

# Prevention: How to Avoid Many Sickneses

## CHAPTER 12

*An ounce of prevention is worth a pound of cure!* If we all took more care to **eat well, to keep ourselves, our homes, and our villages clean**, and to **be sure that our children are vaccinated**, we could stop most sicknesses before they start. In Chapter 11 we discussed eating well. In this chapter we talk about cleanliness and vaccination.

### CLEANLINESS—AND PROBLEMS THAT COME FROM LACK OF CLEANLINESS

Cleanliness is of great importance in the prevention of many kinds of infections— infections of the gut, the skin, the eyes, the lungs, and the whole body. Personal cleanliness (or *hygiene*) and public cleanliness (or *sanitation*) are both important.

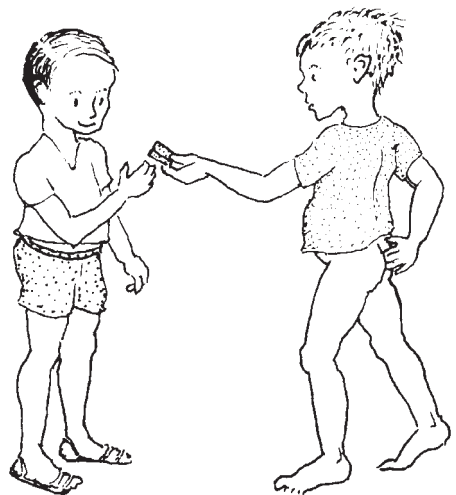
Many common infections of the gut are spread from one person to another because of poor hygiene and poor sanitation. Germs and worms (or their eggs) are passed by the thousands in the *stools* or *feces* (shit) of infected persons. These are carried from the feces of one person to the mouth of another by dirty fingers or *contaminated* food or water. Diseases that are spread or *transmitted* from *feces-to-mouth* in this way, include:

- diarrhea and dysentery (caused by amebas and bacteria)
- intestinal worms (several types)
- hepatitis, typhoid fever, and cholera
- certain other diseases, like polio, are sometimes spread this same way

The way these infections are transmitted can be very direct.


For example: A child who has worms and who forgot to wash his hands after his last bowel movement, offers his friend a cracker. His fingers, still dirty with his own stool, are covered with hundreds of tiny worm eggs (so small they cannot be seen). Some of these worm eggs stick to the cracker. When his friend eats the cracker, he swallows the worm eggs, too.

Soon the friend will also have worms. His mother may say this is because he ate sweets. But no, it is because he ate shit!




Many times pigs, dogs, chickens, and other animals spread intestinal disease and worm eggs. For example:

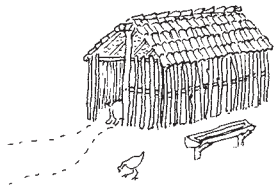
A man with diarrhea or worms has a bowel movement behind his house.

A simple line drawing of a man crouching on the ground, with a small puddle of stool behind him.


A pig eats his stool, dirtying its nose and feet.

A line drawing of a pig standing and eating a puddle of stool on the ground.


Then the pig goes into the house.

A line drawing of a pig walking from the left towards a simple house with a thatched roof. A small chicken is also visible near the house.

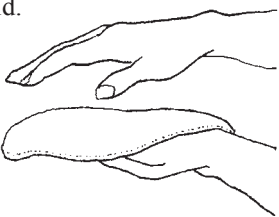
In the house a child is playing on the floor. In this way, a bit of the man's stool gets on the child, too.

A line drawing of a pig on the left and a child crawling on the floor on the right. A dashed line indicates the pig's nose touching the child's hand.


Later the child starts to cry, and the mother takes him in her arms.

A line drawing of a woman holding a crying child in her arms.


Then the mother prepares food, forgetting to wash her hands after handling the child.

A line drawing showing two hands being washed under water.

The family eats the food.

A line drawing of a man, a woman, and a child sitting at a table and eating.

And soon, the whole family has diarrhea or worms.

A line drawing showing five people of different ages crouching on the ground, each with a small puddle of stool behind them.

Many kinds of infections, as well as worm eggs, are passed from one person to another in the way just shown.

If the family had taken **any** of the following precautions, the spread of the sickness could have been prevented:

- if the man had used a latrine or out-house,
- if the family had not let the pigs come into the house,
- if they had not let the child play where the pig had been,
- if the mother had washed her hands after touching the child and before preparing food.

If there are many cases of diarrhea, worms, and other intestinal parasites in your village, people are not being careful enough about cleanliness. If many children die from diarrhea, it is likely that poor nutrition is also part of the problem. **To prevent death from diarrhea, both cleanliness and good nutrition are important** (see p. 154 and Chapter 11).

## BASIC GUIDELINES OF CLEANLINESS

### Personal Cleanliness (Hygiene)

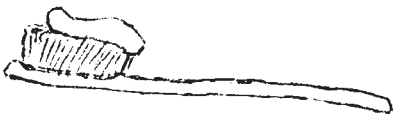


1. Always wash your hands with soap when you get up in the morning, after having a bowel movement, and before cooking or eating.



2. Bathe often every day when the weather is hot. Bathe after working hard or sweating. Frequent bathing helps prevent skin infections, dandruff, pimples, itching, and rashes. Sick persons, including babies, should be bathed daily.

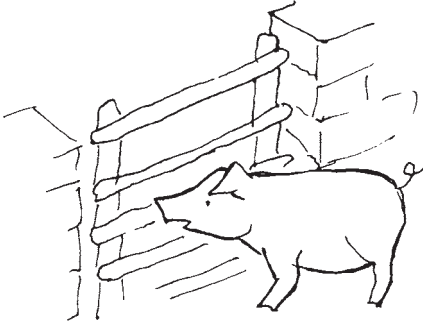
3. In areas where hookworm is common, do not go barefoot or allow children to do so. Hookworm infection causes severe anemia. These worms enter the body through the soles of the feet (see p. 142).



4. Brush your teeth every day and after each time you eat sweets. If you do not have a toothbrush and toothpaste, rub your teeth with salt and baking soda (see p. 230). For more information about the care of teeth, see Chapter 17.

