Heart Disease and High Blood Pressure

What Is Heart Disease?

Our bodies need a strong and healthy heart to pump blood through arteries and veins, the tubes that carry the blood from the heart to all parts of the body (arteries) and then back again (veins). If the arteries are blocked or brittle, not as much blood gets back to the heart, making it weak. And if the heart is too weak, it won't pump the blood well and has to work too hard.

Because the blood carries oxygen and nutrients throughout the body, blood circulation and heart problems can affect the entire body. It is like a water system: if the pump works too hard, it may burn out; if it is too weak, not every household will get water; if the pipes are clogged, there is less water getting through; and in the homes that don't get water, there will likely be more illness.

Problems in the arteries and veins and problems with the valves inside the heart are all called **heart disease**. Common heart diseases (also called cardiovascular disease) include:

- Hardening of the arteries (arteriolosclerosis):
 When the arteries that carry blood from the heart
 throughout the body become stiff, narrow, or
 blocked—often from too much unhealthy food—not enough blood will
 return to the heart.
- Congestive heart failure: When the heart is not strong enough to pump the blood well, it is called heart failure. It harms the person because the blood does not get everywhere it is needed. With less blood flow to the body's organs, the person gets tired more easily. Lack of good blood flow can cause swelling in the legs and fluids to build up in the lungs.



The heart works day and night to pump blood through the body. Put your fingers on the side of your neck or on your wrist to feel the steady beat of your heart.



NEW WHERE THERE IS NO DOCTOR: ADVANCE CHAPTERS

HEART DISEASE AND HIGH BLOOD PRESSURE

2

- **Heart attack:** When blood flow is blocked inside the heart, the heart muscle is damaged and becomes too weak to work properly. This is an emergency (page 19).
- **Stroke:** When blood flow to the brain becomes blocked or when a smaller tube, called a blood vessel, bursts inside the brain, the brain is damaged. This is an emergency (page 20).
- **Rheumatic heart disease:** This is caused when rheumatic fever damages a child's heart (page 22). Medicines or an operation can help.
- Newborn heart problems: When a child is born with a hole or other defect in his heart, it may cause problems only surgery can fix. These are called heart defects (page 23).

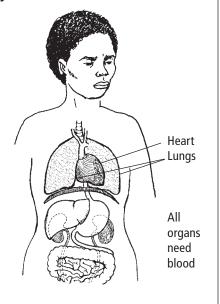
The heart moves blood through the body

The heart is on the left side of the chest. The heart pumps blood through tubes that carry it throughout the body and then back to the heart. If the heart stops pumping, the person dies. Blood moving through the body is called circulation.

The tubes are called **blood vessels**. There are 2 kinds: **arteries** go from the heart to organs and other body parts, and **veins** carry the blood back to the heart. When the blood goes through the **lungs**, it picks up oxygen from the air we breathe.

The heart is only the size of your fist. It is like a house divided into rooms. Blood flows from one room (chamber)

to another, through doors (valves) that open and close. Heart valves that are damaged or don't work well can cause heart problems.



Who is more likely to get heart disease?

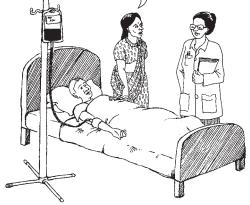
Most kinds of heart disease develop for a long time before any signs appear. But because certain conditions often lead to heart disease, it is easy to predict that a person with 2 or more of these conditions is more likely to have heart problems in the next few years:

- has blood pressure higher than 140/90 every time it is measured
- · weighs too much
- · has diabetes
- · smokes tobacco
- is a man older than 55 or a woman older than 65

He was always out of breath, but we never thought it was because of his heart.

Health workers can encourage people with these conditions to check their blood pressure and get tests for diabetes and cholesterol levels (see page 16).

You can make heart problems less likely, and even improve heart problems you already have. Stop smoking, get treatment for diabetes, eat less salt and less processed "junk" foods, exercise more, and lower your stress. These changes will help your heart. Talk to your health worker and see page 9, Ways to lower blood pressure and help your heart.



A heart attack or stroke may seem to happen suddenly, but heart disease often starts when you are young and then gets worse over many years.

Heart disease and diabetes

Many people with diabetes also have heart problems. Diabetes often goes together with the conditions that make heart disease more likely: high blood pressure, high cholesterol, gaining too much weight, and not getting enough exercise. That is why everyone with diabetes should be checked for high blood pressure and everyone with high blood pressure should be checked for diabetes. Eating healthy foods, moving more, not smoking tobacco, and reducing stress make both conditions better. See the chapter on Diabetes for more information.

4

How to check the heart and circulation system

A health worker measures how well your heart is working by:

- Measuring blood pressure (page 6). This shows if your heart is working too hard to move blood around the body. When the blood pressure measurement is always high, this is a warning that you have or could develop heart disease or problems that can lead to a heart attack or a stroke.
- Testing blood to measure cholesterol. Cholesterol is a waxy liquid made in the body (page 16). The body needs some, but too much is a sign of heart problems to come.

Other signs that may show a heart problem, especially if you feel them often, are:

- Too fast, too slow, or always changing heartbeat (arrhythmia, page 17)
- Pain in the chest (angina, page 18)
- Trouble breathing or feeling short of breath
- · Swelling in your feet and legs
- · Trouble lying flat to sleep at night

Preventing heart disease

Most heart disease is caused by the foods we eat and how we live. We can control some of these choices, but many are not under our control. Are good housing or healthy foods available and affordable? Do jobs pay enough? Are there safe places to exercise and for children to play? Is there pollution or tobacco smoke everywhere? Does racism, poverty, harsh lives for women, or violence make our lives constantly stressful? This chapter describes how heart disease works, but it also shares ideas how individuals, families, and communities can prevent heart disease to live better and longer.



When children can play safely every day and have nutritious food to eat, they will have fewer health problems when they are older.

What is High Blood Pressure?

Measuring a person's blood pressure tells how much force is needed for the heart to move blood through the body and back to the heart. It is normal for blood pressure to go up and down during the day depending on exercise, eating, feelings, etc. But having high blood pressure most of the time is not healthy. High blood pressure (also called hypertension) is a sign that the heart is working too hard.

When people have high blood pressure, lowering it helps them live longer. Medicines are sometimes needed to lower blood pressure but high blood pressure can often be lowered by eating healthier foods, using less salt, and exercising.

Quitting tobacco and alcohol also helps. And treating a person's diabetes will help their heart too. There are many ways to lower blood pressure (see page 9).



Sometimes there is no clear reason why a person has high blood pressure. As people grow older, their blood pressure gradually gets higher as their arteries stiffen with age. For some women, pregnancy increases blood pressure. High blood pressure can also run in families, meaning that if you have parents or other close relatives with this problem, it might be a problem for you too.

