

Good Food Makes Good Health



Food nourishes our bodies as well as our relationships. Food keeps our families and friends together, and our traditions alive.



Eating enough food and enough variety of nutritious food is essential to good health. Food gives our bodies energy and helps us learn and think well. Food protects us from infections and other health problems, allows our muscles and the organs inside our bodies to work properly, and makes our skin, hair and teeth beautiful and strong.

But not all foods make us healthier. The factory-made foods that many of us now depend on contain too much salt, fat, and sugar. These overly-processed foods can cause or increase health problems like heart attacks and diabetes.

Staying healthy depends on eating enough food and a variety of good foods.

Eating Enough

Everyone needs **enough** food. Eating enough gives the energy and strength our bodies and minds need each day.

Lack of food over weeks or months leads to serious and long-lasting health problems. Children, old people, sick people, people with HIV, and pregnant women suffer more (and more quickly) from a lack of food. So be sure there is enough for people who may have less ability to take care of themselves.

Children especially need enough food

More than anyone else, children need enough food every day. Lack of food in early childhood causes small size, sickness, and difficulty learning that lasts a lifetime.

To ensure children get enough food:

- Give only breast milk and no other food or drink until the first teeth come in — about 6 months.
- Even when you start to give food at about 6 months, continue to breastfeed. The best is to breastfeed for 2 years or even longer. Giving breast milk **and** food ensures the child never lacks what she needs to grow and thrive.
- When you start to give food, offer a little bit a few times a day. Then increase to more foods, in greater amounts. A 2-year-old should eat at least 4 times a day. A baby who has stopped breastfeeding needs more meals than one who is still nursing.
- Give smaller children food in their own bowls. Then check that each child has eaten her share.
- Give girls just as much food as boys. Girls and boys need the same amount of food to be healthy and grow strong.
- Treat diarrhea right away with rehydration drink and other fluids (see page 22 in *Belly Pain, Diarrhea, and Worms*).
- Treat children with mebendazole when they have worms. If many children have worms, give mebendazole to all children in your community every 6 months to prevent infection (see page 34).

At different ages, children have different needs for food. See pages 1 to 3 in *Caring for Children* to learn more about feeding babies and children.

Eating a Variety

In much of the world, most people eat one main low-cost food with almost every meal. This main food provides energy to get through the day. But the main food alone is not enough to keep a person healthy. To grow, have strength and energy, and fight infection we must also eat other foods.

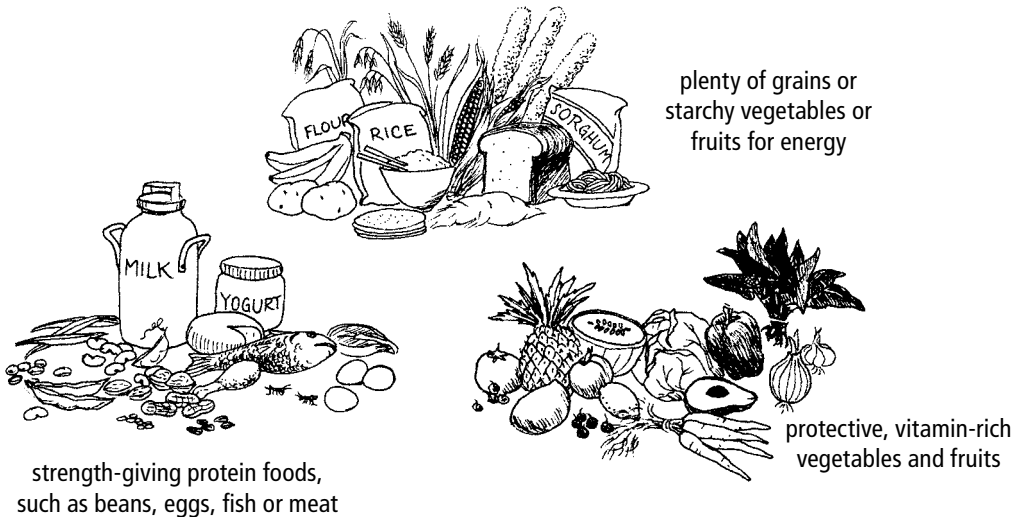


Plain porridge is not enough.



Add beans, meat, dairy, eggs, vegetables, or fruit.

For health, we need:



plenty of grains or starchy vegetables or fruits for energy

strength-giving protein foods, such as beans, eggs, fish or meat

protective, vitamin-rich vegetables and fruits

By eating a range of different healthy foods each day, we can prevent many serious health problems.

Starchy foods give us energy

Our main filling, starchy food gives our bodies most of the energy needed to work, and to care for ourselves and our families. Depending on where you live, the main food may be:



- rice
- maize
- wheat
- cassava
- breadfruit
- plantain
- potato
- yam
- millet
- or some other grain, root vegetable, or starchy fruit

These starchy foods are cooked into porridges, baked into tortillas and breads, pounded or ground into pastes, or cooked whole.



Choose local grains

If you have a choice of which starch to eat, local grains grow more easily, without the need for expensive chemical fertilizer, and are also the most nutritious choice. Corn, wheat, and rice are fine. But local grains like millet, buckwheat, and sorghum are even better because they have more protein, vitamins, and minerals.

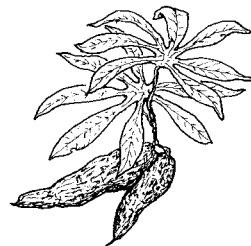
Rice and wheat

If you eat mostly wheat or rice, preparing it with the germ and bran layers still attached is healthiest. Whole wheat and brown rice are rich in nutrients but heavily milled white flour and white rice only provide energy.

Cassava (manioc, yucca)

Cassava root is a common main food that has plenty of energy, but few other nutrients. If you eat mainly cassava, it is especially important to add other foods like dried fish, vegetables, or beans. The leaves of the cassava plant are rich in vitamins and minerals and good to eat if cooked. Some types of cassava are bitter because they have a high level of cyanide (a poison).

People make bitter cassava safe to eat by a process of pounding, grating, soaking, or fermenting that “cleans out” the poison.



Maize

If maize is your main starchy food, process it first with lime “cal,” to bring out its vitamins.

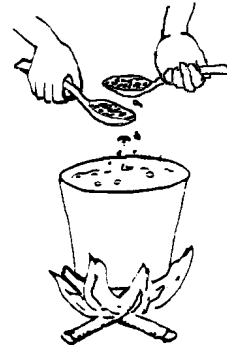
Maize comes from the Americas where it has been a main food for thousands of years. Traditionally, maize is processed with lime (cal) before it is cooked, which makes it more nutritious. When maize was brought to the rest of the world the tradition of cooking it with lime was left behind.



Unprocessed maize is fine if you also eat plenty of other protein and vitamin-rich foods. But maize has become a staple food in much of the world — sometimes it is the only food you can get. Without the traditional cooking process, eating only maize drains the body of an important vitamin called niacin and lacks the protein, iron, calcium, and other nutrients in processed maize. To process maize in the traditional way:



- Mix 2 spoons of lime (calcium hydroxide or calcium carbonate, both also called “cal,” not the lime fruit) into boiling water.
- Add ½ kilo dried maize.
- After the maize boils for a few minutes, take it off the heat and let it sit for a few hours. Then rinse the maize well, rubbing off the husks if you like. You can cook the maize whole or grind it to make dough or meal.



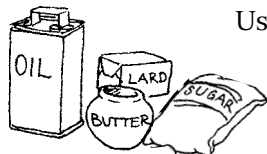
Factory breads and noodles are not as good

Packaged white breads, biscuits, and noodles lack the nutrition found in home-cooked main foods (like porridges and grains). And they often have too much fat, salt, and sugar.



Sugars and oils

Sugars and oils also give energy, and small amounts of these are needed for health. Be sure children get a little oil in each meal — especially if they eat mostly a main starchy food and little else.



Usually, factory-made foods contain much more sugar and fat than we need. People who rely on factory food get too much sugar and oil which causes a lot of health problems, see page 14.

Protein foods make us strong

Everyone needs protein foods for strength, to grow, and to recover from illness and injury.

Protein foods include:

- lentils, peas, beans, or other pulses.
- ground nuts, tree nuts, and seeds.
- eggs.
- any kind of meat that is available where you live: large or small animals, birds, fish, shellfish, or insects.
- milk, cheese, and yogurt.



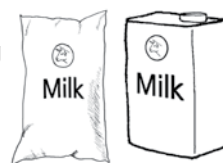
Whole grains without the bran or germ removed, such as brown rice and whole wheat, also contain some protein. So do many edible mushrooms.

You can be just as healthy eating beans, nuts, and other protein foods from plants as you can by eating meat. And plant proteins often cost less than meat to grow or buy.



We need to eat protein regularly. Pregnant women, children, old people, and those recovering from injury or illness need protein foods every day. Be sure to give some of these strength-giving foods to the people who need them most.

Some people cannot digest milk well. If you get stomach cramps from eating these foods, you may be lactose intolerant and should eat other proteins instead.