## Cleanliness in the Home

1. Do not let pigs or other animals come into the house or places where children play.



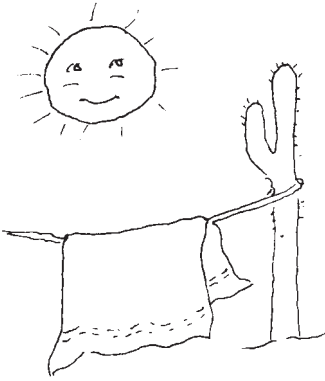
2. Do not let dogs lick children or climb up on beds. Dogs, too, can spread disease.



3. If children or animals have a bowel movement near the house, clean it up at once. Teach children to use a latrine or at least to go farther from the house.



4. Hang or spread sheets and blankets in the sun often. If there are bedbugs, pour boiling water on the cots and wash the sheets and blankets—all on the same day (see p. 200).

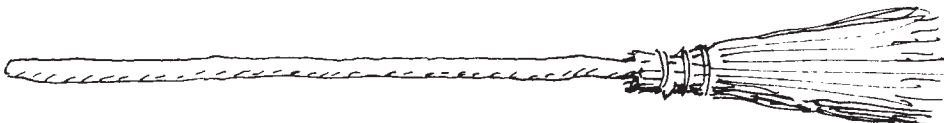


5. De-lice the whole family often (see p. 200). Lice and fleas carry many diseases. Dogs and other animals that carry fleas should not come into the house.



6. Do not spit on the floor. Spit can spread disease. When you cough or sneeze, cover your mouth with your hand or a cloth or handkerchief.

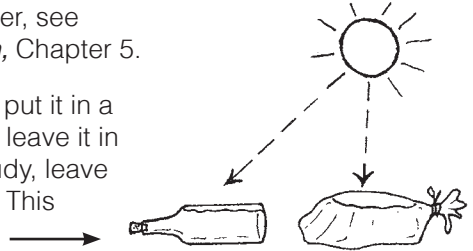
7. Clean house often. Sweep and wash the floors, walls, and beneath furniture. Fill in cracks and holes in the floor or walls where roaches, bedbugs, and scorpions can hide.



## Cleanliness in Eating and Drinking

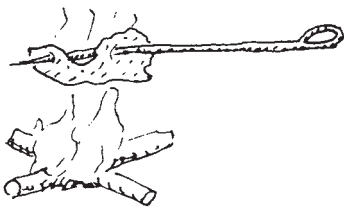
1. Ideally, all water that does not come from a pure water system should be boiled, filtered, or purified before drinking. This is especially important for small children, people with HIV, and times when there is a lot of diarrhea or cases of typhoid, hepatitis, or cholera. However, to prevent disease, having **enough** water is more important than having **pure** water. Also, asking poor families to use a lot of time or money for fire wood to boil drinking water may do more harm than good, especially if it means less food for the children or more destruction of forests. For more information on clean water, see *A Community Guide to Environmental Health*, Chapter 5.

A good, low-cost way to purify water is to put it in a clean, clear bottle or a clear plastic bag and leave it in direct sunlight for at least 6 hours. If it is cloudy, leave the water exposed to sun for at least 2 days. This method will kill most germs in the water.

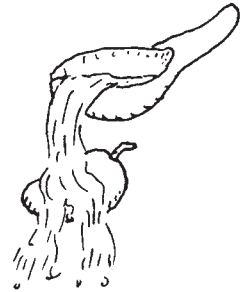


2. Do not let flies and other insects land or crawl on food. These insects carry germs and spread disease. Do not leave food scraps or dirty dishes lying around, as these attract flies and breed germs. Protect food by keeping it covered or in boxes or cabinets with wire screens.

3. Before eating fruit that has fallen to the ground, wash it well. Do not let children pick up and eat food that has been dropped—wash it first.



4. Only eat meat and fish that is well cooked. Be careful that roasted meat, especially pork and fish, do not have raw parts inside. Raw pork carries dangerous diseases.



5. Chickens carry germs that can cause diarrhea. Wash your hands after preparing chicken before you touch other foods.

6. Do not eat food that is old or smells bad. It may be poisonous. Do not eat canned food if the can is swollen or squirts when opened. Be especially careful with canned fish. Also, be careful with chicken that has passed several hours since it was cooked. Before eating left-over cooked foods, heat them again, very hot. If possible, give only foods that have been freshly prepared, especially to children, elderly people, and very sick people.



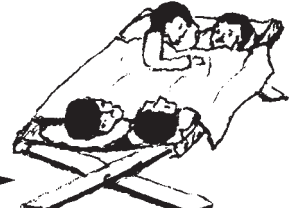
7. People with tuberculosis, flu, colds, or other diseases that spread easily should eat separately from others. Plates and utensils used by sick people should be cleaned very well before being used by others.

## How to Protect Your Children's Health



1. A sick child like this one

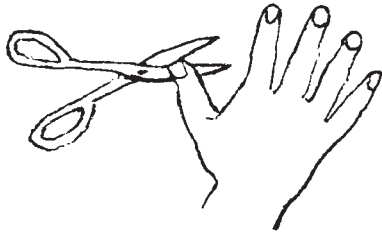
should sleep apart from children who are well.



Sick children or children with sores, itchy skin, or lice should always sleep separately from those who are well. Children with infectious diseases like whooping cough, measles, or the common cold should sleep in separate rooms, if possible, and should not be allowed near babies or small children.

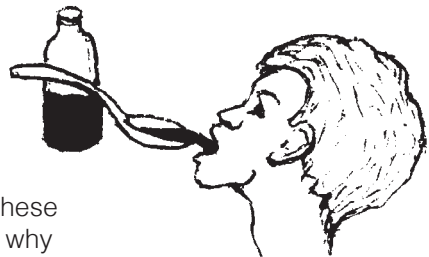
2. Protect children from tuberculosis. People with long-term coughing or other signs of tuberculosis should cover their mouths whenever they cough. They should **never** sleep in the same room with children. They should see a health worker and be treated as soon as possible.