Measuring blood pressure

Usually blood pressure is measured by a "cuff" that tightens and then loosens around your upper bare arm, while your health worker (or the machine itself) listens to the blood flow above your elbow. Two numbers, written side-by-side or one on top of the other, show your blood pressure. The first (or top) number shows how hard the blood pushes when your heart is pumping. This is called systolic pressure. When the top number is more than 140, it is too high. The second (or bottom) number shows how hard the blood pushes when your heart is relaxed between beats. This is called the diastolic pressure. It is too high if it is more than 90.

A blood pressure measurement (BP) has two numbers:

 $BP\frac{120}{80}$ BP120/80 120 is the top (systolic) reading 80 is the bottom (diastolic) reading

It is usual for blood pressure to vary a little each time it is measured.

For most people, it is normal and healthy to have a blood pressure of no more than 120 as the top number and no more than 80 on the bottom. Blood pressure with even lower numbers is better for most people, but there are times when blood pressure can be too low (see page 8).

A person may feel nervous in a health clinic, causing her blood pressure measurement to rise. Have her relax a few minutes first, with both feet on the floor, and not speak while you take her pressure. If

it seems high, measure her blood pressure more than once during the clinic visit. Also, having one high measurement does not always mean the person has a blood pressure problem. After a high blood pressure measurement, ask the person to come back to check it again in a few months, or sooner, depending on the measurement. To learn how to measure someone's blood pressure as accurately as possible, see Health worker skills (in development).



When blood pressure is too high

Blood pressure measured regularly at over 140/90 is considered high blood pressure. But if a person has other health conditions, her acceptable blood pressure numbers may be higher or lower. For example, it is normal for blood pressure to go up a little as people get older, and this may not be a problem for a person with no other health problems. If blood pressure is regularly more than 130/80 or is getting higher over time, try different ways to lower it (page 9) and continue checking blood pressure to see what works.

Usually, a person with high blood pressure will not notice any signs unless his blood pressure is very high. Unfortunately, no signs does not mean no harm. The only way to know if you have high blood pressure is to have it checked.

Very high blood pressure (hypertensive emergency)

Having the top (systolic) number around 180 or higher or the bottom (diastolic) number higher than 110 can be an emergency if the person also has one or more of these signs:

- · Headache
- · Blurred vision
- · Chest pain
- Shortness of breath
- Blood in the urine, or side pain (kidneys)
- Seizures

Take the person to a clinic or hospital where medicines can be used to gradually bring down their blood pressure. Lowering blood pressure too quickly can cause harm.

High blood pressure and pregnancy

Health workers and midwives usually measure the blood pressure of pregnant women at every visit. It is common and healthy for a woman's blood pressure to be a little lower than usual during the first 6 months of pregnancy. A healthy blood pressure stays between 90/60 and 140/90 and does not rise much during pregnancy. High blood pressure during pregnancy causes less blood to circulate. This brings less food to the developing baby, so the baby might grow too slowly.



Blood pressure measuring between 140 and 150 for the top number or between 90 and 100 for the bottom number may be treated without medicines by having the woman rest more and lie on her left side. Signs of more serious health problems include shortness of breath, chest pains, or higher blood pressure. High blood pressure in pregnancy can be a sign of pre-eclampsia, an emergency that can lead to premature birth, bleeding, convulsions, and even death (see page 15 in the chapter Pregnancy and Birth).

When is blood pressure too low?

Blood pressure lower than 90 (systolic) over 60 (diastolic) is generally considered to be low blood pressure. Some people have no problems from low blood pressure. But if there is dizziness or fainting, low blood pressure may need treatment. Low blood pressure can be a sign of dehydration or other problems. It is important to find the cause of low blood pressure to treat it.

When blood pressure drops very quickly and there are other signs such as confusion, cold sweat, or a weak, fast pulse, this could be an emergency condition called shock. Once signs of shock begin, it usually gets worse very fast until the body shuts down completely. Treat shock quickly to save the person's life (see Shock, page 11 in the chapter on First Aid).

It is important to check your blood pressure

Anyone with a blood pressure measurement device can check blood pressure. Usually health workers check your blood pressure at every visit, but you may be able to check it at a pharmacy or a health promotion event in your community or workplace. Keep a record of your blood pressure to see if it changes over time.

Date	Blood Pressure
8Sep	100/61
12 Oct	110/62
15 NoV	90/58
10 Dec	112/61
12 Jan	110/70
9 Feb	108/68

If you get a blood pressure device, you can learn to check your own blood pressure at home. Blood pressure equipment can be shared safely among people.

High blood pressure is a warning that heart disease might be developing or has already begun. Over time, the increased pressure damages the organs in your body and can lead to heart attacks, heart failure, strokes, kidney disease, and eye damage. When you learn to check your own blood pressure, you can see how exercise and healthy eating help your blood pressure improve.

Ways to Lower Blood Pressure and Help Your Heart

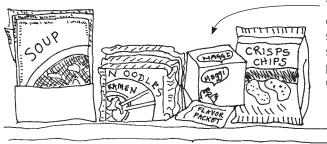


Eat lots of vegetables, fruits, legumes, and whole grains instead of processed, fried, salty, sugary or other "junk" foods. The chapter Good Food Makes Good Health has information on eating a variety of foods for better health and how to eat well when you have little money.

Limit the amount of salt you eat.

Read food labels to see how much salt (sodium) is in canned and packaged foods before you buy them. Processed foods in packages and cans can have too much salt even when they do not taste salty. Make your own meals with fresh foods and no salt. Flavor foods with lemon, garlic, onion, and herbs instead. Soy sauce, soup cubes, flavor packets, steak sauce, tomato ketchup, pickled foods, onion salt, and garlic salt usually have far too much salt to be healthy.

Instant noodles, instant soups, broth (consume), and food flavoring packets are filled with chemicals and salt (called sodium on many labels). All the ingredients are bad for you.



This has 2000 mg of sodium in each soup cube, more sodium than most people need in a day!

Keep a healthy weight. If you weigh too much, even losing a few kilos or pounds can lower your blood pressure. Sometimes eating less of the main starchy food (rice, maize, cassava) at each meal, cooking in ways that use less oil, or stopping soft drinks such as *Coca-Cola* and other sweet drinks will help you lower your weight a little without too much effort. You can get used to less sugar in your tea or coffee by using a little less each week.

Stop smoking. Smoking makes having a heart attack or stroke much more likely. Even after years of smoking, stopping can improve your health. For help to stop, see Drugs, Alcohol, and Tobacco (in development).

Limit alcohol. Drinking alcohol increases the chance of heart disease. Too much is drinking more than 1 or 2 alcoholic drinks a day.



Older people who walk every day and continue their daily activities as much as possible usually feel better and have better health.

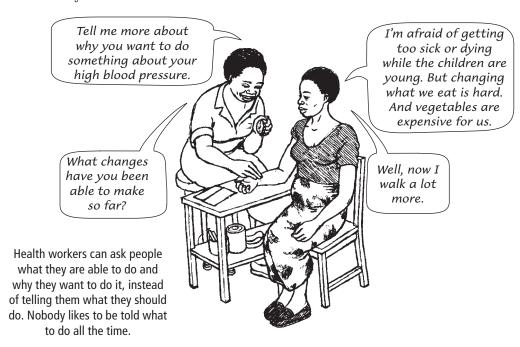
Move your body — be active every day.

