



ILEP

How to Prevent Disability in Leprosy



Copyright ©2006 ILEP, London

Any part of this book may be copied, reproduced or adapted to meet local needs, without permission from the authors or publisher, provided the parts reproduced are distributed free or at low cost – not for profit. For any reproduction for commercial ends, permission must first be obtained from ILEP. All reproduction should be acknowledged. Please send copies of adapted materials to ILEP.

Published by:

The International Federation of Anti-Leprosy Associations (ILEP)
234 Blythe Road
London W14 0HJ
Great Britain

If you have any comments on this book or would like information on how to obtain additional copies or details of other materials related to leprosy, please write to ILEP at this address.

Produced by ILEP.

Production: Susan Lord, Douglas Soutar

Design: DS Print & Redesign
7 Jute Lane, Brimsdown
Enfield EN3 7JL, Great Britain



ILEP

How to Prevent Disability in Leprosy



This is the fourth in a series of Learning Guides about leprosy published by ILEP. It is aimed at health workers and carers who may have to help look after the eyes, hands and feet when nerve damage is already present. ILEP Learning Guides 1 and 2 deal comprehensively with the prevention of disability through the early diagnosis and treatment of leprosy and the recognition and management of leprosy reactions. This booklet provides information, and makes suggestions, on how to help people with existing nerve damage develop a lifetime habit of looking after their eyes, hands and feet.

The ILEP Learning Guides complement the Operational Guidelines of the World Health Organization* and may also be seen as a useful supplement to the guidelines and policies of National Programmes.

This Learning Guide will be further complemented by an ILEP Technical Guide on Community-Based Rehabilitation (due late 2006) which will promote the rehabilitation of people affected by leprosy following the principles and practice of community-based rehabilitation for disabilities in general.

This Learning Guide also reflects the statement produced by the Consensus Development Conference on Prevention of Disability held in Cebu City, Philippines 13-16 September 2006. The Executive Summary of this Consensus Statement is included as Annex 3. The definitions used in this Learning Guide reflect those described in the introduction to this Statement.

**SEA/GLP/2006.2 Global Strategy for Further Reducing the Leprosy Burden and Sustaining Leprosy Control Activities 2006-2010 Operational Guidelines*

A note on definitions

In the context of the International Classification of Functioning, Disability and Health (ICF), disability is defined as “*an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between an individual (with a health condition) and the individual’s contextual factors (environmental and personal factors)*”. While the impact of prevention of disability (POD) could therefore be assessed in terms of impairments, activity and participation, the main focus of interventions has been on preventing impairments, i.e., the physical level. The ICF defines ‘impairment’ as a “*problem in body function or structure such as a significant deviation or loss.*”

POD may therefore be defined as ‘a concept comprising all activities at individual, community and programme level aimed at preventing impairments, activity limitations and participation restrictions’. It is widely acknowledged that personal attitudes and circumstances, combined with environmental factors can either precipitate, or help prevent disability. They are often targets for intervention themselves, as in the case of poor self-esteem or negative community attitudes, or may be the subject of preventive education, as with high-risk work conditions.

Disability preventing measures specific for other chronic conditions in leprosy-endemic countries, including lymphatic filariasis, diabetes and Buruli ulcer, have generally been developed more recently. They use very similar strategies and depend in a similar way on the motivation and participation of those affected. Combining strategies and interventions for POD for people affected by a range of related conditions may decrease stigma, be more cost-effective and improve sustainability.

Acknowledgements

We would like to acknowledge the contribution of the following groups and individuals who contributed to the development of this book:

The principal authors: Hugh Cross and Margaret Mahato.

We would like to acknowledge the following individuals who have provided illustrations. Individual or organisational copyright is only acknowledged where required.

Individuals:

Dr Zao Li Rong, Institute of Dermatology, Qinxinan Prefecture, Peoples Republic of China, who provided Fig. 6a. All other photographs were provided by Hugh Cross American Leprosy Missions Prevention of Disability Consultant for Asia.

Contents

1. INTRODUCTION	2
2. HOW TO PROTECT EYES THAT ARE AT RISK	5
CAUSES OF EYE PROBLEMS IN LEPROSY	5
3. HOW TO PREVENT AND CARE FOR WOUNDS .10	
CRACKS AND CALLUS.....	11
BLISTERS	17
OPEN WOUNDS (ULCERS)	17
4. SELF-CARE: WHAT TO TEACH AND HOW TO TEACH IT	28
WHO NEEDS TO DEVELOP SELF-CARE HABITS?	28
WHAT PEOPLE NEED TO KNOW ABOUT PROTECTING HANDS AND FEET.....	34
FOOTWEAR.....	45
5. MANAGING POD ACTIVITIES	49
ORGANISING PRIORITY GROUPS.....	49
MAKING USE OF AVAILABLE HELP.....	50
MONITORING AND EVALUATING POD SERVICES... ..	53
ANNEX 1	
Impairment Summary Forms.....	54
ANNEX 2	
Discussion and Demonstration Check List.....	61
ANNEX 3	
Consensus Statement on Prevention of Disability, Cebu City, Philippines, 13th – 16th September 2006: Executive Summary..	62