Children living with a person who has tuberculosis should be vaccinated against TB (B.C.G. Vaccine).

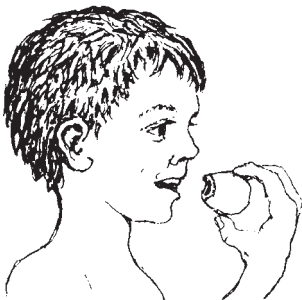


3. Bathe children, change their clothes, and cut their fingernails often. Germs and worm eggs often hide beneath long fingernails.

4. Treat children who have infectious diseases as soon as possible, so that the diseases are not spread to others.



5. Follow all the guidelines of cleanliness mentioned in this chapter. Teach children to follow these guidelines and explain why they are important. Encourage children to help with projects that make the home or village a healthier place to live.



6. **Be sure children get enough good food.** Good nutrition helps protect the body against many infections. A well-nourished child will usually resist or fight off infections that can kill a poorly nourished child (read Chapter 11).

## Public Cleanliness (Sanitation)

1. Keep wells and public water holes clean. Do not let animals go near where people get drinking water. If necessary, put a fence around the place to keep animals out.

Do not defecate (shit) or throw garbage near the water hole. Take special care to keep rivers and streams clean upstream from any place where drinking water is taken.

2. Burn all garbage that can be burned. Garbage that cannot be burned should be buried in a special pit or place far away from houses and the places where people get drinking water.

3. Build latrines (out-houses, toilets) so pigs and other animals cannot reach the human waste. A deep hole with a little house over it works well. The deeper the hole, the less problem there is with flies and smell.



Here is a drawing of a simple out-house that is easy to build.

It helps to throw a little lime, dirt, or ashes in the hole after each use to reduce the smell and keep flies away.

Out-houses should be built at least 20 meters from homes or the source of water.

If you do not have an out-house, go far away from where people bathe or get drinking water. Teach your children to do the same.

**Use of latrines helps prevent many sicknesses.**

Ideas for better latrines are found on the next pages. Also latrines can be built to produce good fertilizer for gardens. See *A Community Guide to Environmental Health*, Chapter 7.

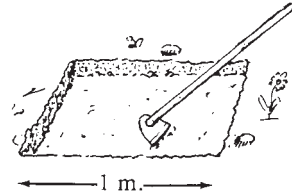
**BETTER LATRINES**

The latrine or out-house shown on the previous page is very simple and costs almost nothing to make. But it is open at the top and lets in flies.

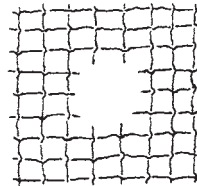
Closed latrines are better because the flies stay out and the smell stays in. A closed latrine has a platform or slab with a hole in it and a lid over the hole. The slab can be made of wood or cement. Cement is better because the slab fits more tightly and will not rot.

One way to make a cement slab:

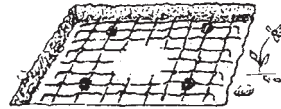
1. Dig a shallow pit, about 1 meter square and 7 cm. deep. Be sure the bottom of the pit is level and smooth.



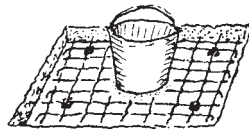
2. Make or cut a wire mesh or grid 1 meter square. The wires can be ¼ to ½ cm. thick and about 10 cm. apart. Cut a hole about 25 cm. across in the middle of the grid.



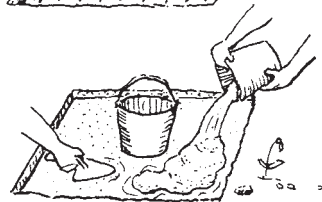
3. Put the grid in the pit. Bend the ends of the wires, or put a small stone at each corner, so that the grid stands about 3 cm. off the ground.



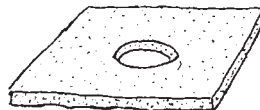
4. Put an old bucket in the hole in the grid.



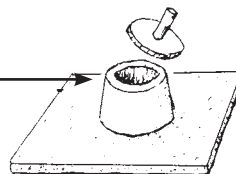
5. Mix cement with sand, gravel, and water and pour it until it is about 5 cm. thick. (With each shovel of cement mix 2 shovels of sand and 3 shovels of gravel.)



6. Remove the bucket when the cement is beginning to get hard (about 3 hours). Then cover the cement with damp cloths, sand, hay, or a sheet of plastic and keep it wet. Remove the slab after 3 days.



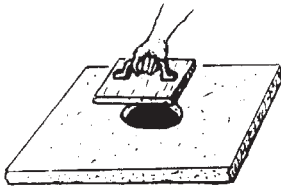
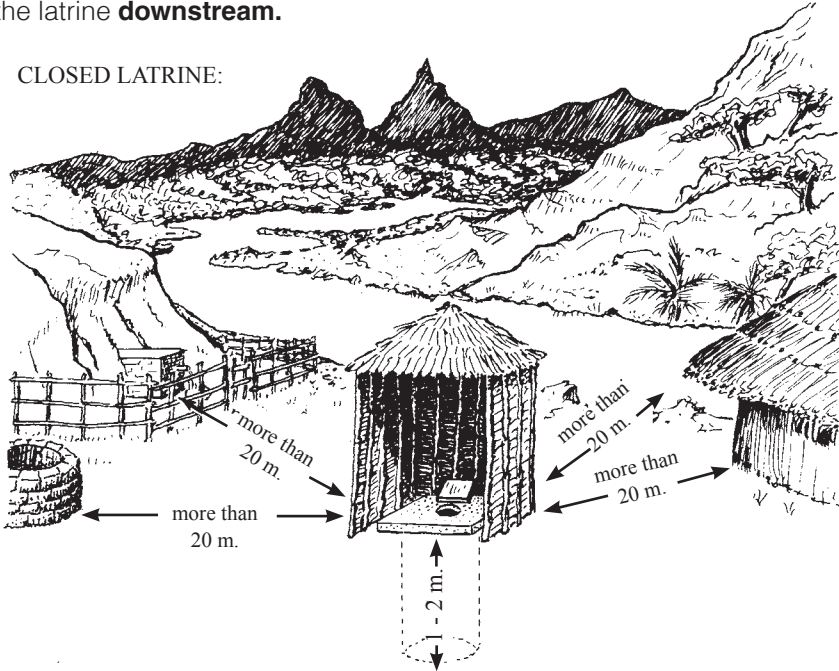
If you prefer to sit when you use the latrine, make a cement seat like this: Make a mold, or you can use 2 buckets of different sizes, one inside the other.





