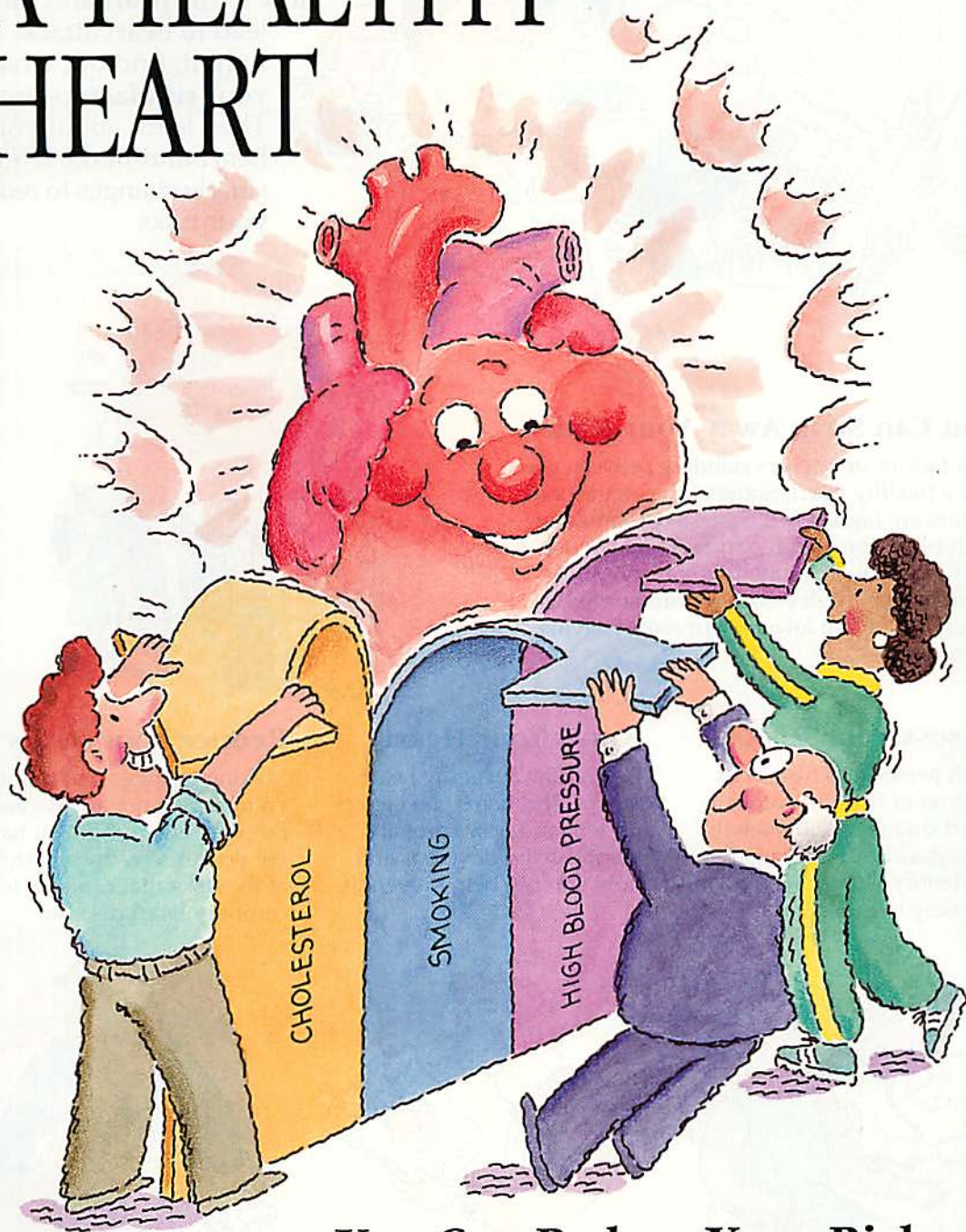


**STRIPPING AWAY
THE BARRIERS TO**

KRAMES.
PATIENT EDUCATION

A HEALTHY HEART



**You Can Reduce Your Risk
of Coronary Heart Disease**

It's Never Too Late

Each day you make choices about your heart. And it's never too late to begin making new choices for a healthier heart. Eating low-fat foods, giving up cigarettes, or losing those extra pounds are all steps you can take to prevent a heart attack. America's number one public health enemy is coronary heart disease. It reduces blood flow to the heart and can lead to heart attack. To fight it, find out what your risk factors are. Then learn about your heart and make a few simple changes to reduce your risks.



You Can Strip Away Your Risks

Risk factors are barriers standing between you and a healthy heart. Some of the biggest risk factors are high blood cholesterol, smoking, high blood pressure, and lack of exercise. Each risk you strip away greatly reduces your chances of developing coronary heart disease. And that lowers your risk of having a heart attack.



Assess Your Risks

Each person has his or her own set of risks for coronary heart disease. Learn what your risks are. Some are easy to identify. Others are hidden, but easy to diagnose.



Know Your Heart

Learn how a healthy heart works. This helps you better understand how coronary heart disease develops and how you can help prevent it.



Reduce Your Risks

Making changes that reduce your risks is not always easy. But it is rewarding. You have the power to reduce many of the risks that can lead to coronary heart disease.



This booklet is not intended as a substitute for professional medical care. Only your doctor can diagnose and treat a medical problem.

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Assess Your Risks

If you're like most people, you don't think about your heart until something goes wrong. But be aware that each risk factor increases your chance of developing coronary heart disease. Take a minute to assess your risk factors below.

YES NO High Blood Cholesterol

- I often eat foods high in fat or high in cholesterol, such as butter, oil, fried foods, and sweets.
- My blood cholesterol (level of fatty substances in the blood) is over 240.
- I eat a lot of processed, convenience, and fast foods.