Walking briskly 30 minutes a day works well for many people. Walking or doing activities with others is safer and more fun. Activities that people do anyway, such as farming and gardening, cleaning, and playing outside with children, are all good ways to keep moving.

Feel less stress. Make yourself feel calmer. Experiment to find what works best for you. Some people calm the body and mind with meditation, yoga, prayer, or other traditions. Others feel better after hard physical work or exercise. It often helps to build a relationship with another person or a group of people you can share your feelings with.

Join with others to help your health and the community's health.

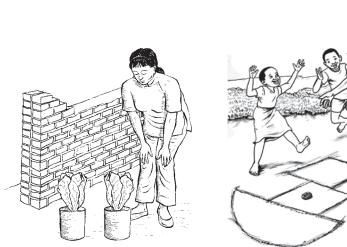
Organize a group to share good ideas and activities that contribute to health. To reduce high blood pressure and heart disease in your community, adapt ideas about Community Action for Diabetes (see page 27 of the Diabetes chapter). For example, community gardening or sharing better ways to prepare food can prevent many future cases of heart disease and bring people together in ways that lead to other improvements for the community.

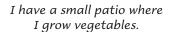


If you have high blood pressure or a heart problem

Finding out you have high blood pressure or another heart problem is worrisome. As with diabetes, you can manage heart and blood pressure problems so they do not lead to ill health or an emergency, and you can feel better. Whether or not you need medicines for your heart problem, you will probably feel better when you move more and change what you eat. This is why some people decide that finding out about their high blood pressure, heart disease, or diabetes—and doing something about it—is like being given a second chance (see the Diabetes chapter, page 26).

Adapting to new foods and new situations is easier when everyone in the family helps and makes the same changes too. And it is easier to exercise and move more if you plan something fun to do regularly with family and friends, such as walking together on your errands or dancing. Work with others to reduce stressful situations when possible.







I play with my children every evening.

People come up with many creative ways to exercise more and eat healthy food. What will you do?

Care for older people in the community

In your community, there may be older people who need companionship and help with their health. Bringing older people together can help fight heart problems, diabetes, and the sadness people feel from being alone.

Some families have lived in Soweto, South Africa for many decades. But as younger people find work far away from Soweto, they sometimes must leave home and their older parents behind. To earn enough to live, those still in Soweto rent out space on their lot so migrants from rural areas can build rooms, one for each new family. Soweto is very crowded now and neighbors no longer see each other from yard to yard. Older people with problems such as diabetes and high blood pressure keep to themselves because they are scared to come outside among all the new people. Poverty, loneliness, and fear keep them from eating well, walking much, or getting health care. When community health workers at the local clinic went door to door, they discovered this problem and began to invite the older people to meet as a group. Soon they were meeting on their own without the health workers and taking walks together. They walk, talk, prepare food together, and share celebrations. Health workers still bring medicines to those who need it, but are finding that less medicine is needed now that people are exercising daily and enjoying life more.



Medicines Can Lower Blood Pressure

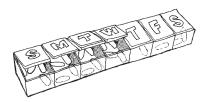
Nutritious food and more exercise improve health for most people with high blood pressure. Some people also need medicines to lower and control their blood pressure. If your blood pressure is high and you also have other health problems, taking medicine every day can prevent health emergencies.



There are many blood pressure medicines. All of them work best when you take them every day. If you stop taking them, usually your blood pressure will go back up. When these medicines are necessary to live a long, good life, people can get used to taking them every day.

Some blood pressure medicines can cause uncomfortable side effects like having to urinate often, diarrhea, nausea, or a cough. Instead of just stopping the medicine, ask your health worker if there is another medicine that will work better for you. But if you get a rash or swelling, stop taking the medicine and talk to your health worker.

People may need more than one blood pressure medicine to control their blood pressure. For people taking more than one blood pressure medicine, it may help to take them at different times of the day.



Use a 7-day pill box to help you remember to take the pills every day. You can make your own. Refill it once a week.



The most common types of medicines used for high blood pressure are:

- Diuretics ("water pills") (page 29). Examples are hydrochlorothiazide and chlorthalidone. They make you urinate more often. This leads to less fluid in the body and this makes blood pressure go down.
- Calcium channel blockers (page 30). These include amlodipine, nifedipine, diltiazem, and verapamil. They prevent blood vessels from narrowing and that helps lower blood pressure.
- ACE inhibitors and ARBs (page 31). Examples are captopril, enalapril, lisinopril, and losartan. They prevent the narrowing of blood vessels and this lowers blood pressure. These help protect your kidneys and are often used for people with diabetes who also need to lower their blood pressure.

14 HEART DISEASE AND HIGH BLOOD PRESSURE

• Beta blockers (page 32). Examples are atenolol, metoprolol, bisoprolol, and carvedilol. They make the heart beat a little slower so it pumps with less force and lowers blood pressure. When used to treat high blood pressure, beta blockers are used together with diuretics or other medicines.

There are many other less common medicines for high blood pressure.

When aspirin helps with heart problems

Aspirin, commonly used to lower fevers or reduce pain, also helps stop blood from clotting. People with certain heart conditions can take a low dose of aspirin once a day to avoid a heart attack or lessen the likelihood of a stroke. Low-dose aspirin usually comes as 75 mg or 81 mg tablets. If only regular strength tablets (300 or 325 mg) are available, you can use half a tablet (or use 1/4 tablet if they can be cut in 4 pieces).

Do not take aspirin if you have anemia, blood in your stools, or ulcers or if you have had an allergic reaction to aspirin.

Because aspirin can irritate the stomach if taken for many years, low-dose aspirin is usually given to people who are 50 years or older and then only if they are likely to develop heart problems.

A low dose of aspirin once a day can help a person who:

- already had a heart attack or stroke.
- has diabetes and is over 40 years old.
- has at least 2 of these health problems: high blood pressure, smokes tobacco, high cholesterol (page 16), or weighs too much.

WARNING SIGNS

Stop taking aspirin if you notice:

- blood in the stool.
- dark black stools.
- paleness or extreme tiredness (fatigue).
- a rash, swelling on your face or body, or trouble breathing. These are common allergic reactions to aspirin.

If you develop any of these warning signs, you will need blood tests to see if another health problem requires treatment.







If you cannot get aspirin as

or 325 mg tablet into 2 or 4 pieces. Take 1 piece every day.

low-dose tablets, cut a 300 mg

Some plant medicines may lower blood pressure

Plants that grow in your region may also be used to lower blood pressure. For example, stinging nettle (urtica dioica) leaves make you urinate more and reduce fluid in the body, a way to lower blood pressure. Hibiscus (hibiscus sabdariffa) can lower blood pressure and is found in many places. Hawthorn berries and flowers (crataegus) seem to improve cholesterol levels and lower blood pressure by improving blood flow in the body. However, hawthorn should not be used in pregnancy. Using garlic and turmeric in your food may help lower blood pressure as well.