Vegetables and fruit protect our bodies

Try to eat fruits and vegetables every day. They contain different vitamins and minerals that:

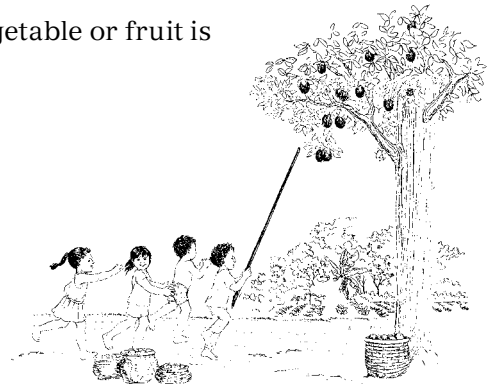
- protect the organs inside our bodies.
- keep our eyes, skin, teeth, and hair healthy.
- keep our digestion working well and help us to have normal stool.
- protect us from infection and disease.



*The fruits and vegetables that grow where you live
are as healthy as imported ones.
And they usually cost less or are free.*

Eat a variety of fruits and vegetables. Any vegetable or fruit is healthy, including:

- squash.
- melon.
- peppers and chilies.
- fresh peas and beans.
- berries, including edible wild berries.
- mango, papaya, guava, oranges, and other tree fruits.
- leafy greens — cultivated or edible wild greens are both good and so are the leaves of many root vegetables, including sweet potato, turnip, and taro.



A mix of different colored vegetables and fruits gives a better variety of vitamins and minerals.

Sprouting seeds and beans

Sprout seeds and beans to get more vitamins and minerals.

Soak a handful of beans, grains, or seeds overnight at the bottom of a bowl or jar of water.



The next day, rinse the seeds well through a sieve or clean cloth. Drain out all the water you can.

Rinse and drain them well once or twice each day so they do not dry out.

Soon, white sprouts will grow. In a few days, when tiny green leaves are visible, the sprouts are ready to eat raw or lightly cooked.



Problems from lack of variety of food

When we do not eat a variety of different kinds of food, then we do not get enough of the vitamins and minerals we need. This can lead to sickness.

Anemia and iron

Tiredness, weakness, and shortness of breath are commonly caused by anemia — a lack of iron in the blood.

Anemia is especially common in women, who lose iron from menstrual bleeding. Anemia can cause babies to be born small and can make bleeding during birth more dangerous.

A blood test for hemoglobin checks the amount of iron in the blood.

SIGNS OF ANEMIA

- pale gums and inner eyelids
- weakness
- tiredness
- dizziness
- trouble catching the breath



TREATMENT AND PREVENTION

Eat iron-rich foods:

- beans, peas, and lentils
- greens and seaweed
- dried fruits
- seeds and nuts
- any kind of meat, including poultry, fish, shellfish, or small animals



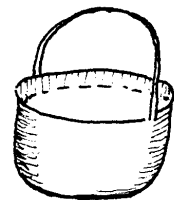
Organ meats like liver and heart, and foods made with blood are inexpensive and especially rich in iron.

Someone who is very pale, tired, or weak, or who has bled a lot may have severe anemia and needs to take iron pills (see page 39).

Foods rich in vitamin C allow our bodies to get much more iron from the foods we eat. So eat vitamin C rich foods in the same meals as iron-rich foods.



Vitamin C is found in green vegetables and most fruits, including tomatoes, oranges, papaya, mango, melons, and berries.



Cooking in iron pots adds iron to food.

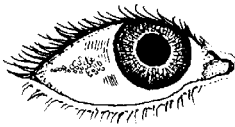
Night blindness and vitamin A

Lack of vitamin A leads to not being able to see well in poor light (night blindness) and eventually complete blindness. Vitamin A is also needed for healthy skin and bones and for fighting infection. Children and women in particular often lack enough vitamin A.

When you do not eat enough foods with vitamin A:



First, there is more difficulty seeing in dim light.



Later, the eyes become dry. The white of the eyes loses its shine and begins to wrinkle. Patches of little gray bubbles (Bitot's spots) may form.



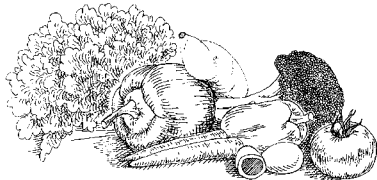
As the disease worsens, the cornea may become dull and pitted.



Then the cornea may quickly grow soft, bulge, or even burst. Usually there is not pain, but blindness can result.

Protect the eyes by eating any of these vitamin A rich foods that are available in your area:

- most **orange fruits and vegetables** — such as pumpkin, carrots, peppers, orange melons, papaya, mango, or orange sweet potato
- most **green vegetables** — such as leafy greens, green peas, and wild edible leaves
- liver
- eggs



If there are any signs of eye damage from lack of this vitamin, supplements of vitamin A (usually drops) should be given. Supplements can also be given out to children during vaccination campaigns or to prevent blindness during a measles outbreak (see page 37).

Goiter and iodine

A goiter is a swelling on the throat caused by a lack of iodine in the diet. A lack of iodine in the diet of a pregnant woman can cause deafness and other physical and mental disabilities in the baby. This can happen to the baby even if the mother does not have goiter.

The easiest way to prevent goiter and iodine deficiency is to use iodized salt (salt with iodine added when it is processed). This prevents most goiter and can make goiter go away. (An old, hard goiter can be removed only by surgery, but this is not usually necessary.) You can also eat foods that have iodine in them such as fish, shellfish, seaweeds, and other foods from the ocean. But in some mountainous areas, it is not possible to get enough iodine from food.

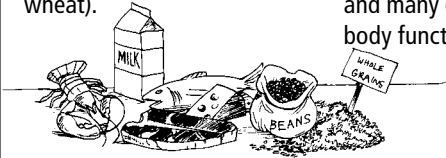


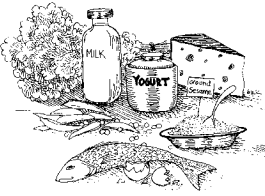



Iodized salt costs only a little more than other salt and is much better for your health.

If you cannot get iodized salt, you may need an iodine supplement (see page 38).

Other vitamins and minerals

We also need other vitamins and minerals, all of which we can usually get by eating a variety of foods. Getting vitamins regularly from food (not from tablets or tonics) is the best way for our bodies to use them. Some of the most important vitamins and minerals are listed in the chart on the next page.

Name of vitamin or mineral	What foods contain this nutrient	What it does for our bodies	Problems from not getting enough
ZINC	<p>Meat, shellfish, beans, milk products, whole grains (like millet, brown rice, or whole wheat).</p> 	<p>Needed for growth, energy, fighting infection, and many other body functions.</p>	<p>Infections are more common. Children get more diarrhea, and take longer to recover from diarrhea.</p>
B VITAMINS	<p>Meat, fish, liver, eggs, whole grains, vegetables, and fermented and yeasted foods (such as bread).</p> 	<p>Helps our cells, nerves, muscles, and immune systems work.</p>	<p>When people have only one food to eat during times of severe hunger, this can lead to a severe B vitamin deficiency called pellagra – a disease of peeling skin, diarrhea, and mental confusion.</p>
FOLIC ACID	<p>Leafy greens, beans, peas, fruit, avocado, mushroom, liver.</p> 	<p>Needed especially by women before and during pregnancy for normal growth of a baby in the womb.</p>	<p>Babies born to mothers who do not get enough folic acid are more often born small or with birth defects (see page 3 in Pregnancy and Birth).</p>
CALCIUM	<p>Milk products, seaweed, dark green vegetables, nuts and seeds. Small fish with edible bones are a good source because bones are almost pure calcium. Finely ground eggshells are another source.</p> 	<p>Keeps bones and teeth strong. Helps muscles and nerves.</p>	<p>Weak bones that break easily.</p>
FIBER	<p>Beans, whole grains, vegetables and fruits, nuts and seeds.</p> 	<p>This is not a vitamin or mineral, but fiber helps keep digestion and bowel movements normal.</p>	<p>Constipation and stomach aches. Over many years, lack of fiber makes cancers and diseases of the intestine more common.</p>

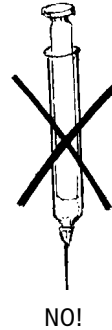
What about vitamin tablets and injections?

Some people think vitamin tablets, syrups, or injections will cure everything from tiredness to problems with sex. When both licensed doctors and so-called “injection doctors” promote vitamins as a cure-all this only worsens the problem—and empties your pockets!

Anyone who eats a good variety of foods, including vegetables and fruits, gets all the vitamins he needs. Save your money for fresh food – not expensive vitamin supplements.

Vitamin supplements are a kind of medicine. Like medicines, they should only be used when they are really needed. Vitamins are needed in cases of severe malnutrition, or during pregnancy when the demands on a woman’s body increase. Otherwise they are not needed and will not improve health or make children grow.

Avoid vitamin injections. They are needed only in the rarest cases of severe deficiency. And avoid re-used needles which spread germs that can lead to abscesses, hepatitis, and HIV.



