सत्यमेव जयते

Training Manual for Medical Officers 2019

National Leprosy Eradication Programme

Central Leprosy Division, New Delhi and Central Leprosy Teaching & Research Institute, Chengalpattu, TN

Directorate General of Health Services, Ministry of Health and Family Welfare

GOVERNMENT OF INDIA

NATIONAL LEPROSY ERADICATION PROGRAMME

(NLEP)

Training Manual for Medical Officers

2019

Central Leprosy Division
Directorate General of Health Services
Ministry of Health and Family Welfare
Government of India

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FOREWORD

It gives me immense pleasure and proud to bring out the training module for Medical Officers engaged in service delivery to the persons affected by leprosy. It is a standardized updated Module prepared by Central Leprosy Division, DGHS, MOHFW, GOI with support of stakeholders of the National Leprosy Eradication Programme (NLEP) for uniformity of the trainings being given by different govt. & non govt. institutes to Medical Officers in respect of NLEP.

As it is known that leprosy is a disabling disease which is still prevalent in the communities. Government of India in partnership with the States' Govt. is working tirelessly to stop transmission of this age old disease and reduce the disabilities by detecting cases in early stage. Quantum of innovations have been introduced under NLEP from 2016-17 onward in phase wise manner majorly, three pronged strategy for early case detection i.e., i. Leprosy Case Detection Campaign (LCDC) ii. Focussed Leprosy Campaign (FLC) and iii. Special plan for case detection in hard to reach areas. Other major innovations were Sparsh Leprosy Awareness Campaign (SLAC), Grade II disability case investigation and ASHA based Surveillance for Leprosy Suspects (ABSULS) for enhanced early case reporting. The impact of the implementation of these innovations and activities of the programme wherein Medical Officer plays a key role, may be assessed by the fact that Grade II disability (visible deformity) in new cases of leprosy has decreased substantially during last three years i.e., from 4.48/million population in 2014-15 to 3.34/ million population in 2017-18, indicating early detection of leprosy cases & interruption of transmission of the disease at the community level. However, still a lot of work is to be done to achieve leprosy free India.

Hence, this standard updated module is formulated to provide uniform knowledge to the Medical Officers of various levels regarding diagnosis and treatment of leprosy, management of lepra reactions, disability prevention and various innovations of NLEP.

I earnestly hope that this module will serve its purpose and get utilized by all the stakeholders as a teaching guide in respect of NLEP to effectively empower the Medical Officers in imparting quality care to leprosy patients.

I owe this opportunity to appreciate and congratulate various stakeholders and partners for the support provided in formulation of this module.

Anil Kumar

(Dr. Anil Kumar)

Dr. VINEET K. CHADHA
Director

सत्यमेव जयते

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PREFACE

It is my privilege to write preface to the most important module which is an operational guide to the Medical Officers while managing NLEP in the primary health care settings.

As a result of declaration of nationwide elimination of leprosy in 2005, the NLEP services were merged into general health care. This brought the MO-PHC at the central core in the management of NLEP services at PHC level. The strategies were shifted from active case finding to voluntary case reporting. There was accumulation of leprosy cases and steady increase in deformity cases. The proportion of Grade II (Visible) deformity cases among new cases steeped from 1.87% in 2005 to 4.61% in 2015. This gave tremendous impetus on identification and management of emergent as well as existing leprosy cases with or without deformities. Leprosy Case Detection Campaign an important component of three Pronged Strategy of Central Leprosy Division has subsequently detected more than 70,000 cases from 2016-19. With incorporation of newer innovation strategies such as Nikushth, Grade II Deformity case investigation, Sparsh Leprosy Awareness Campaign (SLAC), post Exposure Prophylaxis, etc. It is mandatory to empower the key health care providers such as MO-PHC with the adequate knowledge and skills for improved delivery of services.

There has been long standing need for capacity building of Medical Officers in screening, diagnosis and management of patients of leprosy.

I am sure that this module will build up the expected level of confidence among the Medical Officers for discharging their role more efficiently.

Dr. Vineet K. Chadha

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Chapter 1

1. Introduction

1.1 National Leprosy Eradication Programme [NLEP]

The National Leprosy Control Program was launched by the Govt. of India in 1955. Multidrug Therapy [MDT] came into wide spread use from 1982 and the National Leprosy Eradication Program was introduced in 1983. Since then, remarkable progress has been achieved in reducing the disease burden. The National Leprosy Eradication Programme is a centrally sponsored scheme. MDT is supplied free of cost by WHO.

Following are the programme components:–

(i) Decentralized integrated leprosy services through General Health Care System.

(ii) Training in leprosy to all General Health Services functionaries.

(iii) Intensified Information, Education and Communication (IEC).

(iv) Renewed emphasis on Prevention of Disability and Medical Rehabilitation

(v) Monitoring and supervision.

1.2 The Global Leprosy Strategy (2016-2020):

The Global Leprosy Strategy 2016–2020 "**Accelerating towards a leprosy-free world**" was officially launched on 20 April 2016. The overall goal is to further reduce the burden of leprosy while providing more comprehensive and timely care following the principles of equity and social justice.

The vision is "Zero disease, Zero transmission of leprosy infection, Zero disability due to Leprosy and Zero stigma and discrimination".

The global strategy is having the following pillars -

P-I - Strengthen government ownership, coordination and partnership;

P-II - Stop leprosy and its complications;

P-III - Stop discrimination and promote inclusion.

The target indicators for the year 2020 are zero child disabilities among new cases, rate of newly diagnosed leprosy patients with visible deformities <1 case per million population and the number of countries with legislation allowing discrimination on basis of leprosy as zero.

Chapter 2

2. Epidemiology

2.1 Definition

Epidemiology is the study of distribution and determinants of the disease (Leprosy) in a specified population (i.e., population covered by the health centre) and to apply this knowledge for the control of that disease.

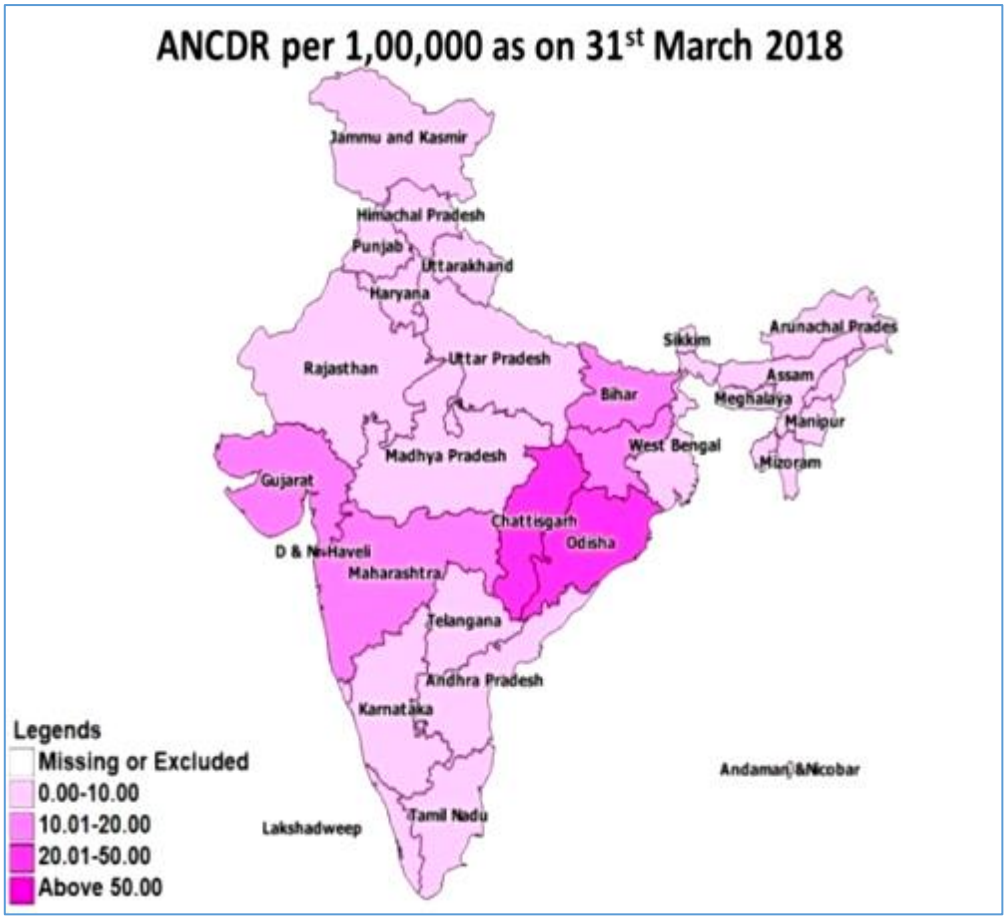
2.2 Global burden

Currently around 126,164 new cases are detected annually (Year 2017-18) with PR 0.67 per 10,000 population and ANCDR 9.27 per lakh population. More than 85% of global burden is currently seen in the following seven countries and India contributes to around 60% of the burden.

Country	Number
India	126164
Brazil	26875
Indonesia	15910
Bangladesh	3754
Democratic Republic of Congo	3649
Nepal	3215
Ethiopia	3114

2.3 Leprosy in India:

State of Chhattisgarh and Dadra and Nagar Haveli (U.T.) have remained to achieve elimination. Other states namely Bihar, Jharkhand, Odisha and Lakshadweep (UT) have reported PR>1/10,000 population, as on 31stMarch 2018. India detected as many as 1,26,164 new leprosy cases during the year 2017-18 with a MB proportion of 50.9% and the proportion in females was 38.8%. During the period 10,287 child cases (8.15%) and 4552 Grade 2 disability cases (3.61%) were detected, making a concern for continued transmission and delayed case detection.



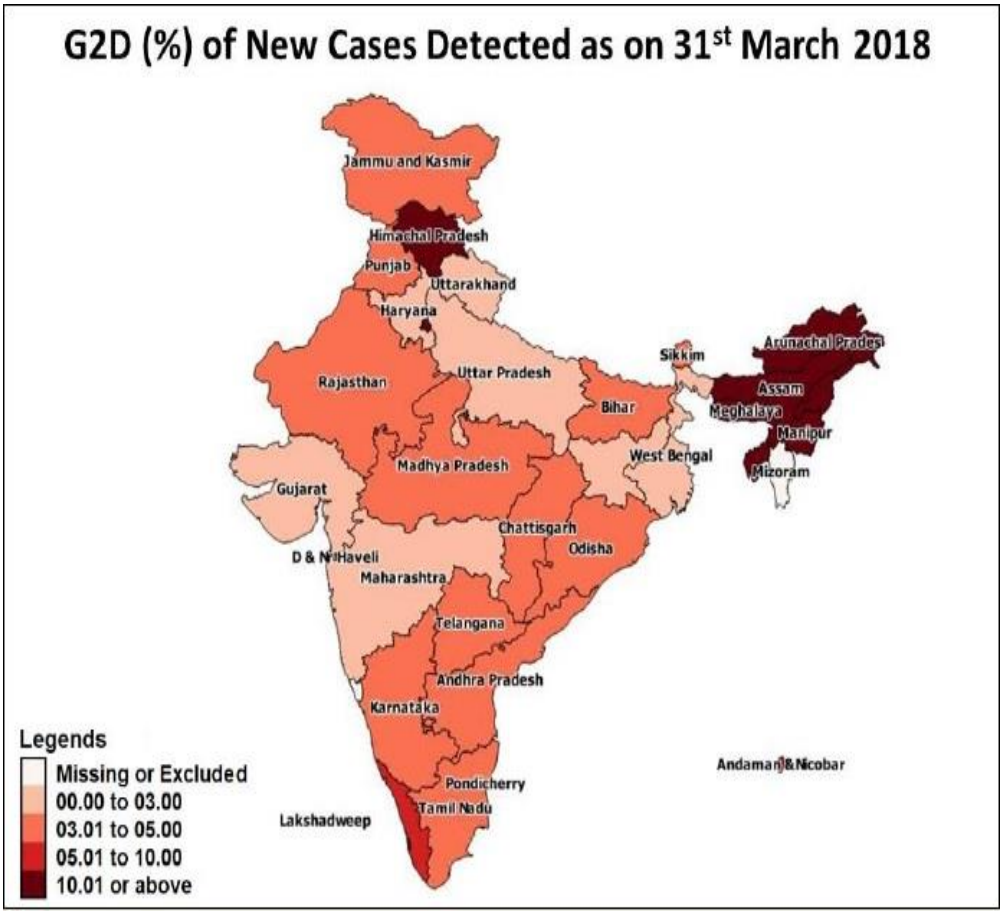


Fig. 2.1 India map showing ANCDR and G2D percentage for the year of 2017-18

2.4 Determinants of Leprosy

Agent: Leprosy is caused by *Mycobacterium leprae* which is an obligatory, intracellular parasite. It is a slow growing bacillus and one Leprosy bacillus takes about 12–14 days to divide into two. It is an acid-fast bacillus and is stained red by a dye called carbol fuschin.

Source of infection: Untreated leprosy affected person (Human beings) is the only known source for *M. leprae*.