Often these plant medicines are prepared as teas or extracts. Ask midwives, healers, and the older women in your community if they know about helpful plants and plant medicines, where they can be found or purchased inexpensively, how to prepare them, and how to use them without causing harm.

As with other medicines, take care when using plant medicines. Find out how much is the right amount to take, if it interacts with other plant or chemical medicines you may be taking, and if it is safe to use

during pregnancy. Some plant medicines used to treat other conditions may raise blood pressure, so find out if a plant medicine you already take might be making your blood pressure high.

For most people with high blood pressure, neither plant medicines nor chemical medicines will do them much good if they do not get enough healthy food and exercise. Healthy food, clean water, basic safety, and good lives are most important.



Hibiscus is used all over the world to treat high blood pressure. Common names for this red flower include roselle, rosella, red sorrel, jamaica, chukor, and bissop. Prepare a tea by letting the dried flowers steep in hot water for 5 or 6 minutes. Drink a glass of the tea, warm or cold, 3 times a day, each day for 5 or 6 weeks. Continuing for longer will do no harm. Drinking this flavorful tea with little or no sugar is best because sugar makes heart problems, diabetes, and other conditions worse.



Stinging nettles contain calcium, vitamin K, folic acid, and other important nutrients and may help with high blood pressure. They are safe in pregnancy. But cover your hands when you pick them or you will be stung!

Cholesterol and Your Heart

Cholesterol is a waxy liquid with nutrients the body needs. Your body makes some cholesterol and gets more from the food you eat. But too much cholesterol can build up in your arteries, leading to high blood pressure, heart attacks, and strokes. Cholesterol does this by blocking blood flow, causing dangerous blood clots and swelling.

Cholesterol is measured through a blood test. There are 2 main types of cholesterol:

- LDL or "bad" cholesterol. When people are told they have high cholesterol, this means the LDL levels are too high.
- HDL or "good" cholesterol. This protects you from heart disease, heart attack, and stroke by taking bad cholesterol out of your blood.

Many things affect cholesterol levels. For example, the LDL (bad) cholesterol increases as people become older. Also, high LDL cholesterol seems to run in families. Often, you can lower bad cholesterol by:

- Limiting the amount and type of fats you eat.
 Instead of frying, cook meats and vegetables by boiling, grilling, or baking.
- Eating more fruits, vegetables, legumes, and whole grains helps because these foods have fiber that the body can use to lower bad cholesterol.
- Losing weight often improves cholesterol. Being heavy or overweight does not.
- Exercise may help with cholesterol. Sitting a lot does not.

Because cholesterol doesn't make you feel sick, a blood test to measure cholesterol (lipid panel) is the only way to know if you have this problem. People with diabetes may have more problems with cholesterol.

High cholesterol levels and what to do

High cholesterol becomes more dangerous when combined with other conditions that harm the heart, such as high blood pressure, too much stress, or diabetes. You can improve all of these problems with a healthier diet and more exercise (see page 9). But if you have made these changes and your cholesterol levels are still high, you may need medicines.

A type of medicine called statins stops the body from making more cholesterol and also removes the LDL (bad) cholesterol from the blood. One common statin medicine is called simvastatin (see page 34).



Statins are also given to people with diabetes and to people who have already had a heart attack or a stroke. For these conditions, statins can help prevent heart emergencies.

You should not take statins if you are pregnant or think you might get pregnant soon since they are dangerous to a baby in the womb.

Other Heart Problems

Irregular heartbeat (arrhythmia)

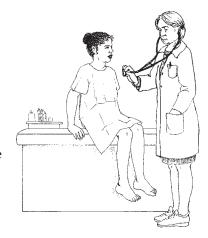
Almost everyone has felt a very fast heartbeat, a "fluttering" or pounding in their chest, or was startled and thought their heart "skipped a beat." These changes in heartbeat are called irregular heartbeat or arrhythmia. Changes in heartbeat are common, especially as people get older, and they are usually harmless. But some arrhythmias happen often, are dangerous, and require treatment.

If the changes in your heartbeat happen too often, they may affect your heart enough that you will have other signs. See a health worker if you often feel heart palpitations (a fluttering feeling in the chest or neck), skipped beats, or if they happen with any of these signs:

- rapid or pounding heartbeat
- fatigue
- · dizziness, lightheadedness
- fainting or near-fainting spells
- shortness of breath
- · chest pain

Certain drinks, medicines, or drugs can cause or worsen an irregular heartbeat, including:

- caffeine, found in coffee, some tea, and some bottled or canned drinks
- nicotine, found in cigarettes and other tobacco products
- alcohol
- cold and cough medicines
- anti-arrhythmics. Though unusual, the same medicines used to treat arrhythmia can sometimes cause arrhythmia! Health workers should carefully monitor a person taking antiarrhythmic medicine.
- drugs such as cocaine, marijuana, and "speed" (amphetamines)



If you are being treated for irregular heartbeat and use any of these drinks, products, or substances, tell your health worker. They may be causing the problem, or they may make medicines to treat arrhythmia work differently.

Chest pain (angina)

Angina is the name for pain or discomfort in your chest. Angina may happen when you are more active or emotional than usual, and then go away when you relax. The pain is caused by narrowed or blocked blood vessels carrying blood to your heart.

Angina may feel like pressure or squeezing in your chest or shoulders, arms, neck, jaw, or back. Angina sometimes feels like indigestion. Your discomfort may be worse or you may also feel shortness of breath when walking, especially uphill.

Not all chest pain is a sign of heart disease. It could be something less serious, such as heartburn or indigestion. Take an antacid, and if that makes the pain go away, it is more likely the pain is from belly problems (see page 12 in the chapter on Belly Pain, Diarrhea, and Worms).

Pay attention to chest pain



Chest pain can be a sign of a heart attack (see box, page 19), although not all heart attacks cause chest pain. Chest pain can also be a sign of other serious conditions including lung infection, blockage of a blood vessel in the lung (pulmonary embolism), or the tearing of a major artery.

Because chest pain can be a sign of a heart problem, tests are usually needed to know if it is an emergency. Tests for heart problems given in a health clinic include blood tests, chest x-rays, or an EKG (electrocardiogram). In an EKG, wires

taped to your chest measure how well your heart is working. None of these tests hurt. Treatment for chest pain might include changes in eating, medicines, or surgery.

If you sometimes feel pain in your chest and already know it is not an emergency, take notes about each time you feel the discomfort. Show these notes to your health worker. If you already take heart medicine, this information will help the health worker know how well it is working.

Include in your notes:

- The date and number of times you felt the chest pain that day.
- Anything that happened before the chest pain, such as exercising, feeling strong emotions, eating a large meal, going out in cold weather.
- If the pain was mild, somewhat strong, or severe.
- How long the pain lasted and if resting helped it go away.

