

**Global Strategy for
Further Reducing the Leprosy Burden
and
Sustaining Leprosy Control Activities
2006–2010**

Operational Guidelines



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Foreword

Leprosy is no longer an incurable disease, leaving affected individuals and their families to suffer its devastating consequences of the disease without hope. Today, the diagnosis and treatment is simple and is available free of charge at the nearest health centre.

Our challenge is to sustain the quality of leprosy services and to ensure that all persons affected by leprosy, wherever they live, have an equal opportunity to be diagnosed and treated by competent health workers, without unnecessary delays and at an affordable cost. To achieve this goal, the major thrust of our efforts must focus on integrating leprosy into the general health services. Health workers at all levels must be taught the simple methods required to diagnose and manage leprosy. This will improve access to leprosy services and reduce the stigma and discrimination faced by persons affected by the disease.

WHO's Global Strategy for further reducing the leprosy burden and sustaining leprosy control activities, 2006-2010, focuses on sustaining the gains made so far and on reducing the disease burden further in all endemic communities. At the same time, particular attention should be given to ensuring that the quality of services is not compromised. Every person affected by leprosy should have easy access to diagnosis and free treatment with multi-drug therapy. We need to ensure that sustainable activities are carried out and quality services provided within an integrated set up that includes an effective referral network to manage leprosy-related complications effectively.

The implementation of the Strategy, through these Operational Guidelines will require renewed commitment from all partners working towards the common goal of a world without leprosy. Together, we can further reduce the leprosy burden and ensure that the physical and social consequences of the disease continue to decline throughout the world. It is hoped that these "Operational Guidelines" will help towards a better understanding of the new Global Strategy and the principles behind it, and will contribute to improving the quality of care for persons affected by leprosy.

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Executive Summary

The *Global Strategy for further reducing the leprosy burden and sustaining leprosy control activities (2006 – 2010)* has been widely welcomed and endorsed. The overall goal is to provide access to quality leprosy services for all affected communities following the principles of equity and social justice. The purpose of these *Operational Guidelines* is to help managers of national health services to implement the new Global Strategy in their own countries. This will be done as they develop detailed policies applicable to their own situation, and revise their National Manual for Leprosy Control.

Leprosy services are being integrated into the general health services throughout the world; a new emphasis is given here to the need for an effective referral system, as part of an integrated programme. Good communication between all involved in the management of a person with leprosy or leprosy-related complications is essential. These Guidelines should help managers to choose which activities can be carried out at the primary health care level and for which aspects of care patients will have to be referred. This will depend on the nature of the complication and the capacity of the health workers to provide appropriate care at different levels of the health system.

The promotion of self-reporting is now crucial to case detection, as case-finding campaigns become less and less cost-effective. It is important to identify and remove barriers that may prevent new cases from coming forward. The procedures for establishing the diagnosis of leprosy remain firmly linked to the cardinal signs of the disease, but the accuracy of diagnosis must be monitored. The Guidelines suggest a greater emphasis on the assessment of disability at diagnosis, so that those at particular risk can be recognized and managed appropriately.

The treatment of leprosy with MDT has been a continuing success; neither relapse nor drug-resistance are significant problems and the regimens are well-tolerated. Clear procedures are given for managing irregular treatment with MDT. Leprosy reactions are a serious complication affecting some patients. The Guidelines address this topic, with additional references under Further Reading. A key decision for programme managers is to determine how and at which level of the health system leprosy reactions are to be managed in their country. Different countries must develop their own detailed guidelines on this issue.

Prevention of disability (POD) is also described in some detail as there is a need for much greater coverage with basic POD activities. This is an important component of 'quality leprosy services' emphasized in the Global Strategy. Items mentioned under Further Reading will be essential for programmes planning to build capacity and increase their service provision in this area.

Rehabilitation may include a medical component (such as reconstructive surgery) but its scope is much broader. It is likely that some people affected by leprosy would benefit from socio-economic rehabilitation (for example, vocational training or a small loan). Staff in the health services need to be familiar with what is being done in the locality, and know how and where to refer people who need these services.

Recording and reporting are essential to maintain quality in any programme. The indicators selected in the Global Strategy are useful for monitoring and evaluation, and they determine which data must be recorded. The data needed to monitor POD activities have not been collected routinely in the past, so this represents a significant change – national managers must therefore decide for themselves which indicators will be used to ensure quality as these will vary from country to country.

Programme management is a broad subject; the topics covered in this Section are those that are central to the running of integrated leprosy control services, including supervision, supply of MDT, partnerships, training and programme evaluation.

1. INTRODUCTION

1.1 What is the place and purpose of the Operational Guidelines?

The Global Strategy for further reducing the leprosy burden and sustaining leprosy control activities (2006 – 2010), went through an extensive process of review and revision during the first part of 2005. It has now been fully endorsed by both WHO and International Federation of Anti-Leprosy Associations (ILEP), and therefore sets out an agreed agenda for leprosy work throughout the world for the period 2006 - 2010.

These Operational Guidelines have two functions:

- To define and explain terms, concepts and activities mentioned in the Global Strategy
- To indicate how the Global Strategy should be implemented in the context of a national programme

Because the Global Strategy and the Operational Guidelines are global in scope, they cannot guide every aspect of each national programme. However, it is intended that national programme managers should be able to use these documents to write a comprehensive National Manual for Leprosy Control.

1.2 What is the target audience for the Operational Guidelines?

The target audience consists of managers of national health services and mid-level managers responsible for leprosy control activities in their countries, who will be required to implement the Global Strategy.

1.3 How can the Global Strategy and the Operational Guidelines be applied to countries with widely differing health systems?

Because of the wide variations in the way leprosy patients are managed by different health services – relating to health service coverage, varying endemicity, training, staffing levels, supervision, etc. – the same guidelines cannot be used in every situation. The Guidelines are for use at two levels, Peripheral and Referral, in appropriate situations. The distinction between these two levels as used in this document should be adapted to the situation prevailing in each country.

“Peripheral level guidelines” are given for the general health workers, working in integrated clinics, where they see and manage a wide range of health problems; leprosy is a relatively small part of their workload. “Referral level guidelines” are for those staff at referral units, including field supervisors, who have had more training and experience in leprosy and also for those with specialist skills to manage other leprosy-related consequences (ophthalmologist, orthopaedic surgeon etc). As part of the process of integration, referral services need to be strengthened.

Where leprosy is common and health workers are familiar with it, many of the routine activities of diagnosis, treatment and disability prevention can be carried out in the peripheral clinics and there should be a fairly good knowledge of leprosy at that level, even in an integrated setting; in this case, some activities mentioned in the “Referral level guidelines” may be appropriate for many peripheral clinics. Some issues may be laid down by the government, for example, who may diagnose and treat leprosy, and who may diagnose and treat reactions.

Example 1: *Disability grading is covered in section 4.6. The guidelines given in that section for peripheral level health workers assume very little experience of leprosy and require a minimum level of skill to carry out the assigned tasks. In some programmes, certain peripheral level workers are already doing disability grading with a reasonable level of technical skill. In these programmes, therefore, it may be expected that the managers at national level would decide that the so-called “Referral level” guidelines in this particular section would apply to those peripheral staff.*

Example 2: *Recognition of reactions and neuritis, and the use of steroids to treat such cases, is covered in section 5.8. The peripheral level guidelines assume no training in this area amongst peripheral health staff and give very simple guidelines – basically to refer cases on. If peripheral staff have received adequate training in this area, the “Referral level” guidelines may be used.*

Referral will always be an essential component of an integrated health service (see section 2.1) and at any level, health staff must be ready to refer any patient who cannot be adequately managed where they are. Staff at selected health centres, district hospitals, or any other place identified as a referral unit, should be adequately

trained and be ready to receive those patients and use such occasions as a training opportunity for peripheral staff.

1.4 What does it mean to “reduce further the burden of leprosy”?

The “burden of leprosy” can be looked at in three ways:

Firstly, the most relevant epidemiological measure of the burden of leprosy is the incidence of disease, which is the number of people developing leprosy during a set period of time, usually one year. Because incidence is difficult to measure directly, the ‘Case Detection Rate’ is used as a proxy for incidence rate. It seems likely, however, that some new cases never come for diagnosis and treatment, so the number of cases detected is lower than the number of incident cases. The global incidence rate of leprosy seems to be declining slowly but the decline is faster in some areas than in others; in a few places the incidence rate seems to be rising. Changes in incidence take place slowly, over decades, and are related to factors such as immunization with BCG and economic development, as well as good leprosy control practices. By this measure, the “burden” of leprosy is declining slowly but new cases will continue to appear for many years. Thus, diagnostic and treatment services need to be maintained.

Secondly, the burden may be related to the registered prevalence of disease, which is the number of people on treatment at a certain point in time. The prevalence of leprosy has decreased throughout the world over the last 20 years because of multi-drug treatment (MDT) provided through the Leprosy Control Programme. By reducing the duration of treatment to just one year or less, MDT has greatly reduced the numbers on treatment at any one time and hence the “burden” on the health services. Although registered prevalence was a useful indicator to achieve the leprosy elimination milestone, it is not an adequate indicator to reflect changes in the epidemiological trend of leprosy.

The third way in which the “burden of leprosy” can be viewed is through the eyes of affected people themselves. Leprosy complications can lead to disability of the hands and feet and sometimes also to blindness. These physical problems are often overshadowed by the social rejection and mental suffering caused by the stigma that persists around this treatable disease in many communities. It is estimated that more than three million people are living with disability from leprosy. Much of this disability

can be prevented and the new Global Strategy calls for increased efforts to reduce this “burden” by preventing disability in new cases, by helping to rehabilitate those with disability and by fighting stigma wherever it exists.

1.5 What are “quality leprosy services”?

The Global Strategy emphasizes quality leprosy services as an essential component of an effective programme. Quality is based on appropriate training of staff at every level, regular technical supervision and monitoring of key indicators. The pursuit of quality assumes the willingness of staff to make changes aimed at improving their skills and the functioning of the health services in which they work.

