



The circulatory system

The circulatory system is one of the human body's most complex organ systems. Responsible for the transportation of blood and critical materials within the bloodstream, the circulatory system can be thought of as the body's extensive highway infrastructure, with the heart as its hub.

Many nursing home residents suffer from conditions involving their circulatory system, most notably **heart disease**, which is the leading cause of death for both men and women in the nation. Other problems include **high cholesterol** and the threat of residents suffering from a **heart attack** or **stroke**.

Due to the prevalence of heart disease in the United States and in the country's nursing homes, it is very important for CNAs to possess a thorough understanding of the circulatory system and the diseases and conditions associated with the heart.

Have a good day of training, and stay tuned for next month's issue of **CNA Training Advisor**, which will cover caring for residents with hearing or vision impairments.

Grasp on the heart

What have you learned about the circulatory system and the heart? Before beginning this month's lesson, compile a list of what you already know. Then, after completing the lesson, revisit your list. The point of this exercise is not to be critical or boastful of what you already knew, but to further build on what you learn in the lesson!

PROGRAM PREP

Program time

Approximately 30 minutes

Learning objectives

Participants in this activity will learn how to:

- Recognize the functions of the circulatory system
- Describe the diseases and conditions that affect the circulatory system
- Identify heart disease risk factors
- React to a resident suffering from a heart attack

Preparation

- Review the material on pp. 2–4
- Duplicate the **CNA Professor** insert for participants
- Gather equipment for participants (e.g., an attendance sheet, pencils, etc.)

Method

1. Place a copy of **CNA Professor** and a pencil at each participant's seat
2. Conduct the questionnaire as a pretest or, if participants' reading skills are limited, as an oral posttest
3. Present the program material
4. Review the questionnaire
5. Discuss the answers

Tips and tools for CNA training

Looking for more information about CNA training? Sign up to receive the **LTC Nursing Assistant Trainer**, a free biweekly e-newsletter that addresses all of your training needs. The **LTC Nursing Assistant Trainer** provides training tips on nursing measures, best practices, and other crucial aspects of job training for CNAs. This free e-newsletter gives you valuable information and tools to help you conduct efficient, innovative training for every CNA in your facility.

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The circulatory system distributes blood cells and nutrients throughout the body via an amazing arrangement of veins and arteries. The most critical of these connect with the heart, which pumps oxygen-rich blood (delivered from the lungs) to the rest of the body and oxygen-depleted blood back to the lungs.

The heart is composed of four chambers:

- Left atrium
- Right atrium
- Left ventricle
- Right ventricle

The atriums are the upper chambers, whereas the ventricles are located at the bottom of the heart on their respective sides. Oxygen-depleted blood enters through the right atrium. It is then directed to the right ventricle before passing through the pulmonary artery, which leads the blood out of the heart and toward the lungs.

Blood that is rich in oxygen enters the heart through the pulmonary vein and flows into the left atrium. Then, the blood is sent to the left ventricle, where it is pumped into the aorta. Located at the very top of the heart, the aorta directs the blood out of the heart and toward the body's organs.

Breaking the ADL Code

Don't let inaccurate ADL scoring hinder your reimbursement under the MDS 3.0. Use this comprehensive, 20-minute video to train your entire nursing team—CNAs, RNs, and MDS coordinators—on the new ADL documentation requirements under the MDS 3.0.

Familiar scenarios illustrate the ADL coding changes, provide concrete examples of each level of scoring, and walk CNAs and RNs through the correct ways to code the four late-loss ADLs. In addition, MDS coordinators will discover how to tabulate the ADL scores of each resident to come up with the final ADL codes, which ultimately determine reimbursement.

The DVD includes a set of valuable tools that you can download and distribute to your staff, including:

- A 10-question comprehensive quiz to test your nursing staff's retention and understanding of the video's content
- An achievement certificate to document training
- CMS' ADL self-performance algorithm
- A flow sheet for CNAs to document ADLs
- A list of definitions related to ADLs and the MDS 3.0

For more information about Breaking the ADL Code: A Team Approach to MDS 3.0 Documentation, visit www.hcmarketplace.com/prod-8756.

Heart disease

The processes of the circulatory system are quite complex. For this reason, complications can be the difference between life and death. This is especially true when it comes to nursing home residents who may already be at a higher risk of heart disease. Nine out of 10 people suffering from heart disease have at least one risk factor, including:

- High cholesterol
- High blood pressure
- Diabetes
- Smoking cigarettes
- Overweight or obesity
- Poor diet
- Physical inactivity
- Alcohol use

The term "heart disease" refers to several types of heart conditions, the most common type being coronary artery disease (CAD), which can cause heart attack, angina, heart failure, and arrhythmias. These related conditions and others are explained below:

- **Acute coronary syndrome** is a general term that includes heart attack and unstable angina.
- **Angina** is a symptom of CAD. It is a chest pain or discomfort that occurs when the heart is not getting enough blood. Angina may feel like pressure or a squeezing pain in the chest. The pain may also occur in the shoulders, arms, neck, jaw, or back, and it may feel like indigestion. There are two forms of angina: stable and unstable. Stable angina happens during physical activity or under mental or emotional stress. Unstable angina is chest pain that occurs even while at rest, without apparent reason. This type of angina is a medical emergency.
- **Aortic aneurysm and dissection** are conditions in which the aorta stretches (aneurysm) or ruptures (dissection). A rupture is a medical emergency.
- **Arrhythmias** are irregular (abnormally fast or slow) heartbeats. Some arrhythmias are serious. One example is ventricular fibrillation, which causes a severely abnormal heart rhythm that leads to death unless treated right away with an electrical shock to the heart (called defibrillation). Other arrhythmias are less severe but can develop into more serious conditions such as atrial fibrillation.
- **Atrial fibrillation** is a type of arrhythmia that can cause rapid, irregular beating of the heart's upper chambers. Blood may pool and clot inside the heart, increasing the risk for heart attack and stroke.
- **Cardiomyopathy** occurs when the heart muscle becomes enlarged or rigid. This can lead to inadequate heart pumping or other problems. Cardiomyopathy has many causes, including prior heart attacks and viral or bacterial infections.
- **Congenital heart defects** are malformations of heart structures that are present at birth. They are the most common type of major

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birth defect. Examples include abnormal heart valves or holes in the heart's walls that divide the chambers. Congenital heart defects range from minor to severe.

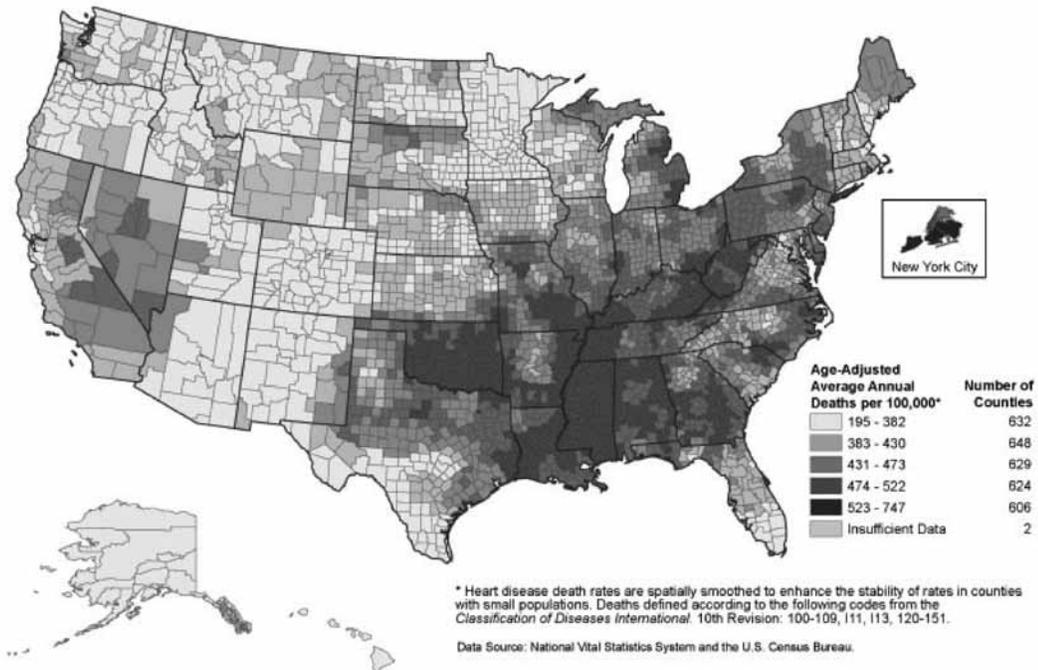
- **Heart failure**, also called congestive heart failure or chronic heart failure, is a serious condition that occurs when the heart can't pump enough blood to meet the body's needs. It does not mean

that the heart has stopped. The only cure for heart failure is a heart transplant. However, it can be managed with medication.

- **Peripheral arterial disease (PAD)** is a hardening of the arteries that supply blood to the arms and legs. PAD usually results from atherosclerosis, the buildup of plaque and narrowing of the arteries. With this condition, blood flow and oxygen to the arm and leg

Heart disease death rates, 2000–2006

Adults Ages 35 Years and Older, by County



Source: Centers for Disease Control and Prevention.

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muscles are reduced or even fully blocked. Signs and symptoms include leg pain, numbness, and swelling in the ankles and feet.

- **Rheumatic heart disease** is damage to the heart valves caused by a bacterial (streptococcal) infection called rheumatic fever.

Coronary artery disease

CAD occurs when plaque builds up in the arteries that supply blood to the heart. Plaque is made up of cholesterol deposits, which can accumulate in the arteries. When this happens, the arteries can narrow over time; this is a process known as atherosclerosis.