The same changes in people's food and lives that help with heart disease are helpful for angina: stop smoking, eat less oily and fried foods, drink less alcohol or none at all, and reduce stress. Exercise is helpful, but if you get chest pain during exercise, talk with your health worker about what kind of and how much exercise is safe. Medicines used for angina include calcium channel blockers, beta blockers, aspirin, and a type of medicine called nitrates.

A heart attack is an emergency!

Both men and women have heart attacks. If blood flow to the heart is blocked for a long enough time, part of the heart muscle begins to die.

SIGNS

- Pressure, squeezing, tightness, burning, pain, or a full feeling in the chest
- The pain may spread to the neck, shoulders, arms, teeth, or jaw
- The pain usually comes on gradually, but sometimes can be sudden and intense
- Shortness of breath
- Sweating
- Nausea
- Feeling lightheaded

Chest pain is the most common sign of a heart attack for both men and women, but women often do not feel chest pain. Instead they feel shortness of breath, tiredness, nausea, vomiting, or back or jaw pain.

If you suspect someone is having a heart attack, give 1 tablet of aspirin right away (300 to 325 mg). Ask the person to chew it up and swallow it with water. Even if you are not sure the person is having a heart attack, aspirin will do no harm. If you have it, give nitroglycerin dissolved under the tongue (see page 35). Morphine helps with the pain and fear. Reassure the person and get help.

A stroke is an emergency!

When the blood moving through the body is blocked from reaching the heart, it hurts the heart muscle and can cause a heart attack (see page 19). When the blood is blocked from reaching the brain or a blood vessel bursts in the brain, this is called a stroke. With a stroke, the

blood carrying nutrients and oxygen to the brain is blocked and parts of the brain stop working.

SIGNS

- Face drooping. Ask the person to smile, and see if one side is drooping. One side of the face may be numb, and the smile may appear uneven.
- Arm weakness. Ask the person to raise both arms. Is there weakness or numbness on one side? One arm drifting downward is a sign of arm weakness due to stroke.
- **Speech difficulty.** People having a stroke may slur their speech or have trouble speaking at all. To check, ask the person to repeat a simple sentence.

A person having a stroke may notice other signs including paralysis somewhere in the body, numbness or tingling, trouble walking, blurred vision, dizziness, severe headache, difficulty swallowing, or memory loss.

Time is important. If you suspect a stroke, get the person to a hospital right away. Hospitals can give treatment, especially within the first 3 hours of the stroke, and can tell you if the stroke's effects are serious.



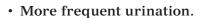
After a stroke, physical and speech therapy can help the person to recover use of their body or speak clearly. Treatment may also include medicines for blood pressure, treatment of diabetes, and aspirin or other medicines that prevent blood clots. After a mild stroke, the person may recover quickly. But a mild stroke is a warning that a person needs treatment to prevent another stroke that could cause serious and lasting damage.

Congestive heart failure

Congestive heart failure is a condition in which your heart is weak and beats with too little force to move your blood around well. This makes extra fluid collect in the lungs, legs, and other parts of the body. This makes you weak and, without treatment, eventually can cause death. But treatment can improve how well the heart works, make you feel better, and increase how long you live.

SIGNS

- Excessive tiredness and weakness. When your heart does not pump with enough force, your muscles do not get enough oxygen. You feel more tired.
- Shortness of breath. Breathing is more difficult when there is fluid in your lungs. You may have difficulty breathing, especially when lying flat at night, and you may cough a lot. Your breathing may make a whistling sound.
- Swelling (edema). Swelling from too much fluid can happen over a few days, or sometimes more gradually. You may have swelling in your feet and ankles and your clothes or shoes may feel tighter. This kind of swelling does not go away after lying down.
- Swelling in the abdomen. Your liver may be swollen and feel bigger to a health worker doing an exam. Your belly may fill with liquid.





Swollen legs, called edema, can be a sign of congestive heart failure.

TREATMENT

- Eat less salt. Cook without much salt, add no salt to the food once it is prepared, and avoid canned foods, processed foods, or junk food like chips or crisps. Processed foods often have a lot of salt (sodium) even if they do not taste salty.
- Medicines that help drain excess water from the body include "water pills" (called diuretics). Someone taking these medicines may need to eat plantains, bananas, oranges, lemon, or avocado daily to replace the potassium that some diuretics take out of the body.
- Beta blockers, such as metoprolol, bisoprolol, and carvedilol, are also used to treat congestive heart failure. They need to be started at very low doses and increased slowly, especially if your blood pressure is already low. Work closely with your health worker.
- ACE inhibitors, such as captopril, enalapril, or lisinopril, are also used to treat congestive heart failure. Some people get a cough from these medicines and should talk with their health worker to see if a different medicine would work better.

Rheumatic heart disease

Rheumatic heart disease affects mostly children and young adults. It is usually caused by untreated strep throat developing into rheumatic fever (see the chapter Caring for Children, page 21). Rheumatic fever often starts with pain in the joints, shortness of breath or chest pain, and uncontrolled or jerky movements. This needs immediate treatment with antibiotics. Without treatment, rheumatic fever causes infection and scarring in a heart valve. This blocks the valve and it no longer works well, like a little doorway that won't open much. The heartbeat becomes weaker and the person does too. This permanent damage is called rheumatic heart disease. If the heart valve damage is not stopped or repaired, the person can die.

SIGNS

 A young person cannot walk 100 meters without getting out of breath.

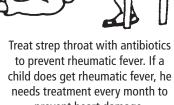
• A child needs to sleep propped up by pillows or she cannot breathe.

 Using a stethoscope, a trained health promoter hears an abnormal heart murmur (the sound of blood moving through the damaged heart valve).

TREATMENT

- The health worker injects benzathine penicillin G once a month to prevent infections from returning and further damaging the heart. Do this at least until a child turns 18 years old.
- If the heart is damaged, a valvuloplasty is a simple operation that opens a narrowed heart valve by inserting a thin tube (catheter) into an artery that leads to the heart valve. The blockage is opened by inflating a tiny balloon through it. If the rheumatic heart disease is more advanced, a more complicated operation can repair it.

Pregnancy and childbirth make the heart work hard. If a woman who had rheumatic fever or rheumatic heart disease gets pregnant, an experienced health worker should check her heart to see if the pregnancy might be dangerous for her. The health worker will also make sure any heart medicines the woman takes are not harmful in pregnancy. It will be safer to give birth in a hospital.



Rheumatic heart disease happens mostly to malnourished children in rural areas living in poverty and in overcrowded conditions, without access to safe water or sanitation, medicines, or health care. In countries that have addressed these conditions even partially, rheumatic heart disease has almost disappeared.

Babies born with heart defects

Babies born with badly formed hearts sometimes die right after birth. Other problems, like a tiny hole between two sections of the heart, may sometimes go away without treatment. Many heart defects are serious but can be treated with operations or medicines. Some countries have special programs that offer heart operations for children at no cost.