Quality leprosy services:

Are accessible to all who need them.

Coverage: MDT treatment can be provided at all health units.

No geographical, economic or gender barriers.

Are patient-centred and observe patients’ rights, including the rights to timely and appropriate treatment and to privacy and confidentiality.

Address each aspect of case management, based on solid scientific evidence:

- Diagnosis is timely and accurate, with supportive counselling (section 4).
- Treatment with MDT is timely, free-of-charge and user-friendly (section 5).
- Prevention of disability interventions are carried out appropriately (section 6).
- Referral for complications and rehabilitation is done as needed (sections 2 and 7).

Maintain simple records and encourage review and evaluation (section 8).

1.6 What are “principles of equity and social justice” in this context?

Communities have wide-ranging health needs. Resources (staff, time, money) should be allocated fairly to different programmes, including the leprosy services, according to the disease burden, so that each can function as effectively as possible. ‘Equity’ means that leprosy patients have the same opportunity to attend health services that are of sufficient quality to deal with their problems. It also implies that leprosy services should be neither worse nor better than other health services available in a given community. Social justice means an absence of discrimination for any reason, including type of disease, level of disability, race, gender, social class or religion; it includes the principles of privacy and confidentiality.

2. INTEGRATION AND REFERRAL

2.1 [How does referral work in an integrated health service?](#)

Effective leprosy control requires an integrated approach, which provides wider equity and accessibility, improved cost-effectiveness and long term sustainability. This implies that leprosy control activities should be implemented by the general health services, including integrated referral facilities. Integration not only improves accessibility to treatment, but also reduces the stigma and discrimination faced by persons affected by leprosy.

Integration means that day-to-day patient management, recording and reporting become the responsibility of general health staff. However, integration does not mean that specialist expertise disappears from the health service. On the contrary, this expertise must be available within the general health service at the central and intermediate levels for planning and evaluation, provision of training, technical supervision, advice, referral services (including those at hospitals) and research. A system should be in place for the referral of difficult or complicated cases to the hospitals or specialists (e.g., general medical officers with some additional training in leprosy, dermatologists or surgeons) and referral by specialists back to the peripheral health facilities for continuation of treatment. The specialized referral services for leprosy are part of the general health services, just like a surgeon in a district hospital is part of the general health services.

Depending upon local conditions (e.g. the availability and level of training of various categories of health staff), each country or region must decide at which level of the health system such specialist expertise should be made available. Peripheral general health workers should be capable of diagnosing and treating leprosy under the technical supervision of specialized health workers who are positioned at the intermediate level. This category of specialized staff will usually have responsibility for other diseases in addition to leprosy.

Where leprosy is less common, the ability to suspect leprosy and refer the patient to a referral unit is the most important skill required for peripheral general health workers. These referral units (including district hospitals and selected health centres) should diagnose leprosy and start treatment. Continuation of treatment could be

delegated to the peripheral health facility serving the community in which the patient resides. The community should be informed about symptoms of leprosy and the availability of services. In areas with small patient loads, management of nerve damage will have to be concentrated in referral units. Centres treating the difficult complications of leprosy and providing rehabilitative surgical services will be even more centralized, but could also provide some referral services through mobile units.

An adequate referral system means that specialist services should be accessible and available to any patients who need them. The main obstacle to referral in many countries is the difficulty for the patient to reach the referral unit at the right time. In such situations, the visiting supervisor should prove useful in providing the necessary support services.

All peripheral health staff should know the clinics and health staff to whom they will refer patients, so that they can advise their patients accordingly, in order to minimize their difficulties. Good communication should be maintained, to allow discussion of patients' progress and as an opportunity for further training. The convenience of mobile phones and text messaging can make this easy and timely.

Six basic principles for successful integration are advocated by WHO:

- Every health facility in an endemic area should provide MDT services on all working days
- At least one trained staff member should be available in every health facility
- Adequate amounts of MDT drugs should be available, free of cost, for patients
- Information, Education and Communication (IEC) materials should be available for the patient and their family members
- A simple treatment register should be available
- Referral services should be available and accessible, and general health staff should know where and how to refer patients

Staff at the Peripheral level should develop good links with the referral units they are most likely to use regularly:

The visiting technical supervisor

The nearest Health Centre (with staff with additional training in leprosy) or District Hospital

Eye clinic for anyone with eye problems

Leprosy or dermatology specialist: for diagnosis, skin smears, reactions
Local rehabilitation networks for anyone with long-term disability

Staff at the Referral level should know the specialist clinics and other professionals to whom they may refer patients, such as:

- Ophthalmology for significant eye pathology
- Dermatology for diagnosis of difficult skin conditions
- Laboratory for skin smears and histopathology
- Physiotherapy for assessment and management of reactions
- Podiatry for the feet and footwear
- Occupational therapy for rehabilitation and adaptations
- Reconstructive and plastic surgery
- Social worker for assessment and further referral
- Rehabilitation specialists and CBR programme

2.2 Which conditions in leprosy require referral?

Staff should refer patients whose condition they are not able to deal with – this may be because they have not been trained to deal with it, or because they do not have the necessary resources (drugs, equipment, other staff, etc.) to manage the condition.

Routine referrals: non-urgent conditions include:

- Diagnosis: if leprosy is suspected but the diagnosis is uncertain (section 4.4)
- Suspected relapse (section 5.5)
- Any stable, long-standing disability which may be suitable for surgery or any other rehabilitation intervention (sections 6 and 7)
- Non-medical referrals, for example, to a social worker or to a CBR programme
- Other health problems, unrelated to leprosy

Emergency referrals: conditions that require urgent treatment such as:

- Severe leprosy reactions (section 5.7), including:
 - Severe reversal reactions
 - Reversal reactions overlying a major nerve trunk
 - Neuritis, including silent neuritis
 - Erythema Nodosum Leprosum (ENL) reactions

- Severe infection of the hand or foot (usually related to an ulcer with foul-smelling discharge); the hand or foot will be hot, red, swollen and probably painful (section 6)
- Eye involvement in leprosy – four specific problems which need urgent referral:
 - Recent loss of visual acuity
 - A painful red eye
 - Recent inability to close the eye (lagophthalmos)
 - A reaction in a leprosy skin patch on the face
- Serious adverse drug reactions (section 5.6)

National programmes should document and circulate contact details of clinics and consultants ready to see leprosy-related referrals, in order to establish a more efficient system of referral.

3. CASE DETECTION

3.1 How should case detection be organized?

There are two methods of case detection, active and voluntary. Active case detection is not recommended, except in hard to reach areas where the health infrastructure is inadequate. National programmes should encourage people suspected with leprosy to report voluntarily. Similarly, household contacts of confirmed leprosy patients should also be encouraged to report voluntarily for examination.

3.2 How can early case detection be promoted?

Efforts to increase case detection are focused on facilitating self-referral by people who develop leprosy. This is done by increasing awareness of the early signs and symptoms of leprosy among the general public. Barriers which prevent people reporting for examination should be removed; they are considered here under five headings.

Barriers include a lack of awareness that leprosy is treatable and that treatment is free and available locally. This can be addressed most effectively by public information campaigns using a variety of media, including traditional means of communication.

Secondly, fear is also a common barrier. This may include fear of the diagnosis, fear of future deformity, fear of being exposed as having leprosy or fear that one's family will suffer. The latter two relate to negative attitudes or other forms of stigma and discrimination in society. Such fears may persist long after general attitudes have become more tolerant and instances of overt discrimination have become rare.

Fear and stigma are difficult to remove. They can only be addressed successfully through a combination of strategies that include factual information about leprosy and its treatment, context-specific media messages addressing misconceptions and traditional beliefs about leprosy, positive images of leprosy and testimonies of people successfully cured of leprosy. Contact between the community and treated patients, successful self-care, rehabilitation aimed at empowerment and counselling of patients to build up their self-esteem, also help to build a positive image of those

affected by leprosy. At the same time, any negative attitudes, structures or arrangements in the health services should be addressed as a matter of urgency. Assurance of privacy and confidentiality, and treatment with dignity are particularly important.

A third group of barriers include other disadvantages, some of which are culturally determined, such as gender, ethnic group and poverty. These require specific approaches, which include awareness raising and education, but also advocacy for supportive legislation and services, and general poverty alleviation measures.

Physical barriers, such as mountains, rivers or distance pose particular challenges, especially in areas with low health service coverage, and form a fourth category. These need flexible arrangements of diagnostic and treatment services. The final group, issues of security in areas of war or civil unrest, is the most difficult to address, but is nevertheless a reality in several leprosy-endemic countries.

3.3 What are the key messages about leprosy for the general public?

There are four key messages for the general public, which can be expressed in many different ways:

- **Curable:** Leprosy is an infectious disease but the risk of developing the disease is low. It can be cured with drugs that are widely available and are free-of-charge.
- **Early signs** of leprosy are pale or reddish skin patches, with loss of sensation; early detection with appropriate treatment helps to prevent disability from leprosy.
- **No need to be feared:** The disease can be managed just like any other disease; affected people should not suffer any discrimination. Treated persons are no longer infectious.
- **Support:** Affected people need the support and encouragement of their family and community, firstly, to take the MDT and any other treatment as prescribed, and secondly, to be able to live as normal a life as possible.

Health promotion activities should be carried out for the general public, by any available means, including:

- Word of mouth, including experiences shared by former patients
- School activities, including quizzes and essay competitions with prizes
- Public talks, announcements, plays, puppet shows
- Posters and leaflets (less useful where literacy is low)
- Mass media, including newspapers and local radio
- TV, video, DVD.

4. DIAGNOSIS

4.1 What is a case of leprosy and when should leprosy be suspected?

A case of leprosy is a person with clinical signs of leprosy who requires chemotherapy (MDT).