Eating Well When You Have Little

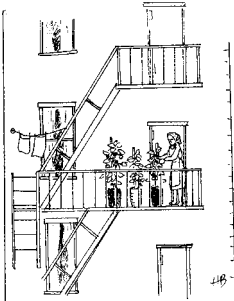
In a world where some people have land, resources, and money and others do not, there will always be hunger. And times of famine will continue as long as there are wars, outbreaks of disease, too much pollution, a lack of care for land, and economic policies that force people to move. These true, root causes of hunger must be changed to ensure that everyone is fed.

But one family or one community can usually eat better even when they have little. And perhaps by eating better, they can gain strength to stand up for social justice.



Ways to eat more and healthier foods

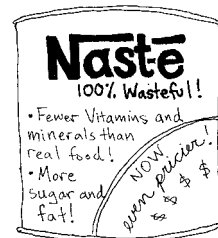
- Buy inexpensive simple foods like beans and grains. They are more nutritious and cost less than processed, factory-made foods such as white breads, biscuits, and tinned soups or snacks.
- If you live in a rural area, **gather or hunt traditional foods** like edible mushrooms, wild greens and berries, small animals, or insects. These tend to be very nutritious, and cost nothing.



- **Keep chickens for eggs and meat.** Some people build small ponds to raise fish to eat.
- **Grow your own food in containers or a garden.**
- **Buy foods in bulk.** Single-serving packages are almost always more expensive than buying a larger amount that you use over a longer time. If you cannot afford the cost of a larger amount, perhaps you can buy with a neighbor or family member, and then share the cost.



- **Babies and young children need breast milk** — not formula. Breast milk is the best food for them and it costs nothing.
- **Avoid packaged cereals and flavored milks that are sold for older babies and children.** These are a waste of money. Regular animal milk, or well-cooked and mashed foods cost less and are healthier for children than packaged “baby food” or “baby milk.”
- **Do not throw away broth from cooking beans, meat, or vegetables.** This broth is full of nutrients and can prevent anemia. Drink it or use it to cook grains and other foods. Or cook with less water and put a lid on the pot – to keep the nutrients in.
- **Use the money you do have for food.** Alcohol, tobacco, and bottled or canned sweet drinks cost a lot of money over time and give no nutrition.



New Foods, New Problems

Factory-made foods such as packaged biscuits and snacks, colas and other sweet, bottled drinks are now available all over the world. These foods are very common in urban areas, and most rural people can get at least some of them. And most people have come to like their sweet or salty flavors. Often we like them so much we eat or drink them every day, and give them to our children instead of real food.

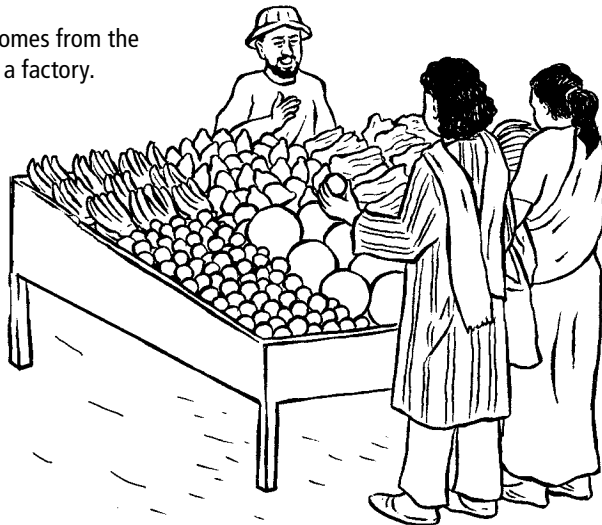


Candy, cola, and packaged snacks have too much salt, sugar, fat, chemical preservatives, and colorings. These unhealthy ingredients cause problems over time such as rotten teeth, diabetes, heart disease, and some cancers. These foods also lack the vitamins, minerals, fiber, and proteins of unprocessed, locally-made foods. For these reasons, they are called **junk foods**.

Factory-made white breads, canned foods, biscuits, and packaged crackers or noodles may seem as healthy as the fresh, home-cooked versions of these foods. Advertising tells us they are. But they are usually filled with too much unhealthy sugar, salt, and chemicals. And they lack the nutrients we get from home-cooked foods. They are also junk foods, just like candy and packaged snacks.



Healthy food comes from the
 earth, not a factory.



Diabetes and heart disease: diseases of the new food system

Diabetes and **heart disease** are health problems caused by the change in how people eat and work. They are rare where people still gather, grow, and cook their own food, and work as farmers or artisans. But as more people have less control of their work and get a limited amount of physical exercise (working in factories or in front of a computer, for example) and they rely more on factory-made foods, these diseases become more common. They are not caused by germs, nor are they contagious. They are caused by lack of activity, reliance on junk food, and increased stress and inequality in our lives. Our bodies do not work well in these conditions.



While diabetes and heart disease are very different diseases, they share many of the same causes. Each of these diseases can cause the other, and many of the ways to treat and prevent each disease are also the same.



Diabetes

Diabetes is a problem in which the body does not use sugars in food properly. It can lead to blindness, loss of limbs, coma, or even death. For more on the different types of diabetes and how to treat them, see the Diabetes chapter.

Diabetes has become extremely common in rich countries like the US, and is now growing more common all over the world. Its food-related causes include eating too much, eating unhealthy foods, and a lack of exercise. Wherever factory-made, white flour and high sugar foods take over, diabetes follows.

Heart disease and heart attacks

- High blood pressure
- Heart disease
- Heart attack

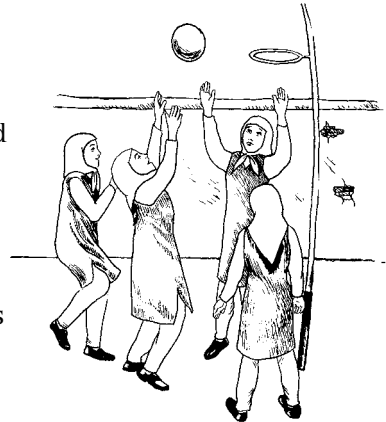
These are different parts of what is really one health problem: heart disease. Unhealthy food and a lack of exercise (along with smoking and stress) cause fat to build up inside the blood vessels. As a result, the heart must pump harder to force the blood through these thickened vessels causing high blood pressure. The heart grows tired and weak from all this effort. Blood which cannot flow freely clots up, and the heart, exhausted and without a flow of blood, stops working, causing a heart attack.

(Rheumatic heart disease is another common cause of heart disease. It comes from having had rheumatic fever as a child. See page 21 in *Caring for Children*.)

TREATMENT AND PREVENTION

There are many things we can do as individuals and in our families to prevent and treat diabetes and heart disease. But changes at a community and national level are also necessary.

Exercise: Fast walking, dancing, sports, or any exercise that speeds up your heart rate for 30 minutes or more a day is needed for every system in your body to function well. Exercise strengthens bones, gives a feeling of energy, improves mood, and helps you live longer. It is an essential way to prevent and treat both diabetes and heart disease.



Food: A diet with plenty of fresh vegetables, whole grains, and beans is best both for preventing and treating heart disease and diabetes.

- Red meats, dairy, and eggs are healthy foods, but if eaten in every meal or even every day they make heart disease more likely. So eat them a few times a week or less.
- Sweets and processed white starches are not needed at all, and eating them every day can lead to diabetes.
- Fat is needed in small amounts but leads to both heart disease and diabetes if eaten in large amounts. Red meat, palm oil, deep-fried food, and factory foods are the main unhealthy sources of fat. Try to eat less of these. Nuts, avocados, and fish are healthy sources of fat and provide other nutrients too, so are better choices.

- Salt can also worsen heart disease if eaten in large amounts. If you have heart disease or high blood pressure, avoid salty, packaged foods. Canned foods almost always contain too much salt. When flavoring your food, use only a little salt, or use herbs or spices instead.

Coke and other bottled and canned sweet drinks are particularly unhealthy. They are basically just water and sugar, with chemicals added for color and flavor. Drinking these every day can cause or worsen diabetes, rot the teeth, and fill you up with nothing good.



If you are fat: Losing weight protects you from both diabetes and heart disease. Losing weight gradually is safer than losing a lot of weight in a short time. The healthiest, most long-lasting way to lose weight is to exercise often (5 days a week or more) and to eat modest-sized meals. Try to avoid the unhealthy foods listed above.

Quitting smoking is another way to live longer and better. Quitting will protect you from heart disease, diabetes, and also from cancer. For more on the dangers of smoking, see Drugs, Alcohol, and Tobacco (in development).

Health is a community issue

What we eat and how we live our lives are partly results of our own choices, but they are also results of what foods, jobs, and housing are available and affordable. We can try to develop healthy eating and exercise habits, but our choices are often limited. For example, what we want to eat and if we have time to prepare good foods are the results of many things that are difficult for one person to control: advertising, how our work is organized, and whether we have access to clean water and a good kitchen. These conditions are shared by large numbers of people and can only be changed by collective action or through government policy.