SIGNS A BABY MAY HAVE A HEART PROBLEM

- Very fast breathing.
- · A baby that is not feeding.
- A heartbeat that is too fast or too slow.

Using a stethoscope, a health worker listens to the baby's heart for a heart murmur or too-fast heartbeat. An x-ray may be used to show the shape of the heart. An EKG, a test to measure the pattern of the baby's heartbeat, may be needed.

Sometimes heart problems are found in older children or young adults. The cause is often a heart defect or rheumatic heart disease that was not treated (see page 22).

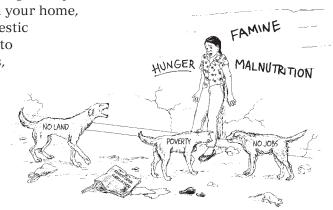


Poverty and Inequality Hurt the Heart

Heart disease, high blood pressure, and diabetes are making people's lives more difficult and causing more deaths, both in low-income countries and in richer countries. These changes are mostly caused by an economic system that increases inequality, forces people who are poor to spend even more to live, and allows unhealthy foods and sweet drinks made by big businesses to become more common than food grown or prepared locally. Poverty often forces people to live in crowded conditions, with polluted air or water, with no safe places to walk or play. All this results in more heart disease and diabetes. These illnesses are worse for people who are poor and cannot get the health care or medicines they need.

Being denied equality or opportunities to make your life better is not just unfair, it harms your health. It may keep you from eating well, make you choose between a dangerous job or no

job at all, evict you from your home, or leave you facing domestic violence. And if you try to change these conditions, you may face violence from the police. These difficult situations cause stress. Stress means both how we feel—sadness, worry, fear—and also how our bodies react when dealing with difficult situations.



Difficult situations cause stress

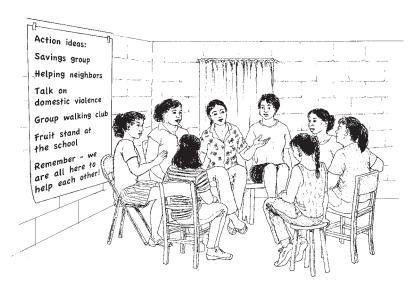
When problems arise, we feel stress. Stress can cause a physical reaction in the body such as fast heartbeat, sweaty palms, or feeling faint. These changes happen because the body changes the natural substances (hormones) it releases in response to something that scares or worries us. On the positive side, hormones alert our bodies to run from danger or fight an attacker. Stress hormones and their effects go away quickly if the cause of the stress goes away. But for people who are stressed all the time, their bodies never get a chance to recover, the effects of stress build up, and they are sick more often. Even when we become used to living with difficult situations and notice the stress less, it can still harm our bodies.

Stress can seem never-ending and overwhelming. Stress caused by living in a war, moving to a new place and not knowing the language or customs, family or relationship problems, housing or employment problems, fear for your safety, racism and discrimination—it all troubles the mind and wears down the body. You become less able to fight infection and illness and more likely to have health problems. Women and men who are always stressed are more likely to have heart disease and diabetes compared to those whose lives are not so difficult.

Stress—and the illnesses it causes—is a result of injustice and inequality. Working to change that is important to improving health.

People working for change help others and feel better

Creating strong community groups to solve problems of violence against women, better education for children, equality of services from city governments, or whatever important problems your community is facing, can reduce stress. This is not easy to do. But with patience and hard work communities bring about changes that improve life. See *Health Actions* for Women, A Community Guide to Environmental Health, Workers' Guide to Health and Safety and other Hesperian resources for ways to improve health by working on the problems facing your community.



Fighting poverty, discrimination, violence, and isolation helps make living conditions better and jobs less dangerous. Working for change with others makes us feel more powerful, part of something bigger, and more connected to others. These feelings can relieve stress.

Getting junk food out and healthy food and exercise in

Communities and governments have to pay attention to why people do not get enough exercise, why it is hard to find fresh and healthy foods, and why junk foods are everywhere and often inexpensive. Some ways a community can work on this are:

• Increase taxes on cigarettes and sweet drinks like *Coca-Cola* so people will buy less of them. Then fewer people will have problems with weight gain, diabetes, and heart disease.



Save your money for nutritious foods. Some foods make your body strong, but other foods just make big companies rich.

- Plant a school garden to provide nutritious food. Stop vendors from selling unhealthly foods near school property. This changes what children eat and also what they are used to eating.
- Calm traffic so it is safer to walk to school, work, and the market. Make it easier and safer to get more exercise.
- Increase access to parks and other areas where people can play sports, dance, walk, or exercise with others.

When people work together for change they feel less alone and feel less stress. And that is good for the heart.



Tax the companies that make us sick

Many countries are now taxing sugar-sweetened drinks because they damage teeth, make people weigh too much, and lead to problems such as heart disease and diabetes. Money from the taxes are often used for health or education. In Mexico, drinks made by *Coca-Cola* and *Pepsi* were so common that children drank them for breakfast. Now more people are dangerously overweight in Mexico than anywhere else in the world, and diabetes is increasing. But since taxes on these sweet drinks started in 2014, every year the companies sell less of them and Mexicans are more aware of how advertising and businesses affect their health.



A can of cola has more than 9 spoons of sugar. A 2-liter bottle can have more than 70 spoonfuls!

Change the message!

Be creative to get people talking and thinking about the harm of unhealthy products and who benefits from their sales. For example, make people take notice by changing an advertisement you have seen in a newspaper or on a billboard. You can share a new idea, expose an ugly truth about the product, or make the viewer feel the opposite of what the advertiser intended. It can be as simple as taping a new caption on an advertising flyer. Take a photo of it to show others or post it online. Or make an internet image with a caption (meme) to promote health and social justice. Hesperian's Health Actions for Women: Practical Strategies to Mobilize for Change has ideas about group activities used in many different countries that you can adapt to the health issue that is important to your community.



Medicines for Heart Problems

Types of blood pressure medicines

Medicines for high blood pressure work a little differently in each person and each person's heart problem can be different. When health workers treat high blood pressure and other heart problems with medicines, they usually start with a low dose. Depending on how well it works for that person and whether blood pressure goes down enough, the medicine is adjusted to make the dose a little more or a little less. Another medicine might be added to the first, or used instead of the first. When blood pressure readings are at normal levels, that means you are taking the right dose and type of medicine or medicines for your condition and this is called having your blood pressure controlled or under control. When starting tretament, get blood pressure checked every few weeks.

Health workers also monitor the side effects, if any, the medicine causes, and know if the medicine can be easily found and if it is affordable or free. If the person stops taking the medicine because of side effects or the cost, the health worker can work to find a solution.

