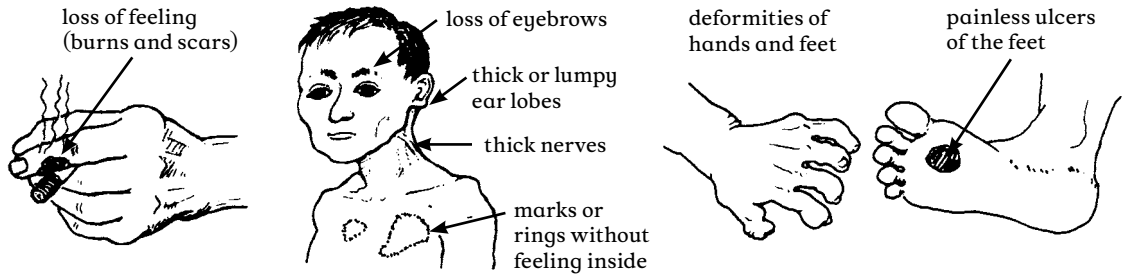


# Leprosy

## CHAPTER 26

### Hansen's Disease

**What is leprosy?** It is an infectious disease that develops very slowly. It is caused by germs (bacilli) that affect mostly the skin and nerves. It can cause a variety of skin problems, loss of feeling, and disabilities of the eyes, hands, and feet:



**How do people get leprosy?** It can spread only from some persons who have untreated leprosy, and only to other persons who have low resistance to the disease. It is probably spread either through sneezing or coughing, or through skin contact. Most persons have a natural ability to resist infection. Either they do not get it at all, or they get an unnoticeable infection that soon goes away completely.

From the time a person is first infected with leprosy germs, it often takes 2 to 7 years for the first signs of the disease to appear.

Leprosy is not caused by evil spirits, by doing something bad, by eating certain foods, or by bathing in river water, as some people believe. It is not hereditary and children of mothers with leprosy are not born with it. However, children who live in close contact with someone who has untreated leprosy are more likely to get it.

**How common is leprosy?** Leprosy is much more common in some parts of the world than others. It is more common where there are crowded living conditions and poor hygiene. But rich people can also get it.

More than 1 million people have leprosy, many in Africa, South America, and Asia. But 16 million people have been cured of leprosy over the past 20 years.

**Leprosy can be cured.** There are medicines that kill leprosy germs. Usually a few days after beginning treatment, a person can no longer spread the disease to others. (In fact, most persons, when leprosy is first diagnosed, can no longer spread it.) However, treatment must be continued for 6 to 12 months for a cure and to prevent the disease from coming back (relapse).

**Is early treatment important?** Yes. Early treatment stops the spread of leprosy to others. Also, if treatment is started before loss of feeling and paralysis of muscles in eyes, hands and feet, recovery is complete and the person will not experience negative physical or social effects.

**Persons receiving regular, effective treatment do not spread leprosy.**

## Checking children for signs of leprosy

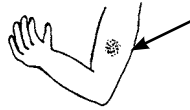
In areas where leprosy is common, health and rehabilitation workers should work together with parents and schoolteachers to check all children regularly for early signs of leprosy. Most important are regular checkups of children in homes, neighborhoods, and schools in the area where persons are known to have leprosy. Checkups should be done every 6 to 12 months and should be continued for at least 3 years.

### EARLY SIGNS

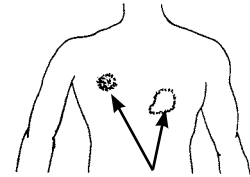
**A slowly growing patch on the skin that does not itch or hurt.** The patch may be somewhat different in color from the surrounding skin. (Patches of leprosy are never completely white, and are not scaly, except during a reaction—see p. 219.)

### WHAT TO LOOK FOR

Examine the whole body for skin patches, especially the face, arms, back, butt, and legs.



If you find a slightly pale patch without a clear edge, keep watching the spot. Unless feeling is reduced inside the patch, look for other signs before deciding it is leprosy. (Many children have similar pale spots on cheeks and arms that are not leprosy.)



ringworm-like patches, with or without raised border

Note: In early skin patches, feeling is often unaffected. If feeling is clearly reduced inside a patch, leprosy is almost certain.