Actions for change can have a narrow focus, such as banning Coke and sugary drinks from schools, or providing healthy school lunches to all students. Activities can be city-wide such as free daily exercise classes

which are offered by the city of Bangkok, Thailand, or the Ciclovía story on the next page. National and local policies can be made to favor small farmers and local markets instead of policies that support profits for large agricultural companies. To successfully prevent and treat diabetes and heart disease, changes must be won on all these levels.

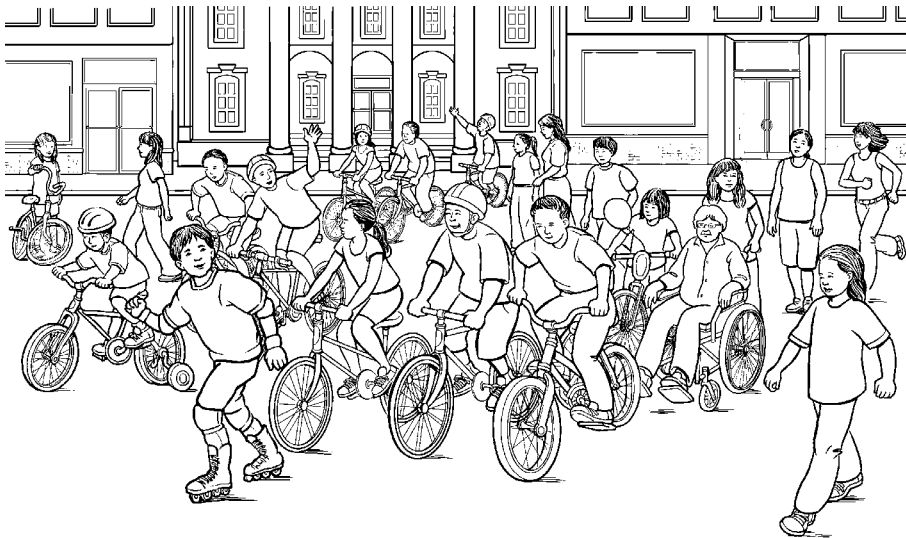
Ciclovía

The people of Bogota, Colombia (an enormous city in South America) were fed up with dangerous, crowded streets and polluted air. With leadership from a forward-thinking city official, they decided to do something about it: they would take back parts of their city from cars and trucks and make it more livable for people. The city got rid of hundreds of parking spots, built over 300 kilometers of paths for bicycles, and limited the number of cars allowed on the road during busy times.

Their most exciting invention (now copied in cities around the world) is **Ciclovía**: Every Sunday, the main streets are closed to cars. Bicycle riders, skaters, wheelchair riders, and walkers take over. In the parks, dance and exercise classes are offered for free. Bicycles are loaned at no cost.

Though organized to solve a serious problem, Ciclovía is fun. It is a weekly party to which everyone in the city is invited. Children and grandparents dance together in the parks and people of all ages bike, skate, and run through the normally traffic-clogged streets. It is a fun way to get exercise, meet neighbors and coworkers, and make new friends. It is a different and better way to live city life.

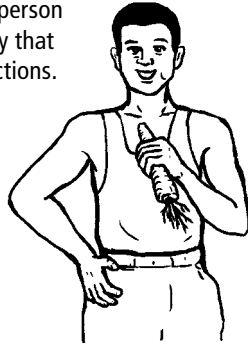
At first, some businesses were opposed to the idea because they thought it would create traffic jams and interfere with shopping. But Ciclovía was so popular that they stopped complaining. Now people in Bogota are looking for more ways to make their city safer, healthier, and more fun, 7 days a week.



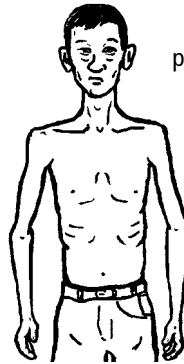
Eating When You Are Sick

Healing from most sicknesses does not require a special diet. Healthy food is the same whether you are sick or not.

A well-nourished person has a strong body that can fight off infections.



A malnourished person may get sick very often.



*When you are sick, do not avoid food.
Food will help make you well.*

HIV

People with HIV need to eat more than they did before they were sick to have enough energy to fight the infection. Eating more often each day is usually the most effective way to do this. Be sure to eat protein, vegetables, fruit, and fat, all of which are needed to stay strong and fight infection. Like everyone else, people with HIV also need to exercise. Even walking each day keeps your muscles working and your heart pumping well.

When you are sick with HIV, mouth sores, dry mouth, sore throat, nausea, or a lack of appetite can make eating feel impossible. See *Care for Sick People (in development)* for ideas about how to eat enough when you feel bad.

Unfortunately, there are no special foods that cure HIV. Only medicines can control the virus (see *HIV and AIDS - in development*).

Gallstones and gallbladder disease

Fried food and fat bring on gallbladder attacks. Boil, steam, or bake food instead of frying. Eat more fresh vegetables and fruits too (see page 14 in *Belly Pain, Diarrhea, and Worms*).

Diarrhea

Do not avoid food when you have diarrhea. Avoiding food does not make diarrhea go away; it can worsen malnutrition and dehydration (the real dangers of diarrhea). See page 25 in *Belly Pain, Diarrhea, and Worms*.



Keep germs out of your food

Making food safe by washing your hands and your food, keeping insects away, and storing food safely can protect you from stomach aches and diarrhea (see *Water and Sanitation: Keys to Staying Healthy*, pages 3 - 6)

Nausea or mouth pain

Care for Sick People (in development) suggests ideas for how to get nourishment when you feel too sick to eat.

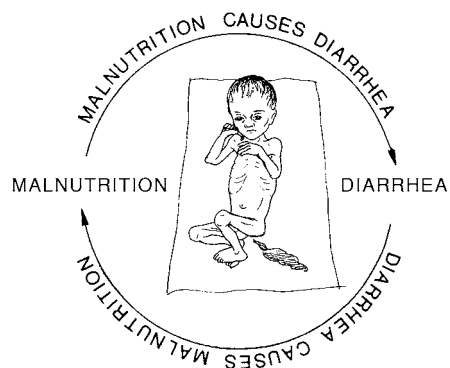
Malnutrition

SIGNS

- slow growth and small size
- thinness
- “wasting” of muscles: the body takes tissue from the muscles to supply energy
- slower thinking and lethargy, because the brain does not get the energy it needs
- more diseases and infections
- diarrhea happens frequently, making poor nutrition worse

Malnutrition is common and often chronic. This means many people are hungry for long periods, so they never grow as tall as they might, they get sick more often than they should, and they get more diarrhea, anemia, and other health problems more often.

In places where most children are malnourished, you may think a malnourished child looks normal. But small size, weakness, sad personality, and constant sickness are neither healthy nor normal.



TREATMENT

You can treat chronic malnutrition even when you do not have much, by giving more and better foods.

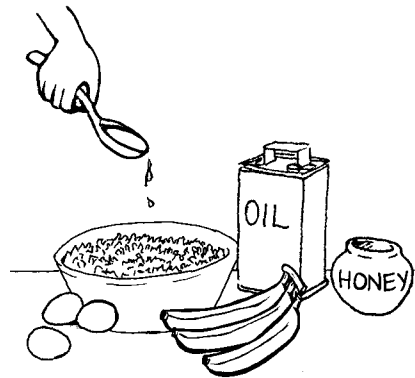
For babies from birth to about 6 months: give plenty of breast milk and nothing else. Any other food makes the problem worse. As the child grows, keep giving breast milk, and add other food too.

For everyone else with signs of malnutrition: give a high-energy porridge. Start by making a porridge with your main starchy food and add to it:

1. Protein: Groundnut flour, peanut butter or another nut or bean flour or paste. Or cooked beans, eggs, or fish. Or milk, yogurt, or cheese. Choose any protein that is affordable and available to you.

2. Energy: Add a spoon of oil and a spoon of sugar, honey, or another sweetener. Or add fruit.

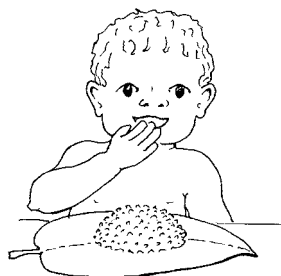
3. Vitamins and minerals: From cooked vegetables or fruit.



There may be times when there is not enough food to give a child a healthy meal with protein and vegetables every day. Still, try to avoid giving only starchy food with nothing else. With only starch, the child will feel full but will grow weak and sick. **Add a spoon of oil.** A spoon of oil does not make up for a lack of protein and vegetables. But for a short time it can give energy that a child cannot get from starch alone.



To meet her energy needs, a child would need to eat this much boiled rice.



But when oil is mixed in, she only needs to eat this much.

Check all children for malnutrition

Chronic malnutrition in children often goes unnoticed. To check for malnutrition, weigh children regularly and keep track of their growth on a chart like the Road to Health Chart (see page 32 in *Caring for Children*). If you do not have a scale, another way to check for malnutrition is to measure the child's upper arm. Often there are programs or clinics for measuring the growth of children. These programs can be a good way to ensure a hungry child gets help early, before malnutrition becomes dangerous.