Common medicines to treat adult high blood pressure include:

- **1.** Hydrochlorothiazide (HCTZ) or another diuretic ("water pills")
- **2.** Amlodipine or another calcium channel blocker (the names of these often end with -dipine)
- **3.** Captopril, enalapril or another ACE inhibitor (the names of these often end in -pril)
- **4.** Losarten or another ARB (the names of these often end in -sarten)
- **5.** Atenolol or another beta blocker (the names of these often end in -lol). When beta blockers are used to treat high blood pressure, they are used in combination with other medicines.

There are also medicines that combine 2 heart medicines in 1 tablet. These may be more expensive than buying each separately, but may be more convenient.

Important **A**

Learn from experienced health workers which medicines can be combined. Learn the best starting dose for each medicine when the person has another condition along with high blood pressure, such as congestive heart failure, high cholesterol, diabetes, or kidney problems.

For a person over 60 taking high blood pressure medicines for the first time, start with the lowest dose.

If medicines do not seem to be working, look for kidney disease, problems taking the right dose, what other medicines or drugs they take, or thyroid problems.

Diuretics ("water pills")

Hydrochlorothiazide (HCTZ), chlorthalidone, spironolactone, bendroflumethazide, triamterene, and furosemide are diuretics.

Diuretic medicines help the kidneys get rid of extra fluid and sodium by causing the person to urinate more often. With less fluid in the body, blood pressure goes down. Some diuretics also make the blood vessels become wider to reduce blood pressure. Diuretics are sometimes used to treat the swelling (edema) from congestive heart failure if the health worker can monitor with lab tests how it is affecting the body.

Side effects

Dizziness, frequent urination, headache, feeling thirsty, muscle cramps, and upset stomach. Most people take diuretics in the morning to avoid urinating frequently at night.

Important **A**

Pregnant women should not use diuretics unless other medicines do not control their blood pressure.

Danger signs: severe rash, problems breathing, problems swallowing, and intense joint pain, especially in the feet. Get help right away.

How to use

Diuretics such as HCTZ, chlorthalidone, and furosemide take potassium out of the body. Eat plantains, bananas, oranges, lemon or avocado often to replace the potassium. If a blood test shows that potassium levels are low, some people will need potassium pills. Spironolactone and triamterene keep the potassium in the body. They are sometimes used in combination with the other diuretics to keep the potassium level normal but need more caution if used together with ACE inhibitors or ARBs.

Diuretics also take magnesium out of the body. Eat greens, yogurt, and squash seeds to replace magnesium.

Potassium levels and kidney function should be checked with lab tests a few weeks after starting diuretics and then every 6 to 12 months if you are taking hydroclorothiazide, and even more often if you are taking furosemide. Furosemide is a stronger diuretic and the person needs to be monitored closely.

HYDROCHLOROTHIAZIDE (HCTZ)

Hydrochlorothiazide comes in 25 mg and 50 mg tablets.

For high blood pressure

→ Adults: The usual starting dose is 12.5 mg, 1 time each day in the morning.

If necessary, the dose can be increased to 25 mg each day after a few weeks if the blood pressure is not controlled with the lower dose.

Do not take more than 25 mg in one day. Taking more does not lower your blood pressure, it only increases side effects.

Calcium channel blockers

Amlodipine, nifedipine, diltiazem, and verapamil are calcium channel blockers.

Calcium channel blockers prevent calcium from entering the blood vessels and the heart. This relaxes the blood vessels, helping lower blood pressure.

They are also used for chest pain (angina).

People with diabetes can take calcium channel blockers.

Side effects



Amlodipine and nifedipine can cause ankle swelling. Prevent swelling by avoiding salty foods, exercising, and keeping legs elevated when sitting. If swelling continues, you may have to change medicine.

Minor side effects such as a mild headache, feeling drowsy, or upset stomach sometimes go away a week or two after the starting the medicine. Talk to your health worker about changing the medicine if side effects continue.

Important **A**

Not all calcium channel blockers can be used during pregnancy.

People with some types of congestive heart failure and some other heart conditions should not use calcium channel blockers.

People taking calcium channel blockers while also taking statins (page 34) will need a lower dose of statins.

Danger signs: severe rash, chest pain, fainting, irregular heartbeat, swelling of any part of the face, mouth, arms, or legs. Get help right away.

How to use



AMLODIPINE

Amlodipine comes in 5 mg and 10 mg tablets.

For high blood pressure

→ Adults: The usual starting dose is 5 mg, 1 time each day.

After a few weeks, measure to see if blood pressure is controlled. If necessary, the dose can be increased to 10 mg.

Do not take more than 10 mg in one day.

ACE inhibitors and ARBs

Angiotensin-Converting Enzyme (ACE) inhibitors and Angiotensin Receptor Blockers (ARBs) are two types of medicines that act in similar ways. Both types are used for lowering high blood pressure, for congestive heart failure, for other kinds of heart disease, and to help protect the kidneys of people with diabetes.

ACE inhibitors and ARBs block the substance in the blood that makes the blood vessels tighten and narrow. When the blood vessels relax and widen, blood pressure goes down.

Captopril, enalapril, lisinopril are ACE inhibitors. Losartan is an ARB.

Side effects

ACE inhibitors can cause a dry cough. If you get a dry cough, switch to an ARB, such as losartan, which does not cause coughing.

Other possible side effects: rash, dizziness, feeling tired, headache, problems sleeping, or fast heartbeat.

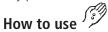
Important **A**

Do not give to pregnant women or to women who may become pregnant. ACE inhibitors and ARBs are dangerous for a developing baby.

Avoid use in people with severe kidney disease.

Avoid ibuprofen and other anti-inflammatory medicines when taking ACE inhibitors or ARRs

Danger signs: chest pain, problems breathing, problems swallowing, swelling of any part of the face, mouth, or legs. Get help right away.



ACE inhibitors and ARBs increase potassium. A blood test should be done a few weeks after starting an ACE inhibitor to monitor the health of the kidneys and the level of potassium. This is especially important if the person has even mild kidney disease. Use extreme caution and monitor the potassium levels through blood tests carefully if the person is also taking one of these diuretics: spironolactone or triamterene.

CAPTOPRIL

Captopril comes in 25 mg and 50 mg tablets

For high blood pressure

→ Adults: When captopril is used by itself, without other heart medicines, the usual starting dose is 25 mg each day, divided in half and taken 2 times a day (12.5 mg each time).

After a few weeks, measure to see if blood pressure is controlled. If necessary, the dose can be increased. The next dose to try is 50 mg each day, divided in half and taken 2 times a day (25 mg each time). If necessary, this can be increased to a dose of 100 mg each day, divided in half and taken 2 times a day (50 mg each time).

NEW WHERE THERE IS NO DOCTOR: ADVANCE CHAPTERS

HEART DISEASE AND HIGH BLOOD PRESSURE

If captopril is used with diuretics or the person is age 60 or older, then the starting dose is 12.5 mg each day, divided in half, and given 2 times a day (6.25 mg each time).

Do not take more than 100 mg total in one day.