To make the **closed latrine**, the slab should be placed over a round hole in the ground. Dig the hole a little less than 1 meter across and between 1 and 2 meters deep. To be safe, the latrine should be at least 20 meters from all houses, wells, springs, rivers or streams. If it is anywhere near where people go for water, be sure to put the latrine **downstream**.

CLOSED LATRINE:

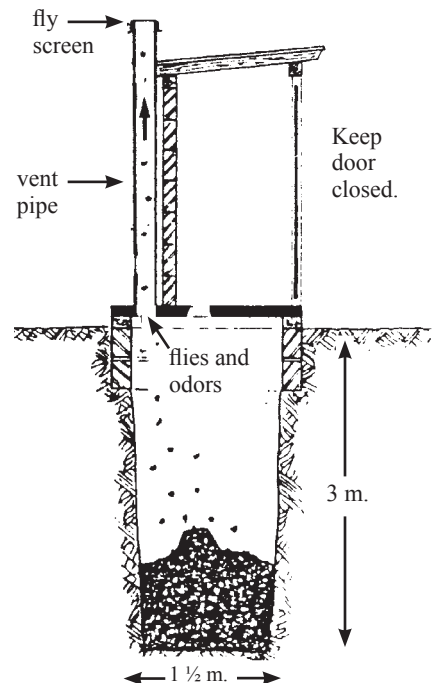


Keep your latrine clean. Wash the slab often. Be sure the hole in the slab has a cover and that the cover is kept in place. A simple cover can be made of wood.

### THE FLY-TRAPPING VIP LATRINE

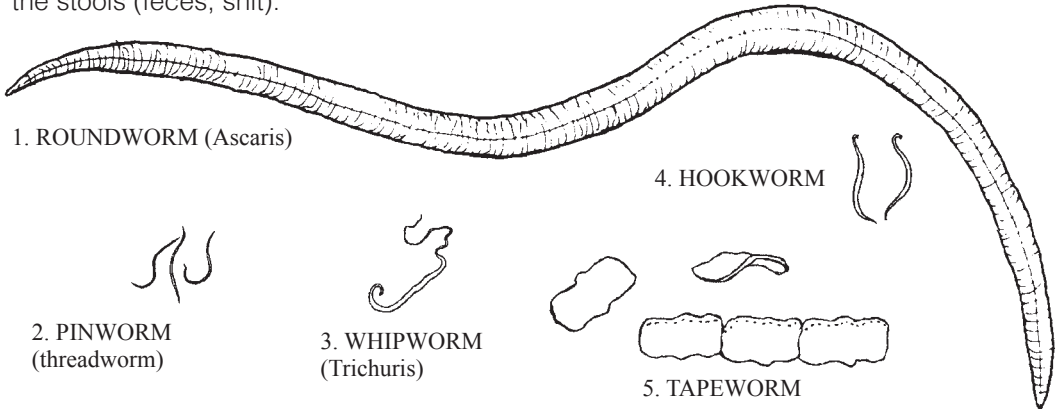
To make the ventilated improved pit (VIP) latrine, make a larger slab (2 meters square) with 2 holes in it. Over one hole put a ventilation pipe, covered with fly screen (wire screen lasts longer). Over the other hole build an out house, which must be kept dark inside. Leave this hole uncovered.

This latrine helps get rid of odors and flies: smells escape through the pipe, and flies get trapped there and die!



## WORMS AND OTHER INTESTINAL PARASITES

There are many types of worms and other tiny animals (parasites) that live in people's intestines and cause diseases. Those which are larger are sometimes seen in the stools (feces, shit):



The only worms commonly seen in the stools are roundworms, pinworms, and tapeworms. Hookworms and whipworms may be present in the gut in large numbers without ever being seen in the stools.

**Note on worm medicines:** Many 'worm medicines' contain piperazine. These work only for roundworms and pinworms and should not be given to babies and small children. Mebendazole (*Vermox*) is safer and attacks many more kinds of worms. Albendazole and pyrantel also work for many kinds of worms, but they may be expensive. Thiabendazole attacks many kinds of worms, but causes dangerous side effects and should usually not be used. See pages 373 to 375 for more information on all these medicines.

### Roundworm (Ascaris)

20 to 30 cm. long. Color: pink or white



#### How they are spread:

*Feces-to-mouth.* Through lack of cleanliness, the roundworm eggs pass from one person's stools to another person's mouth.

#### Effect on health:

Once the eggs are swallowed, young worms hatch and enter the bloodstream; this may cause general itching. The young worms then travel to the lungs, sometimes causing a dry cough or at worst, pneumonia with coughing of blood. The young worms are coughed up, swallowed, and reach the intestines, where they grow to full size.

Many roundworms in the intestines may cause discomfort, indigestion, and weakness. Children with many roundworms often have very large, swollen bellies. Rarely, roundworms may cause asthma, or a dangerous obstruction or blockage in the gut (see p. 94). Especially when the child has a fever, the worms sometimes come out in the stools or crawl out through the mouth or nose. Occasionally they crawl into the airway and cause gagging.

**Prevention:**

Use latrines, wash hands before eating or handling food, protect food from flies, and follow the guidelines of cleanliness described in the first part of this chapter.

**Treatment:**

Mebendazole will usually get rid of roundworms. For dosage see p. 373. Piperazine also works (see p. 374). Some home remedies work fairly well. For a home remedy using papaya see page 13.

**WARNING:** Do not use thiabendazole for roundworms. It often makes the worms move up to the nose or mouth and can cause gagging.

**Pinworm, Threadworm, Seatworm (Enterobious)**

1 cm. long. Color: white. Very thin and threadlike.