To measure the arm, cut a strip of paper, plastic, or cloth to about 25 cm.

← Mark on your strip the places that show when a child is too thin, or has enough fat and muscle. At 0 cm write, "measure from here," at 11.5 cm write "too thin," and at 12.5 cm write "growing well." Or use colors or symbols that make sense to you.

Use your strip to measure the upper arms of children between 1 and 5 years old, to make sure they are gaining enough weight.

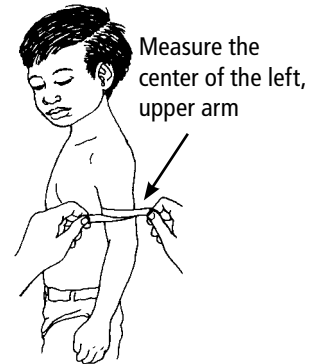
(Arm measurements are not useful when children have kwashiorkor, a kind of severe malnutrition that causes swelling in the arms and elsewhere, see page 23.)

When a child's arm measures less than 11.5 cm (below the "too thin" line), or she falls behind on the Road to Health chart, or has signs of acute malnutrition listed on the next page, she is so malnourished that malnutrition has become an illness in itself. She needs urgent treatment and you can help save this child's life by getting her high-energy food (see page 25).

Note: This picture may print at different sizes, so use a ruler to make sure your strip has the correct measurements.

← **YELLOW (in danger)**

If the child's arm measurement is here she is at risk for becoming malnourished. Give her extra food, monitor her growth, and watch her closely so that she does not become malnourished.

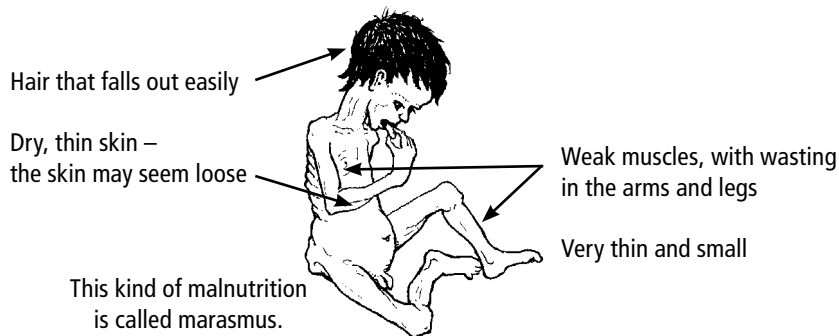


Severe, acute malnutrition

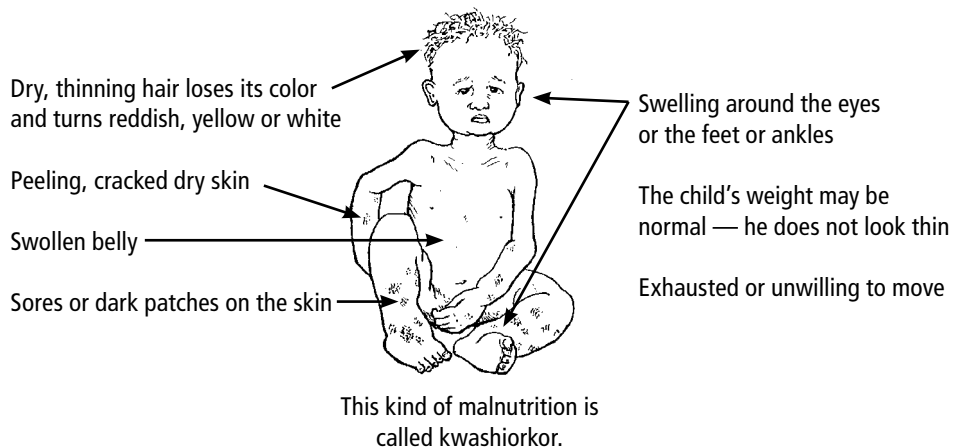
Severe, acute malnutrition happens in times of war, drought, or disaster when the food supply is interrupted. Or it can happen to someone who is poorly nourished most of the time, but something changes to decrease the food they eat or to increase the amount of energy they need. For example, when an already hungry child has a “growth spurt” and needs more energy. Or when a poorly nourished person gets HIV, malaria, leishmaniasis, measles, or some other sickness, and needs more food for energy to fight infection. Suddenly that “just enough” amount of food they were surviving on is no longer enough.

The information on malnutrition here is focused mainly on children because they suffer the most from it. They lose weight more quickly, and then lose their appetites, and must be given the most help to recover and survive. Without help, the damage caused by malnutrition can harm them throughout life. Adults get acute malnutrition too, and the treatment for adults is the same as for children.

A severely malnourished child may look like this:



Or a severely malnourished child might look like this:





Sometimes children show a combination of signs from both kinds of malnutrition.

People with HIV, TB, worms, or other long-lasting illnesses may be malnourished even when they eat regularly. If a child or adult eats plenty of food but still looks malnourished, they may have a serious illness. An important part of staying healthy with any long-lasting illness is to eat more food. But also try to identify the cause of the problem.



Ashika was severely malnourished when she came to the clinic.



After a few weeks, good food had cured her.

These two photos show the same 2 year old girl, Ashika. She came to the Nutritional Rehabilitation Home (NRH) in Kathmandu, Nepal with severe malnutrition. After 26 days of treatment with an enriched milk formula and a mixed diet of local foods, she gained enough weight to be healthy for her age, and went home with her mother. The NRH is not a hospital, just a big house with many beds, a vegetable garden, and a caring staff. They help around 20 children each month who suffer from severe malnutrition due to poverty, other illnesses, and lack of awareness about nutrition, as well as war and famine. Mothers also participate in their children's treatment. They learn about nutrition so they can help others when they return home. Feeding centers like these save the lives of most of the children brought to them.

Treatment for acute malnutrition

An acutely malnourished child needs medical help at once. If there is a feeding center in your area take the child there, or you may need to provide this care yourself. Give:

- food.
- drink (hydration).
- warmth, especially at night.
- medicines.

Food

Give highly concentrated food to quickly provide energy and nutrients. Plain starchy porridge is not enough.

You can make your own high-energy food at home. This homemade high-energy food is just as good as “therapeutic” foods such as *Plumpy’nut* and may be better in some ways (see page 29). It is also a great food for any older baby or young child, because all young children need concentrated energy and nutrients to grow and be well.

Combine 4 kinds of food using ingredients local to where you live: **porridge, protein, fat or oil, and vegetable.**

1. Make 1 cup porridge from a starchy energy food.

Choose any one of these:

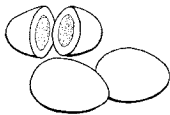
- millet
- maize
- rice
- wheat
- cassava
- yam or potato



Use whatever starchy food you usually make for your family, cooked into a thick paste (not a thin broth).

2. Add a high protein food.

Choose any one of these:

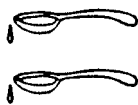


- 2 tablespoons milk powder
- 1 egg
- ½ cup roasted, pounded or ground seeds or nuts
- ½ cup cooked, mashed beans, lentils, or peas
- ½ cup cooked bean or pea flour
- ½ cup dried, pounded fish
- ¼ cup cooked, finely chopped meats or organ meats

3. Add 2 tablespoons fat or oil.

Choose any of these:

- one vegetable or nut oil, ghee, butter, or lard



4. Add ½ cup cooked vegetable.

Choose any one of these:

- tomato
- green leafy vegetables
- squash
- pumpkin
- green beans
- fresh peas
- okra
- any other vegetable



Give this high-energy porridge 4 or 5 times a day.

A malnourished child may not want to eat or may have energy only to eat very slowly. Offer a little food every hour or two. **Be patient and persistent.** Keep feeding this high-energy food to the child until she begins to gain weight and gets her energy and spirit back.



Wash your hands before cooking or serving food, use clean dishes, and use all the food you prepare in a day or so. Like any food, this high-energy food will eventually spoil, and will spoil faster if you live where it is hot.

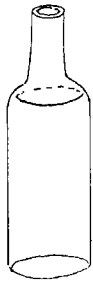
If the child is still nursing, **breastfeed first and then give this high-energy food.** Offer breast milk more often — because malnourished children may be too weak to nurse enough at each feed.

Also give fruit every day. Any fruit will give vitamins. But if you can, give different fruits on different days — so the child will get a variety of vitamins.

Fluids to drink (hydration)

Most malnourished children are also dehydrated from diarrhea. If a mother is breastfeeding, she should continue to give breast milk as often as she can.

Along with breast milk, give rehydration drink. A child with severe malnutrition needs **less salt** and a bit more sugar than is in the usual recipe for rehydration drink. So:



- In 1 liter clean water
- Mix 1/4 teaspoon salt

Taste this mixture. It should be less salty than tears.



- Then mix in 9 teaspoons sugar

Give spoonfuls of this mixture every few minutes. A malnourished person may not even have enough energy to drink. Support her head while you spoon the drink into her mouth.

