flavor packets instead of the whole packet.

Speak up at restaurants

• Ask to see nutrition information in restaurants or research the menu online before you go.
• Choose a lower sodium option.
• Ask for your meal to be prepared without salt.
• Request that sauces and salad dressings be served “on the side” and then use less of them.
• Reduce your portion size – less food means less sodium!

The DASH diet

Dietary Approaches to Stop Hypertension (DASH) eating plan:

• Is rich in fruits, vegetables, fat free or low fat milk and milk products, whole grains, fish, poultry, beans, seeds, and nuts.
• Contains less sodium, sweets, added sugars, beverages with sugar, fats, and red meats.
• Is lower in saturated fat, trans fat, and cholesterol.
• Is rich in nutrients that are associated with lowering blood pressure, mainly potassium, magnesium, calcium, protein, and fiber.
To follow the DASH eating plan, eat a certain number of servings from each food group based on your daily calorie (energy) needs. For a 2,000 calorie diet:

<table>
<thead>
<tr>
<th>Food Group</th>
<th>1 serving equals</th>
<th>Daily Servings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole grains</td>
<td>• 1 slice whole wheat bread</td>
<td>6 to 8</td>
</tr>
<tr>
<td></td>
<td>• 1 ounce dry cereal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 1/2 cup cooked cereal, rice, or pasta</td>
<td></td>
</tr>
<tr>
<td>Lean meat, poultry, and fish</td>
<td>• 1 ounce</td>
<td>6 or less</td>
</tr>
<tr>
<td>Vegetables</td>
<td>• 1/2 cup raw or cooked vegetables</td>
<td>4 to 5</td>
</tr>
<tr>
<td></td>
<td>• 1 cup raw, leafy greens</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 4 ounces of juice</td>
<td></td>
</tr>
<tr>
<td>Fruit</td>
<td>• 1 medium fruit</td>
<td>4 to 5</td>
</tr>
<tr>
<td></td>
<td>• 1/2 cup fresh, frozen, or canned fruit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 4 ounces of juice</td>
<td></td>
</tr>
<tr>
<td>Low fat or fat free dairy products</td>
<td>• 1 cup fat free (skim) or 1% milk</td>
<td>2 to 3</td>
</tr>
<tr>
<td></td>
<td>• 1 cup low fat yogurt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 1 1/2 ounces part-skim cheese</td>
<td></td>
</tr>
<tr>
<td>Fats and oils</td>
<td>• 1 teaspoon soft margarine</td>
<td>2 to 3</td>
</tr>
<tr>
<td></td>
<td>• 1 tablespoon mayonnaise</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2 tablespoons salad dressing</td>
<td></td>
</tr>
<tr>
<td>Sodium</td>
<td>2,300 mg*</td>
<td></td>
</tr>
</tbody>
</table>

*1,500 mg sodium daily lowers blood pressure even further than 2,300 mg.

When following this eating plan, choose foods that are:
- Low in saturated and trans fats.
- Rich in potassium, calcium, magnesium, fiber, and protein.
- Lower in sodium.

For more information, please visit:
- The DASH Diet Eating Plan at http://dashdiet.org
- National Heart, Lung, and Blood Institute at www.nhlbi.nih.gov/health/health-topics/topics/dash
A plant-based diet is healthy for almost everyone, but especially for those with heart disease and other chronic conditions. The diet:

- Decreases inflammation.
- Speeds up healing after surgery.
- Lowers cholesterol levels.
- Often helps people lose weight.

**What is a plant-based diet?**

The diet focuses on eating more vegetables, fruits, legumes, and whole grains.

- Foods have healthy protein, carbohydrates, fats, vitamins, and minerals.
- The foods are naturally lower in calories.
- Colorful plant foods have **phytochemicals** in them. “Phyto” means “plant” in Greek. “Chemicals” are compounds from plants.

**Phytochemicals**

Phytochemicals are naturally present in plant foods. They give plants color, odor, and flavor. They play a role in preventing damage to your body’s cells from free radicals, and thus may help to help prevent disease. They:

- Support overall health
- Decrease risk of heart disease
- Decrease risk for many cancers
- Decrease risk for type 2 diabetes
- May help prevent or delay Alzheimer’s and Parkinson’s

Challenge yourself to try fruits and vegetables of different colors. Try to “eat the rainbow” during the week to increase the nutrients you take in to support your good health.
The 5 colors of phytochemicals

Eat a variety of colorful fruits and vegetables to get all of the vitamins, minerals, and nutrients your body needs to stay healthy and prevent disease. Add color to your plate each day, such as adding a colorful fruit or vegetable salad or a stir fry.

