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Heart Disease and Health

Teaching Plan

To use this lesson for self-study, the learner should read the material, do the activity, and take the test. For group study, the leader may give each learner a copy of the learning guide and follow this teaching plan to conduct the lesson.

Learning objectives

A participant in this lesson will be able to:

- Understand how the heart functions
- Identify potential problems with heart function
- Identify treatment and care for the heart to prevent heart problems

Activity

For an introductory activity, review with your learners the material in the learning guide about what the heart is and how it works. Have your learners fill in the blanks with these words: “When the heart muscle contracts, pumping blood out, it is called systole. When the heart muscle relaxes, it fills up with blood again. This is called diastole.” Ask your learners if they recognize these terms. Point out the information about blood pressure measurement numbers and what they mean.

Heart failure and heart attack

1. Assign half the learners to read the information in the learning guide on heart failure and half to read the information on heart attack.
2. Ask learners from each group to tell the rest of the class what they learned in their reading.

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3. Emphasize the fact that a heart attack is an emergency situation requiring immediate medical care. Be sure your learners know the signs of a heart attack and know how to respond.
4. Discuss the symptoms of heart failure. Ask your learners to think about the patients who have heart failure. Is there anything that your learners should change in their care of these patients?

Prevention

1. Review the guidelines for a healthy heart. Point out that following these guidelines also lowers the risk of certain other diseases, such as diabetes and some cancers.
2. Deliver a minilecture on the information in the learning guide about diet and exercise.
3. Ask your learners how they can use this information to assist your patients in achieving or maintaining optimum health.

Conclusion

Have participants take the test. Review the answers together. Award certificates to those who answer at least seven (70%) of the test questions correctly.

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How the Heart Works

The heart is a bag made out of muscle, with blood vessels leading in and out. It works like a large pump, pushing blood from the bag and through the blood vessels that run throughout the body. The blood carries oxygen, nutrients, and waste products.

Blood is pumped from the heart to the lungs, where it picks up oxygen. The blood then returns to the heart, where it is pumped out to the rest of the body. The blood delivers its oxygen to the tissues and picks up and distributes nutrients and waste products and then returns to the heart and gets pumped back to the lungs.

Figure
16.1

Understanding the Heart

When the heart muscle contracts, pumping blood out, it is called _____.

The top number of a blood pressure reading measures the heart when it beats. This is the *systolic* pressure.



When the heart muscle relaxes, it fills up with blood again. This is called _____.

The bottom number of a blood pressure reading measures the heart at rest. This is the *diastolic* pressure.



What Can Go Wrong with the Heart?

We will look at two different unhealthy heart conditions: heart failure and heart attacks.

Heart failure

Heart failure is a condition in which the heart doesn't pump as well as it should. The heart has not actually "failed," but it is not pumping enough blood to meet the requirements of the body's tissues and organs. The blood flow slows down, causing a backup of fluid and waste products and depriving the tissues of oxygen and nutrients.

Heart failure is not a disease in itself but is caused by underlying problems like high blood pressure or clogged arteries. It is often called congestive heart failure or CHF because of the excess fluid or congestion that tends to build up in the lungs and in tissues throughout the body. This excess fluid creates symptoms like swollen ankles and shortness of breath.

Heart failure is usually a long-term condition that gradually becomes worse. The heart tries to make up for its loss of power by enlarging its chambers, developing more muscle mass, and pumping faster. The body tries to compensate in other ways. Blood vessels narrow, and blood is diverted away from less important tissues and organs to maintain flow to the heart and brain.

The most common signs and symptoms of heart failure are:

- Fatigue, weakness, feeling tired
- Shortness of breath during activity
- Unable to breathe well when lying flat
- Edema: swelling in feet, ankles, legs, or abdomen
- Rapid weight gain
- Lack of appetite, full feeling in stomach, nausea
- Memory loss, disorientation, confusion
- Heart palpitations, heart racing

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- Irregular heart beat
- Anxiety, restlessness
- Decreased urine output
- Cold, sweaty skin that might look gray or bluish in color
- Persistent coughing or wheezing, possibly with white or pink blood-tinged foamy phlegm

Heart attack

A heart attack is an injury to the heart muscle caused by a loss of blood supply. It occurs when an artery that feeds blood to the heart becomes blocked. The blockage is usually due to a blood clot that forms where one of these arteries has been narrowed by a build-up of cholesterol and fat.

A heart attack is also called a **myocardial infarction**, or **MI**. *Myo* means muscle, *cardio* means heart, and *infarct* means that some heart tissue has died from lack of oxygen.

A heart attack usually occurs over a time period of four to six hours. With each minute, more heart tissue is deprived of oxygen and is damaged or dies. The only way to help the individual suffering a heart attack is to restore blood flow before too much damage is done.

Heart attack symptoms in women, the elderly, and people with diabetes tend to be less pronounced. Some people have no symptoms at all. While heart attacks usually occur suddenly, about half of all victims have warning symptoms in advance.

All heart attacks are emergencies. Early treatment, including **cardiopulmonary resuscitation** (CPR) if the heart stops, is essential to survival. Everyone should learn CPR and be able to use it. Recognizing symptoms of a heart attack and helping the person get emergency care can save a life.