Warmth

With severe malnutrition, the body does not have the energy to warm itself enough. Check the person's temperature regularly. Warm her with blankets for several days, until she starts to recover. People get coldest at night, so she needs extra blankets then.

Medicines

Severe malnutrition is an illness and requires medicines. A severely malnourished child is likely to have infections. But her body is so weak, it may not be able to show the signs that usually tell us when someone is sick. For this reason, give medicines to fight infection, even if she has no fever or obvious infections.

Give acutely malnourished children:

- amoxicillin or another antibiotic, 3 times a day for 7 days (see page 41).
- measles vaccine (unless you are sure the child is already fully vaccinated against measles), see Vaccines (in development).
- vitamin A supplements, see page 37.
- zinc supplements, see page 40.
- mebendazole (if worm infections are common where you live), see page 34.



Watch the child carefully

A malnourished child can quickly get much worse, and needs careful attention.

As you start giving fluids and food, check her heart and breathing rate (see Examining a Sick Person - in development). If these increase as you give rehydration drink, stop giving it and get medical help. Her heart may be having trouble adjusting to the fluid.

Is the child getting better? If she does not improve after a few days, she may have an infection or illness causing more problems. You probably need to go to a hospital. Also get help if at any time the child becomes unconscious (passes out), has a seizure, or has a fever, 38°C (100.4°F) or higher.

Help the child's main caregiver understand exactly what this child needs to survive and get better. Clearly explain about rehydration, food, and any needed medicines as well as how to help the child eat more in the future. Remind the caregiver to be patient and persistent while feeding the child. Without attention to the child's food and care, she can quickly slip back into

being malnourished. Ask the caregiver to explain the care instructions back to you, so you are sure they understand. And do what you can to help. Usually the care for a malnourished child is in the hands of a mother who is already busy watching other children and doing household work, and who lacks enough food herself. Helping the mother will help the child.

No matter how well she recovers, a child who has had severe malnutrition needs to be checked regularly to be sure her mind and body are growing and strong.



Ready-to-Use Therapeutic Foods

When people are starving, you may be able to get packaged, “Ready-to-Use Therapeutic Foods” (RUTF). These high-energy foods can be life-saving when you have nothing else, for instance, in refugee camps. But they have their problems. Dr. Massimo Serventi, a pediatrician in Tanzania, wrote to us about his concerns about *Plumpy’nut*, the best known RUTF:



Big institutions advocate the use of Plumpy’nut because they aim to save lives of children. Yes, today, but what about tomorrow? And the day after tomorrow?

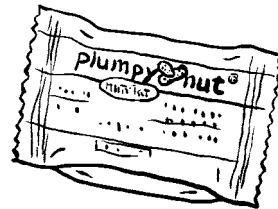
If Plumpy’nut is effective and good, why is it manufactured in France and not in Nairobi? Or Harare? Or Mumbai?

Enriched flours containing groundnuts have been sold in African shops for years. Why not encourage these healthy, local enriched flours instead of importing Plumpy’nut?

Children like the sweetness of Plumpy’nut so much that they refuse to accept other ordinary foodstuffs.

In areas of conflict or crisis (like here) you can find Plumpy’nut sold in the local markets. Doctors, nurses, and nutritionists have all become relaxed in offering Plumpy’nut.

What do mothers think about Plumpy’nut? I suspect they perceive it as a drug, or even worse as “wazungu chakula” (white men food) that is superior to their own food. A tragedy. In Sudan people cook with a nutritious paste of groundnuts (dakua), but they do not give it to children. Dakua could help save hungry children, but instead, they give Plumpy’nut!



(After being challenged by Médecins Sans Frontières, the company that makes *Plumpy’nut* did agree to allow local companies to make products using the *Plumpy’nut* recipe.)

Preventing Hunger

Within your own community, you can help prepare for food emergencies by growing food, storing it well, and sharing with neighbors.

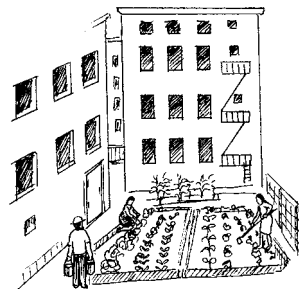
Growing food

Wherever you live, you can grow food. Growing your own food is one of the best ways to eat healthy, and gives you something to eat when there is no money to buy food.

City-dwellers grow food on rooftops, in vacant lots, in pots or sacks of soil in a window. A few plants in a pot may not provide you with much food but it is a way to start. Children love helping with growing things and caring for plants is a valuable skill to teach them. Join with neighbors to plant a garden in an empty lot and you can grow even more.

If you farm already, but mostly grow cash crops like cotton, coffee, rice, or coca, also plant some vegetables for your family or village. Or build a small fish pond. If your cash crop fails or the price drops, you will still have something to eat.

For more ideas on how to grow your own food, see Hesperian's *A Community Guide to Environmental Health*, chapters 12 to 15.



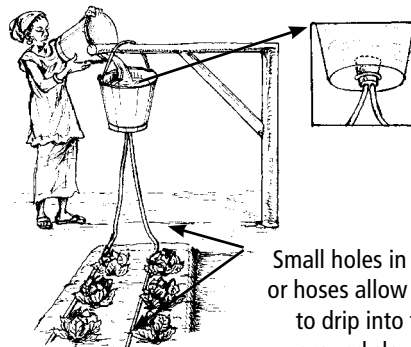
Improve your yield

- **Improve soil with animal manures and compost.** Commercial or chemical fertilizers increase yield for a few years, then leave the soil weakened and water sources poisoned. Natural fertilizers like manure or compost improve the quality of the soil over the long term.



For a small kitchen garden, save your food waste in a bin where it can rot back into soil, and use that compost to enrich the soil.

- **Use your water carefully.** Try collecting rainwater. If you can get a long pipe or hose, make a line of small holes to irrigate each plant instead of wasting water in large irrigation ditches.



Small holes in pipes or hoses allow water to drip into the ground slowly.

- **Rotate crops** to prevent disease and strengthen the soil.
- **Grow peas or beans.** They are nutritious foods and strengthen the soil as they grow.
- **Avoid pesticides.** Pesticides are poison. They kill pests and help crops for a short time, but they also harm the people who handle and use them. Birds and small animals that eat insects may also become sick. Without these predators, more pests survive to damage crops. Over time, insects get stronger and survive even strong poisons. These expensive chemicals are dangerous and should be avoided when possible.



This year maize.



Next year beans.

Spraying plants with a mild soap can keep pests under control without strong poisons. Even vegetable oil kills many insects.



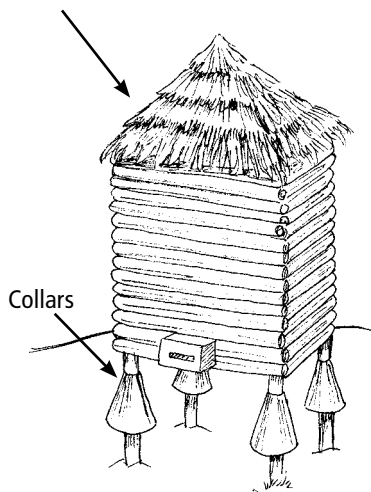
If you have a sprayer, clean it well, then put some vegetable oil and water inside. Shake before you spray to kill aphids and other insects.

Store the food you grow

Growing food does no good if the food goes bad or is eaten by pests. Drying, pickling, salting, and fermenting are traditional ways to keep food safe to eat after the growing season ends.

For grains and beans

- Dry and store grains soon after harvest. (Leaving grain in the field leads to a lot of lost grain.)
- Store grain somewhere dry, **off the ground**, and in containers that can be closed tightly. For a large harvest you can build a raised shed, like this. Smaller amounts can be sealed in barrels or other closed containers.



Clear the area of weeds and other cover. Rodents are attracted to food waste, and to protected dark areas where they can nest. Remove these from the area.

Keep storage containers well sealed and repair any holes quickly. **Rodents can squeeze through very small holes.**

Keep grain storage containers high off the ground.

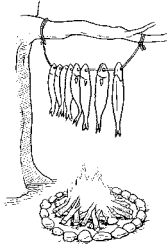
Rodents can climb. Clear away anything touching the storage container and put collars around its legs.

Keep dogs or cats to scare rodents away.

- In parts of India, farmers mix neem leaves in with stored grain. Neem is a natural and safe pesticide and keeps insects away. In Cameroon, farmers tightly pack dried cowpeas and wood ash in clay jars for storage. The ash keeps out weevils. In other places, dried beans are stored in oil. These are all excellent, safe ways to store grain and beans and protect your food for later use.
- Moldy grain should be destroyed. The mold contains toxins.

Drying

Dried fish, fruit, meat, and vegetables can provide vitamins, minerals, and protein in times when you cannot grow or produce food. Dry foods more quickly and with less dust by keeping them off the ground. A shallow, loose-weave basket, chicken wire, or some kind of framed screen allows air to pass underneath, drying the food more quickly. Cover drying foods with a thin cloth or another screen to keep off pests and dirt.