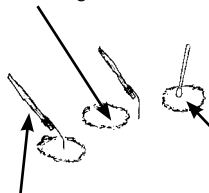
### LATER SIGNS

**1. Tingling, numbness, or some loss of feeling in the hands and feet.**

**Or definite loss of feeling in skin patches.**

### TEST INSIDE THE SKIN PATCHES FOR REDUCED FEELING.

With the tip of a feather or stiff thread, lightly touch the skin inside and away from the patch and have the child tell you (without looking) where he feels the touch.



thread tied to stick

If the child cannot feel the thread, try lightly touching the skin with a cotton swab dipped in rubbing alcohol (so it will feel cold), or the bottom of a test tube that contains very warm water. When using a warm object, test it on your own skin before touching the child's skin to avoid burning the child.

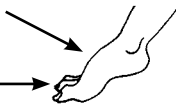


In a similar way, test for a numbness or reduced feeling in the hands and feet.

**2. Slight weakness or deformity in the hands and feet.**

drop foot (Child cannot raise it.)

weakness or clawing of toes



Have the child straighten her fingers. If she cannot do this, it may be a sign of paralysis from leprosy.

Also have the child try to touch the base of her little finger with her thumb.



Muscle weakness here makes this movement difficult and may be a sign.



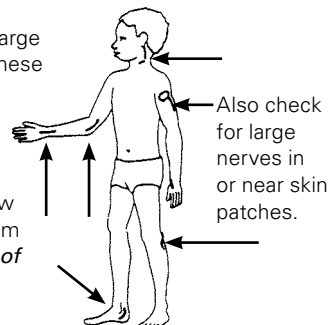
**CAUTION:** These weaknesses may also be caused by polio, muscular dystrophy, or other conditions.

**3. Enlargement of certain nerves,** with or without pain or tenderness. The affected nerve feels like a thick cord under the skin. When they are quite thick, they may be easily seen.



Check for large nerves in these places.

thickening nerve below the ear (from *A Manual of Leprosy*)



Also check for large nerves in or near skin patches.

## Diagnosing leprosy

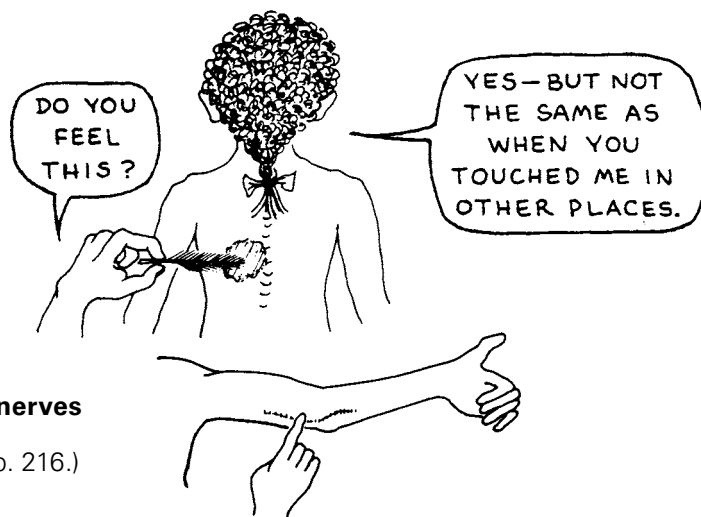
Although skin patches are often the first sign of leprosy, many other diseases can cause similar patches. Only when there is a loss of feeling inside the skin patch, as compared with the skin outside the patch, can we be almost sure the person has leprosy. However, in some forms of leprosy, loss of feeling in skin patches may develop only years later, or not at all. Therefore, other evidence of leprosy must be looked for.

Another sign of leprosy—tingling, numbness, or loss of feeling in hands and feet—may also have other causes.

**To make a fairly certain diagnosis of leprosy, the person should have at least 1 of these 3 major signs:**

1. **definite loss or change of feeling in skin patches**

**Note:** Leprosy patches on face often do not lose feeling as much as on other parts of the body.

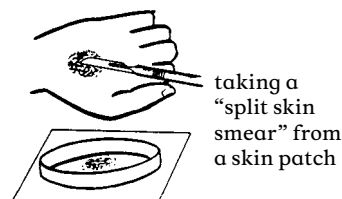


2. **definite enlargement of nerves**

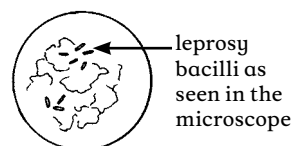
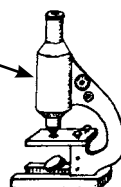
(For nerves to check, see p. 216.)