**How they are transmitted:**

These worms lay thousands of eggs just outside the anus (ass hole). This causes itching, especially at night. When a child scratches, the eggs stick under his nails, and are carried to food and other objects. In this way they reach his own mouth or the mouths of others, causing new infections of pinworms.

**Effect on health:**

These worms are not dangerous. Itching may disturb the child's sleep.

**Treatment and Prevention:**

- ◆ A child who has pinworms should wear tight diapers or pants while sleeping to keep him from scratching his anus.
- ◆ Wash the child's hands and buttocks (anal area) when he wakes up and after he has a bowel movement. Always wash his hands before he eats.
- ◆ Cut his fingernails very short.
- ◆ Change his clothes and bathe him often—wash the buttocks and nails especially well.
- ◆ Put *Vaseline* in and around his anus at bedtime to help stop itching.
- ◆ Give mebendazole worm medicine. For dosage, see page 373. Piperazine also works. When one child is treated for these worms, it is wise to treat the whole family at the same time. For a home remedy using garlic, see page 12.
- ◆ Cleanliness is the best prevention for threadworms. Even if medicine gets rid of the worms, they will be picked up again if care is not taken with personal hygiene. Pinworms only live for about 6 weeks. **By carefully following the guidelines of cleanliness, most of the worms will be gone within a few weeks, even without medicine.**

## Whipworm (Trichuris, Trichocephalus)



3 to 5 cm. long. Color: pink or gray.

This worm, like the roundworm, is passed from the feces of one person to the mouth of another person. Usually this worm does little harm, but it may cause diarrhea. In children it occasionally causes part of the intestines to come out of the anus (*prolapse* of the *rectum*).

**Prevention:** The same as for roundworm.

**Treatment:** If the worms cause a problem, give mebendazole. For dosage, see page 374. For *prolapse* of the rectum, turn the child upside down and pour cool water on the intestine. This should make it pull back in.

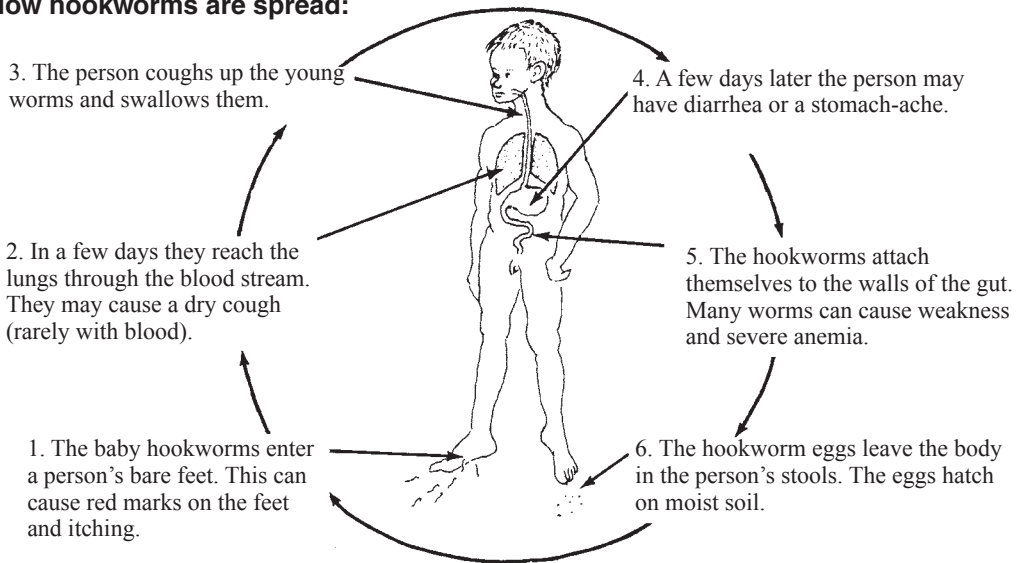
## Hookworm



1 cm. long. Color: red.

Hookworms cannot usually be seen in the feces. A stool analysis is needed to prove that they are there.

### How hookworms are spread:



Hookworm infection can be one of the most damaging diseases of childhood. Any child who is anemic, very pale, or eats dirt may have hookworms. If possible, his stools should be analyzed.

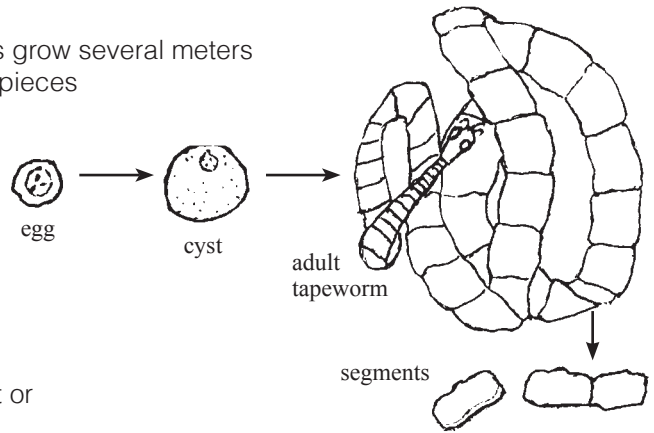
**Treatment:** Use mebendazole, albendazole, or pyrantel. For dosage and precautions, see pages 373 to 375. Treat anemia by eating foods rich in iron and if necessary by taking iron pills (p. 124).