Leprosy should be suspected in people with any of the following symptoms or signs:

- pale or reddish patches on the skin (the most common sign of leprosy)
- loss, or decrease, of feeling in the skin patch
- numbness or tingling of the hands or feet
- weakness of the hands, feet or eyelids
- painful or tender nerves
- swellings or lumps in the face or earlobes
- painless wounds or burns on the hands or feet

Although the majority of leprosy patients have straightforward skin lesions which are easy to see, experienced workers know that there is a great variety in the skin lesions of leprosy. Some skin lesions are very diffuse and difficult to distinguish from normal skin: in these cases the other symptoms and signs become important.

4.2 How is leprosy diagnosed?

A reasonable degree of certainty is required before making the diagnosis of leprosy. A suspect should not be registered as a case, because the diagnosis of leprosy has adverse social consequences.

Leprosy is diagnosed by finding at least one of the following cardinal signs:

1. Definite loss of sensation in a pale (hypopigmented) or reddish skin patch
2. A thickened or enlarged peripheral nerve, with loss of sensation and/or weakness of the muscles supplied by that nerve
3. The presence of acid-fast bacilli in a slit skin smear

Definite loss of sensation in a skin lesion may be detected by touching the skin lightly (use something like a piece of cotton wool); ask the person to close their eyes, then touch the skin in different places, asking the person to point to each place that is touched; if the person cannot feel places within the skin patch, but does point to other places where the skin is normal, the diagnosis of leprosy is confirmed.

Examination of the nerves is an important part in examination of a person affected with leprosy but requires experience and should be done only by those staff specifically trained to do it.

Skin smear examination requires a suitably equipped laboratory with staff trained to do this test. Leprosy skin smear services could be made available in selected units (such as those already doing sputum smears for the diagnosis of TB). In most patients, a skin smear is not essential in the diagnosis of leprosy, but in some cases of early MB leprosy it may be the only conclusive sign of the disease. The majority of people with leprosy have a negative smear.

Peripheral level

Examine:

- all the skin in a good light to identify all skin patches
- note the number of patches
- test for loss of sensation in the skin patches
- assess the disability grade (section 4.6)

If there is definite loss of sensation in a skin lesion, make the diagnosis of leprosy, count the number of lesions to find the classification (section 4.3) and start the person on MDT immediately (section 5.1). If there is no loss of sensation, do not start treatment, but refer the person for further examination.

Referral level

1. Examine the whole skin in a good light. Identify all the skin patches. Note the number of patches. Note if there are nodules around the face or ears, areas of plaque or infiltration of the skin.
2. Test for loss of sensation in the skin patches, as indicated above. **Definite loss of sensation in a skin patch is diagnostic of leprosy.**

3. Examine the nerves for enlargement and test for loss of feeling and muscle weakness: this is to be done only by those trained to do it.

Nerves which are commonly enlarged:

- The **great auricular nerve** on the side of the neck, below the ear, is sometimes visibly enlarged: gently feel it to make sure it is the nerve (solid) and not one of the veins in the neck (full of fluid).
- The **ulnar nerve** at the elbow, the **radial cutaneous nerve** and **median nerve** at the wrist, **common peroneal nerve** at the knee and **posterior tibial nerve** at the ankle, should be gently palpated for enlargement. This is a practical skill that must be learned and practiced in a training session.

Definite nerve enlargement, with loss of sensation or muscle weakness, is diagnostic of leprosy, but it requires experience to do this examination properly.

Testing for sensory loss and muscle weakness in hands and feet:

- See section 4.6 for all aspects of testing nerve function.
4. If possible, arrange for a skin smear test, especially if there are nodular lesions, or if most of the skin is infiltrated with very indistinct lesions and if there is no obvious loss of sensation. These features are more suggestive of multibacillary disease, in which the skin smear is often positive, but some of the other signs, such as loss of sensation, may not be present.

A positive skin smear in an untreated individual is diagnostic of leprosy.

4.3 How and why are leprosy cases classified?

Leprosy is a very variable disease, affecting different people in different ways, according to their immune response. Those at one end of the spectrum, with a high level of immunity harbour a low number of bacilli and are termed paucibacillary or **PB** patients. Those with many bacilli in the body are referred to as multibacillary or **MB** cases. MB patients need more intensive treatment than PB patients – they need three rather than two antileprosy drugs, taken for a longer period. **Classification** in routine programmes is therefore a practical step which divides leprosy patients into two treatment groups.

A simple clinical rule is now used to divide patients into these two groups. The number of individual skin lesions is counted (this means that the whole body must be examined, including more private parts, to make an accurate count):

PB cases have up to five skin lesions in total.

MB cases have six or more skin lesions.

If a skin smear is done and is positive, the patient must be classified as **MB**, whatever the number of skin lesions. If the smear is negative, the classification is decided by the number of skin lesions. Other factors like nerve involvement may be considered at the referral level for classifying the disease.

The risk of nerve damage is greater in MB patients. Therefore, classification is helpful in assessing future risk (section 6.1) and in guiding patient care.

4.4 [What should be done when leprosy is suspected but the diagnosis is uncertain?](#)

Generally, the most difficult cases to diagnose are people who present with one or two pale patches, without loss of sensation or other signs of leprosy. In these cases, there are three options:

- refer: know where to refer cases that are difficult to diagnose; discuss cases with colleagues who have experience of managing leprosy (section 2)
- consider the possibility of another skin disease and treat appropriately
- wait 3-6 months and review the skin lesions again; if it really is leprosy, loss of sensation may now be found and MDT can be started.

If there is no loss of sensation in the skin lesions and no enlarged nerves, but there are suspicious signs, such as nodules or swellings on the face or earlobes, or infiltration of the skin, it is important to try and get a **skin smear test** done. In these circumstances a positive skin smear confirms the diagnosis of leprosy, while a negative result (in the absence of other cardinal signs) would, in practice, rule out leprosy. An alternative diagnosis should then be considered.

In PB cases (in whom the skin smear will be negative); loss of sensation is almost always detected. In MB cases, normal sensation may still be present in a proportion of cases, but these patients often have one or more enlarged nerves and a positive skin smear. Signs of nerve involvement (enlarged nerves or signs of nerve damage, such as numbness, tingling or weakness affecting hands or feet) may occasionally occur without any obvious skin lesions. In such cases, known as neural leprosy, the disease can only be diagnosed by someone with experience of assessing nerve involvement in leprosy.

4.5 How can the accuracy of leprosy diagnosis be ensured?

The diagnosis of leprosy is straightforward in the majority of cases; these cases should be diagnosed in clinics as near as possible to the patients' homes and treatment with MDT should be started immediately or at least within a few days.

In some cases, the diagnosis of leprosy is more difficult. As stated above (section 4.4), the most difficult cases are early PB cases with one or two pale patches on the skin; another difficult group (especially if skin smears are not available) are early MB cases with very vague skin patches and no loss of sensation.

The following steps will help to ensure the accuracy of leprosy diagnosis:

- 1) adherence to the criteria for case definition (section 4.2)
- 2) good training about leprosy diagnosis for health workers (section 9.4)
- 3) regular and effective supervision, with on-the-job training (section 9.1)
- 4) clear lines of referral for suspect cases, when the diagnosis is uncertain (section 2)
- 5) availability of appropriate training and reference materials (section 10.1).

The quality of diagnosis should be monitored as part of regular technical supervision. If there are indications of substantial over-diagnosis, a validation exercise on a representative sample of cases can be conducted (section 8.3), in order to understand the magnitude of the problem.

4.6 How is disability assessed and recorded in leprosy?

Disability is a broad term covering any impairment, activity limitation or participation restriction affecting a person.

Disability Grading in leprosy

Every new case of leprosy must be assigned a Disability Grade, which shows the condition of the patient at diagnosis. The grade is either 0, 1 or 2. Each eye, each hand and each foot is given its own grade, so the person actually has six grades, but the highest grade given is used as the Disability Grade for that patient.

Grade 0 means **no disability** found.

Grade 1 means that **loss of sensation** has been noted in the hand or foot (the eyes are not given a grade of 1). Loss of sensation in the hand or foot means that one of the main peripheral nerve trunks has been damaged by leprosy and this is more common later in the disease than at diagnosis. It should not be confused with the loss of sensation in a skin patch, which is caused by local damage to the small nerves in the skin, and not to the main peripheral nerve trunks.

People with loss of sensation (grade 1 disability) on the soles of their feet, but no other abnormality, are at significant risk for developing plantar ulcers. People with grade 1 disability who routinely use appropriate shoes are protected from ulceration and have far fewer long-term problems with their feet. Therefore, measuring and recording grade 1 disability is an essential step in preventing damage to the feet of people affected by leprosy – it is therefore a key component of quality leprosy services.

Grade 2 means that **visible damage or disability** is noted.

For the eyes, this includes the inability to close the eye fully or obvious redness of the eye (in leprosy, this is typically caused by either a corneal ulcer or by uveitis); visual impairment or blindness also gives a disability grade of 2.

For the hands and feet, visible damage includes wounds and ulcers, as well as deformity due to muscle weakness, such as a foot drop, or a claw hand. Loss of tissue, such as the loss or partial reabsorption of fingers or toes is a late sign in leprosy, but it also gives a disability grade of 2 for that hand or foot.

Peripheral level

- a) Check for grade 1 disability by asking the patient for the presence of loss of sensation in the hands and the feet
- b) Look for the signs of visible disability (grade 2):
 - Wounds or ulcers on the hands or feet
 - Marked redness of the eye
 - Muscle weakness – causing:
 - Incomplete eye closure
 - A claw hand
 - A drop foot
 - Loss of tissue, such as fingers or toes shortened or missing

Any patient showing the above signs should be referred to a referral unit where POD services are being provided. Visible disability should be recorded before referral.