SECTION ONE

Introduction

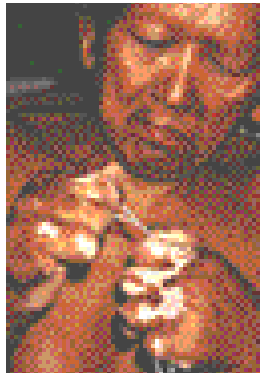
Multi-Drug Therapy (MDT) can cure leprosy within a few months. If patients are treated early, soon after the first signs of leprosy have been noticed, most will never suffer any serious problems and can lead a full and normal life – others will never know they once had leprosy. The diagnosis and treatment of leprosy are described in ILEP Learning Guide One.

Unfortunately, however, some people do develop complications from leprosy and suffer from various types of disability as a result. The complications of leprosy occur because of nerve damage. If this damage is noticed in time, it can usually be reversed by treatment with steroids. For a full explanation of how to examine for nerve damage and treat with steroids see ILEP Learning Guide Two.

Figure 1 Some of the gross disabilities which can still happen if nerve damage is neglected and which this book is designed to help prevent



This man was unable to close his right eye (lagophthalmos). He also has loss of sensation in his cornea. He became blind after damage to his eye.



These people became gradually more disabled because of loss of sensation and muscle paralysis which put their hands and feet at risk of deformity, wounds and bone loss.

This Learning Guide gives suggestions on how to look after the eyes, hands and feet when nerve damage is already present, as these body parts most commonly get damaged. The most important problem with nerve damage in leprosy is loss of sensation, or anaesthesia, which allows the person to injure themselves during normal daily activities. Leprosy may also damage the nerves controlling muscles, leading to weakness, clawing, joint stiffness and deformity.

Section 2 looks at common eye problems in leprosy and gives suggestions on how people can prevent the worsening of impairment and blindness that sometimes follows muscle weakness and loss of sensation. For further information about blindness see *Prevention of Blindness in Leprosy* edited by Paul Courtright and Susan Lewallen.

Section 3 looks at the problems people have when leprosy affects the skin on their hands and feet and gives suggestions on the prevention and treatment of wounds, cracks and other skin problems.

Section 4 looks at how people who have had leprosy can be helped to overcome the challenges of leprosy themselves. It has often been found that once a person is motivated to look after their own hands and feet, they also find the motivation and the courage to deal more effectively with other problems in their lives related to leprosy, such as the isolation from community, loss of work and poverty. Sometimes groups of people affected by leprosy can work together to tackle these problems and there are many examples of such groups which have successfully overcome immense difficulties to improve their lives. Health workers should encourage people with leprosy to manage the complications of the disease at home as far as possible, but be ready to give information and advice when necessary.

Section 5 looks at specialised services that may be available at referral centres and how to select patients who would benefit from them. It also gives suggestions on how to monitor and evaluate a POD service so that it can be managed efficiently.

In summary, the aim of the book is that health workers will be able to help people with nerve damage make a lifetime habit of avoiding injury, cracks and stiffness. These are some of the main lessons that will be taught:

- *Keep eyes which are unable to blink free from injury and sight loss.*
- *Keep insensitive hands free from wounds.*
- *Keep insensitive feet free from wounds.*
- *Keep areas of skin that do not sweat, soft and free from cracks.*
- *Where there is muscle paralysis in hands or feet, maintain joint mobility.*
- *Where important muscles are weak, exercise to strengthen them.*
- *Carry out early care for any eye complications, wounds and skin cracks.*
- *Plan changes to activities of daily life to avoid wound recurrence.*
- *Enable people to take good care of their own hands and feet.*
- *Enable people affected by leprosy to help each other solve common problems.*

SECTION TWO

How to Protect Eyes That Are at Risk

Serious eye problems should be managed by someone with special training in eye care. The general health care worker must identify people with eye problems related to leprosy, in order to refer them to a nearby eye clinic. This means checking the eyes of each person briefly, when they attend the clinic.

The commonest eye complication due to leprosy is lagophthalmos – the eye cannot close completely. In the early stages, lagophthalmos may be reversible, but later on it becomes a permanent disability. Health workers can help people with this condition to look after their eyes and prevent loss of vision.

Causes of Eye Problems in Leprosy

Lagophthalmos

The muscles which close the eye can become weak or paralysed, if the facial nerve is damaged in a leprosy reaction. The result is that the eye cannot close completely. There may be watering of the eye. Sometimes there is loss of sensation in the cornea (the clear part at the front of the eye), which leads to loss of normal blinking. In the early stages, lagophthalmos can be treated like any other case of neuritis, with steroids. When the condition is permanent, surgery to the eyelids may help to prevent corneal damage.