CAD can weaken the heart muscle, which may lead to heart failure or arrhythmia.

Doctors can determine whether a resident is at risk for CAD by checking blood pressure, cholesterol, and blood glucose. Family history also plays a role. Several tests can be done to diagnose CAD, including:

- **Electrocardiogram:** Also known as ECD or EKG, this test measures the electrical activity, rate, and regularity of the resident's heartbeat.
- **Echocardiogram:** Uses ultrasound to create a picture of the heart.
- **Exercise stress test:** Measures the resident's heart rate while he or she walks on a treadmill. This helps determine how well the heart is working when it has to pump more blood.
- **Chest x-ray:** Creates a picture of the heart, lungs, and other organs in the chest.
- **Cardiac catheterization:** Checks the inside of the arteries for blockage by threading a thin, flexible tube through an artery in the groin, arm, or neck to reach the coronary artery. Can measure blood pressure and flow in the heart's chambers, collect blood samples from the heart, or inject dye into the coronary arteries.
- **Coronary angiogram:** Monitors blockage and flow of blood through the heart. Uses x-rays to detect dye injected via cardiac catheterization.

Cholesterol

Cholesterol is a waxy, fat-like substance that the body needs. Too much of it in the blood, however, can result in dangerous buildup along artery walls.

Approximately one in every six adults (16% of the U.S. adult population) has high cholesterol. Individuals with high cholesterol have roughly twice the risk for heart disease as people with lower levels of cholesterol.

For residents with heart disease, lowering their cholesterol can reduce their risk for having a heart attack, needing heart bypass surgery or angioplasty, and dying from heart disease. Even if a resident does not have heart disease, he or she can reduce the risk of developing it by lowering cholesterol levels. This is true even if the resident has normal cholesterol levels.

Steps that residents can take to prevent high cholesterol or to reduce their cholesterol levels include not smoking, eating a healthy diet, and exercising if possible.

Heart attack

A heart attack, also called a myocardial infarction, occurs when a section of the heart muscle dies or gets damaged because of reduced blood supply. CAD is the main cause of heart attack. A less common cause is a severe spasm of a coronary artery, which also can prevent blood from reaching the heart.

Residents who suffer a heart attack must immediately be treated. Otherwise, further damage to the heart muscle can occur and an irregular heart rhythm may develop. Sudden cardiac arrest occurs when the heart stops completely. Unless treated, a person whose heart has stopped will die within minutes.

A resident who experiences a heart attack needs emergency care such as CPR or electrical shock (defibrillation). If you believe a resident is suffering from a heart attack, get the necessary help right away, which may require calling 911. CPR or the use of a defibrillator may be able to sustain the resident until emergency personnel arrive. The chances of a resident surviving a heart attack are greater when treatment begins quickly.

CNAs must be aware of heart attack symptoms. The five major symptoms are as follows:

- Pain or discomfort in the jaw, neck, or back
- Feeling weak, light-headed, or faint
- Chest pain or discomfort
- Pain or discomfort in the arms or shoulders
- Shortness of breath ■

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Mark the correct response.

Name: _____

Date: _____

1. The leading cause of death for both men and women in the United States is _____.
 - a. accidental
 - b. cancer
 - c. lung disease
 - d. heart disease
2. The heart is composed of five chambers.
 - a. True
 - b. False
3. Oxygen-rich blood enters the heart though the pulmonary vein and flows into the _____.
 - a. left atrium
 - b. right atrium
 - c. left ventricle
 - d. right ventricle
4. All of the following are risk factors for heart disease except _____.
 - a. high cholesterol
 - b. low blood pressure
 - c. smoking cigarettes
 - d. diabetes
5. _____ are irregular heartbeats.
 - a. Anginas
 - b. Aortic aneurysms
 - c. Aortic dissections
 - d. Arrhythmias
6. _____ occurs when the heart muscle becomes enlarged or rigid.
 - a. Acute coronary syndrome
 - b. Cardiomyopathy
 - c. Peripheral arterial disease
 - d. Rheumatic heart disease
7. Coronary artery disease (CAD) occurs when plaque builds up in the arteries that supply blood to the heart; over time, CAD can weaken the heart muscle, which may lead to heart failure or an irregular heartbeat.
 - a. True
 - b. False
8. _____ checks the inside of the arteries for blockage by threading a thin, flexible tube through an artery in the groin, arm, or neck to reach the coronary artery.
 - a. Electrocardiogram
 - b. Echocardiogram
 - c. Cardiac catheterization
 - d. Coronary angiogram
9. Even if a resident does not have heart disease, he or she can reduce the risk of developing it by lowering cholesterol levels.
 - a. True
 - b. False
10. All of the following are symptoms of a heart attack except _____.
 - a. pain or discomfort in the jaw, neck, or back
 - b. feeling weak, light-headed, or faint
 - c. intense head pain or headaches
 - d. shortness of breath