3. **presence of leprosy bacilli in a skin smear**

A split skin smear is prepared by cutting a thin layer of skin from a skin patch. Less commonly it is taken from the moist skin deep inside the nose—an area that is often heavily infected. The skin sample is placed on a glass slide, colored with special stains, and examined with a microscope.



The bacteria (bacilli) of leprosy, if present, can be seen under the microscope.



**Whenever you suspect leprosy but the diagnosis is uncertain, a skin smear should be taken (by a trained worker).**

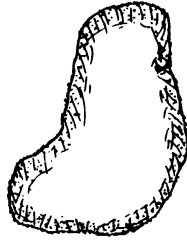
**Note:** Not many persons with leprosy show all 3 of these signs. Persons with loss of feeling in skin patches usually have no bacilli in their skin smears.

## Types of leprosy

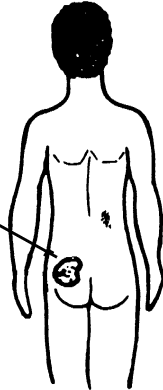
Depending on how much natural resistance a person has, leprosy appears in 2 different forms. You can count the number of skin patches to find out to find out the type of leprosy a person has—people with Pauci-Bacillary (PB) have up to 5 skin patches, while people with Multi-Bacillary (MB) leprosy have more than 5 skin patches.

### PAUCI-BACILLARY (PB)

- in persons with relatively high resistance
- no bacilli in skin smear
- Person cannot pass leprosy on to others.
- Person may have up to 5 skin patches, variable in appearance, but often have raised margins and flat centers.



- Feeling is reduced or absent in centers of the skin patches.



- Skin on the face is **not** thickened.
- Nerve damage appears early, but usually involves loss of feeling only in patches of skin. Usually it does not affect the eyes, hands, or feet. When it does, it often happens early and causes loss of feeling or strength in only one hand or foot.

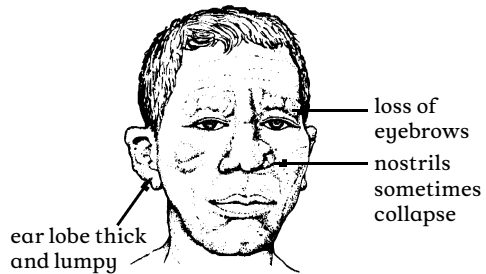
### MULTI-BACILLARY (MB)

- in persons with low resistance
- bacilli—few to many in skin smears
- Person can pass leprosy to others (until treated).

- more than 5 skin patches, raised or flat with irregular edges, and usually some loss of feeling; patches about the same on both sides of the body



- The skin of the face may become thick, lumpy, reddish, especially over the eyebrows, cheeks, nose and ears.



THE “LION FACE” OF LEPRIMATOUS LEPROSY

- Severe nerve damage often results, with loss of feeling and loss of strength in both hands and feet, with deformities.

## Leprosy reactions

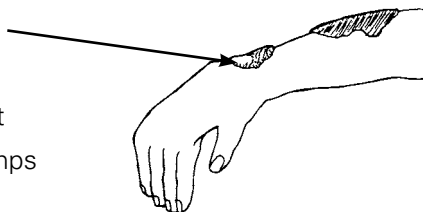
Sometimes persons with leprosy have sudden periods of increased symptoms. These may be something like an allergic reaction to the leprosy bacilli. Leprosy reactions can happen in untreated persons, during treatment, or after treatment has stopped. Reactions can occur when there are changes in the body, such as puberty, in late pregnancy or following childbirth, during illness from other causes, after vaccination, or at times of emotional stress.

There are 2 types of leprosy reactions:

**Type 1 reactions** happen in persons with borderline leprosy when the body increases its fight against the leprosy germs. There is danger of new weakness and loss of feeling.

Signs to watch for are:

- skin patches may become swollen and red
- swollen hands and feet
- new tingling or weakness of hands and feet
- pain or discomfort along nerves (Rarely, lumps along the nerves form sores and drain pus.)