<table>
<thead>
<tr>
<th>Color</th>
<th>Phytochemicals</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>• Lycopene</td>
<td>• Radicchio</td>
</tr>
<tr>
<td></td>
<td>• Ellagic acid</td>
<td>• Radishes</td>
</tr>
<tr>
<td></td>
<td>• Hesperidin</td>
<td>• Raspberries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Red apples</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Red bell peppers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Red chili peppers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Red grapes</td>
</tr>
<tr>
<td></td>
<td>• Beets</td>
<td>• Red onions</td>
</tr>
<tr>
<td></td>
<td>• Blood oranges</td>
<td>• Red pears</td>
</tr>
<tr>
<td></td>
<td>• Cherries</td>
<td>• Red peppers</td>
</tr>
<tr>
<td></td>
<td>• Cranberries</td>
<td>• Red potatoes</td>
</tr>
<tr>
<td></td>
<td>• Guava</td>
<td>• Rhubarb</td>
</tr>
<tr>
<td></td>
<td>• Papaya</td>
<td>• Strawberries</td>
</tr>
<tr>
<td></td>
<td>• Pink and red grapefruit</td>
<td>• Tomatoes</td>
</tr>
<tr>
<td></td>
<td>• Pomegranates</td>
<td>• Watermelon</td>
</tr>
<tr>
<td>Blue / Purple</td>
<td>• Lutein</td>
<td>• Purple cabbages</td>
</tr>
<tr>
<td></td>
<td>• Zeaxanthin</td>
<td>• Purple carrots</td>
</tr>
<tr>
<td></td>
<td>These foods are also sources of vitamin C</td>
<td>• Purple figs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Purple grapes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Purple peppers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Raisins</td>
</tr>
<tr>
<td>Yellow / Orange</td>
<td>• Beta-carotene</td>
<td>• Yellow peppers</td>
</tr>
<tr>
<td></td>
<td>• Lycopene</td>
<td>• Yellow potatoes</td>
</tr>
<tr>
<td></td>
<td>• These foods are also sources of vitamin C</td>
<td>• Yellow summer squash</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Yellow tomatoes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Yellow watermelon</td>
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<tr>
<td></td>
<td></td>
<td>• Yellow winter squash</td>
</tr>
<tr>
<td></td>
<td>• Apricots</td>
<td>• Butternut squash</td>
</tr>
<tr>
<td></td>
<td>• Butternut squash</td>
<td>• Cantaloupe</td>
</tr>
<tr>
<td></td>
<td>• Cape gooseberries</td>
<td>• Carrots</td>
</tr>
<tr>
<td></td>
<td>• Carrots</td>
<td>• Golden kiwi</td>
</tr>
<tr>
<td></td>
<td>• Golden kiwi</td>
<td>• Grapefruit</td>
</tr>
<tr>
<td></td>
<td>• Grapefruit</td>
<td>• Lemon</td>
</tr>
<tr>
<td></td>
<td>• Lemon</td>
<td>• Mangoes</td>
</tr>
<tr>
<td></td>
<td>• Mangoes</td>
<td>• Nectarines</td>
</tr>
<tr>
<td></td>
<td>• Nectarines</td>
<td>• Oranges</td>
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<tr>
<td></td>
<td>• Oranges</td>
<td>• Papayas</td>
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<tr>
<td></td>
<td>• Papayas</td>
<td>• Peaches</td>
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<td></td>
<td></td>
<td>• Persimmons</td>
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<td></td>
<td></td>
<td>• Pineapples</td>
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<tr>
<td></td>
<td></td>
<td>• Pumpkin</td>
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<tr>
<td></td>
<td></td>
<td>• Rutabagas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sweet corn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sweet potatoes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tangerines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Yellow apples</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Yellow beets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Yellow figs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Yellow pears</td>
</tr>
</tbody>
</table>
Color | Phytochemicals | Examples
--- | --- | ---
Green | • Lutein  
• Zeaxanthin  
These foods are also sources of folate, vitamin C, and calcium | • Artichokes  
• Arugula  
• Asparagus  
• Avocados  
• Broccoflower  
• Broccoli  
• Broccoli rabe  
• Brussel sprouts  
• Celery  
• Cucumbers  
• Chayote squash | • Chinese cabbage  
• Endive  
• Green apples  
• Green beans  
• Green cabbage  
• Green grapes  
• Green onion  
• Green pears  
• Green peppers  
• Honeydew  
• Kiwifruit  
• Leafy greens  
• Leeks  
• Lettuce  
• Limes  
• Okra  
• Peas  
• Spinach  
• Sugar snap peas  
• Watercress  
• Zucchini
White | • Beta-glucans  
• Lignans | • Bananas  
• Brown pears  
• Cauliflower  
• Dates  
• Garlic  
• Ginger  
• Jerusalem artichoke | • Jicama  
• Kohlrabi  
• Mushrooms  
• Onions  
• Parsnips  
• Potatoes  
• Shallots  
• Turnips  
• White corn  
• White nectarines  
• White peaches

What does a plant-based diet look like?
Revisit the Healthy Eating Plate, we discussed in Lesson 7, Nutrition 101 on pages 58 to 59 as you read about a plant-based diet.