Regular blinking and complete closure of the eyes at night keep the cornea healthy. In lagophthalmos, the cornea is at risk of damage which makes it less and less transparent. Blindness is a common end result.

Figure 2 Lagophthalmos



This man has lagophthalmos. The lower part of the cornea is not covered when he closes his eyes and has been damaged so that it is no longer completely transparent. Fortunately, the central part of the cornea is normal and he can still see: with care, his vision can be preserved. Behind the cornea is the lens, which looks white. This is due to a cataract which is common in older people and is not related to this man's leprosy. The cataract can be treated by routine surgery, as in anyone without leprosy.

Inflammation

A much less common complication of leprosy is inflammation inside the eye itself, which must be treated by someone with training in eye care. The main signs of inflammation are pain and redness of the eye.

Four signs to look for when checking the eye in someone with leprosy

Visual Acuity

Check how well people can see by using a Snellen chart, or by asking the person to count fingers at six metres distance. If there is recent visual loss in one or both eyes, so that the person cannot count fingers at six metres (visual acuity of $< 6/60$), they should be referred to an eye clinic. Cataracts are the most common cause of significant vision loss in the community and this is especially true in older people. People who have had leprosy can have their cataracts operated on in exactly the same way as those who have not had leprosy, with an intra-ocular lens implant.

Lagophthalmos

Watch for normal blinking and test for eye closure. If the eye does not close fully, lagophthalmos is present. If this is of recent onset, the person should be referred for treatment with steroids – the lagophthalmos is a result of nerve damage which may be reversible.

If the lagophthalmos has been present for longer than six months, it cannot be reversed with steroids. In these cases, the person must be helped to look after the eye to prevent damage to the cornea. In more severe cases the person should be referred for surgery – a fairly simple operation on the eyelids can help to give better protection to the cornea, give the person better appearance, and may prevent blindness.

Red Eye

Conjunctivitis and corneal exposure cause redness of the eye: they can be treated in a general clinic with antibiotic eye ointment and an eye pad. However, if the redness persists after a few days of treatment the person should be referred to an eye clinic. An eye that is persistently red may have exposure which needs surgical treatment or there may be inflammation inside the eye which requires special treatment beyond the scope of this book.

When the cornea does not have sensation it is at risk of damage from objects like sand, insects or eyelashes. These can cause ulcers on the cornea. If the cornea (the clear front of the eye) has a white spot on it and the eye is red, a corneal ulcer should be suspected. In such cases the person should be referred to a specialist immediately. Corneal ulceration is an emergency. If it is not treated very quickly the person may become blind.

A Leprosy Patch on the Face

It is known from experience that many people who are diagnosed with leprosy who have a facial patch, will get neuritis of the facial nerve and lagophthalmos. Anyone with a facial patch should be followed up closely, so that any reaction can be treated immediately.

Managing Permanent Corneal Anaesthesia

People who do not blink should develop the “think blink” habit. They should be encouraged to force themselves to blink whenever they see a common object, such as a mango tree, a cow or a motorcycle. If they exercise “think blink” for long enough, the action will become a habit.

Managing Permanent Lagophthalmos

Essential self-care actions for people who can not close their eyes fully:

- Wear eye-glasses and a hat or a cap.
- Use a cloth or a fan to keep away flies.
- Cover the head with a cloth or bed sheet, or use a mosquito net, while sleeping.
- Keep the eye clean and moist. ‘Moisol’ drops are good if they can be purchased. If it is not possible to use Moisol, try and provide sterile saline solution which should be dropped in the eye often throughout the day. At night a few drops of bland oil such as castor oil should be used.
- Never rub the eye (especially with insensitive rough hands, or dirty cloths).
- The area around the eye should be kept clean, by washing with a clean cloth.
- The eye should be inspected daily. Use a mirror, or ask a friend to look for any signs of a wound, redness or eyelashes turning into the eye.
- Vision should be checked daily by looking at the same fixed object six metres away.
- Daily exercises to prevent the problem from becoming worse (see below).

Figure 3 Exercises for people who can not close their eyes properly



Mild Lagophthalmos:

- 1 When asked to close eyes lightly the person has a slight gap between the eye lids (right eye).*
- 2 Ask the person to try and close their eyes with force. If the face muscles are still strong enough, the person will be able to close the gap. They should keep the eye forced closed while counting to ten. They should do this exercise as often as possible every day.*

Severe Lagophthalmos:

- 3 When asked to close eyes lightly the person has a large gap between the eye lids.*
- 4 Ask the person to try and close their eyes with force. Sometimes the face muscles are too weak to force the eyes closed. If the person still has a gap between the eye lids, they will need to do passive exercises to prevent the deformity from worsening and help keep the eye as healthy as possible.*
- 5 When eyes can not be forced closed, the person should place their fingers at the outer corner of the eye and gently pull outwards until the eye closes. This exercise should be done to a count of ten as often as possible throughout the day.*
- 6. All people who are unable to close their eyes, or who do not blink should wear glasses.*

SECTION THREE

How to Prevent and Care for Wounds

Skin cracks are caused by allowing the skin to become too dry. Leprosy often causes the skin to become very dry, through damage to the nerves which control sweating. Cracks are most commonly found in the creases of the hand, around the heels of the foot and in the toe creases.