Warning signs of a heart attack include:

- Pressure, fullness, uncomfortable squeezing or pain in the middle of the chest that lasts beyond a few minutes
- Pain spreading beyond the chest to the shoulders, neck, arms, or back, and sometimes to the teeth and jaw

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- Pain in the upper abdomen that lasts for more than a few minutes (sometimes people think they are having indigestion or heartburn)
- Shortness of breath, difficulty breathing
- Intense sweating
- Fainting, unsteadiness, lightheadedness
- Nausea and vomiting
- Confusion
- Sense of anxiety or impending doom
- Angina: a type of chest pain caused by the heart temporarily not getting enough blood flow; angina of increasing frequency may be a warning sign of a heart attack

People that die from heart attacks usually die within the first hour after symptoms start. If you suspect that someone might be having a heart attack, call emergency medical personnel immediately.

Causes and risk factors of heart failure and heart attacks

The main causes of heart failure are the same things that can cause heart attacks, such as smoking, eating fatty foods, not exercising, and being overweight. Other causes include birth defects and viruses that damage the heart valves or muscles. Someone who experiences a heart attack will often develop heart failure because part of the heart muscle has been damaged, making the heart work harder.

The following are the main risk factors for heart disease:

- High blood pressure
- High blood cholesterol levels
- Smoking
- Lack of exercise
- Obesity
- Diabetes
- Stress

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- Alcohol
- Family history
- Abnormal heart valves
- Coronary artery disease
- Heart muscle disease
- Congenital heart disease
- Severe lung disease

Preventing heart disease

Some of the things that cause heart disease can't be easily changed, such as diseases caused by viruses or birth defects. Many of the causes and risk factors, however, can be improved with diet and activity changes. Everyone can benefit from following the “guidelines for a healthy heart.”

Guidelines for a Healthy Heart

- Eat a variety of foods
- Engage in regular physical activity
- Achieve and maintain a healthy weight by controlling calorie intake
- Limit total salt (sodium) consumption to less than one teaspoon per day
- Eat foods low in fat and cholesterol
- Limit sugar intake
- Eat plenty of vegetables, fruits, and whole-grain products
- If you drink alcohol, consume no more than one drink per day
- Do not smoke
- Monitor blood pressure and keep it within healthy limits (less than 140 systolic and 90 diastolic for most people, or 140/90)

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Fat and cholesterol

Cholesterol is a waxy substance made in the body (mostly in the liver). Our bodies use it to make some of our hormones and tissues. Foods that come from animals also contain cholesterol, so we add cholesterol to our body's supply when we eat things like eggs and meat. A high level of cholesterol in the blood is a major risk factor for heart disease.

A high intake of fatty foods is another risk factor for heart disease. There are three kinds of fat: saturated, polyunsaturated, and monounsaturated. Saturated fat is the chief culprit in raising blood cholesterol and increasing the risk of heart disease. The main source of saturated fat is animal foods such as meat, eggs, cream, cheese, and butter. Some plant oils, such as coconut oils and cocoa butter, are also high in saturated fats. Foods that are high in saturated fat are usually high in cholesterol as well. The two unsaturated fats (poly and mono) may help lower blood cholesterol when used in place of saturated fats. Unsaturated fats are found in certain plant oils, such as corn, safflower, olive, and peanut oils. Total intake of all three kinds of fat should be less than 30% of your total calories.

Two other substances connected with cholesterol are of concern in heart health. Low-density (LDL) and high-density (HDL) lipoproteins carry cholesterol through the blood. LDL is the main cholesterol carrier, and if too much of it circulates in the blood, it can slowly build up in the arteries that feed the heart and brain, causing the arteries to clog. HDL is the other cholesterol carrier, and it takes cholesterol away from the arteries and back to the liver, where it is taken out of the body. To maintain a healthy heart, you want to have a low level of LDL and a high level of HDL.

To keep your dietary intake of fats and cholesterol at the right levels, follow these guidelines:

- Get two to four servings of fat-free or low-fat milk and dairy products (yogurt, cheese) daily.
- Eat no more than six ounces (cooked) of lean meat, poultry, and seafood a day. Include fish in your diet several times per week.
- Get five or more servings of vegetables and fruits every day.
- Eat six servings of grains (breads, cereals) and starchy vegetables (beans, potatoes) daily.
- Limit your intake of saturated fats like shortening, fried foods, whole milk, ice cream, and butter.

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Exercise guidelines

Physical activity does not have to be strenuous to bring health benefits. The important thing is to do a moderate amount of physical activity every day. Regular exercise helps control weight, raises HDL levels in some people, strengthens the heart muscle, and promotes good circulation. Keep the following in mind:

- Older adults and people with disabilities should talk to their doctors before beginning a new physical activity
- Choose an activity that is rhythmic and repetitive and improves the circulation, like walking
- Find an activity that is enjoyable and can be done year-round
- Wear comfortable clothes and shoes
- Exercise with a friend or a group
- When walking, choose a smooth, soft surface that is well lit
- Take time to warm up before exercising and cool down afterward
- When stretching, stretch muscles slowly and gently
- Start exercising slowly and progress gradually
- Drink water at least every 15 minutes while you are exercising