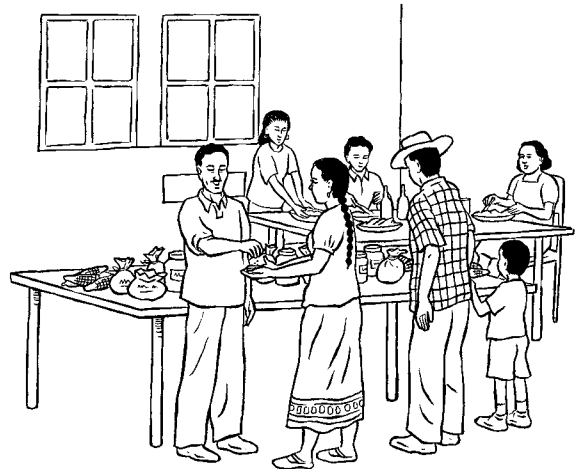


Vegetables should usually be lightly cooked before drying. Dry vegetables and fruit until they are mostly dry, but still contain enough moisture to be tasty. Meat and fish can dry over a fire.

Keep dried foods somewhere dark and cool, in closed bags or containers.

Share with your neighbors

Some communities have a tradition of sharing food with those who need it. For example, when families go to religious services, they bring a handful of grain to share. Small amounts of grain from many families add up to a lot of stored grain. Then, if a few families' crops fail, the stored grain is given to those struggling families. Some groups have set up formal "rice banks" where families leave rice during the harvest season to loan to people in need during the dry season.



Local solutions to community-wide hunger

The city of Belo Horizonte in Brazil is working to stop hunger and poverty for its citizens and for food growers who live nearby. In the 1990s, the local government declared food to be a human right, and started new programs to support this right. For example:

- Healthy meals are provided to school children.
- Poor people can receive a basket of basic, nutritious foods each week.
- Three large neighborhood restaurants serve simple, nutritious meals at low cost. Regular customers can suggest improvements to these restaurants.
- The city buys fruits and vegetables for their food programs directly from small farmers who live near the city. It also established farmers markets where farmers can sell their produce at fair prices. This keeps small farmers on their land, so they do not have to move to the city. It also ensures an adequate supply of fresh fruit and vegetables for people who live in the city.
- The prices of basic foods at dozens of markets are tracked. Then these prices are posted in public places and on television and radio so people know where to get the best price, and private markets are forced to keep their prices fair.



These programs have quickly and greatly improved the health of the people of Belo Horizonte. The number of infant deaths was reduced by half since these programs began.

Good Food Makes Good Health: Medicines

Medicines for Worms

Medicines by themselves are not enough to get rid of worm infections for very long. Personal and public cleanliness is also necessary. Worm infections can spread easily among family members, so when one person has worms it is wise to treat the whole family too.

Mebendazole

Mebendazole works against hookworm, whipworm, roundworm, and pinworm (threadworm). It may do some good against trichinosis, but is not the best medicine for this. Although side effects are not common, there may be some gut pain or diarrhea if the person is infected with a lot of worms.

Important

Avoid mebendazole during the first 3 months of pregnancy when it can harm the developing baby. Do not give to children under 1 year old.

How to use

For pinworm

→ **1 year to adult:** give 100 mg, one time by mouth. Repeat in 2 weeks if necessary.

For roundworm (Ascaris), whipworm (Trichuris) and hookworm

→ **1 year to adult:** give 100 mg, 2 times a day for 3 days (6 tablets in all). **OR** give one 500 mg tablet, one time only.

To prevent roundworm where this infection is common

→ **1 year to adult:** give 500 mg, every 3 to 6 months.

For trichinosis

→ **1 year to adult:** give 200 to 400 mg, 3 times a day for 3 days. Then give 400 to 500 mg, 3 times a day for another 10 days. If there are pain or vision problems, also give a steroid, for example prednisolone, 40 to 60 mg, once a day for 10 to 15 days.

Albendazole

Albendazole is similar to mebendazole but often more expensive. It works against hookworm, whipworm, roundworm, pinworm, and trichinosis. Side effects are rare.

Important

Avoid albendazole during the first 3 months of pregnancy when it can harm the developing baby. Do not give to children under 1 year old.

How to use

For pinworm, roundworm (Ascaris), whipworm (Trichuris), and hookworm

→ **1 to 2 years:** give 200 mg, one time.

Over 2 years: give 400 mg, one time. Repeat in 2 weeks if needed.

For trichinosis

→ Give 400 mg, 2 times a day for 8 to 14 days. If there are pain or vision problems, also give a steroid, for example prednisolone, 40 to 60 mg, once a day for 10 to 15 days.

Pyrantel pamoate, pyrantel embonate

Pyrantel works for pinworm, hookworm, and roundworm (Ascaris), but it may be expensive. It occasionally causes vomiting, dizziness, or headache. Do not give it to someone also taking piperazine (another anti-worm medicine).

How to use

For hookworm and roundworm: give one dose only.

For pinworm: give one dose, wait 2 weeks, then give another dose.

→ Give 10 mg per kg. If you cannot weigh the person, dose by age:

Under 2 years: give 62 mg (¼ of a 250 mg tablet).

2 to 5 years: give 125 mg (½ of a 250 mg tablet).

6 to 9 years: give 250 mg (one 250 mg tablet).

10 to 14 years: give 500 mg (two 250 mg tablets).

Over 14 years: give 750 mg (three 250 mg tablets).

For Tapeworm

There are several types of tapeworm. Praziquantel or niclosamide both work for all types. If the tapeworm infection is in the brain or causes seizures, the person needs albendazole and anti-seizure medicines instead, and should get help.

Praziquantel

Side effects

Praziquantel may cause tiredness, dizziness, headache, loss of appetite, and nausea, but these side effects are rare at the low doses used to treat tapeworm.

How to use

For most kinds of tapeworm, including beef and pork tapeworm

- Use 5 to 10 mg per kg, one time only. Or dose by age:
 - 4 to 7 years:** give 150 mg (¼ tablet), one time only.
 - 8 to 12 years:** give 300 mg, one time only.
 - Over 12 years:** give 600 mg, one time only.

For dwarf tapeworm (*H. nana*)

- Use 25 mg per kg in one dose. Then repeat in 10 days. Or dose by age:
 - 4 to 7 years:** give 300 to 600 mg (½ to 1 tablet) per dose.
 - 8 to 12 years:** give 600 to 1200 mg per dose.
 - Over 12 years:** give 1500 mg per dose.

Niclosamide

Niclosamide works against tapeworm in the gut, but not against cysts outside the gut.

How to use

Take niclosamide after a small morning meal. Tablets must be chewed well and swallowed. The dose may differ depending on the type of tapeworm, so your local health authority may have a good recommendation. If not, use the dose below.

Chew well and swallow the following doses. If a small child cannot yet chew, crush the tablet and mix with a little breast milk or food.

- **Under 2 years:** give 500 mg, one time only.
- 2 to 6 years:** give 1 gram (1000 mg), one time only.
- Over 6 years:** give 2 grams, one time only.

Vitamin and Mineral Supplements

Mixed (or multi) vitamins

Nutritious food is the best source of vitamins. But when adequate food is not available, or during pregnancy when women have a greater need for nutrition, a mixed vitamin supplement should be used.

Vitamin and mineral supplements come in many forms, but tablets are least expensive. Injections of mixed vitamins are unnecessary, a waste of money, and can cause unnecessary pain and infections. Tonics and elixirs often do not include the most necessary vitamins and are usually too expensive for the little good they do.

How to use

Many mixed vitamin tablets use 1 tablet daily, but read the label for instructions.

Vitamin A, retinol

Vitamin A prevents night blindness and xerophthalmia.

To get enough vitamin A, people need to eat enough yellow fruits and vegetables, dark green leafy vegetables, and foods such as eggs, fish, and liver. In areas where night blindness and xerophthalmia are common and eating enough of these foods is not always possible, give children vitamin A every 6 months.

Important

Do not use more than the suggested amount. Too much vitamin A from capsules, tablets, or oil can be dangerous. Do not give the regular adult dose of 200,000 U to girls or women who could become pregnant, or women in the first 3 months of pregnancy because this can harm a developing baby. For pregnant women, vitamin A is given in smaller doses more often instead of a single large dose.

How to use

Swallow pills or capsules. But for young children, crush tablets and mix them with a little breast milk. Or cut open capsules and squeeze the liquid into the child's mouth.

To prevent vitamin A deficiency in children

As part of a prevention program:

→ **6 months to 1 year:** give 100,000 U by mouth one time.

Over 1 year: give 200,000 U by mouth one time. Repeat every 6 months

To treat night blindness

If someone already has difficulty seeing or has other signs of night blindness, 3 doses are given. The first dose is given right away, the second is given one day later and the third dose at least 2 weeks later.

- For each of the 3 doses:
 - Under 6 months:** give 50,000 U by mouth in each dose.
 - 6 months to 1 year:** give 100,000 U by mouth in each dose.
 - Over 1 year:** give 200,000 U by mouth in each dose.
- **For pregnant women:** give 25,000 U by mouth weekly in pregnancy for 12 weeks. If she has continued signs of night blindness or another severe eye problem from lack of vitamin A, an experienced health worker may give a pregnant woman a larger dose.