Figure 4 *Skin cracks*



Skin cracks are wounds and should never be neglected. If they are not treated they may become openings for infection. If the wounds become infected, this can easily spread into the joints and bones causing loss of the infected finger or toe. Infection may track up tendons and spread to other parts of the hand or foot.

If infection tracks into the calcaneus (the heel bone), it can destroy the bone. If the calcaneus is destroyed or badly damaged, there is a strong possibility that the person may eventually lose the entire foot.

Even if cracks do not become infected they should be treated with care. If ignored they may eventually heal, but they will leave scar tissue which can cause the fingers or toes to become stiff, deformed and difficult to use.

Cracks and Callus

Inspection

People should be able to examine their feet and hands at least once a day. If they have difficulty bending far enough to look under the feet then a mirror should be provided (the mirror will also be useful for inspecting the eyes). They should check the skin of the feet and look for wounds and cracks, and also for red or swollen areas. This is especially important for people with a history of previous ulcers or for people with deformed feet. If they find that a particular area of the foot is hot, it may indicate that bones in the foot are infected. This can lead to massive destruction of the foot, requiring amputation.

People should also inspect their footwear daily. Footwear should be checked for stones or other hard objects that may be trapped inside or for sharp objects that may have pierced through the sole. Check under the shoe for sharp objects that may only pierce through the sole when the person is walking.

Figure 5 Foot inspection



Timely inspection with a mirror revealed the first signs of an ulcer (look below). This was a warning for immediate rest to prevent breakdown.



Soaking, Scraping and Oiling

When skin is soft and elastic it is less likely to crack when under stress (due to pressure or friction). Callus will build up under any foot that suffers from stress but callus builds up much quicker if the skin is damaged. If the skin dries and cracks, callus will build up around the edges of the cracks and as it does it worsens the cracks. These are the main reasons why it is important that people with nerve damage should soak, scrape and oil their feet.

Soaking

Any sort of container that will hold enough water to cover the feet will be good enough. Clean water should be poured into the container. Nothing should be added to the water. The feet should be soaked in the water until the skin is soft. This usually takes at least twenty minutes, so it is wise to suggest people soak for thirty minutes.

Scraping

As the skin softens during soaking the person should scrape the dry skin off the foot. Any abrasive object can be used for this purpose. Some useful objects include rough stones, coconut husks, coral, charred corn cobs, sand paper and files (care should be taken not to advise any object that might damage the person's hands).

Oiling

After soaking and scraping the foot should be removed from the water and oil should be rubbed into the skin. Mineral oils are best because vegetable oils can attract rats and insects. Vaseline is good because it seals the water in the skin.

It is best not to dry the skin before oiling, but if the person has fixed claw toes, or other deformed toes, it is wise to dry between the toes to reduce the chance of fungal infection.

Figure 6 Finding suitable solutions for skin scraping



The problem of soaking and scraping was solved by using local solutions. The man scrapes off hard skin using a scorched maize cob. The woman found a stone was useful.

Even with good self-care, some people are unable to prevent a build up of callus, so from time to time a patient may require a health worker to remove it with a scalpel. Deep cracks may also need attention from a health worker from time to time. (See below).

Caution

It is a mistake to think that all callus on the hand is dangerous and should be removed. Sometimes callus is protective. Manual workers (farmers, labourers and fishermen) develop callus on parts of their hands as the body's protection against damage from rough work. This type of callus will only be dangerous if it develops into a large hard plaque. The hard dry callus that forms in and around the creases of the hand and fingers should be removed because it will cause the skin to crack. All callus under the foot should be removed.

Caution

Most cracks are due to dryness of the skin, but toe cracks may need special help. Attention needs to be paid to toe cracks to decide the cause. If the skin around the cracks is white and spongy and the area feels damp to the touch, then the cracks are likely to be due to maceration (skin is too wet), fungal infection or both. Under normal circumstances water will evaporate from the skin. If it is trapped in pockets between tight deformities or under adhesive tape the skin will become macerated. When the skin is macerated or if it is infected with fungus it loses elasticity, which is why it cracks.

Management of Toe Cracks

If laboratory services are readily available, try and arrange a microscope examination of a skin sample to eliminate the possibility of tinea pedis (fungal infection). If there is no tinea pedis or if laboratory services are not available follow the suggestions given below for treatment of cracks due to wet skin.