Portal of exit: The major sites from which bacilli escape from the body of an infectious patient is respiratory tract especially nose. Only small proportion of those suffering from leprosy can transmit infection.

Transmission of infection: Leprosy is transmitted from untreated leprosy affected person to a susceptible person through droplets, mainly via the respiratory tract.

Portal of entry: Respiratory route appears to be the most probable route of entry for the bacilli.

Incubation period: Incubation period (Duration from infection (all entry is not infection) to appearance of first clinical sign and symptom) for leprosy is variable from few weeks to even 20 years. The average incubation period for the disease is said to be 5–7 years.

2.5 Host factors

Age: Leprosy can occur at any age but is usually seen in people between 20–30 years of age. Proportion of affected children in the population indicates the presence of active transmission of the disease in the community.

Gender: Disease occurs in both the genders. However, males are affected more as compared to females.

History of close contact:

Immunity: Occurrence of the disease depends on susceptibility/immunological status of an individual.

Socio-Economic Factors: Leprosy is a disease generally associated with poverty and related factors like overcrowding. However, it may affect persons of any socio-economic group. Fear of stigma, discrimination and migration may be contributory factors.

2.6 Prevention and control:

Primary prevention: Chemo-prophylaxis by single dose of Rifampicin / immunoprophylaxis by *Mycobacterium indicus pranii* (MiP) vaccine to family members and contacts can give protection around 60%.

Secondary prevention: Early diagnosis and complete treatment of leprosy cases. It is available at all government health facilities, free of cost.

Tertiary prevention: Disability prevention and medical rehabilitation is a tool by which leprosy patient can lead a good quality life.

Chapter 3

3. Pathogenesis of Leprosy

Onset of leprosy is insidious. It affects nerves, skin and the eyes, it may also affect mucosa (mouth, nose, pharynx), testis, kidney, voluntary/smooth muscles, reticulo-endothelial system and vascular endothelium.

Bacilli enter the body usually through respiratory system. It has low pathogenicity, only a small proportion of infected people develop signs of the disease. Though infected, majority of the population do not develop the disease. After entering the body, bacilli migrate towards the neural tissue and enter Schwann cells. Bacteria can also be found in macrophages, muscles cells and endothelial cells of blood vessels.

After entering Schwann cells or macrophages; fate of the bacterium depends on the resistance of the infected individual towards the organism. Bacilli start multiplying slowly (about 12-14 days for one bacterium to divide into two) within the cells, get released from the destroyed cells and enter other unaffected cells. During this state, person remains free from signs and symptoms of leprosy.

As the bacilli multiply, bacterial load increases in the body and infection is recognized by the immunological system. Lymphocytes and histiocytes (macrophages) invade the infected tissue. At this stage, clinical manifestation may appear as involvement of nerves with impairment of sensation and /or skin patch. If it is not diagnosed and treated in the early stages, further progress of the disease is determined by the strength of the patient's immune response.

Specific and effective cell mediated immunity (CMI) provides protection to a person against leprosy. When specific CMI is effective in elimination / controlling the infection in the body, lesions heal spontaneously or it produces pauci-bacillary (PB) type of leprosy. If CMI is deficient; the disease spreads uncontrolled and produces multi bacillary (MB) leprosy with multiple system involvement. Sometimes, the immune response is abruptly altered, either following treatment (MDT) or due to improvement of immunological status, which results in the inflammation of skin or / nerves and even other tissues, called as Lepra reaction leading to temporary and permanent disabilities/ deformities.

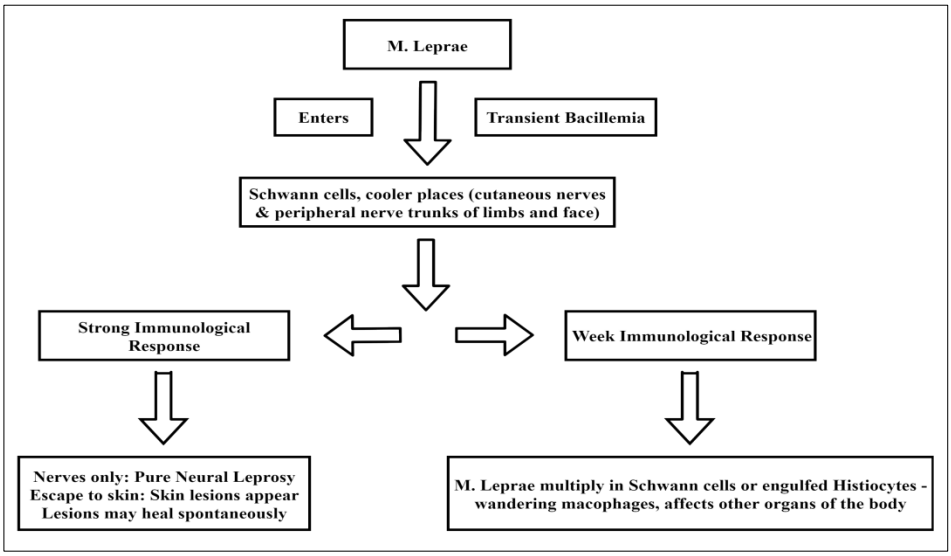


Fig. 3.1 Pathogenesis of Leprosy

Chapter 4

4. Diagnosis of Leprosy

A case of leprosy is diagnosed by eliciting cardinal signs of leprosy through systematic clinical (and wherever required bacteriological) examination. At least one of the following cardinal (unique and very important) signs must be present to diagnose leprosy.

a) Hypo-pigmented or reddish skin lesion(s) with definite sensory deficit;

b) Involvement of the peripheral nerves, as demonstrated by definite thickening with loss of sensation and weakness /paralysis of the corresponding muscles of the hands, feet or eyes;

c) Demonstration of ***M leprae*** in the lesions.

The first two cardinal signs can be identified by clinical examination alone, while the third can be identified by examination of the slit skin smear.

Case of Leprosy: A person with at least one cardinal sign of leprosy and yet to complete full course of MDT may be called as a "case of leprosy".

4.1 Clinical Examination:

Clinical examination includes careful interview of patient to get detailed history and examination of skin and nerves.

A. Case History:

The leprosy history should elicit the following:

- Name, sex, age (year of birth), address, occupation etc.;
- Presenting complaints and their duration (A patch of a few days or that which is present since birth or an itchy patch is unlikely to be leprosy);
- History of recurrence (a recurrent lesion which "comes and goes" will not be due to leprosy);
- Any deformity, the time of its onset, and nature of its progress;
- Treatment history - treatment taken, what drugs for leprosy and how long;
- Any other associated illness (jaundice, cough, swelling of the feet at present or in the recent past);
- Any other person in the family or close contacts having similar disease or had the disease and was treated.

B. Skin examination:

Remember the cardinal sign: Hypo-pigmented or reddish skin lesion(s) with definite sensory deficit;

- Choose a place where good light is available;
- As far as possible, choose a place where there is privacy;
- Always examine the whole skin from head to toe as much as possible;
- Use the same order of examination always so that you do not forget to examine any part of the body.

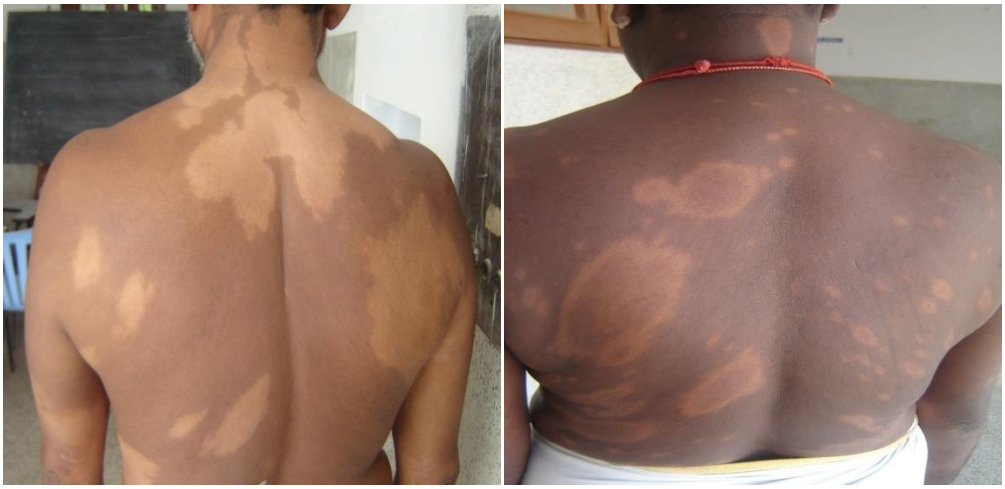


Fig. 4.1 Skin lesions in leprosy

The following features must be noted when examining a patch on the skin Site. This is useful for follow-up.

Number: The number of lesions indicates the severity of the disease. This is useful for leprosy disease classification.

Colour: May be hypo-pigmented (lighter in colour than the rest of the skin), or erythematous (red), raised/swollen. Lesions of leprosy are never de-pigmented. Erythematous colour can be present to identify disease activity or a reaction state. (Active lesions or those in reaction are often red).

Sensory deficit: This is useful for diagnosis. Loss of sensation is a cardinal sign of leprosy.

Tenderness on gentle tapping: This is seen in reaction states.

Presence of infiltration: This term refers to skin, which is thickened, shiny and erythematous. All three features must be present in the same area. Diffuse infiltration may be the only early presenting sign in severe forms of leprosy.

Nodules may be found in the skin in severe forms of leprosy.

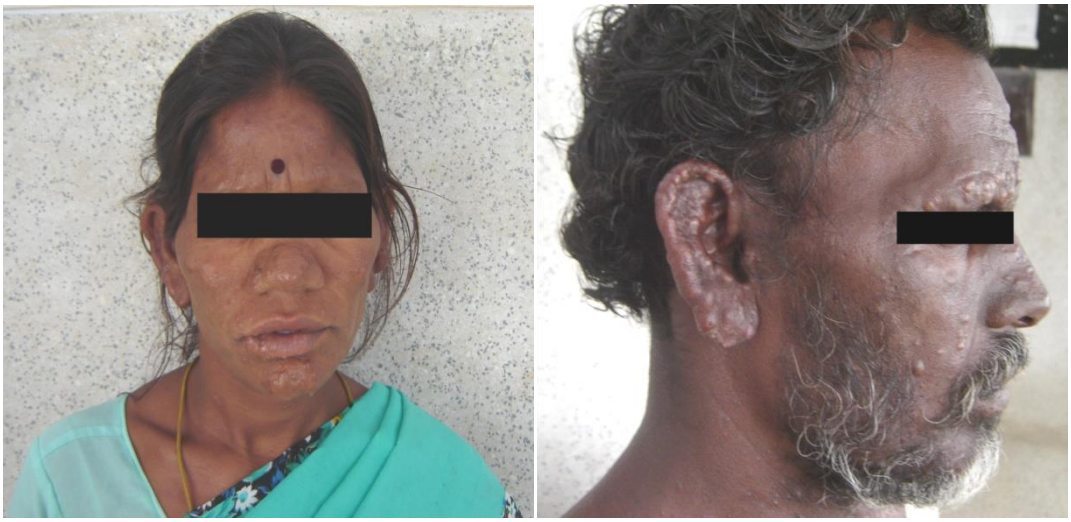


Fig. 4.2 Infiltrative and nodular skin lesions in leprosy

Testing the sensation over skin:

It is very important to pick up the skill of eliciting sensory loss in skin patch.

- You will need a light ballpoint pen (with plastic body) without cap.
- Explain to the person what you are going to do and demonstrate it.
- Touch the skin with the tip of the pen lightly and ask the individual to point to the spot touched with his index finger.
- Repeat this procedure a few times until the patient is familiar and comfortable with the procedure.
- Now ask the patient to close his eyes and repeat the procedure (first on the normal skin then over the affected area).
- While testing lesions over inaccessible areas (back, buttocks) the patient may be asked to count on each touch.

Remember:

- Do not use other "instruments" like pin, cotton wool, feather, etc.
- When testing for sensation, touch the skin lightly with the pen. Do not stroke.
- The pen should be perpendicular to the surface of the skin.
- Do not keep asking the patient whether he feels the touch. You may get misleading results.
- Proceed from the normal skin to the patch.
- Give only one stimulus at a time.
- Vary the pace of testing.