ENALAPRIL

32

Enalapril comes in 2.5 mg, 5 mg, 10 mg and 20 mg tablets

For high blood pressure

→ Adults: When enalapril is used by itself, without other heart medicines, the usual starting dose is 5 mg each day.

After a few weeks, measure to see if blood pressure is controlled. If necessary, the dose can be increased. Most people do well with a dose between 10 mg to 20 mg each day. When the dose is 10 mg or more, it works better if the dose is divided in half and given 2 times a day.

If enalapril is used with diruretics, the person is age 60 or older, or has mild kidney disease, start with 2.5 mg per day.

Do not take more than 40 mg in one day.

LOSARTAN

Losartan comes in 25 mg, 50 mg, and 100 mg tablets.

For high blood pressure

→ Adults: When losartan is used by itself, without other heart medicines, the usual starting dose is 50 mg each day, either 1 time each day, or divided in half and taken 2 times a day (25 mg each time).

After a few weeks, measure to see if blood pressure is controlled. If necessary, the dose can be increased to 100 mg each day, either 1 time each day, or divided in half and taken 2 times a day (50 mg each time).

If losartan is used with diuretics, then the starting dose is a total of 25 mg taken 1 time each day.

Do not take more than 100 mg in one day.

Beta blockers

Beta blockers slow the heartbeat so the heart pumps with less force, resulting in lower blood pressure. If taken every day, beta blockers help lower high blood pressure and can help with chest pain (angina). Beta blockers are usually used together with diuretics or other medicines when taken to lower blood pressure. Some beta blockers are used to treat congestive heart failure.

Atenolol, metoprolol, bisoprolol, and carvedilol are beta blockers

Side effects 🖔

Feeling tired, upset stomach, headache, dizziness, constipation, diarrhea, feeling lightheaded.

If these are mild, they will sometimes go away after a few weeks of using the medicine.



Important **A**

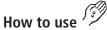
Not all beta blocker medicines may be used during pregnancy.

People with diabetes should use beta blockers with caution if they are having episodes of low blood sugar.

Beta blockers can make asthma worse, so people with asthma should use with caution.

Beta blockers can also lower the pulse. Reduce the dose if the pulse is less than 60 beats per minute.

Danger signs: chest pain, problems breathing, slow heartbeat, swelling in the hands, feet, or legs.



These medicines should be started at a low dose and gradually increased every 1 or 2 weeks. If you are taking a high dose of these medicines and need to stop them, they should be slowly decreased over a few weeks.

ATENOLOL

Atenolol comes in 25 mg and 50 mg tablets

For high blood pressure

→ Adults: the usual starting dose is 25 mg 1 time each day.

After a few weeks, measure to see if blood pressure is controlled. If necessary, the dose can be increased by adding 25 mg more for a total of 50 mg each day. Measure the blood pressure again and repeat the increase if necessary after 2 more weeks (to 75 mg, 1 time each day), and again in 4 weeks (100 mg, 1 time each day).

Do not take more than 100 mg in one day.

METOPROLOL TARTRATE

Metoprolol tartrate is a short-acting medicine that is taken 2 times a day. It is a different medicine than metoprolol succinate which is long-acting.

Metoprolol tartrate usually comes in 50 mg and 100 mg tablets

For high blood pressure

→ Adults: the usual starting dose is 50 mg to 100 mg each day, divided in half and taken 2 times a day (25 mg or 50 mg each time).

After a few weeks, measure to see if blood pressure is controlled. If necessary, the dose can be increased by adding 50 mg to the amount per day. Measure the blood pressure again and repeat the increase if necessary after 2 more weeks. The usual dose is 200 mg to 400 mg each day, divided in half and taken 2 times each day (100 mg to 200 mg each time).

Do not take more than 400 mg in one day.

Statins

Simvastatin, lovastatin, atorvastatin, and pravastatin are statins.

Statins make a person's liver produce less cholesterol. Too much cholesterol limits blood circulation and makes it harder for the heart to pump.

Statins are used to prevent heart attacks and strokes in persons who have already had one. They are also used to prevent heart emergencies in people with diabetes or other health problems that make a heart attack or stroke more likely.

Statins are very helpful for people who have these severe problems. They are also given to people to lower unhealthy levels of cholesterol.

There are moderate intensity statins (such as simvastatin) and stronger high intensity statins (such as atorvastatin) used for people with higher risk of a heart attack.

Side effects



Statin medicines can cause muscle pain. When this is mild and not all over the body, the dose can be lowered to limit the discomfort. But if the muscle pain is severe or is felt all over the body (like having the flu), stop taking the statin and see a health worker.

Minor side effects such as a headache, upset stomach or constipation are common and often go away after the body becomes used to the medicine.

Important **A**

Statins should not be used during pregnancy and are not usually given to women who could become pregnant.

Some statin medicines should not be mixed with other medicines. Sometimes combining medicines changes the dose of one or both. For example, people taking amlodipine, cannot take more than 20 mg of simvastatin. Be sure to tell your health worker about all the medicines you are taking so she can check for drug interactions.

Danger signs: severe muscle aches or muscle aches that affect the whole body. Stop taking the statin medicine and see a health worker.

How to use

Statins are usually started at a moderate dose and decreased if there are side effects. This is different than some high blood pressure medicines where a lower dose is tried first and then slowly raised.

Statins work best if taken before going to sleep.

SIMVASTATIN

Simvastatin comes in 5 mg, 10 mg, 20 mg and 40 mg tablets.

To lower cholesterol for people at high risk of heart attacks

→ Adults: The usual starting dose is 20 mg, 1 time each day.

Most people will have a dose of 10 mg to 40 mg. When combined with certain medicines, the amount of simvastatin will be lower. It is important to know about all the medicines a person is taking before starting simvastatin.

Do not take more than 40 mg in one day.

Medicines for Heart Attack

If you suspect someone is having a heart attack, give 1 tablet of aspirin right away (300 to 325 mg). Ask the person to chew it up and swallow it with water. Even if you are not sure the person is having a heart attack, aspirin will do no harm. On the way to a hospital, give nitroglycerin if you have it.

You can also give morphine to help with the pain and fear, and make it easier for the heart to pump. There is more information about morphine on page 85 of the chapter on First Aid.

Nitroglycerin (Glyceryl trinitrate)

Nitroglycerin is used to treat chest pain from a heart attack. It helps to widen the blood vessels making it easier for the heart to pump blood.

Important **A**

Do not give nitroglycerin to someone with low blood pressure or who has taken sildenafil (*Viagra*) in the last 24 hours. This combination of medicines can cause blood pressure to drop dangerously low, and can be deadly.



May cause severe headache, feeling hot, or dizziness.

How to use

The person should sit or lie down, not stand up, in case they get dizzy.

→ Give ½ mg (0.5 mg) dissolved under the tongue, no more than 3 times, waiting 5 minutes between each tablet. If the chest pain and other signs go away, another tablet is not needed. Do not chew or swallow nitroglycerin tablets. As the tablet dissolves under the tongue, it tingles or even burns a little.