It is important to try and ensure that areas where water is being trapped should be carefully dried with a soft absorbent cloth after washing or soaking (e.g. in the creases of claw toes or in the spaces between fixed deformed toes). After drying, the cracks should be painted with Compound Tincture Benzoin (CTB). If the problem is not solved after a week it may be because there is fungal infection. This should be treated with Clotrimazole cream. Two other commercial products that can be used are Canestan and Daktarin. Only cream preparations are useful as treatment options (powder preparations are used in shoes to prevent re-infection).

Figure 7 *Removing callus at the health post*



Figure 8 Management of deep hand cracks at the health post



Trimming

1. There is too much skin in the cracks to be removed simply by scraping. It needs to be removed with a scalpel.

- Clean the area.
- Wash with mild soap and clean water. Do not use antiseptic solutions or detergents.
- Remove any sand, gravel, wood splinters etc.
- Rinse thoroughly with clean water.
- Soak for about 15 minutes.

2 and 3. The scalpel must be used carefully to trim away the dead skin around the crack and also from inside the crack. Cut away carefully and try to avoid causing bleeding.

4. When most of the dead skin is removed, rub over the area with a pumice stone, sandpaper or some other abrasive object. The rubbing should follow the direction of the crack and not across it to avoid making the crack bigger. Keep rinsing the area between rubbing. When the area is reduced to a base of soft skin give one final rinse to wash away any debris.

After cleaning the area either:

- Cover it with a gauze dressing that has been soaked in saline.

Or:

- Dry the wound well and paint it with Compound Tincture Benzoin (CTB). When CTB is dry, cover the wound with a thin gauze swab.

Finally, wrap the dressing in place with bandage or clean cloth and immobilise the finger to rest it. (See overleaf)

Splinting

A good way to rest and protect an injured finger is to use splinting to keep it from being able to move. Splints can be made out of any smooth but stiff materials such as plastic or rubber tubing, wood,

bamboo, etc. Splints protect the wound and help to hold the fingers in the best possible position. Splints can prevent soft tissues from shortening (especially over joint areas) during the healing process. Without a splint the finger could become stiff and lose some of its function. The splint should be worn for 23 hours each day; for one hour each day the splint should be removed so that the joint can be massaged and moved about to prevent stiffness.

Figure 9 Splinting for finger cracks



- 1 *Cut a piece of hose pipe. It should be long enough to extend from the crease on the hand to the end of the finger. All pointed edges are cut away.*
- 2 *The crack is dressed with CTB.*
- 3 *The dressing is held with a piece of bandage or clean cloth.*

- 4 *The ends of the splint are padded with gauze, held by tape.*
- 5 *The finger is padded.*
- 6 *The splint is put on the finger.*
- 7 *The splint is taped around the finger (note how the tape is placed around the joints).*

Blisters

The two main causes of blisters are:

- Heat – from direct contact with hot liquids or surfaces or open fire
- Friction – repeated rubbing of the skin on hard surfaces (e.g. unpadded tools, poorly fitting shoes)

Management of Blisters

- The first line of blister management is to decide what caused the blister and to make sure that action is taken to prevent recurrence.
- Do not open or puncture the blister. Clean gently with mild soap and clean tap water without breaking the skin, then blot the area dry. (Painting the blister with a mixture of compound tincture benzoin and iodine tincture, 50:50, will help the blister to dry quickly).
- Apply a thick layer of clean gauze or cloth, as padding over the blister and the surrounding area.
- Rest the injured part. The patient can continue his daily routine provided that the part is not used.

If the blister is broken it should be treated as an open wound.

Open Wounds (Ulcers)

Some wounds can be treated by health workers and patients together. Others are complicated by infection of soft tissue and / or bone and should be treated in a hospital or where specialist services are available. There are a few major principles that should be remembered when planning ulcer management. If these principles are followed, simple ulcers will heal **without any medication:**

- Rest.
- Good wound environment.
- Hygiene.
- Protection.

Figure 10 Simple ulcer



This is a new wound that has recently opened. It is a simple ulcer so the person can be treated without hospital care

Management of Simple Ulcers

Rest

All wounds are the result of tissue stress. Common causes of tissue stress among people who have been left without sensation of leprosy include:

- Sudden injury (e.g. sharp objects that cut or pierce through the skin like thorns or broken glass).
- Repetitive pressure, friction or shear forces (e.g. foot ulcers from walking or hand ulcers from using unprotected hand tools).
- Burns.

Figure 11 Common causes of hand injuries



This woman is at risk of stabbing her hand with a sharp tool (sudden injury).



When a hand rubs back and forward over a hard surface there is a risk of blisters developing (Repetitive stress injury).



Using unprotected metal utensils can burn hands (Burn injury).

Rest

Almost all wounds will heal if they are rested.

