
Information for Behavioral Health Providers in Primary Care

Cardiovascular Disease Information Sheet

Cardio (heart) vascular (blood vessels) Diseases

Cardiovascular diseases are a class of diseases affecting the heart or blood vessels

- In the US, more people die from cardiovascular disease than from any other cause.

Types and Symptoms of Cardiovascular Disease

Coronary Artery Disease (CAD):

- *Coronary Arteries:* The coronary arteries supply blood to the heart muscle. Because the heart muscle is continuously working at a high level, and thus requires a continuous supply of oxygen and nutrients, any obstruction of the coronary arteries leads to problems almost immediately.
- *Arteriosclerosis:* Healthy arteries are flexible, strong and elastic. Over time, however, too much pressure in your arteries can make the walls thick and stiff — sometimes restricting blood flow to your organs and tissues. This process is called arteriosclerosis, or hardening of the arteries.
- *Atherosclerosis:* Atherosclerosis is a specific type of arteriosclerosis, but the terms are often used interchangeably. Atherosclerosis refers to the buildup of cholesterol deposits, calcium, and abnormal cells (plaques) on artery walls. These plaques cause a gradual, progressive narrowing of the artery, and thus make blood flow through the artery progressively more difficult. In addition, these plaques are subject to sudden rupture. When the plaques rupture, they trigger a clotting event that can cause acute obstruction within the artery. Although atherosclerosis is often considered a heart problem, it can affect arteries anywhere in your body. Atherosclerosis is a preventable and treatable condition. Atherosclerosis of the arteries is a major cause of heart attacks.
 - *Symptoms of Atherosclerosis:* Atherosclerosis develops gradually. There are usually no atherosclerosis symptoms until an artery is so

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narrowed or clogged that it can't supply adequate blood to your organs and tissues. Sometimes a blood clot completely obstructs blood flow, or even breaks apart and causes blood clots that can trigger a heart attack or stroke.

- If you have *atherosclerosis in your heart arteries*, you may have symptoms similar to those of a heart attack, such as chest pain (angina). [Angina is a type of chest pain or discomfort caused by reduced blood flow to the heart muscle. Angina is typically described as squeezing, pressure, heaviness, tightness or pain in your chest. Many people with angina say it feels like someone is standing on their chest. Others symptoms of angina include nausea, fatigue, shortness of breath, anxiety, sweating and dizziness. *Stable angina* is a persistent, recurring chest pain that usually occurs with exertion. *Unstable angina* is a sudden, new chest pain — or a change in the pattern of previously stable angina — that may signal an impending heart attack. A third, a rare type of angina called *variant angina* (also called Prinzmetal's angina) is caused by a coronary artery spasm.]

Myocardial Infarction (MI or "heart attack"): Sometimes a plaque will suddenly rupture. Blood is then exposed to the "grunge" inside the plaque, and begins to clot; soon the clot blocks the artery. The portion of heart muscle supplied by the occluded artery starts to die, and unless blood flow is restored within a few hours, the damage to the heart muscle becomes permanent. This event (permanent heart muscle damage caused by an occluded coronary artery) is called a *myocardial infarction (MI)*, or heart attack.

The symptoms of an acute MI usually are similar to those of angina, but are much more severe and persistent, and are often accompanied by lightheadedness, nausea, sweating, and a sense of impending doom. If the patient survives the MI itself, the resulting heart muscle damage can lead to chronic heart failure or fatal heart rhythm disturbances.

Cardiac Arrest: A cardiac arrest, in contrast to an MI, is caused by a sudden heart arrhythmia called ventricular fibrillation. In ventricular fibrillation, the electrical signals within the heart suddenly become completely chaotic. Because these electrical signals control the timing and the organization of the heartbeat, when those signals degenerate to total chaos, the heart suddenly stops beating. That is, it goes into "cardiac arrest." The most common outcome of a cardiac arrest is sudden death.