C Nerve examination:

[Resource person should demonstrate nerve examination from head to toe and also use video clips]

Remember the cardinal sign:

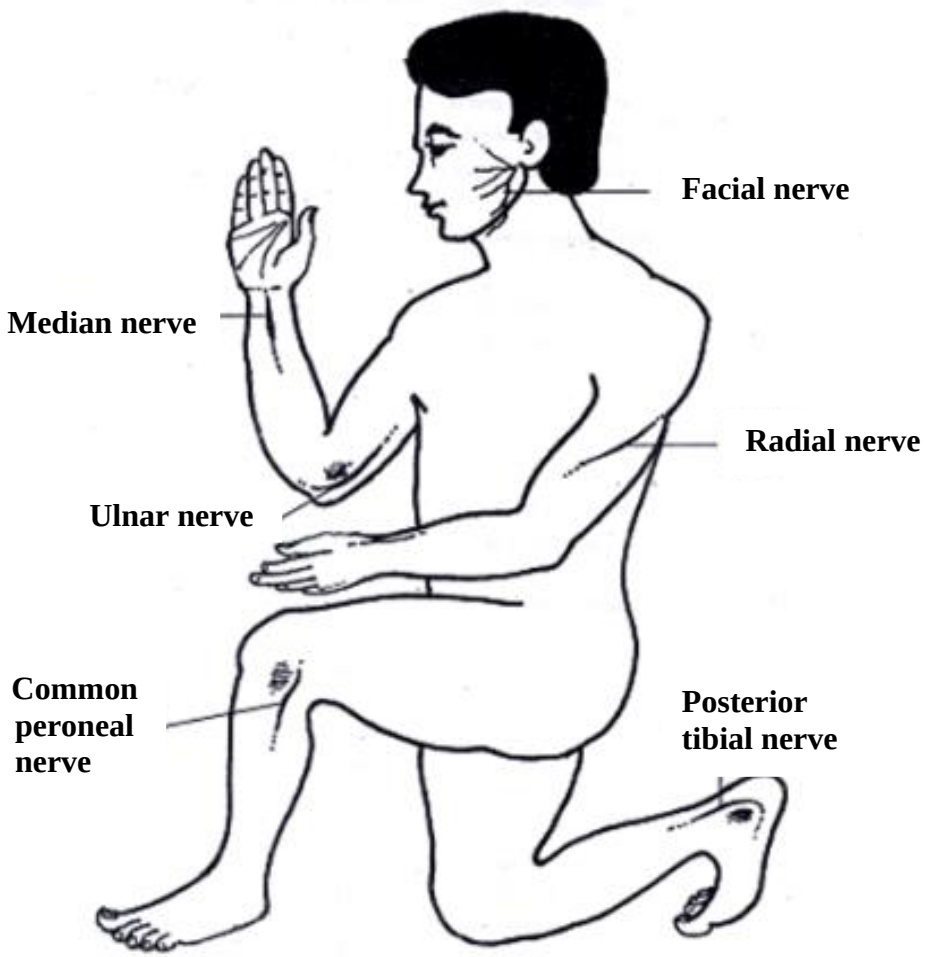
"Involvement of the peripheral nerves, as demonstrated by definite thickening with a loss of sensation with or without weakness /paralysis of the corresponding muscles of the hands, feet or eyes"

Examination of nerves in all the patients is very important for diagnosis, grouping and for prevention of deformity. This involves two aspects:

- palpation of the nerves for thickening, tenderness and consistency
- assessment of nerve function - sensory and motor

Palpation of Nerves

a) The patient should be properly positioned. The examiner should also be positioned correctly.
b) Locate the nerve correctly;
c) Observe the patient's face while palpating the nerve to elicit tenderness;
d) Palpate gently with the pulp of the two fingers, not the tips of fingers;
e) Always palpate across the course of the nerve;
f) Feel along the nerve as far as possible in both directions.



The peripheral nerves most commonly affected inleprosy are:
Ulnar,
Lateral Popliteal (Common Peroneal nerve) and
Posterior Tibial nerve

Other nerves, which may be affected are:
Facial,
Trigeminal,
Median and
Radial nerve

Fig. 4.3 Involvement of nerves in leprosy

Ulnar nerve

- Site: In the groove above and behind medial epicondyle of the elbow.
- Position of patient: Both the patient and examiner facing each other.
- To examine right ulnar nerve, ask the patient to flex the elbow joint slightly. Hold the right wrist with your left hand.
- With the right hand feel for the medial epicondyle.
- Pass behind the elbow and feel the ulnar nerve in the groove.
- Gently palpate with pulp of 2 fingers (index and middle) and feel across the nerve, constantly watching facial expression for signs of tenderness.
- Trace the nerve proximally as far as to ascertain the length of the swelling.

Lateral popliteal nerve (Common Peroneal nerve)

- Site: back of the knee, behind the head of fibula.
- Position of patient: Patient standing with knees slightly flexed (not total) and examiner squatting.
- Identify the head of fibula on the lateral aspect of knee in line with lower end of patella.
- Pass backwards and feel the nerve just behind the fibular head.
- Gently palpate with pulp of 2 fingers (index and middle) and feel across the nerve, constantly watching facial expression for signs of tenderness.
- The palpable course of the nerve is very short.

Posterior tibial nerve

- Site: Below and behind the medial malleolus;
- Position of Patient: to rest the ankle on thigh;
- Identify the medial malleolus. Locate the nerve just below and behind medialmalleolus (approximately at the midpoint between medial malleolus and heel)
- Palpate with the pulp of finger and feel across the nerve constantly watching facial expression for signs of tenderness.
- The palpable course of the nerve is very short.

Assessment of Nerves Function

Voluntary Muscle Testing (VMT):

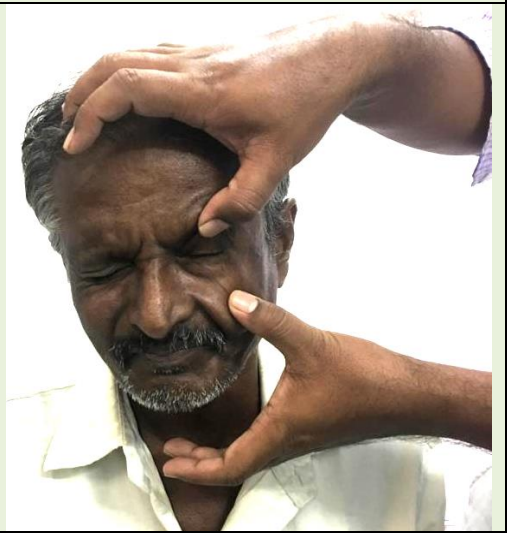
Voluntary muscle testing is done by first checking the range of movement to see whether movement is normal, reduced or absent due to paralysis. If movement is normal, a test for resistance is then done. Press gently in the opposite direction while asking the patient to maintain position, resisting pressure as strongly as possible. Then gradually press more firmly and judge whether resistance is normal, reduced or absent. The grading of the result can be done as follows:

S (Strong) = Able to perform the movement against full resistance;

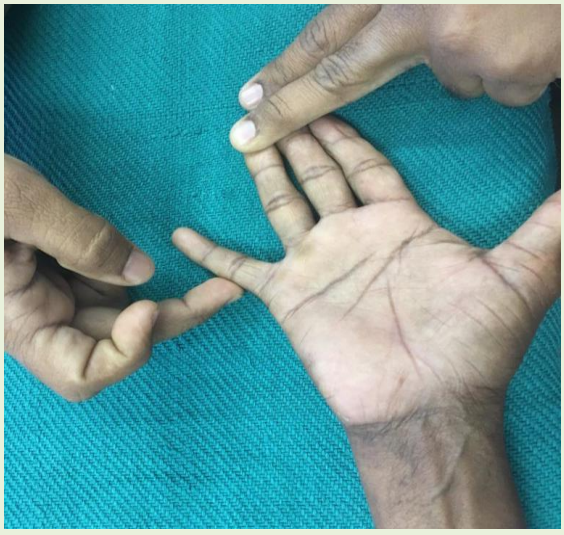
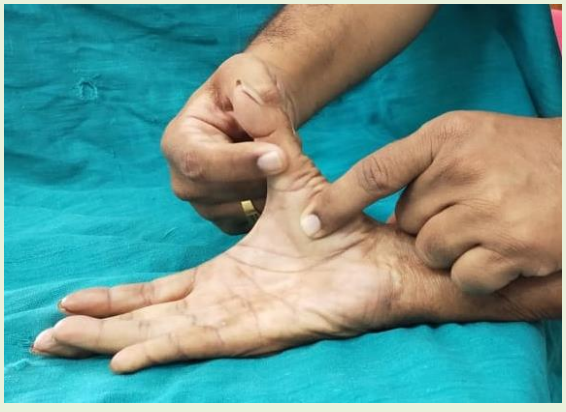
W (Weak) = Able to perform the movement but not against full resistance;

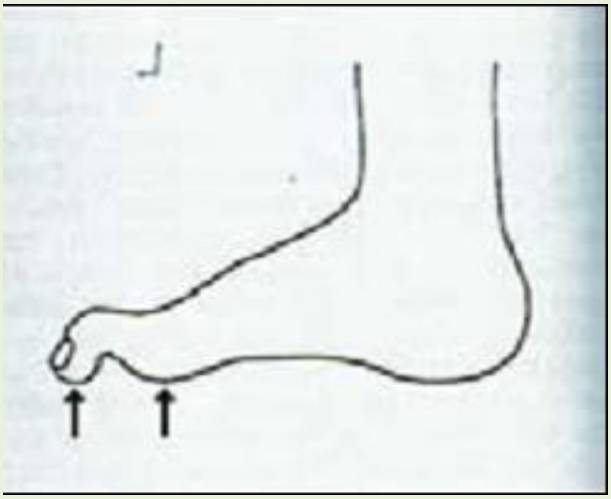
P (Paralysed) = Not able to perform the movement at all.

VMT for Facial Nerve:

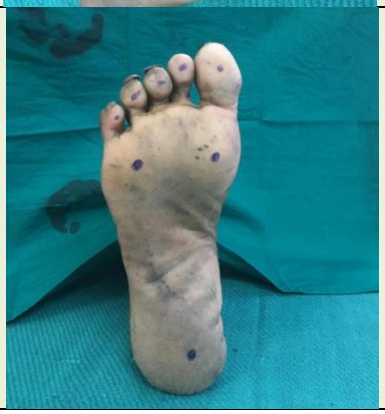
<table>
<tr><td colspan="3">• Ask the patient to close his eyes and keep them lightly closed as if in sleep.
• If there is no gap, ask him to close the eye tightly and try to pull the lower lid down and see whether the patient is able to keep his eyes closed against resistance.</td></tr>
<tr><td>Able to keep his eye closed against resistance</td><td>Grade 'S'</td><td rowspan="3">  </td></tr>
<tr><td>A gap visible between the upper and lower eyelids</td><td>Grade 'P'</td></tr>
<tr><td>Not able to keep his eye closed against resistance</td><td>Grade 'W'</td></tr>
</table>

**Function of Trigeminal nerve can be tested by looking at presence of 'blink reflex'.*

<table>
<tr><td>VMT for Ulnar Nerve known as Test for "Little finger out": Ask the patient to push his little finger out in the same plane as palm. To test for weakness, push the little finger towards the hand while the patient tries to hold it in the test position. The pressure should be applied at the base of little finger. Grade the muscle power as 'S', 'W' or 'P'</td><td>  </td></tr>
<tr><td>VMT for Median Nerve known as Test for "Thumb up":Ask the patient to hold his thumb at right angle to the palm. To test for weakness, push the thumb towards index finger while the patient tries to hold it in the test position. The pressure should be applied at the base of thumb. Grade the muscle power as 'S', 'W', or 'P'.</td><td>  </td></tr>
</table>

VMT for Radial Nerve known as "Wrist Up": Ask the patient to make a fist and then dorsi-flex the wrist. To test for weakness, press the hand downwards as shown in the diagram while the patient tries to hold it in the test position. Grade the muscle power as 'S', 'W' or 'P'.	
VMT for Lateral Popliteal Nerve known as Test for "Foot up": Lift the foot off the ground and support at calf region. Then ask the patient to dorsiflex his foot fully. To test for weakness, push the foot downwards while the patient tries to hold it in the test position. Grade the muscle power as S', 'W', or 'P' as described above.	
VMT for Posterior Tibal Nerve: Clawing of toes when the foot is placed flat on ground. There is hyperextension at metatarso-phalangeal and flexion at inter-phalangeal joints instead of pad of toes, Tips of toes common contact of the ground. Spreading of toes against resistance can be tested.	

Sensory Test (S.T.)-Method of sensory test over the skin supplied by nerve is same as that for testing a patch. Given below are the suggested spots for testing sensation over the palms and soles.

Points for ST in Palms			
Points for ST in sole			

Efforts are made to ensure that persons with disability do not worsen. This can be monitored by EHF score (*It is the sum of the individual disability grade for each eye hand and foot. EHF score can range for 0 to 12. Refer Chapter on Disability Prevention).* For example, a person with anaesthesia in the foot should not develop leprosy ulcers. Patients should be helped to manage their disabilities by self-care practices.

Cutaneous nerve- the following cutaneous nerves may be thickened and palpable in leprosy – for example great auricular, supra-orbital, supra-trochlear, radial cutaneous, sural nerves etc. which are indicative of presence of leprosy but not as a diagnostic cardinal sign.

D Slit Skin Smear Examination

Some people show features like leprosy, but cardinal signs 1 and 2 are not elicited from them – e.g. extensive and /or symmetrical skin patches all over the body without definite sensory deficit or involvement of peripheral nerves, shiny oily skin (infiltration), nodules over the body or over the ears or other conditions resembling leprosy. In such conditions, slit-skin-smear examination for presence of *Mycobacterium leprae* can be helpful in diagnosing leprosy.