Smoking

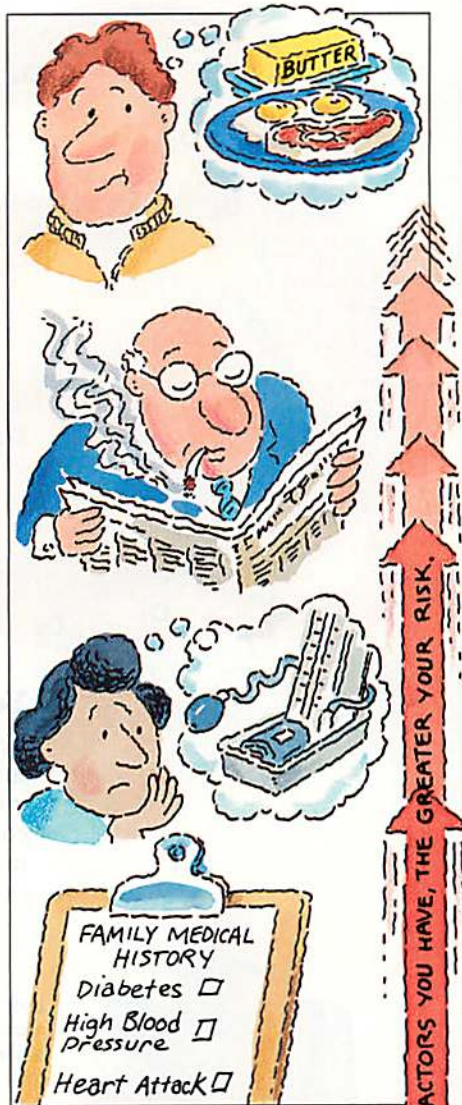
- I am a cigarette, pipe, or cigar smoker.
- I smoke 4 or more cigarettes a day.
- I have little motivation to quit smoking.

High Blood Pressure

- My blood pressure is 120/80 or higher.
- I am overweight.
- I eat a lot of salty foods.
- I exercise less than 30 minutes on most days.

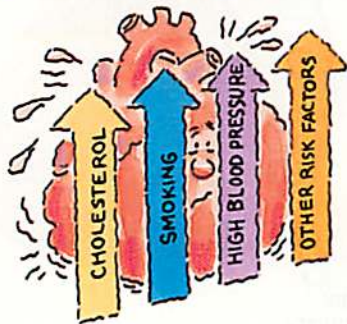
Other Risk Factors

- I have diabetes or a family history of diabetes.
- I'm not physically active.
- I don't do anything regularly to relieve stress.
- I'm a woman on birth control pills who smokes.
- I have a close male relative who had a heart attack before age 55, or a close female relative who had a heart attack before age 65.



The more times you answered "yes"...

...the greater your chance of developing coronary heart disease. But learning about your heart and your risk factors will help you make changes to keep your heart healthy.

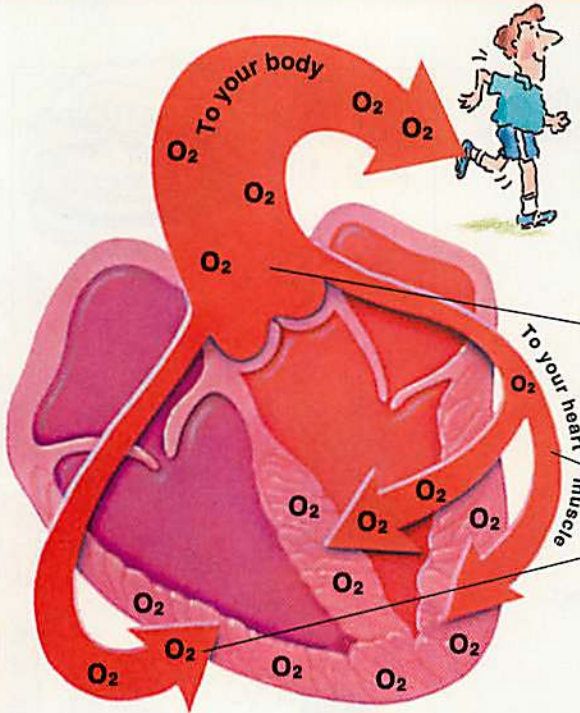


How a Healthy Heart Works

Your heart is a hollow muscle that pumps day in and day out. It rests only between beats. Your heart's two main jobs are supplying oxygen-rich blood to your body and to itself. Like the rest of your body, your heart

Your Pumping Heart

Your heart is your strongest muscle. Each day it beats about 100,000 times and pumps 2,100 gallons of blood. "Fuel lines" out of the heart (blood vessels) feed your body with oxygen-rich blood. "Fuel lines" to your heart (coronary arteries) feed the heart with oxygen-rich blood.