Referral level

Examine carefully for any disability, recording the full results of the examination in the Patient Record Card for future reference:

Eyes

- check the Visual Acuity of each eye separately, using a Snellen chart; if no chart is available, ask the person to count fingers at 6 metres; if the person cannot read the top line of the chart, or count fingers at 6 metres, they are visually impaired and have grade 2 disability in that eye.
- look for an inability to close one or both eyes (lagophthalmos) and check for normal strength of eye closure
- look for any redness of the eye

Sensation in hands and feet

Check the sensation in the palms of the hands and the soles of the feet, using a ballpoint pen:

- Explain the test to the patient
- Ask them to close or cover their eyes
- Touch the skin very lightly with the ballpoint
- Ask the patient to point to the place you touched
- Test a minimum of four points on each hand and foot
- Note any areas where the pen is not felt

NB: In the palm of the hand, the side with the little finger is supplied by the **ulnar nerve**. The part with the thumb, index and middle fingers is supplied by the **median nerve**. The sole of the foot is supplied by the **posterior tibial nerve**.

Check for muscle weakness

The three key muscles are:

1. thumb up (tests the median nerve)
 - ask the person to put out their hand, palm up
 - support their hand in your hand
 - ask them to point the thumb towards their own nose
 - test the strength of the thumb to stay in that position
2. little finger out (tests the ulnar nerve)

ask the person to put out their hand, palm up

support their hand in your hand

ask them to move the little finger out

test the strength of the little finger to stay in that position
3. foot up (tests the peroneal nerve)
 - ask the person to sit down
 - support the person's lower leg in your hand
 - ask them to point the foot up to the roof
 - test the strength of the foot to stay in that position

Muscle strength is recorded as "Strong" (S), "Weak" (W) or "Paralyzed" (P):

"Strong" (S) - means that the muscle being tested is of normal strength;

"Weak" (W) - means that the muscle can move, but it is definitely weak; and

"Paralyzed" (P) - means that the muscle cannot move at all.

4.7 What are the key messages for someone newly diagnosed with leprosy?

When someone is newly diagnosed with leprosy, he/she should receive help and counselling so that the disease can be treated in the best possible manner. It is important that the person learns:

- that he/she should lead a normal life
- where to get answers to any questions about leprosy
- that leprosy is caused by a germ and is curable:
 - the treatment is for either 6 or 12 months
 - common side-effects include red urine and darkening skin
 - tablets must be taken every day at home
 - a new blister-pack is needed every 28-days
- that consultations and treatment are free-of-charge:
 - discuss how often the person should attend: monthly or less often
- that leprosy is no longer infectious once treatment has started:
 - close contacts may develop leprosy, so should be brought for examination at the next visit
- that the skin patches take time to disappear
- that leprosy reactions can occur, and can be treated:
 - patches can suddenly become red and swollen again
 - there may be pain or numbness in the limbs
 - there may be weakness of hand or feet
 - there may be eye problems: loss of vision, pain or redness
- new disability can occur at any time but it can be treated
- existing disability may or may not improve with treatment
- that when problems occur, treatment may be available locally, or the patient may need to be referred to another clinic for specialist care
- that various skills will need to be learnt to help prevent and manage disability.

5 TREATMENT

5.1 What is MDT and what steps need to be taken when starting treatment?

Multi-drug therapy (MDT) is a combination of drugs that is very safe and effective in treating leprosy to prevent the emergence of drug resistance; under no circumstance should leprosy be treated by a single drug. MDT is available free-of-charge to all who need it. The drugs are all taken by mouth. MDT is provided in convenient blister packs covering four weeks of treatment (in these guidelines the four-week period is referred to as a “month”). There are different packs with the same drugs, but in smaller doses, for children. MDT is safe for women and their babies during pregnancy and breast-feeding. MDT can be given to HIV-positive patients, those on anti-retroviral treatment and to patients on treatment for tuberculosis (TB). If a leprosy patient is treated for TB, the MDT regimen should omit rifampicin as long as the TB regimen contains rifampicin.

PB patients need two drugs for six months. **MB** patients need three drugs for 12 months. See section 5.2 for drugs and dosages. Every effort must be made to ensure regularity, so that PB cases complete their treatment in six months and MB cases in 12 months.

There are various groups of people who need MDT, recorded as either **New** or **Other**:

- **New Cases:** people with signs of leprosy who have never received treatment before
- **Other Cases** include:
 - *Relapse cases* receive exactly the same treatment as new cases (either PB or MB); (section 5.5)
 - People who *return from default* receive exactly the same treatment as new cases (either PB or MB; section 5.4)
 - Cases who have been *transferred in*: these people should come with a record of the treatment they have received to date. They require only enough treatment to complete their current course.
 - People with a *change in classification* from PB to MB, need a full course of MB treatment.

NB: None of the “Other Cases” should be recorded as “New Cases”.

When it is determined that a patient needs to be treated with MDT, the following steps must be taken:

- Fill in the Patient Record Card and the Leprosy Treatment Register (section 8.4)
- Determine which type of MDT is required: PB or MB (section 4.3)
- Determine which dose level is required: adult or child (section 5.2)
- Counsel the person (and the parents, if it is a child) to indicate:
 - the need for regular treatment
 - the possibility of complications of leprosy which may need other treatment
 - that the clinic is always ready to see them if they have any problems
- Give the first dose of treatment and explain how to take treatment at home.

As long as accessibility is not a problem, the drugs given once a month should be supervised – in other words, the health worker should make sure that the drugs have actually been taken. The other drugs are taken at home. The supervised dose is most conveniently arranged by having the patient attend the clinic each month. This monthly visit is also useful for monitoring the regularity of treatment and to identify complications (such as neuritis, reaction, etc.) at an early stage. Supervision of the monthly dose is important to ensure regularity of treatment, eventual cure and prevention of relapse.

5.2 Which drugs are included in MDT and what are the doses for adults and children?

MDT treatment is provided in blister packs, each containing four weeks' treatment. Specific blister packs are available for multibacillary (MB) and paucibacillary (PB) leprosy as well for adults and children.

The standard adult treatment regimen for MB leprosy is:

Rifampicin:	600 mg once a month
Clofazimine:	300 mg once a month, and 50 mg daily
Dapsone:	100 mg daily
<i>Duration:</i>	12 months (12 blister packs)

The standard adult treatment regimen for PB leprosy is:

Rifampicin:	600 mg once a month
Dapsone:	100 mg daily
<i>Duration:</i>	six months (six blister packs)

Standard child (ages 10 – 14) treatment regimen for MB leprosy is:

Rifampicin: 450 mg once a month
Clofazimine: 150 mg once a month, and 50 mg every other day
Dapsone: 50 mg daily
Duration: 12 months (12 blister packs)

The standard child (ages 10 – 14) treatment regimen for PB leprosy is:

Rifampicin: 450 mg once a month
Dapsone: 50 mg daily
Duration: six months (six blister packs)

The appropriate dose for children under 10 years of age can be decided on the basis of body weight. [Rifampicin: 10 mg per kilogram body weight, clofazimine: 1 mg per kilogram per body weight daily and 6 mg per kilogram monthly, dapsone: 2 mg per kilogram body weight daily. The standard child blister pack may be broken up so that the appropriate dose is given to children under 10 years of age. Clofazimine can be spaced out as required.]

Rarely, it may be considered advisable to treat a patient with a high bacillary index (BI) for more than 12 months. This decision may only be taken by specialists at referral units after careful consideration of the clinical and bacteriological evidence.

5.3 What should be done when a person does not attend regularly for treatment?

Every effort should be made to persuade newly diagnosed patients to complete their treatment as prescribed (section 5.1); discuss attendance at the clinic and if there is likely to be any difficulty, work out ways in which it can be made easier for the patient.

There are several reasons why someone may not attend regularly for treatment:

- Poor accessibility of the clinic (may be far from home, or a difficult journey, or working hours of the clinic may be inconvenient)
- Difficulty in taking time off work, or nomadic/migrant work
- Lack of understanding about the disease and the importance of regular treatment
- Stigma, often fed by negative attitudes and fear in the community
- A poor relationship with the health worker

As soon as someone misses an MDT appointment, action should be taken to find out why the patient has not attended and, if necessary, to remind the patient of the importance of taking treatment regularly and of finishing the full course of MDT. If this proves insufficient, a home visit by a local community worker should be arranged to find out why the patient has stopped visiting the clinic and, if necessary, to motivate him or her to resume treatment. Such a home visit should be undertaken preferably within one month of the first missed visit date.

If the person has difficulty in attending the clinic, it is possible for them to receive several blister packs at once, so that the visits to the clinic are less frequent. It is advisable in such cases to involve another responsible person to supervise the treatment (a community volunteer, a family member or neighbour), to help the patient to continue the treatment properly at home (this is called Accompanied MDT, or A-MDT). Counselling and information about the importance of regularity of drug intake are essential. They should also be advised to report to the clinic in case of any problem.

5.4 [Who is a defaulter and what should be done for people who return to the clinic after defaulting?](#)

Although every effort must be made to ensure that PB patients complete their treatment in six months and MB patients in 12 months, the six months of treatment for PB leprosy must be completed within a **maximum** period of 9 months. Similarly, the 12 months of treatment for MB leprosy must be completed within a **maximum** of 18 months.

A defaulter is an individual who fails to complete treatment within the maximally allowed time frame. Thus, whenever a PB patient has missed more than three months treatment or an MB patient more than six months treatment, it is not possible for them to complete treatment in the maximum time allowed and they should be declared as defaulters from treatment; this should be indicated in the Leprosy Treatment Register under "Treatment Outcome".

If a patient returns after defaulting, examine him/her in the same way as you would examine a new patient and record your findings.

If the returning patient was previously a PB case:

- Count the number of patches to confirm the original classification (section 4.3)
- If the classification is now MB (more than five lesions), register the patient as a return from default, not as a new case, and treat with a full course of MB-MDT (12 months)
- If the classification remains PB, register the patient as a return from default, not as a new case, and give a full course of PB-MDT
- If there are signs of a reaction (section 5.8), manage appropriately

If the returning patient was previously an MB case:

- Register the patient as a return from default, not as a new case and not as a relapse (a relapse can only occur after fully completing the first course of MDT)
- Treat with a full 12-month course of MB-MDT
- Remember that a reaction may mimic a return of the disease (sections 5.8 and 5.9)

Any defaulter, particularly one who remains very irregular on treatment and repeatedly defaults despite every effort on the part of the health staff, may be referred, so that a more experienced person can decide if further treatment is required and if so, how much.