**Prevent hookworm: Build and use latrines.  
Do not let children go barefoot.**

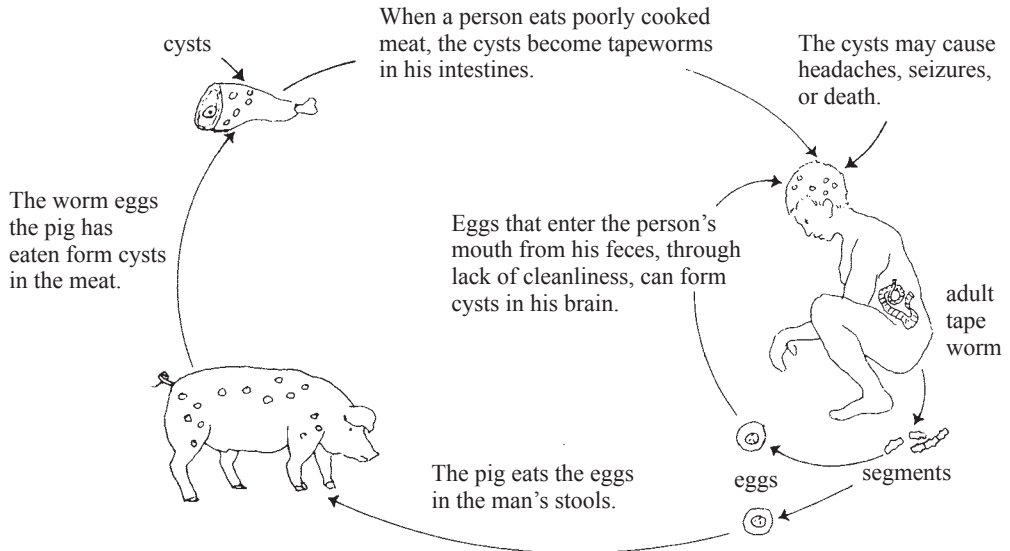
## Tapeworm

In the intestines tapeworms grow several meters long. But the small, flat, white pieces (segments) found in the feces are usually about 1 cm. long. Occasionally a segment may crawl out by itself and be found in the underclothing.

People get tapeworms from eating pork (pig meat), beef (cow meat) or other meat or fish that is not well cooked.



**Prevention:** Be careful that all meat is well cooked, especially pork. Make sure no parts in the center of roasted meat or cooked fish are still raw.



**Effect on health:** Tapeworms in the intestines sometimes cause mild stomach aches, but few other problems.

The greatest danger exists when the *cysts* (small sacs containing baby worms) get into a person's brain. This happens when the eggs pass from his stools to his mouth. For this reason, **anyone with tapeworms must follow the guidelines of cleanliness carefully—and get treatment as soon as possible.**

**Treatment:** Take niclosamide (*Yomesan*, p. 375), or praziquantel (p. 375). Follow instructions carefully.

## Trichinosis

These worms are never seen in the stools. They burrow through the person's intestines and get into her muscles. People get these worms, like tapeworms, from eating infected pork or other meat that is not well cooked.

**Effect on health:** Depending on the amount of infected meat eaten, the person may feel no effects, or she may become very sick or die. From a few hours to 5 days after eating the infected pork, the person may develop diarrhea and feel sick to her stomach.

In serious cases the person may have:

- fever with chills
- muscle pain
- swelling around the eyes and sometimes swelling of the feet
- small bruises (black or blue spots) on the skin
- bleeding in the whites of the eyes

Severe cases may last 3 or 4 weeks.

**Treatment:** Seek medical help at once. Albendazole or mebendazole may help. For dosages, see pages 373 and 374. (Cortico-steroids may help, but should be given by a health worker or doctor.)

**Important:** If several people who ate meat from the same pig get sick afterward, suspect trichinosis. This can be dangerous; seek medical attention.

**Prevention of trichinosis:**

- ◆ Only eat pork and other meat that has been well cooked.
- ◆ Do not feed scraps of meat or leftovers from butchering to pigs unless the meat has first been cooked.

## Amebas

These are not worms, but tiny animals—or parasites—that can be seen only with a *microscope* (an instrument that makes things look much bigger).

**How they are transmitted:**

The stools of infected people contain millions of these tiny parasites. Because of poor sanitation, they get into the source of drinking water or into food, and other people become infected.

**Signs of infection with amebas:**

Many healthy people have amebas without becoming sick. However, amebas are a common cause of severe diarrhea or *dysentery* (diarrhea with blood)—especially in persons already weakened by other sickness or poor nutrition. Less commonly, amebas cause painful, dangerous abscesses in the liver.



Ameba as seen under a microscope



Microscope

**Typical amebic dysentery consists of:**

- diarrhea that comes and goes—sometimes alternating with constipation
- cramps in the belly and a need to have frequent bowel movements, even when little or nothing—or just mucus—comes out
- many loose (but usually not watery) stools with lots of mucus, sometimes stained with blood
- in severe cases, much blood; the person may be very weak and ill
- if there is fever, it means there may also be a bacterial infection

Diarrhea with blood may be caused by either amebas or bacteria. However, bacterial dysentery (*Shigella*) begins more suddenly, the stools are more watery, and there is almost always fever (p. 158). As a general rule:

**Diarrhea + blood + fever = bacterial infection (*Shigella*)**  
**Diarrhea + blood + no fever = amebas**

Occasionally bloody diarrhea has other causes. To be sure of the cause, a stool analysis may be necessary.

Sometimes amebas get into the liver and form an **abscess** or pocket of pus. This causes tenderness or pain in the right upper belly. Pain may extend into the right chest and is worse when the person walks. (Compare this with gallbladder pain, p. 329; hepatitis, p. 172; and cirrhosis, p. 328.) If the person with these signs begins to cough up a brown liquid, an amebic abscess is draining into his lung.

**Treatment:**

- ◆ If possible get medical help and a stool analysis.
- ◆ Amebic dysentery can be treated with metronidazole, if possible followed by diloxanide furoate. For dosage, length of treatment, and precautions, see p. 368.
- ◆ For amebic abscess, treat as for amebic dysentery. Be sure to take both metronidazole and diloxanide furoate (p. 368).

**Prevention:** Make and use latrines, protect the source of drinking water, and follow the guidelines of cleanliness. Eating well and avoiding fatigue and drunkenness are also important in preventing amebic dysentery.

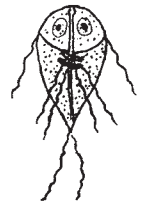
**Giardia**

The giardia, like the ameba, is a microscopic parasite that lives in the gut and is a common cause of diarrhea, especially in children. The diarrhea may be *chronic* or intermittent (may come and go).