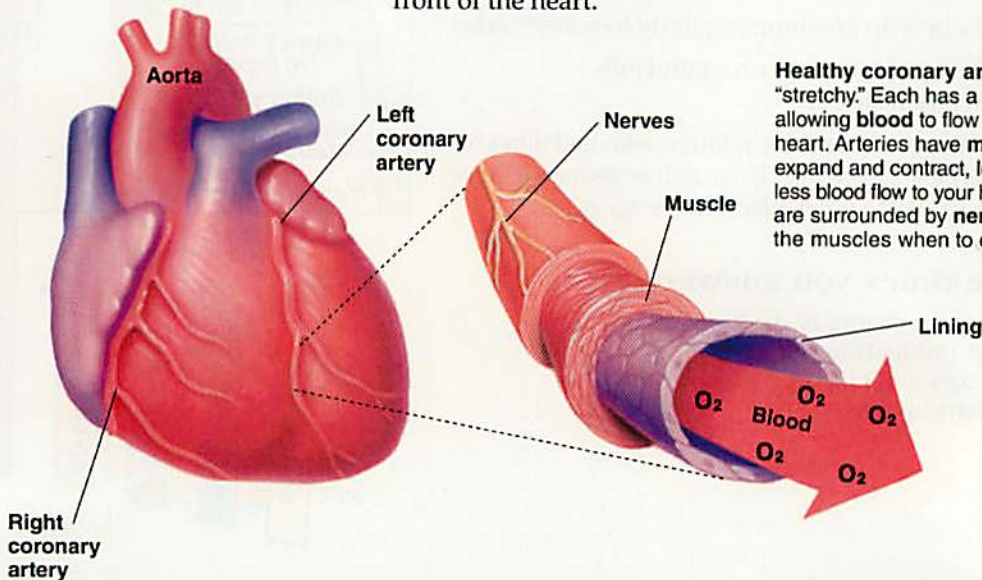


To your body. Your heart pumps blood through your body, supplying it with oxygen (O₂).

To your heart. Through coronary arteries, your heart pumps blood to itself, carrying oxygen.

Your Coronary Arteries

Coronary arteries branch off your **aorta** (the largest artery that leaves your heart). They spread out over the surface of your heart to supply it with oxygen-rich blood. The **right coronary artery** supplies the bottom, right side, and back of the heart. The **left coronary artery** supplies the left side and front of the heart.



Healthy coronary arteries are "stretchy." Each has a smooth lining, allowing **blood** to flow freely to your heart. Arteries have **muscles** that expand and contract, letting more or less blood flow to your heart. Muscles are surrounded by **nerves** that tell the muscles when to expand.

needs oxygen. It gets oxygen through the blood supplied by the coronary arteries. Healthy arteries allow blood to flow freely to your heart whether you're resting or active.



Demand equals supply

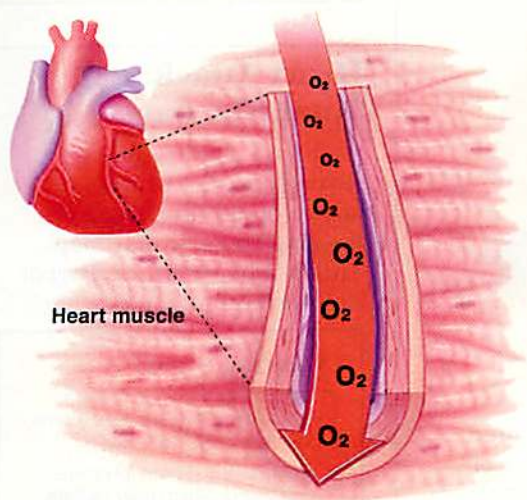
Your Heart's Oxygen Supply...

Your heart needs a large supply of oxygen to do its endless job. And your heart uses almost all the oxygen that passes through it. With healthy coronary arteries, your heart can quickly increase its oxygen supply when needed, such as during exercise or other exertion.

...When you're resting



As you sit quietly reading a book, your heart keeps working. Each minute, it beats 45 to 80 times and pumps about 5 liters of blood throughout your body. To keep up this work, your heart demands a steady supply of oxygen. You feel comfortable because your heart's oxygen supply equals its demand.

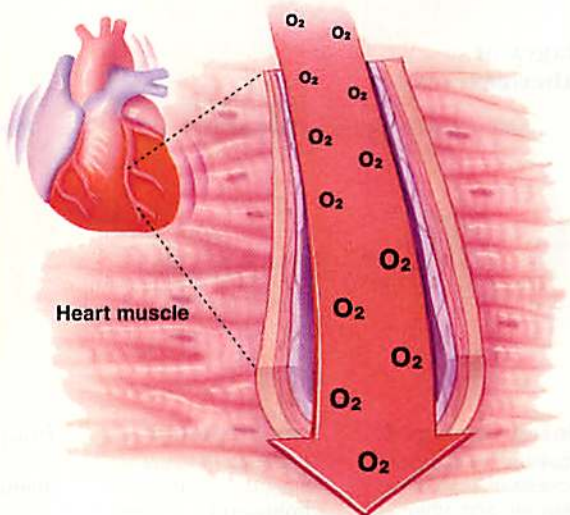


Blood flows freely through coronary arteries with smooth linings. The right amount of oxygen passes to your heart's muscle.

...When you're active



When you become more active, so does your heart. It almost doubles its speed and pumps more blood each minute to fuel your body's work. Your heart also demands more oxygen because it's pumping faster. You still feel comfortable because your heart is still getting the oxygen it demands.



Your coronary arteries widen to meet your heart's increased demand. This allows more blood to flow through your arteries and more oxygen to pass into heart muscle.

How Coronary Heart Disease Develops

Heart attack—one sign of coronary heart disease—often strikes older people. But coronary heart disease doesn't happen overnight. It starts with a process called **atherosclerosis**, where fatty substances