5.5 What is a relapse? How is it recognized and managed?

Relapse is defined as the re-occurrence of the disease at any time after the completion of a full course of treatment. Relapse is indicated by the appearance of new skin lesions and, in the case of an MB relapse, by evidence on a skin smear of an increase in BI of two or more units. It is difficult to be certain that a relapse has occurred, as new lesions may appear in leprosy reactions (section 5.8), and in many programmes evidence from smears is not available.

MDT is a very effective treatment for leprosy. If a full course of treatment has been taken properly, relapse is generally rare, although continued vigilance is important. Patients who start treatment with a high BI are more likely to suffer a relapse later; most relapses occur long after the treatment was given – sometimes over 10 years later. Fortunately, the use of a combination of drugs has prevented the development

of drug resistance in leprosy, so relapse cases can be treated effectively with the same drug regimen – MDT.

PB relapses are difficult to differentiate from reversal reactions (section 5.9). If there are signs of recent nerve damage, a reaction is very likely. The most useful distinguishing feature is the time that has passed since the person was treated: if it is less than three years a reaction is most likely, while if it is more than three years, a relapse becomes more likely. A reaction may be treated with steroids, while a relapse will not be greatly affected by a course of steroids, so using steroids as a 'therapeutic trial' can help clarify the diagnosis.

MB relapses should be investigated by using skin smears and histopathology, if at all possible.

Peripheral level

Suspected relapses should be referred for further investigation at a referral centre.

Referral level

Suspected PB relapse: the diagnosis of a PB relapse can never be absolutely certain. A skin smear should be carried out, if at all possible, to ensure that an MB case is not being misclassified as PB. The evidence for either a relapse or a reaction must be weighed up and a decision made. If it is decided to treat someone as a PB relapse, they are given a normal six-month course of PB-MDT.

MB relapse: criteria for diagnosing a relapse are the presence of new skin lesions and an increase by two or more units of the Bacillary Index.

5.6 Is drug resistance a problem?

Drug resistance is a potential problem when treatment has been irregular. Although resistance to dapsone was a serious problem in the past, when leprosy was treated with dapsone alone, clinically important drug resistance has not been reported with MDT. Failure to respond to treatment, especially the treatment of a relapse, should lead to suspicion of drug resistance. Because of the seriousness of the development of drug resistance, any suspicious case should be thoroughly investigated at a referral centre.

5.7 What complications occur in leprosy and how are they managed?

The complications of leprosy can be categorized as:

- Leprosy reactions (section 5.8)
- Effects of nerve damage (section 6.2)
- Adverse effects of MDT
- Complications of advanced disease
- Psycho-social problems

Adverse effects of MDT

MDT is remarkably safe and serious adverse effects are very rare.

Minor problems	Drug	Management
Red urine	Rifampicin	Reassurance
Brown discoloration of the skin	Clofazimine	Counselling
Gastro-intestinal upset	All three	Give drugs with food
Anaemia	Dapsone	Give iron & folic acid

More serious problems	Drug	Management
Itchy skin rash	Dapsone	Stop dapsone, refer
Allergy, urticaria	Dapsone or Rifampicin	stop both, refer
Jaundice	Rifampicin	Stop rifampicin, refer
Shock, purpura, renal failure	Rifampicin	Stop rifampicin, refer

Other drugs are available for use if one or more of the standard drugs must be stopped, but serious adverse drug reactions are complex problems and must be managed by a specialist.

Complications of advanced disease

Most late complications are easily prevented by MDT, so are rarely seen these days, but it is important to refer patients with unusual complications:

Eye problems

Leprosy can lead to blindness because of damage to the cornea, or due to damage to the internal structures of the eye. Refer to an eye specialist any patient who has *decreased vision, or has a red or painful eye.*

Facial and other deformities

The sunken nose, loss of eyebrows and the so-called 'leonine' face, which used to be characteristic of untreated MB leprosy, are cosmetic problems leading to severe stigma and discrimination. Fortunately, these are now rare. Plastic surgery is needed to correct these lesions.

Internal medical conditions

Chronic untreated leprosy (fortunately no longer seen) and chronic ENL reactions (still a serious complication in a small proportion of patients) may lead to internal medical complications. Such patients need referral to the appropriate specialists.

Psycho-social problems

Psycho-social problems are related to widely-held beliefs and prejudices concerning leprosy and its underlying causes, not just to the problem of disability. People with leprosy often develop self-stigma, low self-esteem and depression, as a result of rejection and hostility of family and community members. Such negative attitudes are found also among staff in the health services, including doctors. These need to be addressed urgently. People with psycho-social problems may need to be referred for counselling or other help.

5.8 What are leprosy reactions? How are they suspected and managed?

The long-term problems related to leprosy (deformity and disability resulting in stigma and suffering for the patient and their family) are due to damage from leprosy reactions. Early detection and effective management of reactions are thus very important. Longer-term assistance for people with nerve damage is covered in sections 6 and 7.

A leprosy reaction is the sudden appearance of symptoms and signs of inflammation in the skin lesions of a person with leprosy. There is redness, swelling and sometimes tenderness of the skin lesions. New skin lesions may appear. There may also be swelling, pain and tenderness of nerves, often accompanied by loss of function; sometimes loss of nerve function occurs without other signs of inflammation, making it much less obvious – so called 'silent neuritis'.

Recent (that is within the last six months) loss of function in one or more peripheral nerves is the main reason for steroids to be prescribed in leprosy. Monitoring nerve function on a regular basis, using the checklist in section 4.6 enables new nerve damage to be detected in time and treated.

Peripheral level

Reactions requiring treatment with steroids may be suspected when patients have symptoms suggestive of new nerve damage, such as numbness, or muscle weakness in the hands or feet; they should be referred to a specialist unit where they can be monitored and treated effectively.

The following signs also indicate that a reaction is severe and that the patient must be referred:

- Red, painful, single or multiple nodules in the skin with or without ulceration
- Pain or tenderness in one or more nerves, with or without loss of nerve function
- Silent neuritis – nerve function impairment, without skin inflammation
- A red, swollen skin patch on the face, or overlying another major nerve trunk
- A skin lesion that becomes ulcerated, or that is accompanied by a high fever
- Marked oedema of the hands, feet or face
- Pain and/or redness of the eyes, with or without loss of visual acuity
- Painful swelling of the joints with fever

Reactions which show none of these signs of severity, but which are limited to mildly inflamed skin lesions, may be treated symptomatically, with aspirin.

Referral level

MB patients with nerve damage present at the time of diagnosis are at high risk of further damage (section 6.1) and should be examined regularly. Monitor nerve function on a monthly basis (or at least every three months) using the checklist in section 4.6. Recent nerve function impairment (appearing within the last six months) is the most important sign of a reaction requiring treatment with steroids.

There are two types of reaction: reversal reaction (or Type 1) and Erythema Nodosum Leprosum (ENL or Type 2). Both types can occur before the start of treatment, during treatment, or after treatment has been completed. Both types can be divided into mild or severe: only severe reactions are treated with corticosteroids. Patients with single skin lesions are unlikely to get reactions, but most other patients have some risk of getting a reversal reaction; only a much smaller group of MB patients with a high load of bacilli are at risk of developing an ENL reaction.

Distinguishing between the two types of reaction is usually not difficult: in a reversal reaction, the leprosy skin lesions themselves become inflamed, red and swollen; in an ENL reaction, new inflamed, red nodules (about 1 – 2 cm across) appear under the skin of the limbs or trunk, while the original leprosy skin patches remain as they were. In addition, ENL reactions cause a general feeling of fever and malaise, while reversal reactions cause less systemic upset.

Signs of a severe reversal reaction

If any of the following signs occur, the reaction should be treated as severe:

- Loss of nerve function – that is, loss of sensation or muscle weakness
- Pain or tenderness in one or more nerves
- Silent neuritis
- A red, swollen skin patch on the face, or overlying another major nerve trunk
- A skin lesion anywhere that becomes ulcerated
- Marked oedema of the hands, feet or face

Severe reversal reactions should be treated with a course of steroids, usually lasting 3 – 6 months. **Steroids should be prescribed by someone properly trained in using these drugs.** There are a number of important side-effects associated with steroids, so a careful assessment must be made of any patient requiring them.

Signs of a severe ENL reaction

If any of the following signs occur, the reaction should be treated as severe:

- Pain or tenderness in one or more nerves, with or without loss of nerve function
- Ulceration of ENL nodules
- Pain and or redness of the eyes, with or without loss of visual acuity
- Painful swelling of the testes (orchitis) or of the fingers (dactylitis)
- Marked arthritis or lymphadenitis

ENL reactions are complex medical problems requiring careful management by experienced clinicians. Short courses of steroids are often used, but other drugs are also useful.

5.9 How is a relapse distinguished from a reaction in leprosy?

Various criteria may help in distinguishing a relapse from a reaction:

Criteria	Relapse	Reaction
Time since completion of treatment	More than 3 years	Less than 3 years
Progression of signs and symptoms	Slow	Fast
Site of skin lesions	In new places	Over old patches
Pain, tenderness or swelling	No	Yes – skin & nerves
Damage	Occurs slowly	Sudden onset
General condition	Not affected	Inflammation

Peripheral level

Refer such patients for specialist assessment

Referral level

The assessment of any patient who has previously been treated for leprosy should be carried out as follows:

Take a full history of the current problem, including:

- The duration of previous treatment and the onset of the new symptoms
- Did new lesions appear quickly or over a long period?
- What is the relationship with the old skin patches?
- Has there been any pain, tenderness or swelling?
- Has there been any recent loss of function in any nerves?

Carry out a full examination of the skin and of nerve function, in order to identify any signs of a recent reaction.

Arrange for a skin smear test; an MB relapse is associated with an increase in the bacillary load. Obviously, if no previous smear has been done, it is impossible to identify an increase; in this case, the presence of solid staining bacilli in the smear gives support to the diagnosis of a relapse.