Skin smear examination is essentially three steps; first is the collection of the specimen, second is the staining of the slide and third is the microscopic

examination of the material. Reasonably accurate report is obtained in terms of positivity if proper technique is followed. *(Annexure I)*

4.2 Differential Diagnosis

There are many skin diseases and neurological conditions which may mimic leprosy.

Following disease conditions are to be considered to rule out leprosy:

Conditions	Characteristic	Sensation and Nerve enlargement
Differential Diagnosis of Flat Lesion		
Birth Mark or Naevus	Present since birth and edges are sharply defined with saw tooth appearance;	Sensation intact
Vitiligo	De-pigmented lesion, Sweating normal and white hairs on lesion,	Sensation intact
Contact Dermatitis	Itching on exposed-contacting part and history of acute oozing phase,	Common sensations intact
Lichenoid Dermatitis	Patch itchy, hypo-pigmented to violaceous and small lesions coalescing,	Sensation normal
TineaVersicolor	Patches have variable mild itchiness, seasonal and fungus can be demonstrated,	Sensation normal
Seborrhoeic Dermatitis	Severe itching on patches,scalp commonly involved and oily yellowish scales.	Sensation normal
Scar	History of injury/trauma	Sensation may or may not be present
Differential Diagnosis of Raised Lesions		
Granuloma Annulare	Annular lesions (ring shaped) over extremities.	Sensation normal, no nerve changes
GranulomaMultiforme	Large –dramatic geographic patches without skin sensory changes	Nerve involvement absent
Ring Worm	Scaly appearance at periphery of patches if untreated, itchy patches, superficial look. Fungus can be demonstrated (if untreated);	Sensation normal

Lupus Vulgaris (Skin TB)	Lymph node involvement. Area of healing with scar. Erythematous area of activity	Sensation usually normal
Psoriasis	Silvery- Scaly lesions on extensor surface, on scraping leaves bleeding points (Auspitz sign)seasonality and Joint involvement may be present	Sensation normal
Differential Diagnosis of Nodular Lesions		
Neurofibromatosis	Coffee-ground coloured macules Soft multiple nodules.	No nerve lesion
Dermal Leishmanlasis	Nodules/infiltration on face, even on ear-lobe / history of kala-azar	Sensation normal and no nerve abnormalities
Xanthomatosis	Skin coloured to yellow nodules / papules / plaques on bony prominences	No nerve lesion

4.3 Neurological Conditions:

- Diabetic Neurophathy
- Alcoholic Neuropathy

Chapter 5

5. Disease Classification

5.1 Classification of Leprosy cases

After making a diagnosis of leprosy, one should group the patient based on certain characteristics. This is important because, it helps in selecting the correct combination of drugs for a given patient.

Criteria for classification

Sl. No	***Characteristics***	***PB (Pauci-Bacillary)***	***MB (Multi-Bacillary)***
1	Skin lesions	1 - 5 lesions	6 and above
2	Peripheral nerve	No nerve / only one nerve involvement	More than one nerve involvement
3	Skin smear	Negative at all sites	Positive at any site

5.2 Grading Of Disabilities

Hands and Feet

Grade 0: No anaesthesia over palm/sole, No visible deformity or damage

Grade 1: Anaesthesia present over palm/sole but no visible deformity or damage;weakness/paralysis but no visible deformity

Grade 2: Visible deformity or damage present

Eyes

Grade 0: No eye problem due to leprosy; no evidence of visual loss

Grade 2: Severe visual impairment (vision worse than 6/60; inability to count fingers at six meters), lagophthalmos, iridocylitis and corneal opacities.

Chapter 6

6. Management of Leprosy

The treatment of leprosy is Multi Drug Therapy (MDT) which is the combination of two or three of the following drugs:

a) Cap. Rifampicin
b) Tab. Dapsone
c) Cap. Clofazimine

i. MDT kills the bacilli (*M. leprae*) in the body and thus stops the progression of the disease and prevents further complications.

ii. As the *M. leprae* are killed, the patient becomes non-infectious and thus the spread of infection is reduced.

iii. Using a combination of two or three drugs instead of one drug alone will ensure effective cure and reduce the chance of development of resistance to the drugs.

- Based on the disease classification, the patients can be given any one of the standard MDT regimens mentioned below. In children, the dose may be adjusted suitably.
- When the patient has completed the required number of doses (monthly pulses) of standard MDT regimens, s/he is released from Treatment - RFT.
- MDT is safe in pregnancy.

6.1 MDT Regimen (Adult)

Type of leprosy	Drugs used (Adult)	Dosage	Frequency of administration	Criteria for RFT
MB Leprosy	Rifampicin	600 mg	Once monthly	Completion of 12monthly pulses
	Dapsone	100 mg	Daily	
	Clofazimine	300 mg	Once monthly	
	Clofazimine	50 mg	Daily	
PB Leprosy	Rifampicin	600 mg	Once monthly	Completion of 6 monthly pulses
	Dapsone	100 mg	Daily	

6.2 MDT Regimen (Child - 10-14 years of age)

Type of leprosy	Drugs used (Adult)	Dosage	Frequency of administration	Criteria for RFT
MB Leprosy	Rifampicin	450 mg	Once monthly	Completion of 12 Monthly pulses
	Dapsone	50 mg	Daily	
	Clofazimine	150 mg	monthly	
	Clofazimine	50 mg	Alternate day	
PB Leprosy	Rifampicin	450 mg	Once monthly	Completion of 6 monthly pulses
	Dapsone	50 mg	Daily	

The Appropriate dose for children under 10 year of age can be decided on the basis of body weight

- Rifampicin: 10 mg/kg/month
- Clofazimine: 6 mg/kg/month and 1 mg/kg/day (to be given weekly capsule as the lowest available dose is 50mg)
- Dapsone: 2 mg/kg/day

Regarding fitness of patient for MDT, before starting treatment, look for the following:

a) Jaundice: If the patient is having jaundice, wait until jaundice subsides.
b) Anaemia: If the patient is having anaemia, treat the anaemia simultaneously and start Dapsone if Hb> 8gm%, otherwise withhold Dapsone.
c) Tuberculosis: Ensure that Rifampicin is given in the dose required for the treatment of tuberculosis, along with other drugs required for the treatment of leprosy.
d) Allergy to sulpha drugs: If the patient is known to be allergic to sulpha drugs, Dapsone should be avoided. Clofazimine may be used instead.

To ensure the regularity of treatment

- Adequate counseling at the start of treatment will encourage the patient to be regular and complete the required number of doses of MDT.
- Patients who are absent should be contacted immediately to identify the reasons and take corrective actions.
- Flexibility in MDT delivery (accompanied MDT - more than one blister pack given at a time) may be adopted whenever it is essential, in case of migration or change of address /location.
- The explanation a patient receives at the beginning of treatment is very important. It helps the patient to be regular and to complete the treatment on time.
- Patients who have completed treatment earlier and return with extension of old leprosy lesions and/or appearance of new lesions could be relapse or reaction. They should be referred to district nucleus or specialized centre.
- All patients who fail to collect drugs should be contacted immediately and effort should be made to ensure that the patient resumes treatment. Whenever a PB patient has missed more than three months of treatment or MB patient more than 6 months of treatment they should be declared as defaulter. They should be re-examined after retrieval and put on regimen accordingly.
- Patients migrating to another place in the middle of treatment could be given all the remaining doses of MDT with proper counseling. The patient is made RFT in the register at the expected month of completion of treatment.

- Treatment register (ULF 02AandB) and drug stock register (ULF 03) are maintained at the health facility by pharmacist or any other identified person. The MO of the health facility should ensure that the treatment cards and registers are updated regularly.
- At least 3 months drug stock should be maintained at the district whereas at the health facility level 2 months buffer should be available. PHCs with no case in the last 3 months need not keep any stock.
- District leprosy office should estimate the amount of drugs of all categories required for the whole year taking into consideration the stock in hand (with expiry date) and number of new cases expected.
- Each health facility will prepare and submit monthly progress report (ULF-04) to the block level PHC which will compile the reports and send the consolidated report to DLO.

6.3 Side Effects of anti-Leprosy Drugs

Dapsone:

Side effects	Signs and Symptoms	What to do if side effects occur
Anaemia	Pallor, Tiredness, edema of feet and breathlessness	Give anti-worm treatment and iron and folic acid tablets. Stop Dapsone if Hb< 8gm%
Severe skin Rash (Exfoliative dermatitis)	Extensive scaling, itching, ulcers in the mouth and eyes, jaundice and reduced urine output	Stop Dapsone. Refer to hospital immediately. Never restart
Hepatitis	Jaundice, loss of appetite, vomiting	Stop Dapsone. Refer to treat Hepatitis.
Nephritis	Edema of face and feet, reduced urine output	Stop Dapsone. Refer to treat Nephritis

Rifampicin:

Side effects	Sign and Symptoms	What to do if side effects occur
No significance	Reddish coloration of urine, saliva and sweat	Reassure the patient
Hepatitis (liver damage)	Jaundice (yellow colour of skin, eyeballs and urine). Loss of appetite and vomiting	Stop Rifampicin. Refer to hospital. Restart after the jaundice subsides
Allergy	Urticaria, Skin rash	Stop Rifampicin

Clofazimine:

Side effects	Signs and Symptoms	What to do if side effects occur
Dark Colour	Brownish-red discoloration of skin, urine and body fluids	Reassure the patient that it will fade after completion of treatment
Ichthyosis	Dryness and scaling of the skin, itching	Apply oil to the skin. Reassure the patient.
Eye	Conjunctiva- dryness	Moistening eye drops
Abdominal symptoms	Abdominal pain, nausea and vomiting with high doses (used for Type II reaction)	Symptomatic treatment. Reassure the patient. Stop high doses

Chapter 7

7. Lepra Reactions, Neuritis and its Management

7.1 Introduction

A major problem in leprosy is the management of reactions that occur due to the immunological response of the body system against *M.leprae* bacilli. These reactions may occur before, during or after the completion of MDT, in both PB and MB cases. Severity of reaction depends on the bacterial load in the body of the affected person and strength of immunological response. Long term problems related to leprosy (deformity, disability, stigma and suffering of the patient and their family) are due to nerve damage from lepra reactions.

Sudden onset of acute inflammation of skin lesions, nerves, eyes and sometimes other organs in leprosy affected person is indicative of reactions. Lepra reaction is diagnosed by clinical examination. Early diagnosis and prompt management can prevent disability and deformity.

Risk for developing reactions:

Though any person affected by leprosy can develop reaction, some are more prone /predisposed/ at risk of developing reaction.

Persons with following features are more likely to develop reaction:

- Multiple lesions, Positive slit skin smear;
- Lesions close to the peripheral nerve, Lesions on the face;
- Pregnancy and Childbirth, Hormonal changes (Puberty / adolescence
- Stress (Physical, Physiological and Psychological), Inter-current infection
- Parasitic infestations

These patients should be monitored more frequently for early detection of reaction and its prompt management.

7.2 Types of Lepra Reactions:

There are two types of Lepra Reactions:

Type-I Lepra Reaction: Also called Reversal Reaction occurs in a patient with unstable CMI, both PB and MB.

Type-II Lepra Reaction: Also called Erythema Nodosum Leprosum (ENL) occurs in patients with MB leprosy with a high bacillary load.

Type I Lepra Reaction

This may be the first presenting sign of the disease. It usually lasts for few weeks to few months but in some patients can be recurrent. It presents with inflammation of existing skin lesions. Appearance of new skin lesions are in reality sub-clinical patches, now noticed due to inflammation.

General condition: General condition of the patient is satisfactory. Usually there is no fever and patient does not feel ill.

Inflammation of skin lesions: Signs of inflammation are seen in the existing skin lesions i.e. skin lesions become red, more prominent, swollen, shiny and warm. In severe forms they may ulcerate. Lesions are usually not painful but some discomfort may be felt. Sometimes, only few patches are inflamed.

Inflammation of nerves: Nerves are frequently affected in Type 1 Reaction.

Acute Neuritis: Inflammation of the peripheral nerve results in pain, paresthesia and loss of nerve function - sensory, motor and autonomic. Neuritis may be the only presenting feature of reaction without inflammation in the skin lesions.

Silent neuropathy / Quiet nerve paralysis: Nerve function may get affected without any pain or tenderness of the nerve or inflammation of skin lesions. This needs to be identified early and treated promptly - ***Any Nerve Function Impairment of < 6months duration is 'Acute Neuritis' and requires treatment with steroid.***

Swelling of hands and feet: Swelling of the limbs and/or face may be present as part of Reaction.

Eyes: Ocular tissue is not affected in Type 1 Reaction but patient may develop corneal anaesthesia and lagophthalmos due to involvement of trigeminal and facial nerves.