1. Make half of your plate fruits and vegetables:

**Vegetables**
- Choose whole, unprocessed vegetables. Fresh or frozen are best.
- If you use canned vegetables, choose no added salt versions and rinse before eating.
- Buy vegetables in season to save on cost.
- Eat a variety to maximize health benefits of phytochemicals.

**Fruits**
- Choose whole, unprocessed fruits. Fresh or frozen are best.
- Canned in own juice with juice drained are okay. Use as a back up when out of fresh or frozen.
- Buy fruit in season to save on cost.
- Eat a variety to maximize health benefits of phytochemicals.
2. Make a quarter of your plate **whole grains:**
   - Choose grains with the term “whole” listed in its ingredient list on packages.
   - Choose high fiber grains that have at least 3 grams per serving.
   - Look for “100% whole grain” on labels.
   - Examples of non-traditional grains include: quinoa, teff, barley, amaranth, oats, flax, and millet.

3. Make a quarter of your plate **plant-based protein or lean cuts of meat:**

   **Plant-based protein**
   - Include protein for taste, texture, and flavoring – NOT as your whole meal.
   - Aim for plant protein for at least ½ of your protein needs. Good examples include:
     - Edamame
     - Nuts, such as almonds, pecans, pistachio, hazelnut, walnut
     - Seeds, such as flax, chia, pumpkin (pepita), sunflower, sesame
     - Nut butters
     - Legumes, such as beans (black, kidney, pinto, lima, great northern, etc.), lentils, split peas

   **Animal protein - lean cuts**
   - Animal protein can be used in small to moderate amounts. Choose lean meats of high quality.
     - Fish is best choice, such as oily fish like salmon, mackerel, and sardines.
     - Avoid processed animal proteins, such as lunch meat, bacon, hot dogs, sausage, meat with marinades or preservatives.
     - Avoid charred meat.

4. Use healthy **plant-based oils** in moderation.
   - Avoid most animal fats, such as butter, lard, and bacon grease. Fish is the exception since it is high in omega-3 fatty acids DHA and EPA.
   - Healthy oils and fats still need portion control. Examples include:
     - Olive oil (best choice of all oils)
     - Canola oil
     - Nuts
     - Avocado
   - Cook with olive oil for low temperature cooking.
Where can I get these foods?

**Grocery store**
- Try to get foods close to their natural state.
- Don’t have to buy organic.
- Stick to the perimeter of the store with the exception of whole grains.
- Buy bulk grains and legumes to save money.

**Local farmer’s market or your own garden**
- This is the best option.
- It is a good activity and therapeutic for many people.
- Most produce is pesticide free.
Weight Management

Maintaining a healthy weight is important for overall health. It can help you prevent and control many diseases and conditions. It also helps you to feel good about yourself and gives your body energy.

Excess weight causes:
- Strain on body’s organs, tissue, and systems
- Inflammation
- Joint pain
- Increased risk for heart disease, high blood pressure, diabetes, and cancer

About energy balance
Reaching and maintaining a healthy weight involves a balance between the calories you eat (energy in) and the energy you burn (energy out). To lose weight, you will need to make lifestyle changes that burn more calories than you eat.

How many calories do I need?
2,000 is often used as reference, but your calorie needs may be less or more. It depends on your:
- Gender
- Age
- Muscle mass
- Diseases and conditions
- Exercise levels

What does 2,000 calories look like? www.youtube.com/watch?v=rgaqwFPU7cc

About calories
Calories come from the carbohydrates, proteins, and fats you eat and drink.
- Carbohydrates = 4 calories per gram
- Protein = 4 calories per gram
- Fat = 9 calories per gram
- Alcohol = 7 calories per gram
Dietary recommendations

• **Carbohydrates:** 50 to 60% of your calories. For a 2,000 calorie diet, this is **250 to 300 grams per day.** For example, 2 slices of bread have 30 grams of carbohydrates.

• **Protein:** 15 to 20% of your calories. For a 2,000 calorie diet, this is **75 to 100 grams per day.** For example, 1 chicken breast has 25 grams of protein.

• **Fat:** 20 to 30% of your calories. For a 2,000 calorie diet, this is **44 to 67 grams per day.** For example, 1 tablespoon of oil has 13.5 grams of fat.