If no firm conclusion can be made after all these investigations, a trial of steroids may be considered; a reaction would begin to settle in 10-14 days, while a relapse would not be affected by such treatment.

5.10 What are the key messages for someone who is completing treatment successfully?

Most patients in this situation will have no further problems. However, after being congratulated for completing treatment, they need to be made aware of possible complications:

- Recurrence of the disease (relapse) is rare, but if they suspect the disease has returned, they should come for further examination. If leprosy recurs, it can be treated again.
- Reactions can occur, even after treatment has been successfully completed. If any unusual symptoms occur (including weakness, numbness or pain in the limbs, or loss of vision or other eye problems) the person should come back for examination and treatment; this is especially important for MB patients.
- If some disability is already present, make sure the person knows what they need to do at home to manage the problem (sections 6.3, 6.4 and 6.5). Arrange for any follow-up or referral that may be necessary.

6. PREVENTION OF DISABILITY (POD) AND SELF-CARE

6.1 Are some patients at greater risk of nerve damage than others?

The longer the delay between the appearance of the first symptoms of leprosy and the start of treatment, the more likely it is for nerve damage to occur. For this reason, every effort should be made to inform the public that the early diagnosis and treatment of leprosy prevents the occurrence of long-term complications.

It is important to realize that significant nerve damage also occurs *during MDT and after* the patient has completed the full course of MDT; the risk declines steadily over the following three years. MB cases with impaired nerve function at diagnosis are at much higher risk of nerve damage than other patients and therefore should be monitored more closely (section 5.8).

6.2 What are the long-term effects of nerve damage in leprosy?

Recent nerve damage (present for less than six months) can usually be reversed by steroids. But, in many cases, no further recovery can be expected if the damage occurred long ago. These people need to learn how to minimize any adverse effects and how to prevent any worsening of the damage.

There are five common, physical problems affecting everyday life, faced by people who have had leprosy and, of course, many have to cope with more than one of these problems:

1. Problems with eye closure

Lack of muscle strength to close the eye means that the cornea is constantly at risk of exposure. Damage from this exposure leads to ulceration of the cornea. These ulcers heal, but healed ulcers interfere with vision, leading eventually to blindness. The aim of POD interventions is to preserve sight.

2. Loss of sensation in the hand

Numbness is usually accompanied by loss of sweating and therefore extreme dryness of the skin. Together, these lead to recurrent injury, cracking and ulceration. These, in turn, lead to chronic infection, stiffness and loss of tissue, making the hand more and more disabled. POD interventions aim at keeping the skin in good condition and avoiding injury, if necessary by adjusting routine activities.

3. Weakness and deformity of the hand

Muscle weakness is a disability by itself, but over time, it often leads to the formation of contractures and fixed deformity. POD activities help to preserve strength and prevent contractures and deformity.

4. Loss of sensation and ulceration of the foot

The same problems of dryness, recurrent injury (especially from walking), cracking and ulceration occur in the insensitive foot. Late complications include chronic infection (osteomyelitis), sometimes necessitating amputation. POD interventions target the condition of the skin and appropriate footwear to help prevent injury. Changes in routine activities may also be advised.

5. Weakness and deformity of the foot

Muscle weakness affecting the toes is quite common, but it does not usually affect walking. A foot-drop leads to problems with walking.

6.3 What can be done for people with long-standing disability due to leprosy?

There are three areas under which useful interventions can be described:

Home-based self-care (see also section 6.4)

- These are activities done by the person at home
- Self-care succeeds when people fully take charge of their own care
- Daily dressing of wounds can be done at home, using local materials

Simple interventions organized in the local clinic

The clinic can help with some straightforward POD activities.

Referral services for more complex interventions

Some interventions require input from specialists.

Home Level

A) Activities to prevent disability which can be done by the person at home

- Problems with eye closure:
 - Inspect the eye in a mirror every day to look for redness
 - Learn to blink frequently to keep the eyes moist and exercise the lids
 - Wear a hat or sunglasses to prevent dust from getting into the eyes
 - Use a sheet or mosquito net to cover the head at night
- Problems with the hand:
 - Daily inspection for signs of injury
 - Loss of feeling is associated with dryness of the skin, so the insensitive hand must be soaked in water for about 30 minutes every day, to maintain skin elasticity. Use a rough stone to rub away callous, then use oil or Vaseline to prevent the skin from drying out
 - Use a clean cloth to cover any open wounds
 - If there is muscle weakness in the hand, passive stretching and active exercises will help to prevent contractures and may lead to some strengthening
- Problems with the foot:
 - Daily inspection for signs of injury
 - Soak and oil the feet, as for the hands; use a rough stone to rub away callous
 - Walk as little as possible; walk slowly and take frequent rests
 - If ulcers are present, rest is essential:
“All simple ulcers will heal, if given sufficient rest. No ulcers will heal if not rested sufficiently.”
 - Use a clean cloth to cover open wounds
 - If there is a foot-drop, passive stretching will help to prevent a contracture of the Achilles tendon

B) Activities which can be done in the peripheral clinic

General health workers cannot be taught all of these interventions as a routine. When they have a patient with certain disability problems, however, they can arrange to see that person with their supervisor, so that specific interventions relevant to that person can be discussed (section 9.1). Leprosy-related disabilities are long-term problems and individual health workers should learn how to manage the specific problems seen in their own patients.

Provide any help that may be needed by the person to carry out the home-based self-care tasks mentioned above.

- Problems with eye closure:
 - Provide saline drops for use if the eyes are very dry
 - Treat conjunctivitis with antibiotics and an eye pad
 - Refer more serious eye problems to an eye clinic
- Problems with the hand:
 - Review, guide and refer if required.
- Problems with the foot:
 - Organize appropriate footwear (section 6.5)
 - Review, guide and refer if required.

C) Interventions which can usually only be done at a referral centre

- Problems with the eyes:
 - Any acute eye problem should be managed at an eye clinic
 - Corrective surgery may be helpful in severe cases of lagophthalmos
 - Remember that cataract is the most common cause of blindness in elderly people, whether or not they have leprosy; leprosy does not prevent routine cataract surgery
- Problems with the hand:
 - Help the person adapt tools to avoid injury to insensitive hands
 - Remove thick callous and trim ulcers with a scalpel blade
 - If there is weakness or a contracture, make a splint to wear at night
 - An invasive infection (the hand is hot, red and swollen) is an emergency and must be referred for intensive antibiotic treatment and surgery
 - Surgery may be appropriate in some cases of weakness or claw-hand, as long as the joints remain mobile
- Problems with the foot:
 - Remove thick callous and trim ulcers with a scalpel blade
 - Chronic ulcers may be helped by orthotics, or by surgery
 - For a foot-drop, make a spring-loaded device to keep the foot in the correct position while walking
 - An invasive infection (the foot is hot, red and swollen) is an emergency and must be referred for intensive antibiotic treatment and surgery
 - Foot-drop surgery

6.4 How can people be encouraged to practice self-care at home?

There are many ways in which the complications of leprosy can be minimized by practicing good self-care at home, as indicated earlier. People need to be informed clearly about the actions they can take at home that are appropriate for their particular situation.

The health worker may be the main source of advice but others can be recruited to help:

- Family members can help and encourage the person to do what is needed on a regular basis
- Other people affected by leprosy can show how they have been able to look after themselves at home.

Self-care groups have been started in some communities. A number of people with self-care needs meet together regularly to discuss the practicalities of self-care. These groups are often surprisingly supportive and can be very motivating for members.

6.5 What is the value of special footwear for people affected by leprosy?

Loss of feeling on the sole of the foot and ulceration are very common in people affected by leprosy, so the use of appropriate footwear is very important to prevent disability.

The best solution is for people to wear locally available and socially acceptable shoes whenever they are on their feet and walking. It is of no help to use shoes only for special occasions.

Most people do not require specially made footwear – the right shoes found in the market can be just as effective. Sports shoes or running shoes are often very appropriate; alternatively, sandals or shoes with a firm under-sole and a soft in-sole may be used. They should fit comfortably; velcro straps are easier to use than other types of fastenings and heel straps are needed for sandals.

7. REHABILITATION

7.1 What is rehabilitation?

The UN Standard Rules for Equalization of Opportunities for Persons with Disabilities (PWD) define 'rehabilitation' as follows: *"Rehabilitation includes all measures aimed at reducing the impact of disability for an individual, enabling him or her to achieve independence, social integration, a better quality of life and self-actualization."*

7.2 How can rehabilitation help a person affected by leprosy?

Leprosy may lead to physical, functional, social and/or economical problems. Physical rehabilitation includes physiotherapy and occupational therapy, orthotics and prosthetics services, assistive and protective devices and sometimes corrective surgery. Social and economic rehabilitation aims at social integration, equal opportunities and economic advancement. Examples are given in the table below in section 7.3.

A comprehensive approach to rehabilitation is needed to maximize the benefit for the individual, family and society at large. Considering the limited availability of specialized institutional services, the World Health Organization introduced a strategy called 'Community-Based Rehabilitation' (CBR). CBR is defined as *"a strategy within general community development for the rehabilitation, equalization of opportunities and social inclusion of all people with disabilities"* (ref. to Joint Position Paper on CBR 2004). The CBR approach emphasizes community participation and empowerment of the individuals involved. Poverty has been identified as a root problem causing and aggravating disability. Addressing poverty is therefore an essential part of rehabilitation.

Although most basic rehabilitation activities can be carried out in the person's own community, many persons with disabilities have to be referred temporarily to specialized services. Close cooperation is needed between specialized services and CBR programmes. Networking among existing services should be actively promoted. CBR is team work and requires full participation of the clients, their families and communities in the rehabilitation process. Organizations of people with disability need to be involved actively in the planning and management of rehabilitation services.