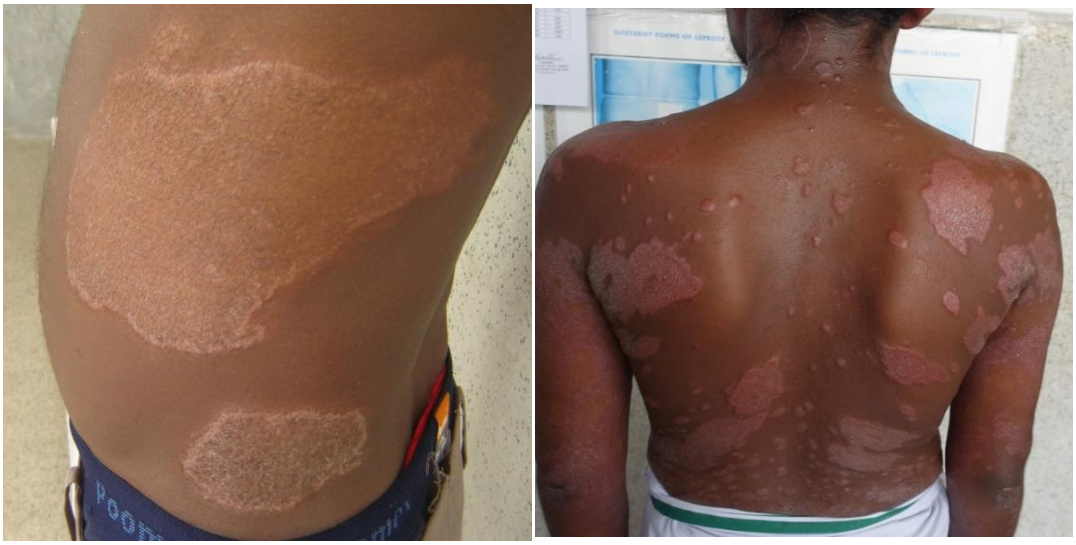


Fig. 7.1 Type-I Lepra Reaction

Type II Lepra Reaction

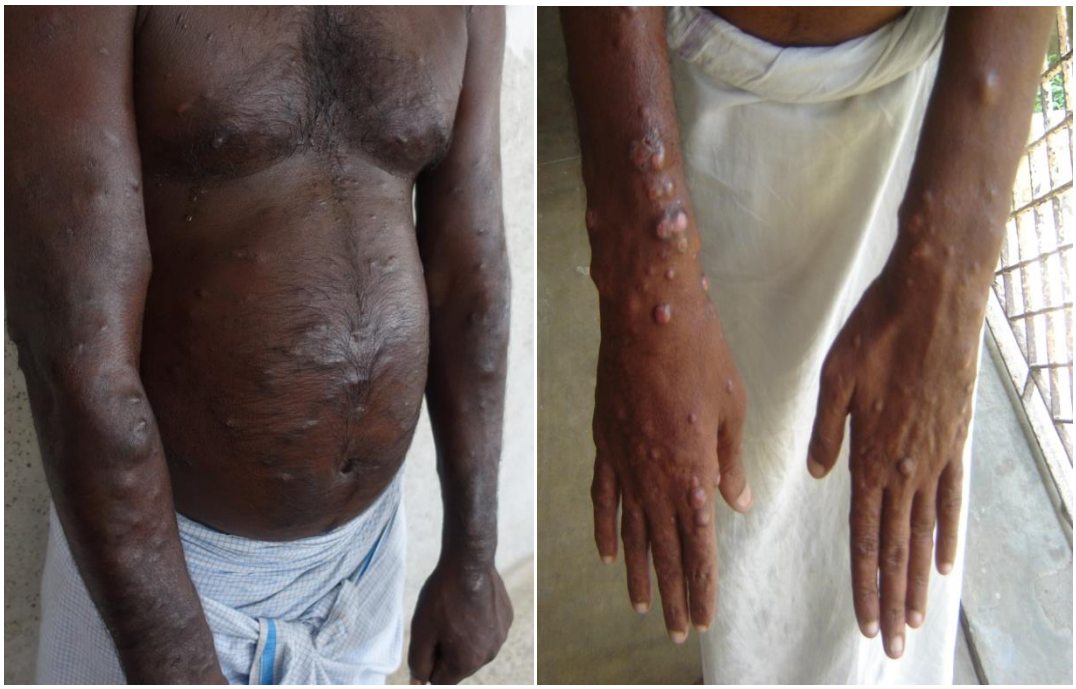


Fig. 7.2 Type-II Lepra Reaction

Type 2 Lepra Reaction: Occurs in patients who have a high bacillary load. It is a vasculitis, due to precipitation of immune complexes in multiple organ systems (skin, nerves, testes, eyes, joints, lymph nodes, kidneys, liver, spleen, bone marrow). It may be the presenting complaint of the disease and usually last for few weeks to several months.

General condition: General symptoms like fever, headache and body ache appear before or along with the characteristic nodules that appear on the skin.

Skin lesions: Type 2 Reaction exhibits the typical signs of erythema nodosum - red, firm, painful, tender, subcutaneous nodules (about 1-2 cm across) of variable size appear in crops. Nodules blanch on pressure. Usually multiple, they tend to be distributed bilaterally and symmetrically. They appear preferentially on cooler parts of the skin. They usually spare the warmer parts of the body like hairy scalp, axilla, groin and perineum. Rarely they can break down and suppurate / necrose producing Erythema Nodosum Necroticans (ulcerative ENL). These nodule crops are evanescent, melting away in seven to ten days. When nodules fade these leave bluish/brownish marks followed by brownish hue in the skin. Unlike Type-1 Reaction, there is no clinical change in the existing leprosy lesions.

ENL reaction may become chronic and persist for several years causing significant debilitation.

Eyes: Ocular tissue may get affected. This may lead to iritis / iridocyclitis (inflammation of the iris and ciliary body), synechiae, glaucoma and impairment of vision. Eye becomes red, watery and painful, pupil becomes constricted and non reactive. Colour of iris becomes dull and patient complains of photophobia (pain in the eye when it is exposed to light). Involvement of eye is an emergency and needs immediate referral to higher centre.

Swelling of hands, feet and face may occur.

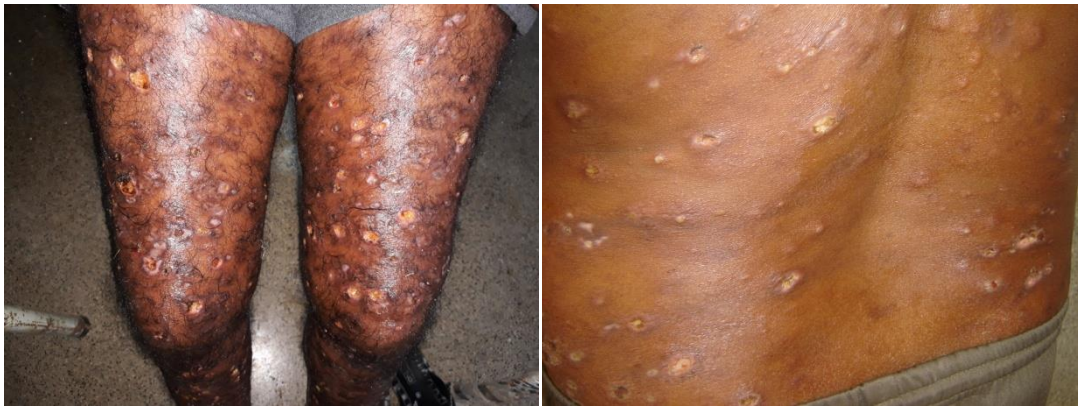


Fig. 7.3 ENL Ulcerative reaction

Involvement of other organs: Osteitis-periosteal pain (especially tibia), myositis (muscle pain), Tenosynovitis (pain and swelling of tendons), arthritis, dactylitis, Lymphadenitis, epididymo-orchitis, hepato-splenomegaly, nephritis (proteinuria, RBCs and WBCs in urine), neutrophil leucocytosis and Neuritis.

7.3 Difference between Type-I and Type-II Reactions:

Features	Type I (Reversal)	Type II (ENL)
Type of Hypersensitivity	Delayed Hypersensitivity (Type IV)	Antigen antibody reaction (Type III)
Skin	Few or many skin lesions suddenly become reddish, swollen, warm (not usually painful and tender).The rest of the skin is normal.	Transient, red, painful, tender, subcutaneous nodules (ENL) appear in groups, commonly on face, arms, legs and are not related to patches
Nerves	Acute Neuritis – pain, paresthesia, tenderness, swelling, loss of function (sensory, motor, autonomic) occurs commonly and acutely.	Nerves may be affected but not as common or severe/acute as in Type I
General condition	Good, occasionally mild fever	Poor, with fever and general malaise
Eye	Lagophthalmos and Corneal anesthesia due to neuritis	Iritis/Iridocyclitis
Other Organs	Rarely affected	Other organs like joints, bones, testis, kidney may be affected

Management of reaction: It is very important to reassure the patient and explain that it can be controlled with proper treatment

Type 1 Lepra Reaction: The patient will need Corticosteroids in addition to rest and analgesics. The drug of choice is Prednisolone. The usual course begins with 40-60 mg daily in single dose preferably in the morning after breakfast (up to a maximum of 1mg/kg of body weight) and the reaction is generally controlled within a few days. The dose is then gradually reduced fortnightly and eventually stopped. Proper precaution should be taken in patients with diabetes, peptic ulcer, hypertension, Tuberculosis etc. Necessary precautions for administering steroid should be taken.

WHO Schedule for Prednisolone therapy for an adult patient in Type 1 reaction:	• 40 mg once a day for the first 2 weeks, then • 30 mg once a day for weeks 3 and 4 • 20 mg once a day for week 5 and 6 • 15 mg once a day for weeks 7 and 8 • 10 mg once a day for weeks 9 and 10, and • 5 mg once a day for weeks 11 and 12

In case of neuritis, (involvement of peripheral nerve) the period of treatment may be prolonged according to the response. From 20 mg onwards, the period for each dose would be for 4 weeks. Response to steroid therapy is generally seen within two weeks. Review the progress every two weeks. If there is no response the same dose may be continued for further two weeks. If there is good response, the dose may be tapered according to the schedule.

It is also important to provide rest to the affected nerve, if involved, until symptoms subside, by applying a padded splint or any suitable alternative material to immobilize the joints near the affected nerve. The aim is to maintain the limb in the resting position to reduce pain and swelling and prevent worsening of the nerve damage

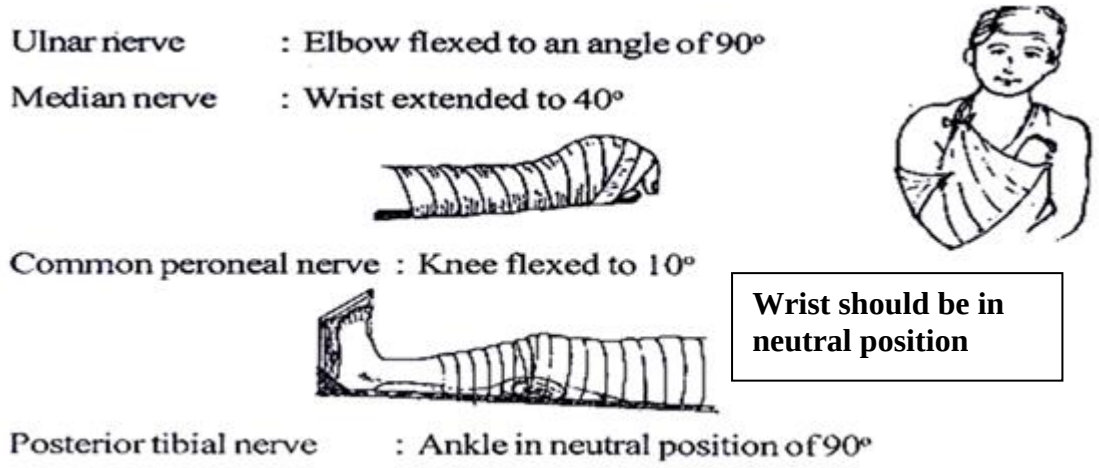


Fig. 7.4 Resting position of limbs

- If a patient develops Lepra Reaction during treatment, do not stop MDT (complete the course of MDT).
- Lepra Reactions, which occur after completion of treatment, should also be managed with steroids as per schedule. MDT should not be started again.

Type 2 Lepra reaction (ENL):

In case of reaction not responding to treatment after 4 weeks with prednisolone or at any time showing signs of worsening, the patient should be referred to the nearest referral centre.

Type 2 Lepra Reaction	Treatment
Mild: few nodules, mild fever	Analgesics
Severe: severe pain over nodules, tendency for ulceration, high fever, involvement of internal organs	Steroid - Prednisolone course is given in the same dose as for type I reaction, but with faster tapering – given dose not exceeding 2 to 3 weeks
Neuritis	Prednisolone regimen as for neuritis in Type 1Reaction

Clofazimine is also effective for Type 2 Reaction but is less potent than corticosteroids and often takes 4-6 weeks to develop its full effects, so it should never be started as the sole agent for the treatment of recurrent Type 2 reaction. However, clofazimine may be extremely useful for reducing or withdrawing corticosteroids in patients who have become dependent on them. The dose required in such cases is 300 mg daily (maximum of 1 month), which may be given in three divided daily doses to minimize the gastro intestinal side effects. It is tapered gradually to 100 mg daily.