**A person who has yellow, bad-smelling diarrhea that is frothy (full of bubbles) but without blood or mucus, probably has giardia.**

The belly is swollen with gas and uncomfortable, there are mild intestinal cramps, and the person farts and burps a lot. The burps have a bad taste, like sulfur. There is usually no fever.

Giardia infections sometimes clear up by themselves. Good nutrition helps. Severe cases are best treated with metronidazole (see p. 368). Quinacrine (*Atabrine*, p. 369) is cheaper and often works well, but causes worse side effects.



Giardia as seen under a microscope

## BLOOD FLUKES (SCHISTOSOMIASIS, BILHARZIA)

This infection is caused by a kind of worm that gets into the bloodstream. Different types of blood flukes are found in different parts of the world. One kind, common in Africa and the Middle East, causes blood in the urine. Other types, which cause bloody diarrhea, occur in Africa, South America, and Asia. In areas where these diseases are known to occur, **any person who has blood in his urine or stools should have a sample of it tested for fluke eggs.**

### Signs:

- **The most common sign is blood in the urine** (especially when passing the last drops)—or, for other kinds of flukes, **bloody diarrhea.**
- Pain may occur in the lower belly and between the legs; it is usually worst at the end of urinating. Low fever, weakness, and itching may occur. In women, there may be sores that look like a sexually transmitted infection.
- After months or years, the kidneys, liver or spleen may be damaged or enlarged, which can cause pain and eventually even death.
- Sometimes there are no early signs. In areas where schistosomiasis is very common, persons with only mild signs or belly pain should be tested.

### Treatment:

See a health worker. Praziquantel works for all types of blood flukes. Oxamniquine works for some kinds of blood flukes (see p. 376).

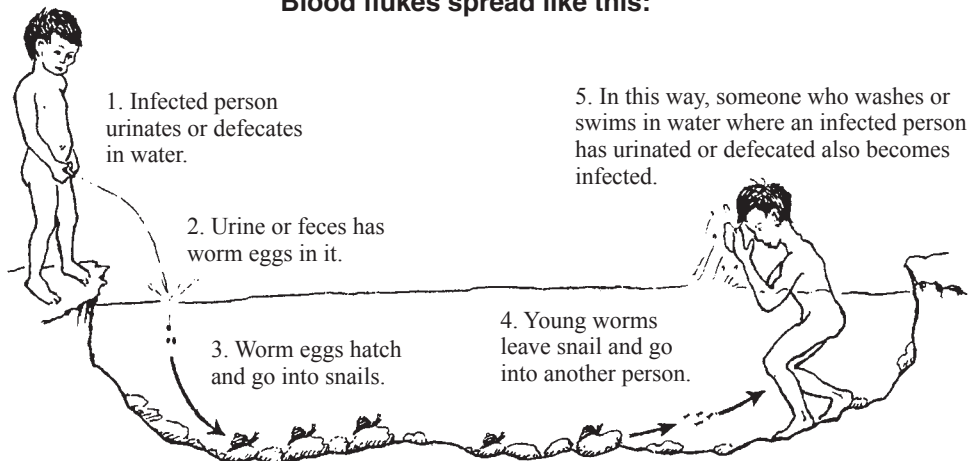
### Prevention:

Blood flukes are not spread directly from person to person. Part of their life they must live inside a certain kind of small water snail.



SNAIL,  
REAL SIZE

### Blood flukes spread like this:



To prevent schistosomiasis, cooperate with programs to kill snails and treat infected persons. But most important: **Everyone should learn to use latrines and NEVER URINATE OR DEFECATE IN OR NEAR WATER.**

For information on **guinea worm**, which is also spread in water, see p. 406 to p. 407.



## VACCINATIONS (IMMUNIZATIONS)—SIMPLE, SURE PROTECTION

Vaccines protect against many dangerous diseases. Each country has a schedule of vaccinations, usually given for free. It is better to take your children to the nearest health center to be vaccinated while they are healthy than to take them for treatment when they are sick or dying. The most important vaccines are:

**1. DPT, for diphtheria, whooping cough (pertussis), and tetanus.** A child needs 4 or 5 injections usually given at 2 months, 4 months, 6 months, and 18 months old. Sometimes one more injection is given between 4 and 6 years old.

**2. POLIO (infantile paralysis).** The child needs drops in the mouth or an injection 4 or 5 times. In some countries the first vaccination is given at birth and the other 3 doses are given at the same time as the DPT injections. In other countries, the first 3 doses are given at the same time as the DPT injections, the fourth dose is given between 12 and 18 months of age, and a fifth dose is given when the child is 4 years old. In a family where someone has HIV, do not use drops, use injections only.

**3. BCG, for tuberculosis.** A single injection is given under the skin of the left arm. Children can be vaccinated at birth or anytime afterwards. If any member of the household has tuberculosis, it is important to vaccinate babies in the first few weeks or months after birth. The vaccine makes a sore and leaves a scar.

**4. MEASLES.** A child needs 1 injection given no younger than 9 months of age, and often a second injection at 15 months or older. In many countries a '3 in 1' vaccine called MMR is given for measles, mumps, and rubella (German measles). One injection is given between 12 and 15 months old, and a second is given between 4 and 6 years of age. Do not give measles vaccinations to a child with HIV.

**5. HepB (Hepatitis B).** This vaccine is given in a series of 3 injections, at the same time as DPT injections. In some countries the first HepB is given at birth, the second at 2 months old, and the third at 6 months old. Make sure there are at least 4 weeks between the first and second injection, and 8 weeks between the second and third.

**6. Hib (for Haemophilus influenza type b,** which is a germ that causes meningitis and pneumonia in young children). Generally this vaccine is given in a series of 3 injections together with the first 3 DPT injections.

**7. Td or TT (Tetanus toxoid), for tetanus (lockjaw) for adults and children over 12 years old.** Throughout the world, tetanus vaccination is recommended with 1 injection every 10 years. In some countries a Td injection is given between 9 and 11 years of age (5 years after the last DPT vaccination), and then every 10 years. Pregnant women should be vaccinated during each pregnancy so that their babies will be protected against tetanus of the newborn (see p. 182 and 250).