Atherosclerosis: Clogged Arteries

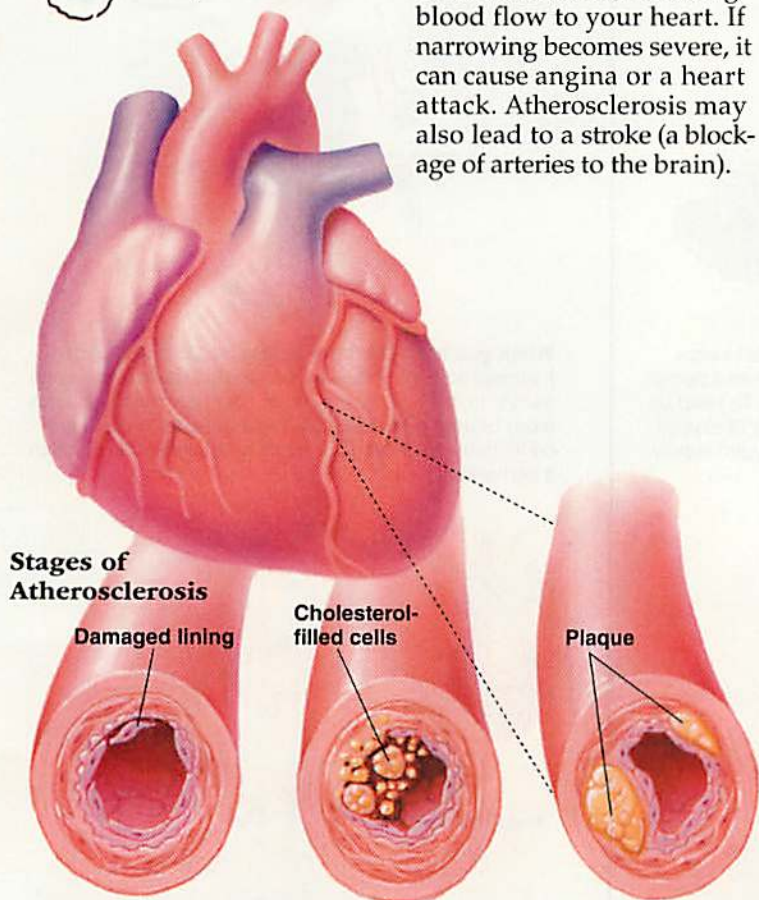
You can't see it or feel it. Yet almost everyone has some atherosclerosis, a buildup of fatty substances inside artery walls. Risk factors such as smoking, high blood pressure, and high blood cholesterol can damage arteries or cause a buildup of fatty deposits. This narrows arteries, reducing blood flow to your heart. If narrowing becomes severe, it can cause angina or a heart attack. Atherosclerosis may also lead to a stroke (a blockage of arteries to the brain).

Angina: One Symptom of Severe Blockage

If blockage in your coronary arteries is severe (50% or more), blood flow to your heart is reduced. Your heart may still get enough oxygen-rich blood while you're resting. But it can't get what it needs when you're excited or active. This can cause symptoms such as angina (chest discomfort). Angina often lasts just a few minutes and goes away with rest. It doesn't damage your heart. Talk to your doctor if you have any symptoms.

Warning Signs:

- Symptoms occur when you're active or excited and get better with rest.
- Unusual chest pain, pressure, or burning. May radiate into your arm, neck, back, or jaw.
- Sweating, nausea, dizziness, or shortness of breath.



Stages of Atherosclerosis

Damaged lining

Cholesterol-filled cells

Plaque

Lining damaged

Smoking, excess blood cholesterol, high blood pressure, and other factors damage the lining of your coronary arteries. The lining becomes rough.

Fats attracted

The roughened areas attract cells that carry **cholesterol** and other fatty substances (**lipids**). These fatty cells begin to collect under the lining.

Plaque formed

Layer upon layer of **plaque** (fatty deposits) forms, narrowing the blood flow through your arteries. More buildup and damage to the lining occur over time.

Heart Attack: Total Blockage

If a blood clot forms in a severely blocked coronary artery, blood flow to part of the heart muscle may stop. This is a heart attack. Part of the heart muscle dies.

Warning Signs:

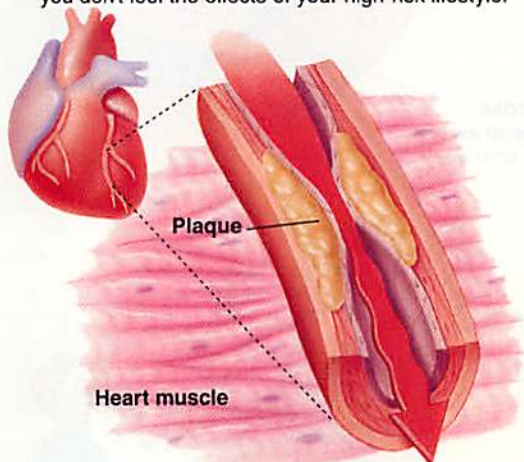
- Symptoms may occur even when you're inactive. Symptoms don't get better with rest.
- Unusual chest pain, pressure, or burning, which may radiate into your arm, neck, back, or jaw.
- Sweating, nausea, dizziness, or shortness of breath.

build up in your arteries. Like clogged drainpipes, coronary arteries may become partly or totally blocked. Then the heart's demand for oxygen is greater than its supply. You can prevent this by reducing your risks.

...When you're resting



As you sit quietly, your heart pumps slowly. So it needs less oxygen. Supply still equals demand, so you don't feel the effects of your high-risk lifestyle.



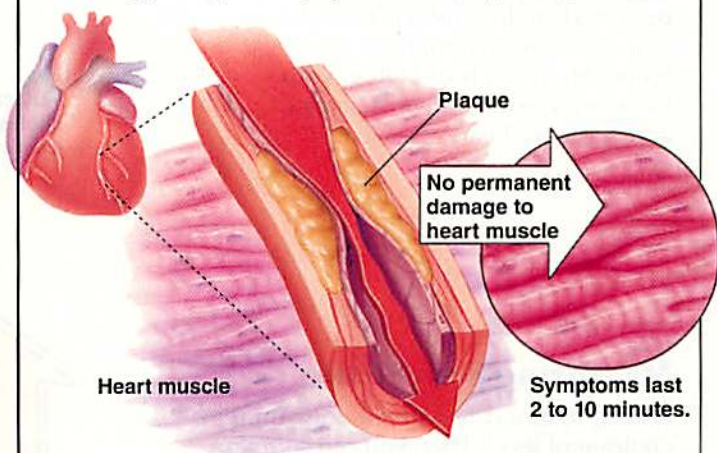
Less blood flows through severely blocked arteries. But, when your heart isn't working hard, enough oxygen reaches your heart muscle. You don't feel any symptoms.