The total duration of clofazimine therapy should not exceed 12 months. Response will be seen after 2 - 4 weeks after starting the drug. Often, Type 2 Reaction may recur due to precipitating causes like infection, stress or helminthic infestation. Lepra reaction may subside faster or less likely to recur if precipitating factor is treated.

For persons who suffer from chronic recurrent ENL reactions not responding to conventional methods of management, Thalidomide is drug of choice. But it is highly teratogenic. Treatment with thalidomide is only recommended in tertiary care hospitals after taking necessary consent. Since this drug is teratogenic, it is contraindicated for use in women of reproductive age group.

Patient has to be followed up every 2 weeks while on steroids – General condition, side effects of steroids and nerve function assessment (NFA).Patient may need referral before starting the steroid therapy or during the treatment if: they have co-morbidities like hypertension, diabetes mellitus, peptic ulcer, tuberculosis, ulcers, and infections**. Pregnant women and children under 12 years require special precautions when prescribing steroids**

Chapter 8

8. Relapse

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, it is evident by an increase in BI of two or more by skin smear examination. It is difficult to be certain that a relapse has occurred, as new lesions may appear in lepra reactions also. The possible causes of relapse may be drug resistance to any of anti-leprosy drugs, inadequate therapy, persisters which become metabolically active or re-infection.

PB relapse is difficult to differentiate from reversal reactions. 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 in clarifying the diagnosis.

Suspect relapse cases are to be referred to the district hospital for confirmation. A relapse case can be differentiated from reversal reaction by using guidelines in the following table:

Criteria	Relapse	Reaction
Time since completion of treatment	Usually more than 3 years	Usually 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 – over skin and nerves
Damage	Occurs slowly	Sudden onset
General condition	Not affected	May be affected

A Relapse case is treated with MDT regimen for MB cases irrespective of the previous or current disease classification.

Chapter 9

9. Disability and its Management

Disabilities in leprosy are mainly due to damage to peripheral nerves. Nerve damage can occur as part of lepra reaction with signs of acute inflammation. It can also occur during the course of the disease without any obvious signs and symptoms of inflammation. Early detection and proper treatment of nerve function impairment will prevent the occurrence of disability.

Damage to the nerves results in impairment of sensory, motor and autonomic functions, leading to anaesthesia, weakness/paralysis of muscles in eyes and extremities, loss of sweating and fissures/cracks/ulcers over extremities. These disabilities can worsen because of neglect by the patient.

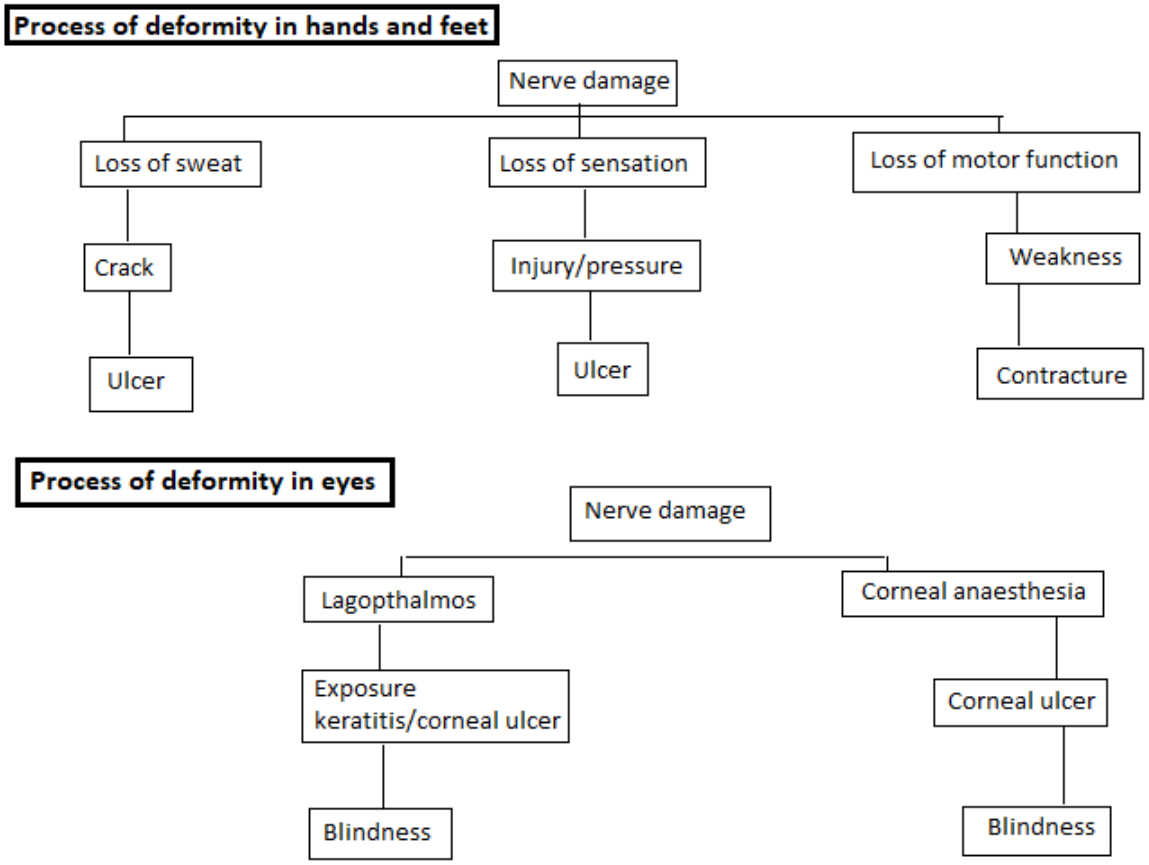


Fig. 9.1 Process of deformity in hands, feet and eyes.

Patients at high risk of developing disability:

People with the following features are more likely to develop lepra reaction and neuritis compared to others and thus subjected to developing disability -

- Multi-bacillary leprosy
- Past or present thickened/painful/tender nerve trunk
- Skin lesion on face
- Adolescents, pregnancy, old age
- Any inter-current infection

9.1 Stages of involvement of nerve:

Stage I: Stage of nerve involvement – Nerves become swollen (thickened) due to inflammatory response and tender but no loss of function. This condition is reversible if action is taken early.

Stage II: Stage of nerve damage – Along with thickened and painful peripheral nerves, associated with loss of function (loss of autonomic, sensory and motor functions). This condition is reversible if suitable action is taken early preferably within 6 months.

Stage III: Stage of nerve destruction – In long standing case of nerve involvement (usually more than one year) nerve may become fibrosed, thin and atrophic. Involved nerve is completely destroyed and its function cannot be recovered to any useful degree.

There are two types of disabilities in leprosy: –

1. **Primary :** These disabilities occur as a result of nerve damage – e.g. loss of sensation, paralysis, dryness
2. **Secondary:** These occur as a result of neglected primary disability – e.g. ulcer, contracture.

*A **Disability** is defined as lack of ability to perform an activity.*

*A **Deformity** is a visible consequence of an impairment inside the body.*

Grading of Disabilities (WHO):

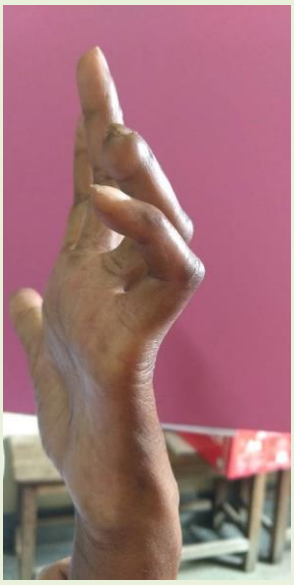
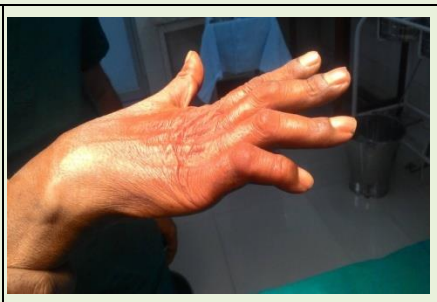
Grade – 0 No disability found

Grade – 1 Loss of sensation over skin supplied by any peripheral nerve. Weakness / paralysis of muscles and no visible deformity

Grade – 2 Weakness / paralysis of muscles, visible deformity, cannot count fingers at 6 meters distance, lagophthalmos, red eye, corneal ulcer etc.

EHF score is the sum of the individual disability grades for each eye, hand and foot.

The highest grade of disability given in any of the part is used as the Disability Grade for that patient. EHF score i.e. sum of all the individual disability grades for two eyes, two hands and two feet (0-12) should be recorded at each examination.

Site	*Nerve*	*Feature*	*Image*
Hand	Ulnar nerve	Clawing of 4th and 5th finger Loss of sensation and sweat over the little finger and the inner half of ring finger	
	Median nerve	Inability to move the thumb away (abduction) and touch the tips of other fingers (apposition). Loss of sensation over the thumb, index, middle and outer half of ring finger	
	Ulnar and median	Clawing of all five fingers Loss of sensation and sweat over the whole palm	
	Radial nerve	Wrist drop that is inability to extend at wrist joint	

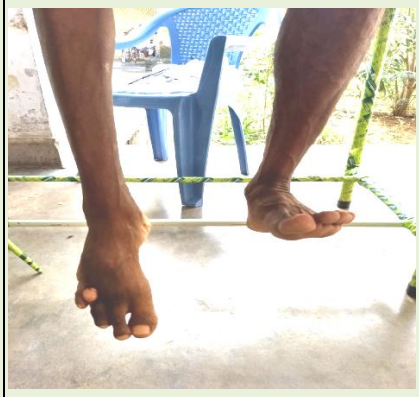
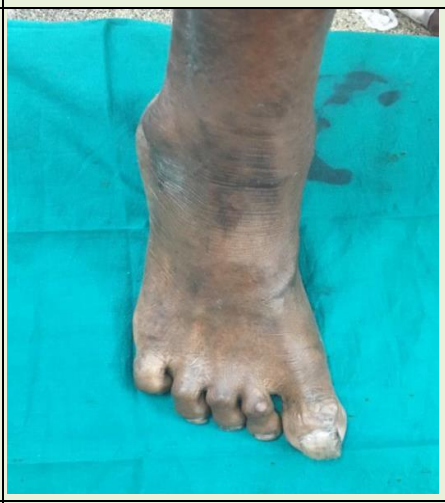
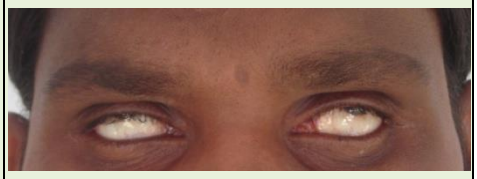
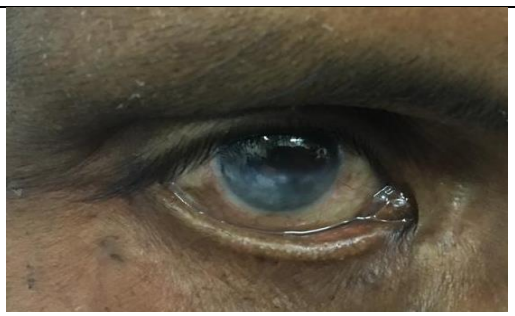
Foot	Lateral Popliteal Nerve	Foot drop. Loss of sensation over the lower leg and dorsum of the foot.	
	Posterior tibial nerve	Claw toes. loss of sensation and absence of sweating over the sole of the foot	
Face	Facial nerve	Inability to close the eye (lagophthalmos)	
	Trigeminal nerve	Loss of sensation over cornea	

Fig. 9.2 Disabilities in relation to peripheral nerves that are damaged



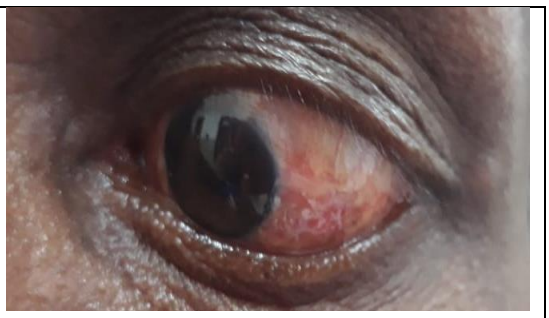


Fig. 9.3 Exposure keratitis- Corneal ulcer

EHF (Eye, Hand, Foot) Score:

The EHF score is used to grade the disability of the individual organ separately and given overall disability grade to the person as outlined below –

Examination parts (Separately for Right and Left)	WHO Disability Grade	Sensory Testing (ST)	Voluntary Muscle Testing (VMT)
Hands	0	Sensation present	Muscle power – Normal (S)
	1	Sensation absent	Muscle power – Normal (S)
	2	Sensation present/absent	Muscle power – Weak / paralysed (W / P)
Feet	0	Sensation present	Muscle power – Normal (S)
	1	Sensation absent	Muscle power – Normal (S)
	2	Sensation present/absent	Muscle power – Weak / paralysed (W / P)
Eyes	0	Vision - Normal	Blinking present, No lid gap
	2	Vision – cannot count fingers at 6m distance	Gaps between eye-lids, red eye, corneal ulcer, corneal opacity

EHF score is the sum of the individual disability grades for each eye, hand and foot.