**IMPORTANT:** Reactions sometimes cause new weakness and loss of feeling without nerve pain.

**Type 2 reactions** happen with lepromatous leprosy. The body is reacting against too many bacilli.

Signs may include:

- swollen, reddish, or dark lumps under the skin, especially on the face, arms, and legs
- fever
- pain in testicles, breasts, or fingers
- stuffiness or bleeding of the nose
- watering, red eye, with or without pain.

**Danger:** This may lead to iritis or loss of vision unless treated early.

Rarely, this reaction causes death due to swelling of the mouth, throat or lungs, or to kidney problems.

If untreated, leprosy reactions can quickly lead to permanent nerve damage with increased paralysis of the hands, feet, or eye muscles, or to permanent damage to the eyes.

**Early treatment of leprosy reactions is very important to prevent paralysis, deformity, and loss of vision.**

Treatment of leprosy reaction is discussed on p. 221.

### IRITIS (INFLAMMATION OF THE IRIS)



EYE WITHOUT IRITIS



EYE WITH IRITIS

Pain may begin suddenly or gradually. The eye waters a lot. It hurts more in bright light. There is no pus as with conjunctivitis. Vision is usually blurred.

This is a medical emergency. Antibiotic ointments do not help. Get medical help.

## TREATMENT AND MANAGEMENT OF LEPROSY

Treatment and management of leprosy should include 4 areas:

1. **Multidrug therapy to treat** leprosy infection should begin as early as possible.
2. **Emergency treatment** when necessary to treat and prevent further damage from leprosy reactions.
3. **Safety measures**, aids, exercises, and education to prevent deformities (sores, burns, injuries, contractures).
4. **Social rehabilitation**: Work with the individual, parents, schools, and the community to create a better understanding of leprosy, to lessen people's fears, and to increase acceptance, so the child or adult with leprosy can lead a full, happy, meaningful life.

### Medical Treatment

**Multi-drug treatment (MDT)** consisting of rifampicin (rifampin), dapsone, and clofazamine, is now recommended by the World Health Organization. These medicines should be used in combination, not alone. MDT is usually supplied free.

For years, **dapsone** was the main drug used. Unfortunately, in some areas the leprosy bacilli became 'resistant' to dapsone (the leprosy was not cured by it).

**Rifampicin** works much faster against leprosy. To prevent development of resistance, it is given in combination with other anti-leprosy medicines. Rifampicin needs to be given only once a month. This kills bacteria quickly. Treatment with rifampicin is less expensive and does not have many side effects.

**Clofazimine** treatment is added to fight MB leprosy and the Type 2 reaction.

A **combination therapy** is used to treat single lesions of PB leprosy. It contains: 600 mg rifampicin, 400 mg ofloxacin, and 100 mg minocycline. It is taken by mouth one time only. A children's dose is one-half the adult dose.

Age	Medicine	How to take	Duration: MB	Duration: PB
children under 10 years	rifampicin clofazamine dapsone	10 mg/kg by mouth once a month 100 mg by mouth once a month, and 50 mg by mouth 2 times a week 2 mg/kg by mouth once a day	12 months	6 months
children 10-14 years	rifampicin clofazamine dapsone	450 mg by mouth once a month 150 mg by mouth once a month, and 50 mg by mouth every other day 50 mg by mouth once a day	12 months	6 months
children 15 and older and adults	rifampicin clofazamine dapsone	600 mg by mouth once a month 300 mg by mouth once a month, and 50 mg by mouth every other day 100 mg by mouth once a day	12 months	6 months
Take rifampicin on an empty stomach to improve the body's absorption of the drug. Check with your Ministry of Health and WHO for local information about leprosy treatment.				

### Importance of regular treatment

Treatment to cure leprosy takes from 6 months to 1 year or more depending on the type of leprosy. If treatment is stopped too soon or if the medicine is not taken at the right time and regularly, not only can leprosy return, but sometimes a leprosy reaction may result which can cause even more nerve damage and paralysis or loss of vision.

It is therefore essential that health and rehabilitation workers make sure the person affected by leprosy and her family understand the importance of taking the medicine regularly. It is helpful if a health worker can be present when the child's monthly dose is taken. This way, he can check her for any complications of leprosy.