Almost all wounds will get worse if they are not rested.

Regardless of the cause of injury, the first line in treatment of wounds is to remove the cause of tissue stress and then to allow the injured part time to **rest** so that damaged tissue can repair itself. So long as the person with a wound is healthy, damaged tissue **will repair itself**. Rest doesn't necessarily mean that the patient must stay in bed (although for foot ulcers this is often the best option). If the person is unable to rest it may still be possible to rest the injured body part.

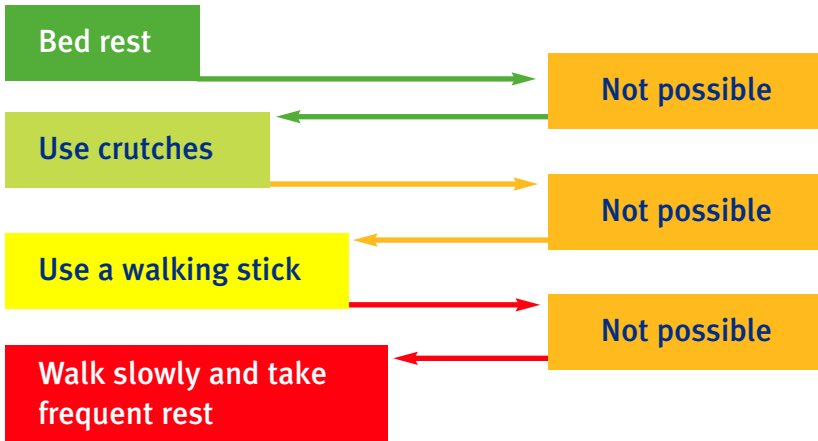
- Splinting will **rest** hand and finger wounds.
- Walking with crutches (or even with a walking stick) will **rest** foot wounds.

Whatever the circumstances, the injured part should not be required to perform normal functions whilst the tissue is still being repaired.

The best option is for the person to spend as much time as possible, lying down with his foot raised above the level of his

heart (bed rest). However, this is very rarely possible amongst people who must struggle to feed themselves and their families, so other options should be explored.

Figure 12 Options for resting a wounded foot



It is also very important to find out whether the person is able to change his activities so that he does not need to walk so much: for example, can he temporarily swap work with another person? Other transport options should also be considered: for example, riding a bicycle or donkey.

Wound Environment

A good wound environment will be:

- Free of foreign bodies and toxic substances (dead tissue is toxic and dressing material, especially cotton wool, will be treated like a foreign body).
- Free of dangerous micro organisms (bacteria and other microbes will be found in every wound but not all will cause a problem).
- Moist but not too wet (discharge from wounds should be drained).
- Not dry (wounds heal better if they are moist, so care should be taken not to dry the wound too much; many medications commonly used on wounds, such as gentian violet, are

antiseptic, but they delay healing by causing the wound to become too dry).

- Stable temperature (wound healing is best where the temperature does not change quickly so wounds should be cleaned or soaked in water near body temperature).

Create a Good Wound Environment

Day 1

- Trim away callus from the wound edges.
- Cut away all dead and overhanging tissue from the wound edges (debridement).
- Clean the wound with normal saline solution.
- Cover with clean cloth or bandage but do not make the dressing too bulky. There should only be enough bandage to hold the dressing in place.

Day 2

- Remove the soiled dressing.
 - Clean it carefully with saline.
 - Put dry gauze dressings over the wound (these are to soak up discharge).
 - Cover with clean cloth.
- **Antiseptics are not necessary and might delay healing**

Day 3 and Thereafter

By day three there should be signs of granulation tissue. The main task from this point is to protect the granulation tissue.

- Remove the soiled dressing carefully. If it is stuck to the wound, soak it first before removing it and avoid damaging the granulation tissue.
- Clean the wound carefully with saline (do not scrub it with gauze dressings).
- Soak a gauze dressing in saline, squeeze out excess saline so that the dressing is left moist and then place it over the wound (this will help to keep the granulation moist).
- Cover with clean cloth or bandage.

Late Stages

From about the twelfth day after debridement, the wound should be healing well. There should be new skin growing over the wound and there should be much less discharge. Care should be continued to ensure that the wound does not become too dry so gauze dressings, made moist with saline should be continued. Dressings can be held in place by using either a clean cloth, bandage or tape.

Hygiene

Many problems can be prevented if good hygiene is observed in the workplace and in the patients' homes. Particular attention should be paid to bathing and latrine areas because drains are a reservoir of infection. Treating the infection in the wound is pointless unless the source of infection (such as the drains) is treated as well. Routine cleaning around areas with drains, using bleach (hypochlorite), will reduce risks greatly. Manufacturers' recommendations vary, but a practical guide for the use of bleach, as a disinfectant, is to use a cup of bleach in half a bucket of water. The bleach solution should be used to sluice down the bathing / latrine area.