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The treatment for a cardiac arrest is to begin immediate cardiopulmonary resuscitation (CPR) to support the victim's circulation, and, as soon as possible, to deliver a large electrical shock to the heart with a device called a "defibrillator." The large shock allows the heart's electrical signal to re-organize itself, and the heart starts beating again. Unfortunately, because death occurs within a few minutes of cardiac arrest unless expert help is available, the large majority of individuals who suffer cardiac arrest are not successfully resuscitated.

Congestive Heart Failure (CHF): CHF is a chronic disease occurring when the heart can't fill or pump a sufficient amount of blood to body. Symptoms of CHF include:

- Swelling in extremities (edema) from excess and stagnant blood in vessels due to reduced heart pumping power
- Excess fatigue and shortness of breath (especially upon lying down)
- Cold extremities due to poor circulation

Cardiac Arrhythmias are irregular electrical activities of the heart often referred to as irregular heartbeats. The symptoms of cardiac arrhythmia include:

- Palpitations (a feeling of skipped hear beats, fluttering or "flip-flops," or feeling that your heart is "running away")
- Pounding in your chest
- Fainting
- Shortness of breath
- Chest discomfort

There are a number of different types of arrhythmias to including premature atrial contractions, premature ventricular contractions, ventricular tachycardia, atrial fibrillation, atrial flutter, and several other less common types.

Hypertension (high blood pressure): Hypertension, or high blood pressure, is a cardiovascular disease characterized by blood pressure that is higher than normal for an extended period of time. The condition is asymptomatic except in very serious cases. Normal blood pressure is less than 120 systolic over 80 diastolic—often written as 120/80 mm Hg (read 120 over 80 millimeters of mercury).

Normal blood pressure is less than 120/80. When a person has a blood pressure reading between 120/80 and 139/89, this condition is called prehypertension. Stage 1 hypertension is defined as 140-159 over 90-99, and a blood pressure above those levels is considered Stage 2 hypertension. If hypertension is well controlled, most serious complications may be avoidable. However, for people with very high, uncontrolled blood pressure, serious problems could develop. Coronary

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artery disease and stroke are the most common causes of death for people with very serious high blood pressure.

Peripheral Vascular Disease (PVD): If you have atherosclerosis in the arteries in your arms and legs, you may have symptoms of peripheral arterial disease. The symptoms of PVD include:

- Pain, weakness, or cramping in muscles due to decreased blood flow
- Leg pain when walking (intermittent claudication)
- Sores, wounds, or ulcers that heal slowly or not at all
- Noticeable change in color (blueness or paleness) or temperature (coolness) when compared to the other limb
- Diminished hair and nail growth on affected limb and digits

Stroke: A loss of brain function due to limited supply to the brain is known as a stroke or cerebral vascular accident (CVA). Strokes can be a result of thrombosis (blood clot), embolism (a traveling clot, if you will), or hemorrhage (a rupture of a blood vessel). Most strokes (about 80%) are a result of lack of blood flow to the brain due to a blockage. *Symptoms of a Stroke include:*

- Sudden numbness or weakness in your face, arms or legs, especially on one side of the body
- Altered vision, smell, taste, hearing, breathing, heart rate
- Confusion, difficulty speaking, slurred speech, misunderstanding speech
- Difficulty walking, dizziness, loss of balance
- Severe headache with unknown cause

Transient Ischemic Attack (TIA): A TIA is a "warning stroke" or "mini-stroke" that produces stroke-like symptoms but no lasting damage. Recognizing and treating TIAs can reduce your risk of a major stroke. TIAs occur when a blood clot temporarily clogs an artery, and part of the brain doesn't get the blood it needs. The symptoms occur rapidly and last a relatively short time. Most TIAs last less than five minutes. The average is about a minute. Unlike stroke, when a TIA is over, there's no injury to the brain. Most strokes aren't preceded by TIAs. However, of the people who've had one or more TIAs, more than a third will later have a stroke. In fact, a person who's had one or more TIAs is more likely to have a stroke than someone of the same age and sex who hasn't.

Risk Factors for CVD

Risk factor of cardiovascular disease can be divided into non-modifiable risks (risks we are stuck with) and modifiable risks (those we can do something about).