...When you're active



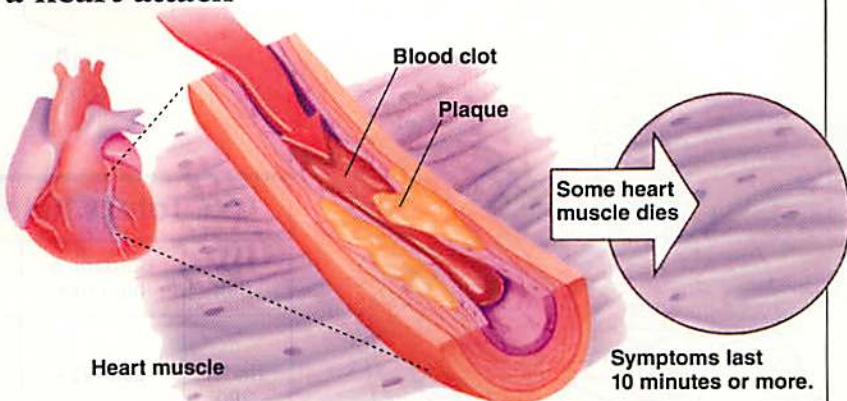
Demand exceeds supply.

When you're active, your heart pumps faster. So it needs more oxygen than your narrowed coronary arteries can supply. The lack of oxygen may cause symptoms like chest pain or pressure.



Narrowed coronary arteries don't supply enough oxygen to fuel the heart's increased activity. If you rest, the heart slows down and reduces its demand for oxygen. The heart muscle is not permanently damaged. But a narrowed artery can cause problems over time.

...When you're having a heart attack



Heart attack occurs when a coronary artery is totally blocked. Part of the heart muscle receives no oxygen and is damaged. You may have chest pain or discomfort.

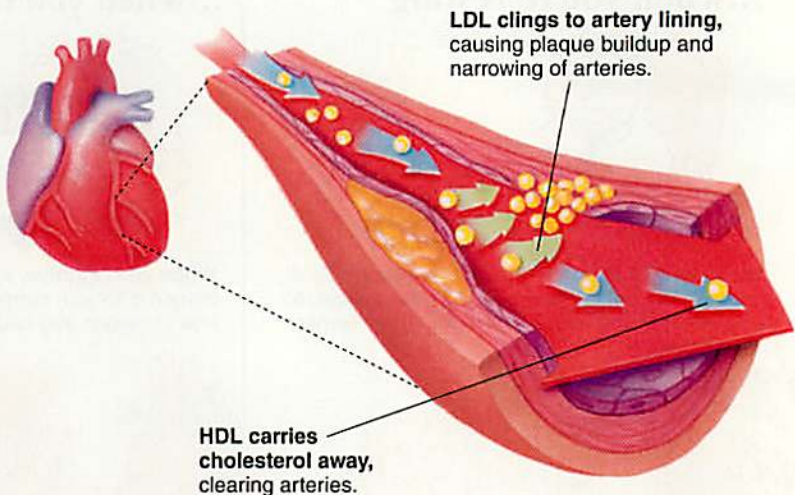
A blood clot forms in a severely clogged coronary artery, completely blocking the flow of oxygen-rich blood to part of the heart muscle. Without oxygen, some heart muscle dies.

Risk Factor: High Blood Cholesterol

You can't know whether you have high blood cholesterol unless you have it checked. High blood cholesterol causes a buildup of fats in your coronary arteries. Many American adults have cholesterol levels that put them at high risk for

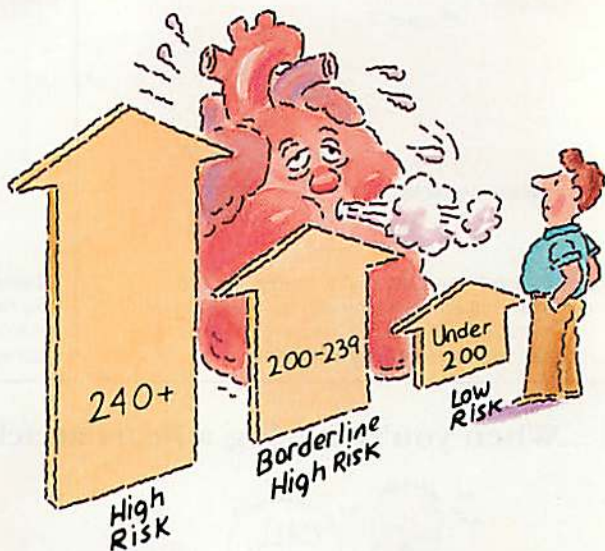
The Cholesterol Culprit

Cholesterol is a substance present in some foods. It's also produced by your liver, then released into your bloodstream. Cholesterol is carried in your blood mainly by two kinds of protein. **Low-density lipoprotein (LDL, or "bad cholesterol")** creates plaque buildup. **High-density lipoprotein (HDL, or "good cholesterol")** is thought to remove cholesterol from your blood. High levels of LDL in your blood may lead to atherosclerosis and coronary heart disease.



Measuring Your Risk

A simple blood test gives your total cholesterol level. Then you can compare your risk to the cholesterol guidelines below. If your total cholesterol level is high (240 or over), you should have a **lipid analysis**. This is a blood test requiring a 12-hour fast (no eating). It measures LDL, HDL, and **triglycerides**—another form of fat.



Total Cholesterol Guidelines

Low risk	Borderline high risk	High risk	Goal level	Your current level
Under 200	200-239	240+	Under 200	

Your HDL level should be 40 or higher. And an LDL level of less than 100 is thought to be optimal.

coronary heart disease. Try to strip this risk factor away by making a few changes in how you eat and by starting an exercise or weight-loss program. Some people may also need medications.