Protecting the Wound Environment

The clean, moist wound environment should be protected with a cloth or bandage cover. However, if the wound covers become soaked through with discharge from the wound, the wound is at the same risk of infection as if the wound was not covered at all (this situation is known as "strike through"). To keep the wound environment protected and to reduce the chances of infection, the wound covers should be changed if discharge from the wound can be seen to have soaked all the way through. Bulky dressings should be avoided, so it is not helpful simply to increase the amount of dressing material to try and protect the wound from strike through.

Recent foot ulcers will give a heavy discharge in the early stages of healing so plans should be made to change the dressings every day (at least). As the wound begins to heal, there will be less discharge and dressings can be left in place a little longer (two to three days before changing).

Granulation Tissue

Granulation tissue should be treated with great care. Protect it by cleaning granulating wounds very gently with soaked gauze swabs. Do not use cotton wool because strands of fibre may be left in the granulation tissue. Fibres of cotton in granulation tissue can delay healing. Always soak gauze dressings well before trying to remove them. They may be stuck to the granulation tissue, so tearing them off carelessly will result in damage that will delay healing.

Figure 13 A wound with healthy granulation tissue



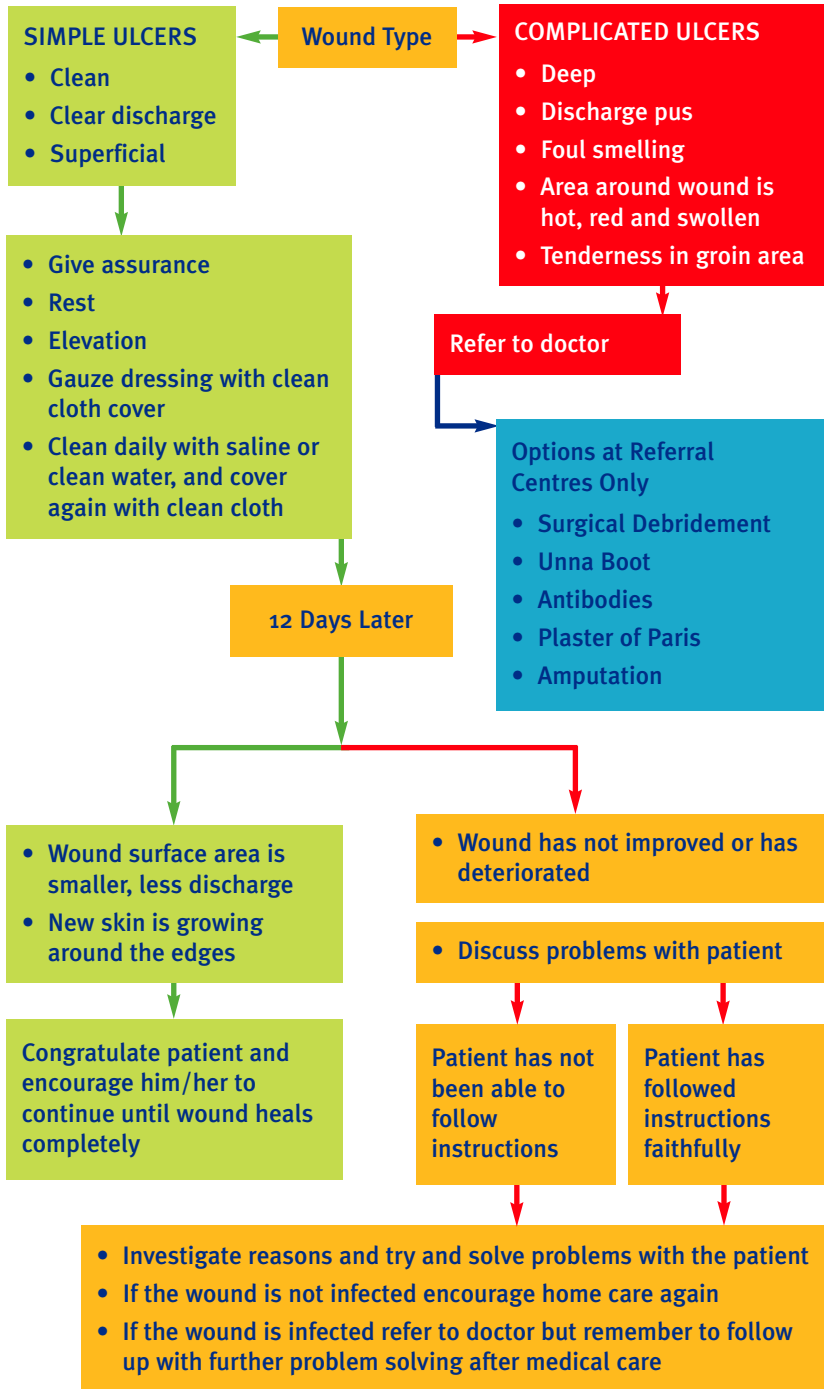
Figure 14 *How to do a simple debridement*



Debriding a Wound

After the dead tissues were cut away there was a small bleeding point on the toe. New tissue was cut, therefore the wound can be dressed with Savlon (chlorhexide gluconate) for one day, thereafter, only saline dressings should be used.