**TREATED EARLY, LEPROSY NEED NOT BE A DEFORMING OR DISABLING DISEASE.**

## Treatment of leprosy reactions

As we mentioned on p. 215, loss of feeling, paralysis, and deformities need not happen to a person with leprosy. Early diagnosis and treatment together with quick care of leprosy reactions prevents the development of many deformities.

Care of a leprosy reaction has several objectives:

- Prevent nerve damage that causes loss of feeling, paralysis, and contractures.
- Stop eye damage and prevent loss of vision.
- Control pain.
- Continue with medicine to kill leprosy bacilli and prevent the disease from getting worse.
- Improve general health and participation in activities of daily life.

Care includes:

### 1. Medicine to reduce pain and inflammation

For mild reactions (skin inflammation but no pain or tenderness of nerves) use aspirin. For dosage and precautions, see p. 134.

For severe reactions (pain along nerves, increasing tingling, numbness or weakness, eye irritation, or painful testicles) corticosteroids (prednisolone) are needed. Because this is a medical emergency and because corticosteroids are dangerous, if at all possible get experienced medical advice before using them.

### 2. Anti-leprosy medicine should be continued throughout the leprosy reaction.

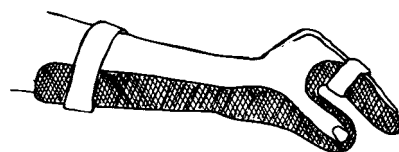
Clofazimine helps to reduce Type 2 reactions and fights the MB leprosy. The dose of clofazimine can be increased (to 300 mg. daily in adults) and later reduced as the reaction lessens. However, for severe reactions that damage nerves, prednisolone is needed.

### 3. Splinting and exercise

Holding the affected limbs in splints during a severe reaction helps reduce pain and prevent nerve damage and contractures (see Chapter 8).

Joints should be splinted in the most useful position. Splints can be made of plaster bandage or molded plastic (see p. 540). Very carefully pad splints for hands or feet that do not feel pain.

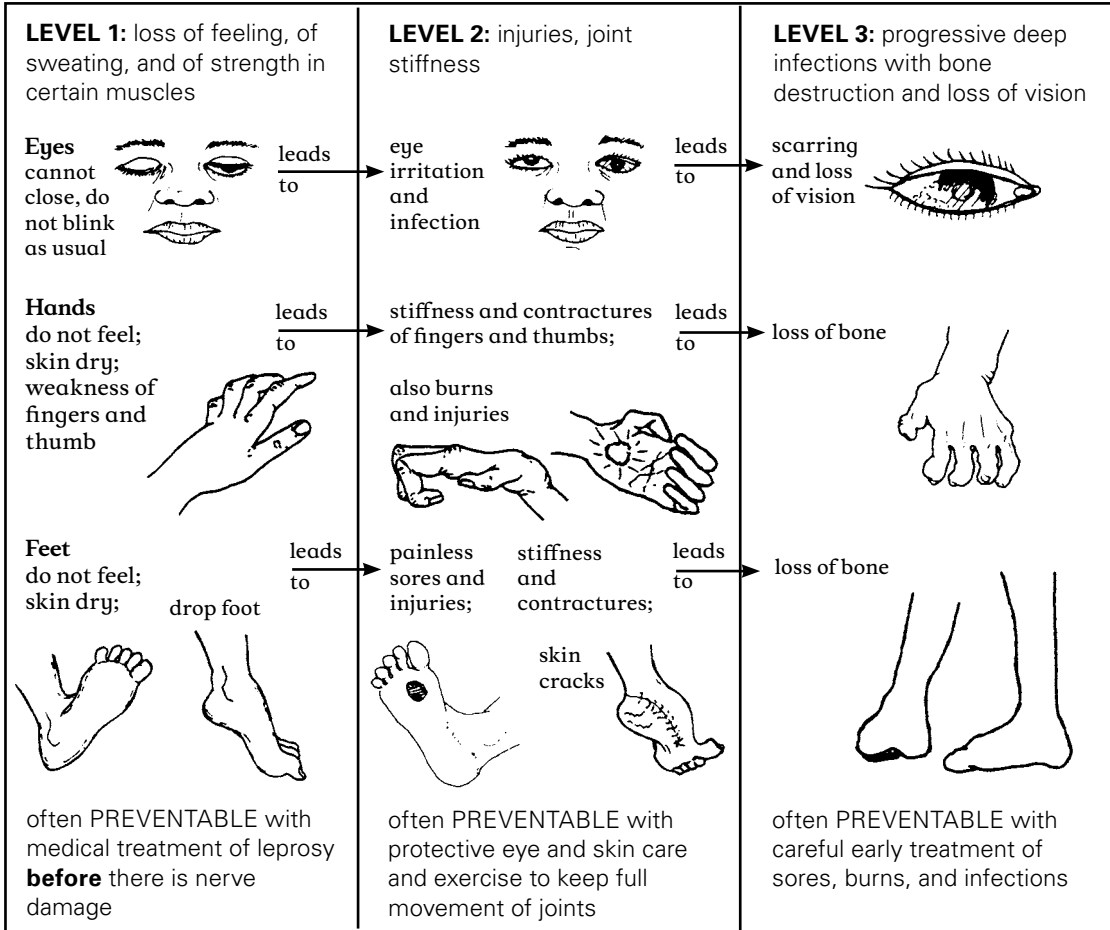
Leave the splint on day and night until pain and inflammation are gone. Remove only for gentle range-of-motion exercise at least once a day (see Chapter 42).