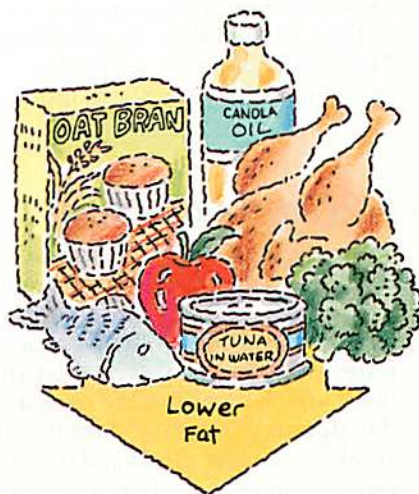


You Can Lower Your Risk

A high blood cholesterol level is one risk of coronary heart disease you can control. Reducing your cholesterol level by 25% cuts your risk of heart attack in half. Healthy eating, exercise, and weight loss may be all you need to make your levels safe. But each person is different. Sometimes lifestyle changes alone are not enough. In such cases, your doctor is likely to prescribe medications along with diet and exercise.

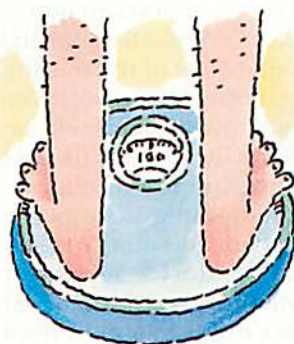
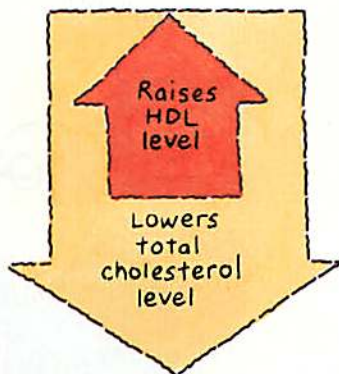
Healthy Eating

Eating saturated and trans fats can raise your blood cholesterol. Saturated fats are found mostly in animal products such as meat, whole milk, cheese, and butter. Trans fats are found in packaged baked goods and snacks. Choose unsaturated vegetable oils, but use sparingly. Limit meat, poultry, and fish to no more than 6 ounces per day. Eating more fiber may help lower your cholesterol. Try eating more oats, dried beans, brown rice, vegetables, and fruit.



Exercise and Weight Loss

Exercise may increase levels of HDL, the "good" cholesterol. It also helps you take off and keep off any extra weight, which may help improve your blood cholesterol levels. In fact, 30 minutes of exercise on most days of the week can help you be healthier overall.



Medications

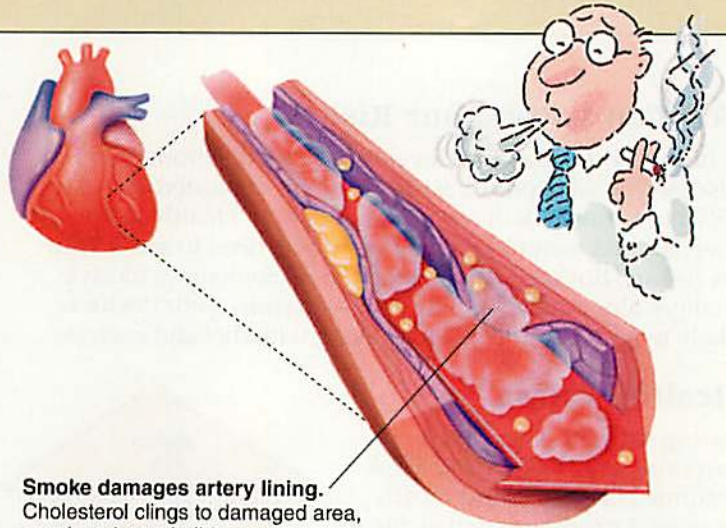
Depending on your specific cholesterol levels, medications may be needed to reduce your health risks. Medications can prevent the body from absorbing cholesterol or to make the liver produce more HDL and less LDL. When taking medications, limit fat intake and stay active.

Risk Factor: Smoking

Smoking is another major risk factor. Many of the deaths from coronary heart disease are linked to smoking. Luckily, it's a risk that's easy to spot. And it's a risk you can do something about.

Playing with Fire

Smoking increases your risk for coronary heart disease in more than one way. Nicotine, carbon monoxide, and other substances damage the artery's lining. Cholesterol is then attracted to the injured site, causing plaque buildup. Smoking also can cause artery muscles to contract, reducing blood flow to your heart. There may be other ways that smoking hurts your heart, too.



Smoke damages artery lining. Cholesterol clings to damaged area, causing plaque buildup.

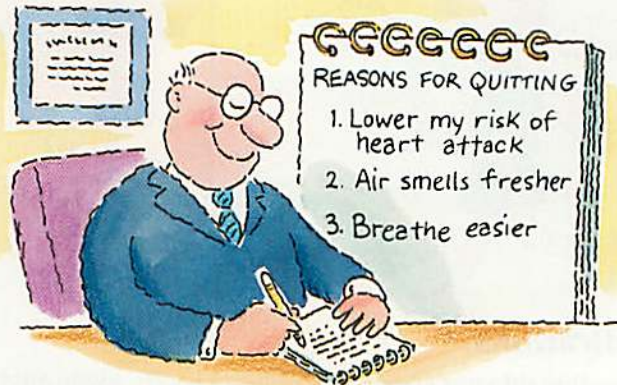
Measuring Your Risk

Your risk of coronary heart disease is related to the number of cigarettes you smoke each day and to how long you've smoked. Just 4 cigarettes a day increases your risk of heart attack by 50%. One pack a day doubles your risk. And if you smoke 2 or more packs a day, your risk is 3 times as high as a person who never smoked.