The highest grade of disability given in any of the part is used as the Disability Grade for that patient. EHF score i.e. sum of all the individual disability grades for two eyes, two hands and two feet (0-12) should be recorded at each examination.

Ulnar weakness or paralysis

Active Exercise

- Straighten the weak little finger and ring finger and hold it straight for a few seconds. Use the other hand to hold the weak fingers steady.

Passive Exercises

- Straighten the paralysed little finger and ring finger using the other hand.
- Hold the base of fingers with the other hand and pull it away towards the palm.


Median weakness or paralysis

Active Exercises

- Straighten the weak thumb and hold it straight for a few seconds. Use the other hand to hold the weak thumb steady.

Passive Exercises

- Straighten the paralysed thumb using the other hand.
- Hold the base of thumb with the other hand and pull it away towards the palm.

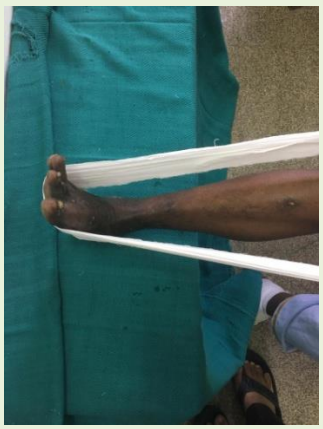

Lateral Popliteal Nerve Paralysis (Footdrop)

Active Exercises

- Practice bending the foot up and holding it in this position for a few seconds.

Passive Exercises

- Practice it with the leg straight. Pull the foot up using a towel. Repeat this movement several times.



Facial nerve

- Pull the outer corners of eye repeatedly to strengthen eye lid muscles.

Fig. 9.4 Active & Passive Exercise for weak muscles.

9.2 Ulcer Care

Management of ulcers:

There are a few major principles that should be remembered when planning ulcer management. If these principles are followed, simple ulcers will heal without any medication:

- Rest
- Good wound environment
- Hygiene
- Protection

Rest:

Almost all wounds will heal if they are rested. Almost all wounds will get worse if they are not rested. Regardless of the cause of injury, the first line in treatment of wounds is to remove the cause of tissue stress and then to allow the injured part to rest so that damaged tissue can repair itself. So long as the person with a wound is healthy, damaged tissue will repair itself. Rest doesn't necessarily mean that the patient must stay in bed (although for foot ulcers this is often the best option). If the person is unable to rest it may still be possible to rest the injured body part by splinting, crutches and standard MCR footwear used in leprosy.

All wounds are the result of tissue stress. Common causes of ulcer include:

- Sudden injury (e.g. sharp objects that cut or pierce through the skin like thorns or broken glass or burns)
- Repetitive pressure, friction or shear forces (e.g. foot ulcers from walking or hand ulcers from using unprotected hand tools)
- Dryness of skin leading to cracks and fissures
- Secondary infection in macerated skin of web space with candidiasis can lead to deep abscess
- Rarely rat bite can also produce an ulcer on toes, mainly after using vegetable oil on feet.

Hygiene and Good wound environment:

1. Examination of general condition of a case and local wound area. Probe the wound gently to search pus collection, drain the pus, if any.
2. Flush the wound cavity by saline solution.
3. Pack the wound with gauze and bandage it.
4. Elevate the part to facilitate healing.
5. Start systemic antibiotics.
6. Change the dressings daily and check for any further pus collection.

7. Surgical debridement after 3 days when inflammation is reduced, pus discharge is controlled and wound is clear. All the dead tissues and avascular tissues are removed. Wound space is packed with gauze soaked in Savlon solution. Dressing on alternate days to be done, after checking for collection of pus
8. Plaster cast with off-loading device may be considered after two weeks when wound is totally clear, healing has started and no signs of inflammation are present.
9. Wide spread use of antiseptics and topical antibiotics are to be avoided.
10. Oral preparations of Zinc, vitamin C and vitamin A may be supplemented.
11. Proper counseling of patient is required for better compliance and coordination.

Treating the ulcer is a great opportunity to reduce fear and stigma through demonstrating ulcer care without any discrimination. Family members are also encouraged to learn and practice the dressing of ulcer and nursing care of patient.

Complications to be referred for management:

- Severe side effects of MDT drugs
- Lepra reaction not responding to steroids even after 4 weeks
- Suspected relapse
- Eye complications
- Severe ENL with involvement of internal organs
- Infected chronic ulcers in foot.
- Patients with disability eligible and willing for Reconstructive Surgery

Disability can be prevented by:

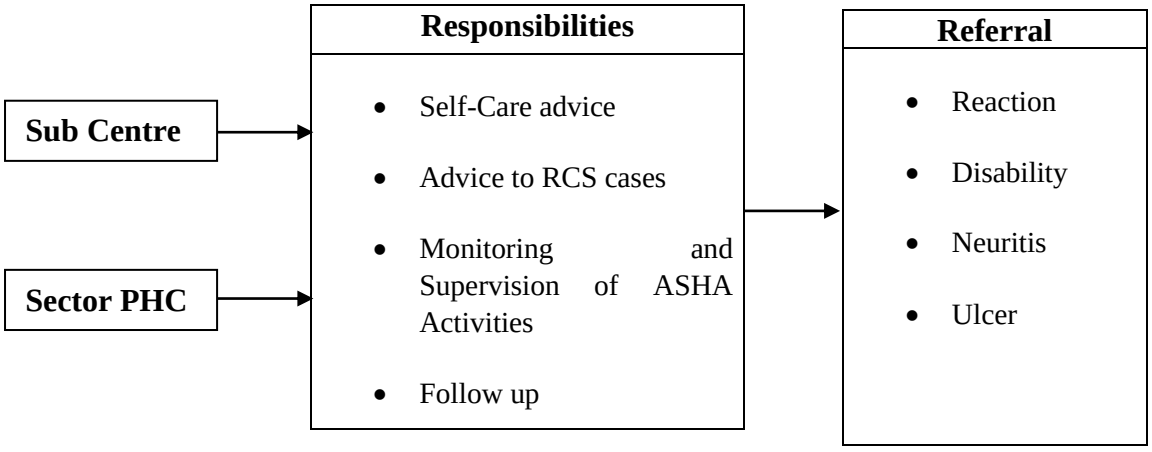
- Detecting leprosy patients as early as possible (early diagnosis of leprosy before disabilities and deformities are set in) and treating them with MDT.
- Adequate counseling at the start and during treatment explaining possible signs and symptoms of reaction, and the need to report immediately in case of nerve pain, loss of sensation, weakness, tingling /paraesthesia in the hand, face and foot.
- Detecting loss of nerve functions early (early diagnosis of lepra reaction / Neuritis).
- Check muscle strength and sensation (VMT and ST) i.e. assessment of nerve functions among patients at high risk regularly to detect complications early.
- Managing early loss of nerve function appropriately.
- Demonstration of self-care practices.
- Active and passive exercise for weak muscles by demonstration to patient.

Criteria for selection of patients eligible for RCS

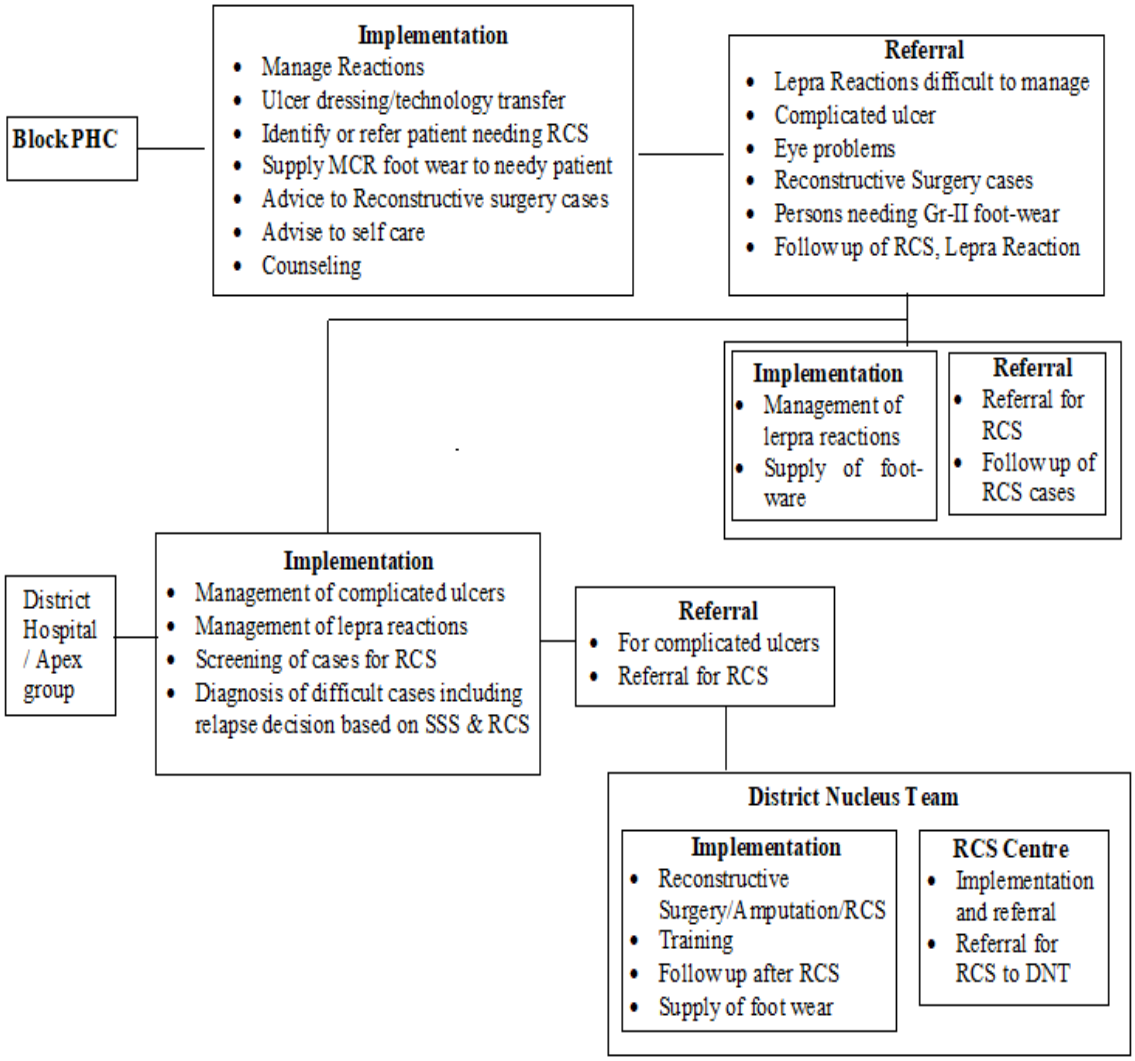
- Patient should have taken full course of MDT;
- Reaction free status for at least 6 months;
- Steroid free status for at least last 3 months;
- No inter-current infection;
- There should not be any severe contractures/ stiff joints.
- If the patient has recent nerve function loss, he should be given a course of steroids.

Referral Protocol

Village Health and Sanitation Committee (GKS), ASHA, PAL	**Responsibilities**	**Condition requiring referral to higher centre**
	• Supervision of Self-care practices • Supervision of use of MCR • Supervision of ulcer and dressing • Carried out by patient / family member	• Neuritis • Lepra Reaction • Disability • Ulcer



Role of different healthcare centres



9.2 Disability Prevention and Medical Rehabilitation (DPMR) Programme:

The prime objective of the National Leprosy Eradication Programme is to provide comprehensive leprosy services to the persons affected by leprosy i.e. i) early detection of leprosy cases and complete treatment so that disabilities are prevented and stigma dispelled, ii) follow up of such persons in a way that they do not land with any complications, iii) early identification of disabilities and deformities and manage them so that they can be mainstreamed, earn their livelihood and maintain their families. In order to achieve these objectives, a programme is launched known as Disability Prevention and Medical Rehabilitation (DPMR) programme.

The goals and aims of DPMR programme is:

- To prevent the occurrence of any disability or deformity not already present at the time when the disease is diagnosed
- To prevent the worsening of the existing disabilities and deformities.

All the persons diagnosed with leprosy should have:

- Nerve Function Assessment (NFA) at regular intervals, monitored by EHF scoring and appropriate services provided.

- Persons having Lepra Reaction or Neuritis are to be kept under strict surveillance and monitored more frequently with appropriate steroid regimen.

- The patients and their family members are to be counseled properly so that they carry out the instructions provided by the health providers.