For children with measles

Vitamin A can help prevent pneumonia and blindness – two common complications of measles.

- **Under 6 months:** give 50,000 U by mouth 1 time a day for 2 days.
- 6 months to 1 year:** give 100,000 U by mouth 1 time a day for 2 days.
- Over 1 year:** give 200,000 U by mouth 1 time a day for 2 days.

If the child has already received a dose of vitamin A in the last 6 months, give this treatment for one day only. If someone with measles is severely malnourished or already starting to lose her vision, give a third dose of vitamin A after 2 weeks.

Vitamin B6, pyridoxine

Persons with tuberculosis being treated with isoniazid (INH) sometimes develop a lack of vitamin B6. Signs of vitamin B6 deficiency include: pain or tingling in the hands or feet, muscle twitching, nervousness, and sleep problems.

How to use

Give vitamin B6 every day the person is taking isoniazid.

To PREVENT vitamin B6 deficiency

- **Babies and small children:** give 10 mg each day.
- Larger children and adults:** give 25 mg each day.

To TREAT vitamin B6 deficiency

- **Newborn to 2 months:** give 10 mg once a day for as long as there are any signs of deficiency.
- Children older than 2 months:** give 10 to 20 mg, 3 times a day for as long as there are any signs of deficiency.
- Adults:** give 50 mg, 3 times a day for as long as there are any signs of deficiency.

Iodine

Iodized salt and seafood are the best ways to get enough iodine. Where it is impossible to get these, and where there is goiter or hypothyroidism (cretinism), you can give iodine supplements.

How to use

With capsules:

- ➔ **Newborn to 1 year:** give 100 mg once a year.

If you have a 200 mg capsule, cut it open and squeeze the contents into a small cup, and do your best to feed the baby ½ of this liquid. It is OK to not be exact, but do not give the entire contents to a small baby.

1 to 5 years: give 200 mg once a year.

6 years to adult: give 400 mg once a year.

For pregnant women, to protect them from goiter and their babies from disabilities: give 400 mg one time during pregnancy. As early in pregnancy as possible is best, but any time is OK.

With iodized oil:

- ➔ **1 to 5 years:** give 0.5 ml (240 mg) once a year.

6 years to adult: give 0.5 to 1 ml (480 mg) once a year.

Pregnant women: give 1 ml (480 mg) one time as early in pregnancy as possible.

Repeat 1 year after giving birth.

Iron, ferrous sulfate, ferrous gluconate

Ferrous sulfate is useful in the treatment or prevention of most cases of anemia.

Treatment with ferrous sulfate by mouth usually takes at least 3 months.

Iron works better when taken with vitamin C (either by eating fruits and vegetables, or taking a vitamin C tablet).

Side effects

Iron sometimes upsets the stomach and is best taken with meals. Also, it can cause constipation especially in older people, and it may make the stools (feces) look black. See advice for constipation on page 37 in Belly Pain, Diarrhea, and Worms.

Drinking liquid iron supplements blackens the teeth. Drink it through a straw or brush the teeth afterwards.

DOSE BY AGE FOR FERROUS SULFATE

AGE GROUP	HOW MUCH PER DOSE	HOW MANY 300 MG TABLETS	HOW MUCH TOTAL IRON
Under 2 years	➔ 125 mg ferrous sulfate	➔ Use iron syrup, or crush about ¼ of a 300 mg ferrous sulfate tablet in breast milk	➔ Give enough to provide 25 mg iron
2 to 12 years old	➔ 300 mg ferrous sulfate	➔ 1 tablet of 300 mg ferrous sulfate	➔ Give enough to provide 60 mg iron
12 years to adult	➔ 600 mg ferrous sulfate	➔ 2 tablets of 300 mg ferrous sulfate	➔ Give enough to provide 120 mg iron

Important

Be sure the dose is right. Too much ferrous sulfate is poisonous. Do not give iron to severely malnourished persons. Wait until they have recovered their health.

How to use

Different forms of iron contain different concentrations of this mineral. For example, a 300 mg tablet of ferrous sulfate contains about 60 mg of iron. But a 325 mg tablet of ferrous gluconate contains 36 mg of iron. So read the label of your tablets, syrup, or other iron supplement to learn the iron content.

To PREVENT anemia in pregnant and breastfeeding women

- ➔ Give 300 mg ferrous sulfate (60 mg iron) each day. It should also be taken daily by pregnant women and women who plan to become pregnant. A combined iron and folic acid supplement is even better because folic acid helps prevent birth defects.

To TREAT someone who is already anemic

- ➔ Give ferrous sulfate once a day, or divide into 2 doses if it upsets the stomach.

Zinc

Zinc helps a person with diarrhea to get better faster. It should be given along with rehydration drink. See page 27.

How to use

For babies, tablets can be ground up and mixed with breast milk or a little water. You may be able to get a “dispersible tablet” which dissolves quickly and easily in liquid.

- ➔ **Newborn to 6 months:** give 10 mg, once a day for 10 to 14 days.
Over 6 months: give 20 mg, once a day for 10 to 14 days.

Antibiotics Fight Infection

Cotrimoxazole, sulfamethoxazole with trimethoprim, TMP-SMX

Cotrimoxazole, a combination of 2 antibiotics, is inexpensive and fights a wide range of infections. It is an important medicine for people with HIV and can prevent the many infections that come as a result of infection with HIV.

Important

Avoid giving cotrimoxazole to babies less than 6 weeks old and to women in the last 3 months of pregnancy. Allergy to this medicine is common. Signs of allergic reaction are fever, difficulty breathing, or rash. Stop using it if a rash develops or if you think there may be an allergy.

How to use

Cotrimoxazole comes in different strengths of each of the 2 medicines it contains. So it may say 200/40 (meaning 200 mg sulphamethoxazole and 40 mg trimethoprim) or 400/80 or 800/160. A dose is sometimes described only in terms of the amount of trimethoprim (the second number).

- ➔ **6 weeks to 5 months:** give sulfamethoxazole 100 mg + trimethoprim 20 mg, 2 times a day for 5 days.
- 6 months to 5 years:** give sulfamethoxazole 200 mg + trimethoprim 40 mg, 2 times a day for 5 days.
- 6 to 12 years:** give sulfamethoxazole 400 mg + trimethoprim 80 mg, 2 times a day for 5 days.
- Over 12 years:** give sulfamethoxazole 800 mg + trimethoprim 160 mg, 2 times a day for 5 days.

Amoxicillin

Amoxicillin is a broad-spectrum penicillin, which means it kills many kinds of bacteria. It is usually interchangeable with ampicillin. When you see a recommendation for amoxicillin in this book, you will often be able to use ampicillin in its place, in the correct dose. Both are very safe and are especially useful for babies and small children.

Side effects

Amoxicillin often causes nausea and diarrhea (but not as often as ampicillin does). Avoid giving it to those who already have diarrhea if you can give another antibiotic instead.

The other common side effect is rash. But, raised, itchy bumps that come and go in a few hours are probably a sign of penicillin allergy. Stop giving the medicine right away and do not give the person a penicillin medicine again. Future allergic reactions may be more severe and even life-threatening. For some problems, erythromycin can be used instead, see Belly Pain, Diarrhea, and Worms, page 45. A flat rash that looks like measles, and usually appears a week after starting the medicine and takes days to go away, is not necessarily an allergy. But it is impossible to know for sure if the rash is from allergy or not, so it is usually better to stop taking the medicine.

Important

Resistance to amoxicillin is growing more common. Depending on where you live, it may not work any more against staphylococcus, shigella or other infections.

How to use

Amoxicillin works well when taken by mouth. To give tablets or capsules to a baby, crush the pills or empty the capsules and divide the powder to get the amount you need. Then mix it into a little breast milk. Feed the milk and medicine to the baby with a cup or spoon.

As with other antibiotics, always give these medicines for at least the shorter number of days shown here. If the person still has signs of infection, have her continue taking the same amount every day until all signs of infection have been gone for at least 24 hours. If the person has taken the medicine for the maximum number of days and is still sick, stop giving the antibiotic and get medical help. For people with HIV, always give the medicine for the maximum number of days listed.

Likewise, the amount of antibiotic to take depends on the age or weight of the person and the severity of the infection. In general, give the smaller amount for a thinner person or a less severe infection, and the larger amount for a heavier person or a more severe infection.

- ➔ Give 45 to 50 mg per kg each day, divided into 2 doses a day. If you cannot weigh the person, dose by age:

Under 3 months: give 125 mg, 2 times a day for 7 to 10 days.

3 months to 3 years: give 250 mg, 2 times a day for 7 to 10 days.

4 to 7 years: give 375 mg, 2 times a day for 7 to 10 days.

8 to 12 years: give 500 mg, 2 times a day for 7 to 10 days.

Over 12 years: give 500 to 875 mg, 2 times a day for 7 to 10 days.