You Can Lower Your Risk

The best way to lower your risk is to quit smoking. You can slowly cut down or you can quit "cold turkey." Motivate yourself by making a list of reasons for quitting. Focus on the positive: Think about how fresh air will smell or how easily you'll walk up stairs. Getting support through a stop-smoking clinic or support group may help you quit. You can also ask your doctor about stop-smoking aids. Your risk of heart attack drops to almost normal just 3 years after quitting.

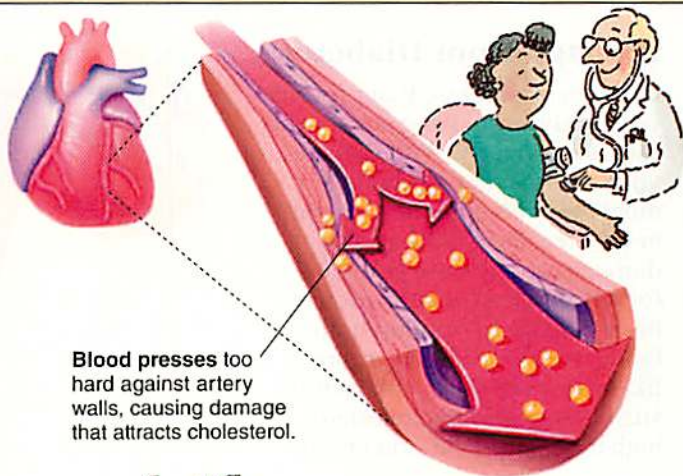


Risk Factor: High Blood Pressure

One out of four American adults has high blood pressure, which can wear out arteries and lead to coronary heart disease. The only way to know whether you have high blood pressure is to have it checked. Then you can strip away this risk, too.

The "Silent Killer"

High blood pressure (hypertension) is not about being tense or nervous. It is a condition causing blood to press too hard against the inside walls of your arteries. The pressure wears down the lining of your arteries over time. Cholesterol is then more likely to attach to artery walls, causing atherosclerosis. The cause of high blood pressure is most often unknown.



Blood presses too hard against artery walls, causing damage that attracts cholesterol.

Measuring Your Risk

The higher your blood pressure, the higher your risk for coronary heart disease. The device used to measure your blood pressure gives two numbers: **systolic pressure** (the top number) and **diastolic pressure** (the bottom number). The top tells you the pressure against artery walls when your heart beats. The bottom tells you the pressure between beats. A safe level for most healthy adults is below 120/80.



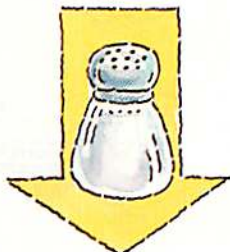
You Can Lower Your Risk

If your blood pressure is only slightly high, you can most likely lower it to a safe level by exercising, losing weight, and reducing your salt intake. If you have moderate or severe high blood pressure, you may need medications as well.

Exercise and weight loss. If you exercise and lose weight, your heart won't have to work as hard to pump blood through your arteries. That may help lower your blood pressure.



Salt reduction. Salt makes your body retain water, increasing the amount of blood in your arteries. This raises blood pressure in some people. Avoid salty foods, like ham and potato chips.



Medications. If you have moderate or severe high blood pressure, your doctor may prescribe an **antihypertensive**. There are many types that work in different ways.

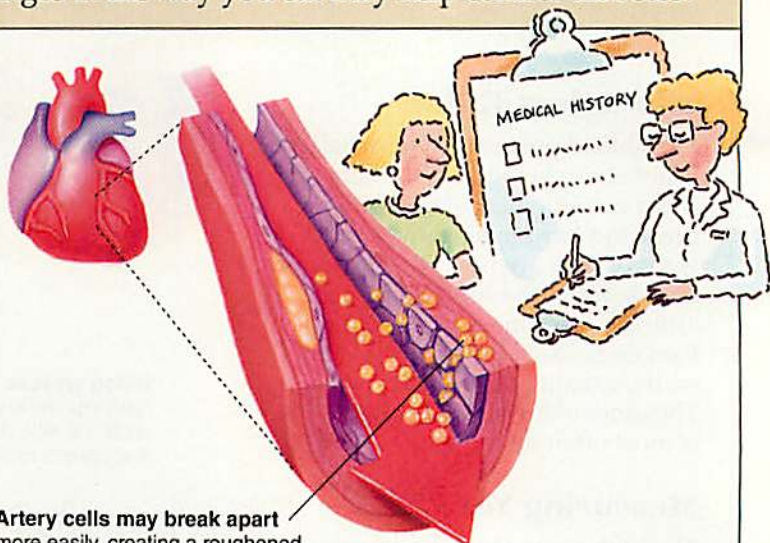


Risk Factor: Diabetes

Diabetes is one more “hidden” risk: Many people with the disease don’t know they have it. If you have diabetes, your coronary arteries may become damaged more easily. This can lead to atherosclerosis. Simple changes in the way you eat may help control diabetes.

Damage from Diabetes

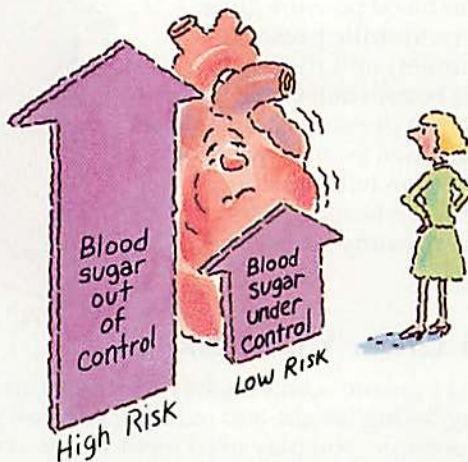
Diabetes is a disease that prevents your body from using sugars and starches properly. With diabetes, your arteries may be damaged more easily because the “cement” between cells is weaker. The damage can increase your risk for atherosclerosis and coronary heart disease. If you have diabetes, you may also be more likely to have other risk factors, such as high blood cholesterol, high blood pressure, and obesity.