A good splint for the hand—to avoid contractures and maintain a useful position.

## Cause of deformities

When most people think of leprosy, they think of the severe deformities of the advanced case: deep open sores (ulcers), clawed fingers, gradual loss of fingers and toes, and eye damage leading to loss of vision. Actually, these deformities are not caused directly by leprosy germs, but result from damaged nerves. Nerve damage causes 3 levels of problems, one leading to the next:



When there are level 1 problems, there is a lifelong danger of level 2 and 3 problems. Because feeling has been lost, the person no longer protects herself automatically against cuts, sores, thorns, and other injuries. And because they do not hurt, these injuries are often neglected.

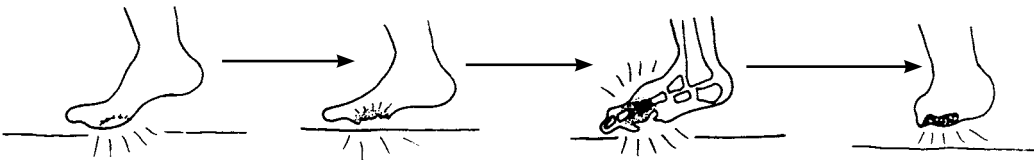
For example, if a person without loss of feeling walks a long way and gets a blister, it hurts, so he stops walking or limps.

But when a person with leprosy gets a blister, it does not hurt.

So he keeps walking until the blister bursts and becomes infected.

Still without pain, the infection gets deeper and attacks the bone.

In time the bone is destroyed and the foot becomes more and more deformed.



Usually, leprosy bacilli cannot be found in these open sores. This is because the sores are not caused by the bacilli. Instead, they are caused by pressure, injury, and secondary infection.



## PREVENTION OF INJURY for persons with loss of feeling and strength

**Eyes:** Much eye damage comes from not blinking enough, because of weakness of lids or loss of feeling. Blinking keeps the eyes wet and clean. If the person does not blink well, or his eyes are red, teach him to:

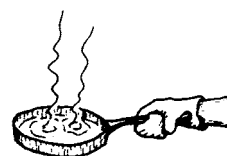
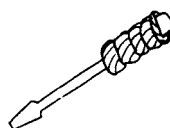
- Wear sunglasses with side shades, and maybe a sun hat.
- Close the eyes tightly often during the day, especially when dust blows.
- Roll the eyeballs up as you try to close eyes tight.
- Keep eyes clean. Wash well around eyes, keep flies and dirty hands away.



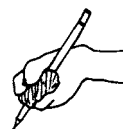
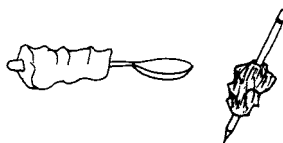
**Hands:** When you work with your hands, or cook meals, take special care. Never pick up a pan or other object that might be hot without first protecting your hand with a thick glove or folded cloth. If possible, avoid work that involves handling sharp or hot objects. Do not smoke.

- **Use tools with smooth, wide handles,** or wrap cloth around handles.

To help the person with weak or atypical fingers hold a tool or utensil, you can mold a handle to the shape of the person's closed hand.