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- *Non-modifiable Risks include:*
 - Age (risk increases as people get older)
 - Gender (men generally have a greater risk; post-menopausal women have a higher risk than pre-menopausal)
 - Heredity (higher risk if your first degree relatives have coronary vascular disease)
- *Modifiable Risks include:*
 - *Hyperlipidemia:* Hyperlipidemia refers to having high cholesterol and/or high triglyceride levels. Individuals who have hyperlipidemia are at greater risk of developing cardiovascular disease. *Cholesterol* is a fatty substance (a lipid) that is an important part of the outer lining (membrane) of cells in the body of animals. Cholesterol is also found in the blood circulation of humans. The cholesterol in a person's blood originates from two major sources; dietary intake and liver production. *LDL cholesterol* is called "bad" cholesterol, because elevated levels of LDL cholesterol are associated with an increased risk of coronary heart disease. LDL lipoprotein deposits cholesterol on the artery walls, causing the formation of a hard, thick substance called cholesterol plaque. *HDL cholesterol* is called the "good cholesterol" because HDL cholesterol particles prevent atherosclerosis by extracting cholesterol from the artery walls and disposing of them through the liver. Thus, high levels of LDL cholesterol and low levels of HDL cholesterol (high LDL/HDL ratios) are risk factors for atherosclerosis, while low levels of LDL cholesterol and high level of HDL cholesterol (low LDL/HDL ratios) are desirable. *Triglyceride* is a fatty substance that is composed of three fatty acids. Most doctors now believe that an abnormally high triglyceride level is a risk factor for atherosclerosis, even though it is difficult to conclusively prove this at the present time. However, it is increasingly recognized that elevated triglyceride is often associated with other conditions that increase the risk of atherosclerosis, including obesity, low levels of HDL- cholesterol, insulin resistance and poorly controlled diabetes mellitus.
 - *Smoking tobacco products:* (Smokers are two times more likely than non-smokers to have heart attack)
 - *Hypertension (high blood pressure >140/90):* (Hypertension is a leading cause of heart attack as a result of narrowing of blood vessels increasing workload of heart; elevated systolic seems to be most significant in this regard)
 - *Obesity/Overweight (especially >30 BMI):* (Obesity increases risk of hypertension and diabetes, leading to increase risk of cardiovascular

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- disease. “Apple shaped” people (fat mid-section) is associated with higher risk for CVD than “pear shaped” people (fat legs/thighs))
- *Hyperglycemia*: Hyperglycemia or high blood sugar is associated with diabetes mellitus which increases the risk of cardiovascular disease
 - *Inactivity*: Lack of physical activity/exercise double’s ones risk for heart disease
 - *Depression*: Depression independently increases risk for CVD and is associated with reduced physical activity as well as increased smoking
 - *Alcohol*: Excessive use of alcohol has been linked to an increase in CVD
 - *Poor Diet*: Foods high in salt, sugar, saturated and partially hydrogenated fats increase risk for CVD
 - *Elevated C-reactive protein (CRP)*: CRP is produced by the liver and is used mainly as a blood serum marker of inflammation. People with high levels of CRP are at higher risk for CVD, hypertension, and diabetes compared to those with lower levels

Treatments:

There are multiple treatments available for the various types of cardiovascular disease.

- *Coronary Artery Bypass Surgery (CABG, also referred to as a “Cabbage”)*: CABG is surgical procedure to relieve angina pectoris (chest pain) and reduce the risk of death from coronary artery disease. Arteries or veins from elsewhere in the patient’s body are grafted to bypass occluded (blocked) coronary arteries in order to improve blood flow to the heart.
- *Angioplasty*: Angioplasty is a mechanical widening of a narrowed or totally-obstructed blood vessel by insertion of a guide wire and inflation of a balloon.
- *Stents*: This is a type of angioplasty consisting of an expandable wire form (netting) or perforated tube inserted into constricted (stenosed) coronary or peripheral artery in order to increase blood flow.
- *Pharmacologic Treatments*: Today there is a large armamentarium of medications used to treat cardiovascular disease. Among these medications are:
 - *Blood Thinners*: Warfarin (coumadin): Mostly administered orally to people with an increased tendency for blood clots or as prophylaxis in those individuals who have already formed a blood clot (thrombus) which required treatment. Heparin: A fast acting anti-coagulant that’s injected intravenously or subcutaneously (under the skin). If long-term anticoagulation is required, heparin is often used to begin anticoagulation therapy until the oral anticoagulant warfarin takes effect. Whereas administration of heparin is often

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done via a continuous infusion, low molecular weight heparin (LMWH) can be administered once per day.