Persons affected by leprosy, who are in need of rehabilitation, should have access to any existing (general) rehabilitation services. Similarly, where leprosy-specific rehabilitation services are available, people with other disabilities should be given access. This facilitates integration, helps to break down stigma and promotes sustainability of rehabilitation services.

7.3 What is the role of health workers in rehabilitation?

Peripheral level

Health staff may not have the time or expertise to be involved in rehabilitation activities. However, they need to be able to identify physical, functional or socio-economic problems resulting from disability and know about available services for rehabilitation and how to refer people to make use of such services. Health workers may need to play an advocacy role to ensure that those affected by leprosy have access to health care services, including rehabilitation facilities, in the same way as other people.

Referral level

The following are examples of interventions that may be available.

Problems	Rehabilitation interventions
Anatomical:	
Deformity of the hand	Reconstructive surgery and physiotherapy
Foot drop	Ankle-foot orthosis, reconstructive surgery
Amputation	Prosthesis
Psychological:	
Depression	Counselling
Functional:	
Limitation of fine hand movements	Occupational therapy
Mobility limitations	Crutches or wheelchairs
Social participation:	
Stigma in the family	Counselling
Exclusion from community functions	Education and advocacy
Children with disability	Promoting inclusive education
Economic:	
Loss of employment	Vocational training and/or placement
Poverty	Micro-credit for self-employment

8. RECORDING, REPORTING AND MONITORING

8.1 What are the main indicators for monitoring progress and how are they used?

The following are the main indicators used for monitoring the epidemiological trends of leprosy:

- The number of new cases detected in a given area each year
- The proportion of patients who complete their treatment on time as a proxy for cure rate
- Registered prevalence (for those countries yet to reach the elimination target)

The number of new cases indicates how much leprosy there is in an area. This helps to estimate how much MDT should be supplied to that area during the following year. Given consistent procedures for case detection, figures for a period of several years will show whether there is an increase or decrease in numbers, which may indicate whether activities aimed at controlling the disease are effective. If the population of the area is known, it is possible to calculate the case detection rate (the number of new cases per 100,000 people) which can be compared with other areas.

The proportion of new patients who complete their treatment on time is an indication of how well the leprosy patients are being served by the health services. The information required to calculate this indicator can be collected either through the routine reporting system from all health facilities or from a representative sample of health facilities as part of supervision. The rate is calculated separately for PB and MB patients, in what is known as a 'cohort analysis'. A cohort is simply a group of patients who all started treatment in the same batch, usually in the same year.

The calculation of the completion rate is as follows:

1. The report date will normally be at the beginning of a new reporting year and the annual report will refer to the year just completed (Year Y). For completion statistics, the PB cohort will be from Year Y-1; the MB cohort will be from year Y-2.
2. Identify all the PB patients who are new cases in the register (sections 5.1 and 8.4) and who started MDT in year Y-1. Note this number.

3. From this cohort, count the number who completed treatment within 9 months of registration.

4. The PB treatment completion rate is calculated as follows:

$$\frac{\text{Number of new PB cases who completed MDT}}{\text{Number of new PB cases who started MDT}} \times 100$$

5. Identify all the MB patients who are new cases in the register (sections 5.1 and 8.4) and who started MDT in year Y-2. Note this number.

6. From this cohort, count the number who completed treatment within 18 months of registration.

7. The MB treatment completion rate is calculated as follows:

$$\frac{\text{Number of new MB cases who completed MDT}}{\text{Number of new MB cases who started MDT}} \times 100$$

8. Note that each cohort includes all new cases who started treatment during the year, including any who became defaulters or who died before completing treatment.

For example, the report for the year Y= 2010, will include completion statistics for PB cases registered in 2009 (Year Y-1) and for MB cases registered in 2008 (Year Y-2).

8.2 What additional indicators are used for monitoring case detection?

The following additional indicators for case detection may be used. The information used to calculate these indicators is usually collected routinely, but in some countries with a large number of cases, it may be collected from a representative **sample** of cases:

Proportion of new cases presenting with grade 2 disability (section 4.6)

Because disability and deformity occur late in the disease, the proportion of new cases with disability gives a rough indication of how early, on average, leprosy cases are coming forward for diagnosis.

Proportion of child cases (under 15 years of age) among new cases

If the transmission of leprosy is being reduced in an area, it is expected that the proportion of children affected will decrease. Monitoring this indicator over several years, may show a trend. It is also required for correctly replenishing the stock of child doses for MDT.

Proportion of multibacillary cases among new cases (section 4.3)

The proportion of MB cases is a useful guide to the proportion of cases at risk of complications and is needed for replenishing the stock of MDT correctly.

Proportion of female patients among new cases

Many programmes diagnose leprosy more frequently in men than in women, but there is concern that women may have less access to health care in some situations. Thus, a ratio of 2 males to every 1 female is commonly seen. If the ratio is higher, steps should be taken to ensure that women have adequate access to diagnostic services.

8.3 [What are the indicators for patient management and follow-up?](#)

The following indicators for quality of care and patient management may be collected, usually on a representative **sample basis**, as part of an integrated supervision process.

The proportion of new cases correctly diagnosed (section 4.5)

The accuracy of diagnosis should be assessed through regular technical supervision. If there is any suggestion of significant over-diagnosis, a sample of new cases should be reviewed within three months of the diagnosis being made. The proportion of new cases included in the review would depend on the total number of cases and the resources available (staff and funds) for the review. This would identify problem areas where additional training and supervision are needed, but would not impede treatment at all.

The proportion of treatment defaulters (section 5.4)

This only requires examination if the completion rate is low. The proportion of patients who default and who are transferred out are calculated in exactly the same way as the cure rate (sections 8.1 and 8.4). If transfer out is the main reason for non-completion of treatment, the situation needs to be investigated to find out whether the transferred patients are really continuing treatment at a new clinic, or whether in fact they just stop taking treatment.

The number of relapses reported during the year (section 5.5)

Relapse cases occur sporadically and are generally not part of any defined cohort, so these figures are difficult to analyze. If high numbers are reported from any particular area, further investigations must be carried out.

The proportion of patients who develop new or additional disability during MDT (section 4.6).

Possible methods of calculating this indicator are given below:

This indicator is a measure of how well new nerve damage is detected and treated by the programme. There are two ways in which information may be gathered in the clinic in order to calculate this indicator, the EHF (eye-hand-foot) score and the Impairment Summary Form (ISF). Both scoring systems can also be used after completion of treatment to monitor POD activities.

1. The **EHF score** is calculated from data already being recorded routinely. It is the sum of all the individual disability grades for the two Eyes, two Hands and two Feet. Since the disability grade can be scored as either 0, 1 or 2, it follows that the EHF score ranges from 0 to 12. A score of 12 would indicate grade 2 disability of both eyes, both hands and both feet.

The EHF score has been shown to be more sensitive to change over time than the Disability Grade itself. The simplest way to use the EHF score to measure the development of new or additional disability during MDT, is to calculate the score at diagnosis (this examination is already done in the initial assessment of Disability Grade) and then repeat the examination at the time treatment is completed. The two scores can then be compared. When the cure rate is calculated for any cohort, the proportion in which the EHF score increased can be calculated at the same time – an increase in the score would indicate some new or additional disability.

2. The **Impairment Summary Form (ISF)** may be used to monitor impairments and disabilities in patients, and to calculate the proportion of patients who develop new or additional disability during MDT. The ISF contains more details about each individual patient's impairments and disabilities. If used effectively it allows a higher quality of care to be maintained. The ISF is described in more detail in the ILEP Learning Guide Four: How to prevent disability in leprosy.

8.4 What records are used in clinics treating leprosy?

Information about new leprosy patients is needed for two reasons:

- Details about the individual are recorded in the **Patient Record Card**; over the following months and years, any health worker treating that person will be able to read the medical history, which is very important when considering how to manage a new problem. Good records are essential for quality health care. Good records do not have to be very detailed – they may be quite simple but they should be accurate and neat, in order to be useful to other health workers who will read them.
- Data about new leprosy patients is entered into the **Leprosy Treatment Register**, which is essential for planning, calculating essential indicators and monitoring.

Use the **Patient Record Card** to record the following basic information on each patient:

MINIMUM DATA TO BE RECORDED ON LEPROSY PATIENT RECORD CARD		
	At diagnosis	During follow-up and at RFT
Name	✓	
Age	✓	
Sex	✓	
Address	✓	
Patient status (new, return from default, transfer in, relapse)	✓	
Duration of symptoms	✓	
Number of skin lesions with sensory loss	✓	
* Enlarged nerves	✓	
Classification	✓	
Eye (l/r): disability grade (0, 1, 2)	✓	✓
Hand (l/r): disability grade (0, 1, 2)	✓	✓
Foot (l/r): disability grade (0, 1, 2)	✓	✓
* Skin smear (if available)	✓	
* Signs suspicious of reaction?	✓	✓
Date of starting MDT	✓	
Date of completing MDT or other treatment outcome (default, died, transfer out, change of classification)		✓
* These items may be omitted in peripheral units		
A body chart may be used to show where skin lesions occur		

Note that clinics with only occasional patients may not need a Leprosy Treatment Register; the treatment can be noted on the Patient Record Card. If no printed Record Card is available, a blank sheet of paper may be used. However, at least some kind of record is essential for good patient care, effective supervision and monitoring.

The **Leprosy Treatment Register** should list every patient receiving MDT at a particular clinic.

- Write the name of every patient who is started on MDT in the Leprosy Register
- Indicate which treatment they are getting (PB or MB) and the dose (adult or child)
- Indicate the type of patient (New or Other: section 5.1)
- Indicate the Disability Grade (section 4.6)
- Indicate the date of starting treatment
- Enter the date of attendance whenever the person comes for MDT and the amount of treatment given (this will indicate when the person is expected to attend again).

The Register should record each visit of each patient to receive MDT. It should be easy to see from the register when any patient is overdue for an appointment – in other words, when any patient has run out of MDT at home. Each month, examine the register, to find out which patients (if any) did not attend during the last month to collect their MDT. Remember to make a note if more than one month's treatment has been given. Every effort should be made to help patients take treatment regularly.