**8. Rotavirus.** Give the oral vaccine 2 or 3 times (depending on the manufacturer) at 2 months, 4 months, and (if needed) 6 months old. It prevents this diarrhea disease, a leading cause of death for young children.

Vaccines for measles, polio, and tuberculosis must be kept frozen or very cold (under 8° C). The vaccines for Hepatitis B, tetanus, and the DPT must be kept very cold (under 8° C) but **never frozen**. Vaccine that has been prepared but not used should be thrown away. DPT is still good and useable if it remains cloudy 1 hour after preparing it. If it becomes clear or has white flecks in it, it is spoiled and will not work. For ways to keep vaccines cold, see *Helping Health Workers Learn*, Chapter 16.

**Vaccinate your children on time.  
Be sure they get the complete series of each vaccine they need.**

## OTHER WAYS TO PREVENT SICKNESS AND INJURY

In this chapter we have talked about ways to prevent intestinal and other infections through **hygiene, sanitation, and vaccination**. All through this book you will find suggestions for the prevention of sickness and injury—from building healthy bodies by eating nutritious foods to the wise use of home remedies and modern medicines.

The **Introduction** and **Words to the Village Health Worker** give ideas for getting people working together to change the conditions that cause poor health.

In the remaining chapters, as specific health problems are discussed, you will find many suggestions for their prevention. By following these suggestions you can help make your home and village healthier places to live.

Keep in mind that one of the best ways to prevent serious illness and death is early and sensible treatment.

**Early and sensible treatment is an important part of preventive medicine.**

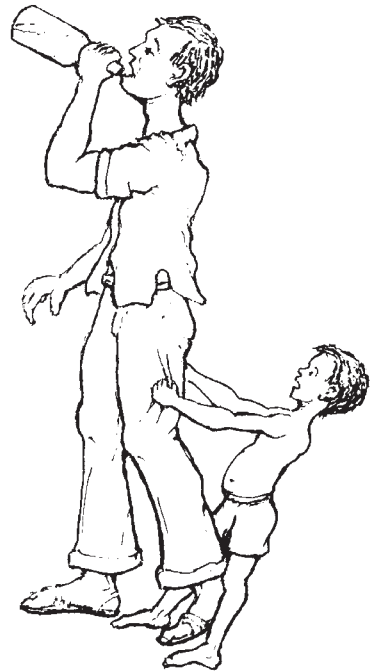
Before ending this chapter, we would like to mention a few aspects of prevention that are touched on in other parts of the book, but deserve special attention.

### Habits that Affect Health

Some of the habits that people have not only damage their own health but in one way or another harm those around them. Many of these habits can be broken or avoided but the first step is to understand why breaking these habits is so important.

#### DRINKING

If alcohol has brought much joy, it has also brought much suffering—especially to the families of those who drink. A little alcohol now and then may do no harm. But too often a little leads to a lot. In much of the world, heavy or excessive drinking is one of the underlying causes of major health problems—even for those who do not drink. Not only can drunkenness harm the health of those who drink (through diseases such as cirrhosis of the liver, p. 328, and hepatitis, p. 172), but it also hurts the family and community in many ways. Through the loss of judgment when drunk—and of self respect when sober—it leads to much unhappiness, waste, and violence, often affecting those who are loved most.



How many fathers have spent their last money on drink when their children were hungry? How many sicknesses result because a man spends the little bit of extra money he earns on drink rather than on improving his family's living conditions? How many persons, hating themselves because they have hurt those they love, take another drink—to forget?

Once a person realizes that alcohol is harming the health and happiness of those around him, what can he do? First, he must admit that his drinking is a problem. He must be honest with himself and with others. Some individuals are able to simply decide to stop drinking. More often people need help and support—from family, friends, and others who understand how hard it may be to give up this habit. People who have been heavy drinkers and have stopped are often the best persons to help others do the same. In many areas Alcoholics Anonymous (AA) groups exist where recovering alcoholics help one another to stop drinking (see p. 429).

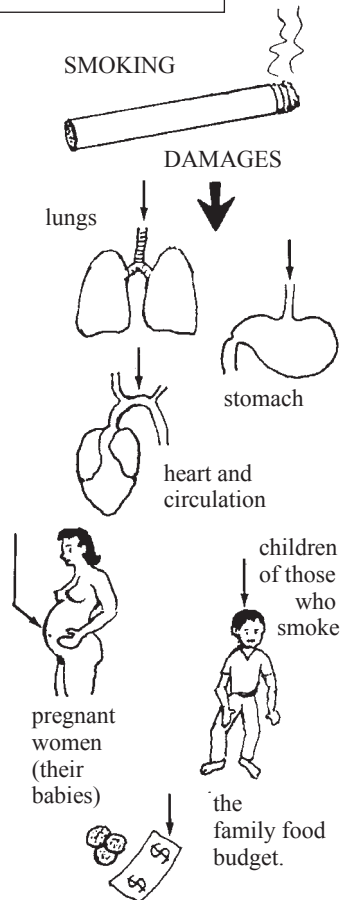
Drinking is not so much a problem of individuals as of a whole community. A community that recognizes this can do much to encourage those who are willing to make changes. If you are concerned about the misuse of alcohol in your community, help organize a meeting to discuss these problems and decide what actions to take. For more about harm from alcohol, and community action, see *Helping Health Workers Learn*, Chapters 5 and 27.

**Many problems can be resolved when people work together and give each other help and support.**

## SMOKING

There are many reasons why smoking is dangerous to your own and your family's health.

1. Smoking increases the risk of cancer of the lungs, mouth, throat, and lips. (The more you smoke, the greater the chance of dying of cancer.)
2. Smoking causes serious diseases of the lungs, including chronic bronchitis and emphysema (and is deadly for persons who already have these conditions or have asthma).
3. Smoking can cause stomach ulcers or make them worse.
4. Smoking increases your chance of suffering or dying from heart disease or stroke.
5. Children whose parents smoke have more cases of pneumonia and other respiratory illness than children whose parents do not smoke.
6. Babies of mothers who smoked during pregnancy are smaller and develop more slowly than babies whose mothers did not smoke.



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