- *Lipid Altering Medications:* Lipid altering medications are used in lowering blood levels of undesirable lipids such as LDL cholesterol and triglycerides and increasing blood levels of desirable lipids such as HDL cholesterol. Several classes of medications are available in the United States, including HMG CoA reductase inhibitors (statins), nicotinic acid, fibric acid derivatives, and medications that decrease intestinal cholesterol absorption (bile acid sequestrants and cholesterol absorption inhibitors). Some of these medications are primarily useful in lowering LDL cholesterol, others in lowering triglycerides, and some in elevating HDL cholesterol. Medications also can be combined to more aggressively lower LDL, as well as in lowering LDL and increasing HDL at the same time. There are an incredible number of current, very new, and emerging drugs in these classes. Among the more well known are the:

Statins: The statins are the most widely used, and also the most powerful medications for lowering LDL cholesterol. Numerous large, randomized, double-blind, placebo-controlled, clinical trials (controlled trials) have shown that statins reduce heart attacks (and strokes) and improve survival. Statins are well tolerated with low side effect rates when used long term. Statins not only lower blood LDL cholesterol levels, they also modestly increase HDL cholesterol levels and modestly decrease triglyceride levels. The statins that are now on pharmacy shelves in the U.S. (putting the generic name first followed by the brand name in parentheses) are:

- rosuvastatin (Crestor)
- fluvastatin sodium (Lescol)
- atorvastatin calcium (Lipitor)
- lovastatin (Mevacor)
- pravastatin sodium (Privation)
- simvastatin (Zocor)

Nicotinic Acid: Nicotinic acid medications are most effective in increasing HDL, effective in lowering triglycerides, and mildly to modestly effective in lowering LDL. Examples of the nicotinic acids are: niacin, niaspan, and slo-niacin.

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Fibric Acid: Fibric acid medications are most effective in lowering triglycerides, effective in increasing HDL, and minimally effective in lowering LDL. Examples include Lipid and Tricor.

Bile Acid Sequestrants: These medications are mildly to modestly effective in lowering LLD but have no effect on HDL and the triglycerides. Examples include Zetia.

Combining Nicotinic Acid with a Statin: A recent trend is to combine two different classes of medications into a single pill. Advicor (lovastatin + niaspan) is an example.

Combining a Statin with an Absorption Inhibitor: An example in this group is Vytorin (Zocor + Zetia) which purports a synergistic lowering of LDL by using a lower dose of each ingredient.

- *Lifestyle Changes:* Because many of the modifiable risk factors involve health behaviors (or the lack of healthy behaviors), treatment for cardiovascular disease SHOULD involve one or more “Lifestyle Change” interventions. These include:
 - *Weight Loss - MOVE!:* The MOVE! Program (Managing Overweight Veterans Everywhere) is a primary-care based program of weight reduction that involves the Veteran in selecting personal goals. MOVE! is truly interdisciplinary and involves individual, group and telephone support; exercise; and dietary support.
 - *Exercise Programs:* Even in the absence of a dietary program, appropriate exercise can be an effective treatment for cardiovascular disease. Always consult a physician before making recommendations

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These Information Sheets are designed to provide a brief overview of various medical conditions. Referring to the Information Sheets may help you communicate more effectively with other members of the Primary Care Team. The Information Sheets are by no means an exhaustive description of the disorders. If you need additional information, please engage in a more detailed search. Don't forget to consult with other members of the Primary Care Team. They are an invaluable source of information!