Figure 15 Wound Care and Monitoring



Medication

No medication is required in the management of cracks and simple ulcers. Many lotions that are commonly used are actually harmful because they delay the healing of wounds. Some medications may be used in certain situations for specific reasons, for example:

Skin Disinfection

Betadine (povidone iodine) is a good skin disinfectant (before cutting tissue with a scalpel), but it should only be used on intact skin. Soap can also be used to clean the skin, including blistered skin, if it is not broken.

Infection

- If an area has been made to bleed during trimming, Savlon (chlorhexidine gluconate) or Anaflex (polynoxylin) can be used once for the first dressing, to reduce the chance of infection in newly exposed tissues.
- Silver sulphadiazine is useful in the treatment of burns.
- Hydrogen peroxide is sometimes used to clean very dirty, deep wounds during surgery.

Healing Agents

Compound tincture of benzoin (CTB) does promote healing and can be used on simple cracks.

Unna Dressings are used for leg ulcers. They are made up in the following way:

- 100g of gelatine powder, clear without flavour
- 350g of distilled water
- 100g of zinc oxide
- 400g of glycerine

Mix water and gelatine together and set aside for a few minutes

Mix glycerine and zinc oxide

Heat gelatine (do NOT boil). When gelatine is dissolved add oxide mixture.

Three or four layers of gauze bandage, (preferably elastic) are dipped into the mixture and wound around the affected area. The Unna Boot combination of medicaments and compression is helpful in hastening the healing process.

Medications to Avoid

There are a number of products that are widely used but which should be avoided for various reasons:

- **Gentian violet, a widely used purple dye, is a powerful antiseptic, but it dries the wound out too much, damaging the new tissue that is formed in the healing process.**
- **Salt is an antiseptic which also causes too much drying and damages new tissue.**
- **Soap is also an antiseptic, causing drying when used on an open wound.**
- **Topical antibiotics should never be used in the treatment of ulcers due to leprosy.**

SECTION FOUR

Self-Care: What to Teach and How to Teach it

Who needs to develop self-care habits?

People who have any nerve damage.

People who are at risk of reaction (during treatment and for at least two years after treatment).

Why do People Need to Develop Self-Care Habits?

Many people who have had leprosy have some permanent nerve damage. If so, they will always be at some risk of tissue damage and deformity. By learning good self-care habits, they can protect themselves from further damage. Although health workers, family and friends can sometimes help, it is up to those affected to look after themselves day by day.

In the eye, hand and foot sections of this Guide the following three needs have been repeated:

The need for:

- awareness
- inspection
- protection

In each chapter advice has been given to guide the reader in understanding how awareness, inspection and protection can be carried out for the eye, hand and foot separately. Although the practices seem easy and simple to do, it is **very difficult** for people to develop and continue self-care habits. People need much encouragement if they are to develop self-care habits.

How to Help People Develop Self-Care Habits

The most important thing that any health worker can do to encourage self-care is to make the person feel that they are **worth** taking care of. People only care for things that they truly value. If people do not value themselves they will not care for themselves. Leprosy often makes people feel worthless.

Health workers can help people feel positive about themselves by showing respect, listening properly, asking for their opinions and discussing their plans.

Counselling

Strategies for prevention should include counselling of the affected person and their family, neighbours and community, vocational training and advocacy work. Guidance and training in facilitation skills and counselling may need to be sought from a higher level. These strategies will be covered in greater detail in future ILEP Guides on Community-Based Rehabilitation and Promotion of Self-Care and Self-Help.

Other Important Things to Think About

1. Involve Others

Do not

- expect the person to manage without help and encouragement

Do

- involve family members or friends in discussions about self-care.
- encourage disabled people to meet together to talk about solving self-care problems and to practise self-care together.

Figure 16 Self-Care Group



This group of people meet every week to encourage each other to do self-care.

2. Teach Problem Solving

Do not

- simply tell the person what to do

Do

- help the person to think about and understand the problems he/she faces
- encourage the person to solve the problems themselves (ask for their suggestions and give guidance)

Example:

Woman has dry cracked skin on the sole of her foot.

Health worker explains:

- Nerves are damaged so skin will dry and crack.
- Body can not keep the skin moist and soft.
- Feet need to be soaked in water for about 30 minutes at least twice a day.

Health Worker asks:

- How will the woman soak her feet?
- What will she soak her feet in?
- What will she use to scrape hard skin with?
- Will other people allow her to soak her feet (will they criticise or scold her) If so what will she do to overcome such problems?