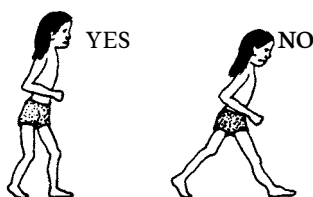
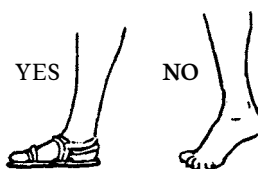
Use epoxy putty, or plaster of Paris mixed with a strong glue. Have the person grip the handle while it is still soft. Then let it harden.



For more aids for gripping, see p. 230 and p. 577.

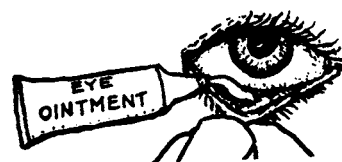
### Feet:

- **Avoid going barefoot. Use shoes or sandals.** (For suggestions on appropriate footwear, see the next page.)
- **Learn to take short steps.** This helps protect the feet.



## INJURY CARE

**Eyes:** Close eyes often. If necessary, use a simple eye patch. If eye gets infected (forms pus) use an antibiotic eye ointment. Put the ointment into lower lid without touching the eye.



**Hands and feet:** If you have a cut or sore, keep the injured part very clean and at rest until it has healed completely. Take care not to injure the area again.

## Things to do every day

- Checkups: At the end of each day (or more often if you work hard or walk far) examine your hands and feet carefully—or have someone else examine them. Look for cuts, bruises, or thorns. Also look for spots or areas on the hands and feet that are red, hot, swollen, or show the start of blisters. If you find any of these, rest the hands or feet until the skin is completely healed.
- If the skin gets dry and cracks, soak the feet daily in water for at least 20 minutes. Then rub cooking oil, *Vaseline*, or lanolin hand cream into them (Not butter or animal fat. These attract insects and rats).
- As you rub oil into the hands and feet, do stretching exercises to keep the complete range of motion in the joints.



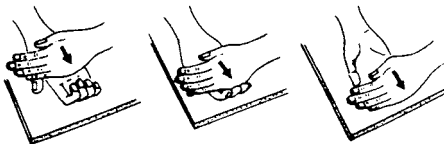
**With continued daily care, most deformities of leprosy can be prevented.**

## PREVENTION of contractures and deformities in persons with paralysis

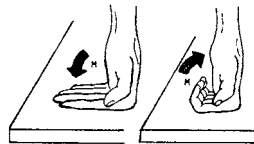
Prevention of **contractures** from paralysis due to leprosy is similar to prevention of hand and foot contractures due to polio and other forms of paralysis (see p. 81). However, loss of feeling makes prevention more difficult.

Exercises to maintain full range of motion are covered in Chapter 42 (see especially pp. 370 to 373).

- Exercises to prevent fixed clawing of the hands can be done by . . .  
 . . . gently straightening the fingers like this:



and like this:



Open your fingers as much as you can without help. Then use your other hand to open them the rest of the way. Close fingers and repeat.

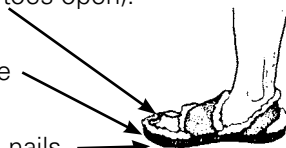
- A good exercise to prevent “tiptoe” contractures with “foot drop” is to stretch the heel cords by leaning forward against a wall or by squatting with heels on the ground.



## Footwear for persons without feeling in their feet

The best footwear has:

- a well-fitted upper part that does not rub and has plenty of toe room (or leaves toes open).
- For the outer sole, a hard, resistant rubber or plastic sole should be used.
- a tough under-sole so thorns, nails, and sharp rocks do not injure foot.
- Footwear should be acceptable (not look too strange or unusual) so that the person will use it.



AVOID:

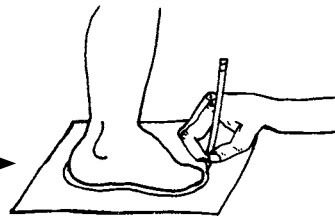
- plastic shoes or sandals
- soft-soled sandals or thongs that thorns can pass through
- using nails to fasten heels and soles (These might poke through and injure the foot. Better to sew on soles or use glue.)