Safe weight loss

• Decreasing your weight by just 5 to 10% can decrease your risk for disease. You will also see many of your “numbers” improve. For a 200 pound person, that is weight loss of 10 to 20 pounds.

• Lose 1/2 to 2 pounds per week for safe weight loss.

• Each body is different, so lose weight in a manner that is safe and comfortable for you.

• Each week will be different, so think long term!

To lose 1 pound per week, cut 500 calories each day.

• 500 calories of EXERCISE, or

• 500 less calories of FOOD/DRINK, or

• A combination of less food and more exercise.

Examples of 500 calories of food and drink:

• 3 ½, 12 ounce cans of Coke

• 1 Wendy’s spicy chicken sandwich

• 1 large McDonald’s French fries

• 4½ glasses of orange juice

Start slow!

Make small changes - they add up!

• Switch to diet soda or water.

• Eat smaller portions of meat.

• Eat breakfast.

• Switch to wheat products.

Aim for a healthy lifestyle and good results will come!
Healthy Eating Plate

Use the Healthy Eating Plate to guide your eating choices. See Lesson 7, Nutrition 101, on pages 58 to 59 for more information.

To create healthy, balanced meals:

• Make half of your plate fruits and vegetables.
• Make a quarter of your plate whole grains.
• Make a quarter of your plate plant-based protein or lean cuts of meat.
• Use healthy plant-based oils in moderation.
• Drink water, tea, or coffee.
• Stay active to support a healthy weight.

General tips:

• Practice portion control.
• Choose a variety of foods each time you eat.
  › For meals, choose 3 to 5 food groups.
  › For snacks, choose 2 to 3 food groups.
• For more information, visit www.choosemyplate.gov or www.hsph.harvard.edu/nutritionsource/healthy-eating-plate.

Sorting out standard portions

When you are away from home and do not have measuring cups and spoons or a food scale handy, it helps to know what a standard portion of some common foods looks like. The table below gives examples of everyday items to help you judge serving sizes. Get out a measuring cup or a food scale and practice measuring some of your favorite foods, so you can see what a serving size looks like. This will help you judge how much food you are eating.

<table>
<thead>
<tr>
<th>Sample Foods</th>
<th>Serving Size</th>
<th>Similar Sized Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar</td>
<td>1 teaspoon</td>
<td>Small marble or tip of thumb</td>
</tr>
<tr>
<td>Oil, butter, margarine, honey, mayonnaise, ketchup</td>
<td>1 tablespoon</td>
<td>Large marble, poker chip or thumb to first knuckle</td>
</tr>
<tr>
<td>Salad dressing, salsa, hummus, peanut butter</td>
<td>2 tablespoons</td>
<td>2 large marbles, 1 ping pong ball or whole thumb</td>
</tr>
<tr>
<td>Large egg, dried fruit, nuts</td>
<td>1/4 cup</td>
<td>Golf ball or cupped handful</td>
</tr>
<tr>
<td>Burger patty, beef, pork, chicken, turkey, fish, cooked vegetables, mashed</td>
<td>1/2 cup or 4 ounces uncooked meat, poultry or fish (3 ounces cooked)</td>
<td>Tennis ball, hockey puck, deck of cards, bar of soap, checkbook, computer mouse, light bulb or palm of hand</td>
</tr>
<tr>
<td>potatoes, small baked potato, cooked beans and peas, canned fruit, ice cream,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-inch diameter by 1 inch bagel/biscuit/English muffin, cooked rice or pasta</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Foods</td>
<td>Serving Size</td>
<td>Similar Sized Item</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>--------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Chopped raw vegetables/fruit, lettuce (4 leaves), medium apple or orange, small roll, chips, popcorn, pretzels, cereal, soup, yogurt</td>
<td>1 cup</td>
<td>Wiffle ball, baseball or woman’s fist</td>
</tr>
<tr>
<td>Cheese</td>
<td>1 ounce</td>
<td>4 dice or 2 dominoes</td>
</tr>
<tr>
<td>Thin pancake, small waffle</td>
<td>1</td>
<td>CD or DVD disk</td>
</tr>
</tbody>
</table>

**Fad diets**

- Promise fast weight loss of 2 pounds or more per week.
- Promise little to no effort needed.
- Promise no need to exercise.
- Eliminate food groups.
- Require that you purchase pills, bars, shakes, or “diet” foods.
- Make claims about specific foods or combining of foods.
- Rely on personal testimonials instead of scientific evidence.

If it sounds too good to be true, it probably is.

**The keys to your long term success**

- Practice moderation, balance, and portion control.
- Stay active.
- Keep a food journal to become aware of your habits and behaviors. Things to include:
  - Time
  - Location
  - What and portion
  - Hunger/Fullness
  - Thoughts/Feelings
  - Exercise