Artery cells may break apart more easily, creating a roughened lining that allows cholesterol to deposit and plaque to form.

Measuring Your Risk

Simple blood tests (blood glucose or sugar tolerance tests) can tell you if you have diabetes or are likely to get it. A medical evaluation can also help uncover diabetes. Are you overweight or constantly thirsty? Do you urinate too often? These are a few symptoms of diabetes.



You Can Lower Your Risk

If you have diabetes, you can help control atherosclerosis by keeping your blood sugar levels normal. Work with your team to design an eating plan to control your blood sugar. If changing the way you eat doesn’t control your diabetes, your doctor may prescribe medications or **insulin** (a hormone that helps control blood sugar levels). Lower other risks by losing extra pounds with exercise and by limiting foods high in fat or cholesterol.



Risk Factor: Lack of Exercise

Lack of exercise is also a risk factor you can strip away. Active people have fewer heart attacks than people who are not active. Exercise may improve cholesterol levels and reduce high blood pressure. Choose safe, fun activities to help make exercise a habit.

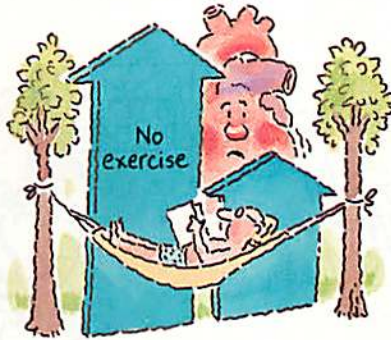
How Exercise Helps

Exercise may improve your HDL levels. It relaxes blood vessels, and may lower high blood pressure. It's also a good way to lose weight.



Are You At Risk?

Do you get regular physical activity or aerobic exercise? Inactive people have a higher risk of heart attack than do active people.



Lowering Your Risk

Check with your doctor before starting an exercise program. Then work toward a goal of at least 30 minutes of brisk exercise on most days.

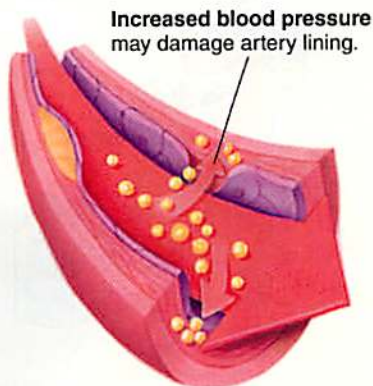


Risk Factor: Stress

You can't remove all stress from your life. But you may lower your risk of coronary heart disease by getting rid of a few stresses you don't need. Having a positive attitude toward life's pressures and finding ways to relax will also help you manage stress better.

How Stress Hurts

Stress can increase levels of a hormone (epinephrine), which may increase your blood pressure and heart rate. This could damage artery linings.



Are You At Risk?

If you always find yourself in stressful situations, you may be at high risk. You need to take steps to lower your stress level.



Lowering Your Risk

Find out how you react to stress each day. Learn a few relaxation techniques, like visualizing ocean waves on a sunny beach.



Other Risk Factors

Other risk factors also increase your chances of getting coronary heart disease. Some you cannot change, such as your age, family history, and gender. But others you can control, such as being overweight. By controlling what you can, you help reduce your overall risk.

Overweight

When you are overweight, your heart must work harder. Losing weight helps reduce this strain. It lowers other risks, too. If you're losing weight, chances are you're exercising and eating fewer high-fat foods.



Birth Control Pills

Talk to your doctor to find the best birth control method for you. Birth control pills may not be a good choice for women who smoke or who have other risk factors, such as high blood pressure or high cholesterol.



Age

As you become older, it's even more important to strip away all the risk factors you can control. That's because atherosclerosis develops in each of us over time, even without other risk factors.

Family History

Your risk is higher if family members have had coronary heart disease or certain other risks. Your risk is higher still if you have a close relative who had a heart attack at an early age.

Gender

Men have an increased risk of heart disease beginning at age 45. Women's risk increases at 55.



Ways to Help You Reduce Your Risks

Making even one lifestyle change for your heart greatly reduces your risk of coronary heart disease. Once you've begun to strip away your risk factors, you'll have some momentum on your side. Here are a few techniques to help you get started.



Make a Contract

Why not make a commitment to your own health? Put it in writing by making a contract. This will help you define your goal and outline steps to reach it. Pick your most important goal. Start with that one first. How about picking one of the major risks, such as cigarette smoking? You can make other contracts later.



Keep Records

Records of your activities help you see your habits. Keeping an exercise record gives you a way to track your progress. This may help motivate you. Note the times you exercise and the length of each workout. Work up to exercising at your target heart rate (a doctor or fitness specialist can show you yours) for at least 30 minutes on most days.



Substitute Behavior

Once you know your risk factors, you can exchange unhealthy habits for healthy ones. Try small changes: crunchy carrots instead of potato chips, or low-fat frozen yogurt instead of ice cream. If high-fat, high-cholesterol fast food at your desk is your habit, try having a low-fat, low-cholesterol lunch in the park.



Reward Yourself

Change isn't easy. You deserve some rewards when you succeed. Meeting your goal is sometimes reward enough, but why not give yourself an extra pat on the back? Buy yourself a special gift, like those golf clubs you've been promising yourself. But you don't have to spend money on rewards. You can treat yourself with a walk in the park.

A Change of Heart for a Healthier Life

You really can improve the health of your heart. Why not start with a few simple changes in the way you eat? Or, kick that cigarette habit once and for all. Even taking short walks can make you healthier and help prevent coronary heart disease. It's never too late for a change of heart.



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