**NO!**

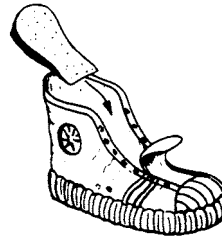


### Possible ways to get footwear

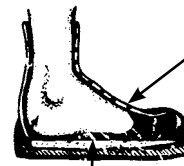
- Contact a leprosy hospital with a footwear workshop. They can make sandals if you send a tracing of the foot.



- Check the market. You may find a canvas shoe or tennis shoe that already has a good insole.



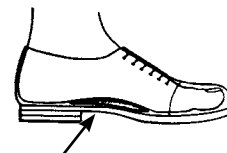
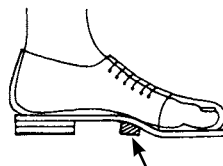
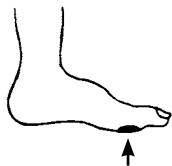
- Or you can put soft insoles into the shoes. But **CAUTION:** If you put an insole that is thick into a standard shoe, there may not be enough room for the toes—unless you cut out the part over the toes and leave them open.



An insole that is thick may work if the foot is already short.

soft insole

- Make (or have a local shoemaker make) special footwear. For the inner sole, you can use a soft, sponge sandal or buy “microcell” rubber, which is soft but firm. For the outer sole, a hard, resistant rubber or plastic sole should be used.

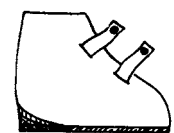
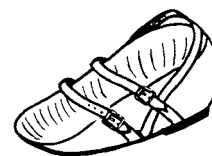


- For persons who have developed sores on their foot here,

a bar here or a foot support here may help take pressure off the ball of the foot and prevent new sores.

- A very helpful lining for preventing sores is a soft, heat-moldable foam plastic called *Plastazote*.

- For persons with a drop foot, a brace or lift can help prevent sores and injuries.



You can get a brace or support at a rehabilitation workshop, or make a specially-fitted, well-padded plastic brace (see Chapter 58).



Or make a simple device to hold the foot up.



## LEPROSY AND THE COMMUNITY

Historically, there has been a lot of fear and misunderstanding about leprosy. Persons with leprosy have often been thrown out of homes and towns, or treated with cruelty. Until recently, governments took persons with leprosy away from their families and locked them up in special institutions or “leprosaria.” All this added to people’s fears.

Today, leprosy can be cured—without any deformities or disabilities if treatment is begun early. It can be treated at home. The person can continue going to school or to work. Having leprosy need not disable the person physically or socially.

But in many communities fear and misunderstanding remain. Persons still refuse to admit—even to themselves—the early signs of leprosy. They delay in getting treatment until permanent deformities appear. The disease continues to be spread to others by those who are not yet treated. And so the myth and the fear of leprosy are kept alive.

To correct this situation will require the efforts of all health and rehabilitation workers, schoolteachers, religious and community leaders, families of persons with leprosy, and organizations that serve people with disabilities. These steps are needed:

1. **Information and Education** Schools, health centers, comics, radio, and television can be used to help educate the community about leprosy. Information should:
  - try to lessen the fears people have about leprosy and let them know it is curable.
  - stress the importance of early diagnosis and treatment.
  - tell people how to recognize early signs and where to get treated.
  - include popular stories of persons who think they might have leprosy, decide to get help, and are cured.
2. Integration of leprosy programs into general health care. Too often leprosy control is done as a separate program. It is important that people (and health workers) begin to see leprosy as “just another serious health problem” — like diarrhea in children.
3. Regular screening (mass checkups) of children for skin patches and other early signs of leprosy. This can be part of a CHILD-to-child program (see Chapter 47) in which school children learn first to examine each other, and then their younger brothers and sisters.
4. Community pressure and government orders to let children being treated for leprosy attend school, find work, attend festivals, and take part in public functions. (Organizations of people with disabilities can help make this happen.)
5. Self-help and community groups of people affected by leprosy can raise awareness in the community and increase acceptance, care and respect. They can also organize to get medicines and treatment, and educate to prevent deformity. Where needed, community groups can advocate to get the schooling, health care, work, and social rights that persons with leprosy deserve.



Screening school children for leprosy, India. (Photo, The Leprosy Mission.)

The example of a health worker who welcomes persons with leprosy and is not afraid to touch them can do much to calm needless fears and encourage acceptance.