When a patient collects the last dose of MDT (the sixth dose of PB-MDT, or the twelfth dose of MB-MDT), mark them as "Treatment Completed" and close their entry in the Treatment Register. Tell them they are cured after completion of this last dose and stress the importance of returning if there are any further complications. The other treatment outcomes that may be recorded include: "Transferred out" (= a patient who has started treatment and has been transferred to another reporting unit and for whom the treatment outcome is not known at the time of evaluation of the treatment results), "Defaulted" (section 5.4) and "Died" (= a patient who died for any reason during the course of MDT).

The cohort analysis (sections 8.1) is carried out using the **Leprosy Treatment Register**.

Some countries prefer to keep a **Master Register** at the district level with all details of patients being treated in the district (these include, in addition to the personal details, such as name, address, sex, classification, and disability status and treatment outcome). Such a register is usually maintained by a district supervisor, who compiles the reports from this register.

9. ORGANIZATIONAL ISSUES FOR PROGRAMME MANAGERS

9.1 How should technical supervision be organized?

Supervision is a way of ensuring staff competence and effectiveness through observation, discussion, support and on-the-job training. Its aim is to ensure that:

- the technical skills required for leprosy control activities are present;
- any obstacles faced by the peripheral health worker are identified and removed;
- plans for future work and improved performance are made;
- health workers are supported and motivated in their work; and
- additional information, not available under the routine reporting system, is collected and analyzed.

The central figure in supervision is a designated individual located at the first referral level (usually with other responsibilities in an integrated setting), who visits individual clinics on a regular basis – there are many different titles for such a person, but the key element is a personal link with the staff of the peripheral clinics where the majority of patients are seen. Training in supervisory skills and attitudes is essential for effective supervision.

The supervisor should be aware of his own tasks and responsibilities, and also those of the people he has to supervise.

One of the most important aspects of a supervision visit is to see and examine patients with the clinic staff. The supervisor will also use methods such as, document review (records and registers), observation of skills and activities, and interviews with health workers.

In order to carry out supervision in a systematic manner, the supervisor uses a checklist. Items to be included in the checklist are listed under “Quality leprosy services” in section 1.5 and “Six basic principles for successful integration” in section 2.1. In some countries the district level supervisor maintains a district leprosy register (section 8.4), which is very useful for monitoring programme performance and reporting.

Before each visit, the supervisor should review the assessment made during the last visit, to note any points that need further attention. After each visit, a description of the findings, both positive and negative, with recommendations, should be included in the feedback to the supervised staff and to their direct superior.

9.2 How can programme managers ensure easy access to MDT?

This can be achieved through:

- Correct estimation of drug requirement and regular ordering, based on epidemiological data
- MDT supply integrated with the general drug supply system
- A system of monitoring drug supply distribution to ensure that adequate quantities of drugs are available at all levels
- Making MDT available free-of-charge to all patients

9.3 How can partnerships be developed to enhance leprosy control activities?

Partnerships have always played an important role in leprosy control. The World Health Organization (WHO) and national and international nongovernmental organizations (NGOs) provide a significant supportive function in partnership with national governments. Among the NGOs involved, the members of the Federation of Anti-Leprosy Associations (ILEP), The Nippon Foundation, Novartis and the World Bank have played a prominent role.

Partnership can be defined as: 'Inter-organizational relationships involving activities (beyond that which contracts or authority alone would demand) aimed at achieving shared goals based upon close working relationships'. There are more definitions of partnership but they usually include these common themes: commitment to shared objectives; mutuality, equality and open dialogue; a sense of trust and respect between the partners; and reciprocal obligations and accountability. Partnership does not mean that partners should agree on all aspects, but implies that there is a willingness on both sides to 'give and take' so as to reach consensus. Partnerships will be most effective when the objectives are clearly expressed and agreed by all partners, the role of each partner is agreed and acknowledged and activities and problems are widely discussed and negotiated.

The role of the partners in the short to medium term will focus on strengthening the national capacity to provide quality leprosy services, to provide technical advice, funding for core activities, free MDT drug supply and logistics, and global advocacy. It is important that the partners involved in leprosy control continue to collaborate and coordinate their activities to increase their effectiveness. The government, particularly the Ministry of Health (MoH), is the owner of the programme, and should coordinate national and international donor support to the country. Effective donor coordination is an important requirement for a consistent and uniform implementation of the programme activities throughout the country. All partners should know how their resources are utilized, and should therefore be involved in the planning and evaluation process. It is necessary that the MoH and its partners, including WHO and ILEP Members, reach consensus on the implementation of the Strategy, long-term planning and annual plans of action and budgets. This will be greatly helped by organizing joint programme reviews by the MoH and all partners.

Besides NGOs and international multilateral and bilateral organizations, there are also government departments other than the MoH that have to be involved in sustaining effective leprosy services, such as education, social welfare, finance, communications and publicity. A great deal of collaboration and coordination is required between the various departments, NGOs and other partners. At the national level, coordination should primarily be the responsibility of the MoH.

9.4 What type of training should be provided to general health workers?

Training of general health workers should enable them to:

- correctly diagnose and classify a case of leprosy
- treat a leprosy patient with the appropriate MDT regimen
- manage or refer cases with complications
- maintain simple patient cards and a treatment register, and submit reports regularly
- keep adequate stocks of drugs for MDT
- provide appropriate information about the disease to patients, community members, and decision-makers
- recognize patients in need of rehabilitation and refer them to the appropriate services

In an integrated setting, it is important to ensure that this training is included in the core curriculum of all health workers.

9.5 What is programme evaluation and how is it carried out?

Evaluation is the systematic assessment of a programme's performance after a specified period of implementation. It compares achievements with the intended outcomes that have been defined in the strategic plan (annual plan or medium-term plan over 3, 5 or more years). In order to carry out an effective evaluation, it is essential that the national level has developed such a plan and that it includes well defined outcome indicators.

Evaluation will look mainly at the effectiveness of the programme, but it can also look at a number of other aspects of quality, including efficiency, equity, relevance, sustainability, quality of care and impact on the target population. The aim of evaluation is to determine if an ongoing programme is on the right track or needs to be adjusted, and to provide recommendations regarding the future direction of the programme.

The national level must plan and organize the evaluation missions. It has to define the terms of reference and to choose the evaluation team. Team members can be:

internal: the programme's own staff, who are directly responsible for its implementation and management

external: experts from outside the programme (they may be national or international experts)

mixed: participatory evaluation by internal and external evaluators

When planning the evaluation mission, the national level should take into consideration the interests of all concerned stakeholders, particularly the people affected by leprosy.

10. ADDENDA

10.1 Further reading

Many of the items mentioned in this section are freely available on the WHO website: <http://www.who.int> or on the ILEP web-site: <http://www.ilep.org.uk>.

WHO

- The Global Strategy for further reducing the leprosy burden and sustaining leprosy control activities (Plan period: 2006 – 2010). WHO, 2005.
- CBR: A strategy for rehabilitation, equalization of opportunity, poverty reduction and social inclusion of people with disabilities. Joint Position Paper; Geneva, 2004.
- The final push strategy to eliminate leprosy as a public health problem: questions and answers. Geneva, 2003.
- The final push towards elimination of leprosy: strategic plan 2000-2005. Geneva, 2000.
- Expert Committee on Leprosy, Seventh Report (Technical Report Series, No 874). Geneva, 1998.
- Leprosy disabilities: magnitude of the problem. *Weekly Epidemiological Record*, 1995, **70**: 269-275.

ILA

- Technical Forum: International Journal of Leprosy, 2002: **70** (Suppl): S3-S62.

ILEP

- Learning Guide One: How to diagnose and treat leprosy. 2001
- Learning Guide Two: How to recognise and manage leprosy reactions. 2002
- Learning Guide Three: How to do a skin smear examination for leprosy. 2003
- Learning Guide Four: How to prevent disability in leprosy. 2006
- Technical Guide: Facilitating the integration process. 2003
- Technical Guide: Training in leprosy. 2003
- Technical Guide: Meeting the needs of people affected by leprosy through CBR. 2006

Others

van Hees C & Naafs B. Common skin diseases in Africa. 2001

Cross H. Wound care for people affected by leprosy. ALM 2003

10.2 Glossary

Case of leprosy:	A case of leprosy is a person with clinical signs of leprosy, who requires chemotherapy (MDT)
CBR:	Community-based rehabilitation
Corticosteroids:	A group of drugs known for their ability to suppress inflammatory response
Defaulter:	An individual who fails to complete treatment within the prescribed time-frame
Disability:	A broad term covering any impairment, activity limitation or participation restriction affecting a person
EHF score:	The sum of the individual disability grades for each eye, hand and foot
Impairment:	A problem in body function or structure, such as a significant deviation or loss
Indicator:	A measurable aspect of a programme, which can indicate the level of performance and changes in performance
ISF:	Impairment Summary Form
MDT:	Multi-drug therapy
Monthly dose:	MDT is frequently referred to as being given on a 'monthly' basis; in fact, MDT blister packs provide 28-days, or 4 weeks, of treatment. Appointments must therefore be scheduled every four weeks, not strictly on a monthly basis.
Multibacillary (MB):	A leprosy patient with six or more skin patches
Nerve function impairment or loss of function in a nerve:	A loss of normal nerve functioning, demonstrated by loss of sensation (loss of feeling or numbness) in the skin served by the nerve and/or weakness of muscles supplied by the nerve
New case:	A case of leprosy who has never been previously treated with anti-leprosy chemotherapy
Orthotics:	Specially shaped inner sole of a shoe, used to correct an abnormality of the foot, including a tendency to ulceration
Paucibacillary (PB):	A leprosy patient with up to five skin patches
Reaction:	The sudden appearance of symptoms and signs of inflammation in the skin of a person with leprosy
Relapse:	The re-occurrence of the disease at any time after the completion of a full course of treatment
RFT:	Release from treatment; this occurs when treatment with MDT has been successfully completed