For the persons, those who are already having leprosy related disabilities or deformities or presently diagnosed with leprosy related disability or deformity are to be line-listed in the Disability Register maintained at the CHC level (Block), NFA and EHF score ascertained and the required services enlisted to be provided to them.

The services provided under the DPMR programme are:

- Counseling of the affected persons and their family members regarding the reason of disability and how this could have been avoided. Further, the role of the affected persons and their family members are to be impressed to preserve the affected parts and not allow to worsening.

- Thorough Nerve Function Assessment and EHF scoring are to be recorded in the NFA card and Disability register for monitoring.

- Demonstration and monitoring of self-care practices and active and passive exercises.

- Demonstration of ulcer-care and emphasis on rest, good wound environment, hygiene and protection and monitor the progress of healing. Adequate dressing materials should be supplied to them.

- Supply of MCR foot-wear to the persons having anaesthetic feet and regularly replacing it so that the feet can be protected from injuries. Persons needing customized MCR foot-wear for deformed foot are to be referred to appropriate centres.

- Persons fit and willing for Reconstructive surgery (RCS), complicated plantar ulcers, MDT side-effects, Lepra reaction and Neuritis cases not responding to steroid, pregnant and child cases developing Lepra reactions and eye complications are to be referred to district hospitals for further management.

- The affected persons can be linked to the authorities to issue disability certificates and social welfare assistance.

Chapter 10

10. Supervision and Monitoring

Supervision - It is a way of ensuring support and guidance to the staff to enable them to perform their job effectively and efficiently. For this, the person who supervises should be competent and should know the job responsibilities of the staff working under him. The supervisor should be able to identify and rectify problems interfering in the implementation of various activities by the subordinate staff. This is done by observing the functioning of staff, through reviews during field visits using checklists, during monthly meeting and review of reports.

Monitoring - The strategy of National Leprosy Eradication Programme is early case detection, prompt treatment with MDT and prevention of disability among patients. Data is continuously collected on all these activities and consolidated into a Monthly Progress Report (MPR). Certain indicators are generated out of these reports and are used in assessing the progress. This process helps in knowing whether the activities are being carried out by the programme according to the plan,for taking immediate corrective action in case of deficiencies / deviation. All cases detected are brought under treatment. Treatment compliance should be at least 95%. Timely discharge of cases should take place and records should be properly maintained. It is also important to review the integration status through a set of indicators). It is essential to know the impact of the program (evaluation) through the use of indicators. (For additional details refer to USIS guidelines 2014.

Indicators -Indicators are tools that are used to measure progress and achievements under a programme. The following indicators are used in the the National Leprosy Eradication Programme.

A. Essential Indicators

- Annual New Case detection Rate (ANCDR) per 100,000 population
- Rate of new cases with Grade 2 disabilities per 10,00,000 population per year
- Treatment Completion Rate (TCR) as proxy to cure rate
- Prevalence Rate (PR)

B. Additional Epidemiological Indicators

- Proportion of Grade II disabilities among new cases
- Proportion of females among new cases
- Proportion of MB among new cases
- Proportion of child (0- 14 years) among new cases
- Child rate per 100,000 population

- Scheduled caste New Case Detection Rate
- Scheduled Tribe New Case detection Rate

C. Quality of Service indicators

- Patient month Blister calendar pack stock
- Absolute number of patients made RFT
- Number of Relapse reported.
- Proportion of cases who developed new or additional disability after starting MDT
- Proportion of treatment defaulters
- Proportion of new cases correctly diagnosed

Definition of the Indicators and formula to be used for their calculation are indicated below: –

1. Annual New Case Detection Rate (ANCDR)

1. Definition: is the rate at which new cases (never treated before) are detected in a defined geographical area (block, district) in a year (April-March)

$$\text{ANCDR} = \frac{\text{Number of new leprosy cases detected in one year x 100,000}}{\text{Total population of the area (as on 31}^{st}\text{ March)}}$$

2. Rate of new cases with Grade 2 disabilities per 10 00 000 population per year

Definition: is the rate at which new cases with disability grade 2 are detected in the defined geographical population (area) in a given year

$$\text{RNCWG2D} = \frac{\text{Total No. of new cases detected with Gr II disability x1000000}}{\text{Total Population of the area (as on 31}^{st}\text{ March)}}$$

3. Treatment Completion Rate

Definition: is the rate of patients who complete their treatment on time as a proxy for cure rate. Cohort analysis of PB and MB cases are done separately.

$$\text{PB TCR} = \frac{\text{Number of new PB cases who completed MDT in 9 months x100}}{\text{Number of new PB cases who started MDT in a year}}$$

$$\text{MB TCR} = \frac{\text{Number of new MB cases who completed MDT in 18 months x100}}{\text{Number of new MB cases who started MDT in a year}}$$

4. Prevalence Rate (PR)

Definition: is the total number of leprosy cases on record/under treatment per 10,000 population at a given point of time in an area.

$$PR = \frac{\text{Total number of leprosy cases on record x 10,000}}{\text{Total population of the area (as on 31st March 31)}}$$

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

5. Proportion of Grade II disability among new cases (PG2DANC)

Definition: is the Proportion (%) of new leprosy patients with grade II disability among total new cases detected

$$PG2DANC = \frac{\text{No. of Grade II disabled cases detected in a year x 100}}{\text{Total New case detected in a year}}$$

6. Proportion of Female among new cases (PFANC)

Definition: is the proportion (%) of new female patients among total newly detected cases.

$$PFANC = \frac{\text{Number of new female patients x100}}{\text{Total no. of newly detected cases}}$$

7. Proportion of Multi-bacillary (MB) among new cases (PMBANC)

Definition: is the proportion (%) of new patients diagnosed as MB among newly detected cases

$$PMBANC = \frac{\text{Number of new MB cases x100}}{\text{Total no. of newly detected cases}}$$

8. Proportion of child among new cases (PCANC)

Definition: proportion (%) of new leprosy patients up to 14 years of age among newly detected patients.

$$PCANC = \frac{\text{Number. of child leprosy cases detected x 100}}{\text{Total no. of newly detected leprosy cases}}$$

9. Child Rate (CR) per 100,000 population

Definition: The rate of new child leprosy cases (0-14 yrs of age) detected among the population of the area in a year

$$CR = \frac{\text{No. of new child cases (0-14 yrs) detected in a year x 100,000}}{\text{Population of the area (as on 31st March)}}$$

10. Scheduled cast (SC) new cases detection Rate

Definition: Total number of new cases detected among the SC population in a given time in an area

$$\text{SCNCDR} = \frac{\text{Total number of SC cases newly detected x 10,000}}{\text{Total SC population in an area}}$$

11. Scheduled Tribe(ST) new cases detection Rate

Definition: Total number of new ST cases detected among the ST population in given time in an area

$$\text{STNCDR} = \frac{\text{Total number of ST cases newly detected x 10,000}}{\text{Total ST population in an area}}$$

12. Patients month Blister calendar pack (BCP) stock (PMBCP)

Definition: Stock of BCPs in months, according to the number of patients expected to be treated in the next quarter

$$\text{PMBCP} = \frac{\text{Number of Blister Packs of each category [PB(A/C) MB(A/C)]}}{\text{No. of cases under treatment in each category [PB(A/C), MB(A/C)]}}$$

13. Absolute number of patients made RFT

Definition: Number of patients released from treatment during the year. The number should include both the new and the other cases treated in a year.

14. Number of Relapses reported.

Definition: No. of Relapse cases recorded in (and reported by) the PHC, District Hospitals, Medical colleges and other institutions in the district during the given time.

15. Proportion of cases with new disability after starting MDT (PCWNDASMDT)

Definition: Proportion (%) of cases who developed new or additional disability after starting MDT (new disability includes new nerve damage or new secondary impairment)

$$\text{PCWNDASMDT} = \frac{\text{No. of cases developed new or additional disability during treatment x 100}}{\text{No. of cases put under MDT during the year}}$$

16. Proportion of new cases correctly diagnosed (PNCCD)

$$\text{PNCCD} = \frac{\text{No. of new cases correctly diagnosed x 100}}{\text{No. of cases v}\mathbf{a}\text{lidated (DNT Team}}$$

Records

Six records are to be maintained under the Upgraded Simplified Information System under NLEP. These are:

Form No.	Description
U.L.F. 01	Patient Card
U.L.F. 02/A	Treatment Register for New cases
U.L.F. 02/B	Treatment Register for Other cases
U.L.F. 03	MDT Drug Stock Register
U.L.F. 04	Assessment of Disability and Nerve Function
U.L.F. 05	Disability Register
U.L.F. 06 and 07	Monthly Progress Report

Patient Card (Annexure - II) should be kept along with Assessment of Disability and Nerve function (Annexure - II)

Reports

The data recorded in different centers need to be periodically collected and put in a pre-designed format for submission to the next higher level for further use. These are called the reporting formats.

Monthly Progress Report (MPR) i.e U.L.F. 06 from PHC/CHC to district and ULF 07 from district/state to centre, submitted within time frame.

New Initiatives: In the present context,the following activities / initiatives have been undertaken to strengthen the programme –

- Stigma reduction
- Leprosy Case Detection Campaign (LCDC)
- Focused leprosy campaign (FLC)
- Special Plan for Hard to Reach Areas
- "Nikusth" – Online reporting system
- Web based training of Medical and Para-medical workforce in leprosy
- Mathematical modeling for evidenced based intervention.
- Research study to know effectiveness of PEP++.
- Strengthening Surveillance of Drug Resistance in Leprosy (AMR)
- Mainstreaming of Leprosy Colonies Inhabitants
- ASHA Based Surveillance for Leprosy Suspects (ABSULS)

Chapter 11

11. IEC and Counseling

11.1 Role of Medical Officer in IEC and Counselling

It is well known that problems like delay in reporting by untreated cases, hiding the disease, poor drug compliance, irregular self care practices and discriminations are due to lack of awareness and stigma attached with leprosy. It is essential to make the people aware about early signs and symptoms of leprosy, free availability of full course of effective and safe treatment, disabilities are preventable and discrimination is unjustified. Medical officers should be aware about facts about leprosy, standard messages to be disseminated, language and media to be used for spreading messages and frequency of disseminating messages. Interpersonal communication with persons affected, influential persons, village health sanitation committee and decision makers at all levels in the form of advocacy, counselling, training and focused group discussion will be helpful in reducing stigma. Demonstration of rational behaviour, not maintaining distances, no isolation is a strong force to change the behaviour. Setting examples will reduce discriminations. Medical Officer need to guide health workers in organizing rallies, film shows or campaigns along with using mass media during anti-leprosy day and other occasions and build attitudes in communities. Developing team of local volunteers in tribal and difficult to reach areas for increasing awareness and changing attitudes may prove to be a sustainable tool.

Standard messages for different target persons may be –

- Leprosy is a disease, not the curse of God.
- Leprosy is completely curable if treated in time.
- Full course of treatment is available free of cost in all government hospitals and health centers
- Disabilities/Deformities due to leprosy are not inevitable and can be corrected by reconstructive surgery, self-care and simple exercises.
- Leprosy does not spread by touch, nor is hereditary.

Counselling of persons affected, family members and community around is often required to treat patients and remove discrimination. The objective of counselling is to encourage the needy person to realize about the existence of the problem and analyze the cause and reason behind it. Further it is hoped that the needy person himself would act and do something to solve the problem. This act of doing something to solve the problem is his/her own decision; however, it may be under the guidance given by the counselor. In counselling decision to act or not to act should solely be taken by the needy person and under any circumstance it should not be enforced.

Advocacy with decision makers at all level also helps in rationale policy, practices and regulating mechanism in favour of national program and to restore the lost functions and social status of leprosy affected persons

IEC – Components

- ❖ Information - knowledge based on scientific facts and figures.
- ❖ Education - Process of bringing out ability of a person/community through learning
- ❖ Communication process of transmission of information, ideas, attitudes, or emotion from one person (or group) to another (or others) primarily through symbolic messages.
- ❖ Purpose of communication is to transmit right information and develop mutual understand.

Aim: Change in behaviour including

- Affecting Cognitive – Knowledge
- Affective -Behaviour and Attitude
- Psychomotor – skills/ practices

IEC Plan

- Assess needs and knowledge levels
- Define Tools and Methods (interpersonal communication, street play, posters, pamphlets, massmedia-print/electronic, etc depending upon the target audience
- Include NRHM IEC Plan
- Implement IEC activities
- Evaluate Knowledge levels and behaviour change

IEC -Features of a good message

- Content: Should be clear short, specific and need based
- Appeal: Must lead to/ ask for an action
- Relationships: Express relationship among health care system and community (including persons affected by leprosy)
- Emotions: Convey pleasing emotions, concern, care and motivation

Leprosy IEC - Key Messages

- Leprosy is Curable
- The disease is caused by leprosy germs and can be cured with medicines (MDT) that are available free of charge in all the health facilities.
- Early signs and symptoms of leprosy
- Leprosy usually starts as a patch with loss of sensation or as numbness and tingling in hands and/ feet. Consult health worker on occurrence of any of these.
- Disabilities can be prevented
- Early detection with appropriate treatment helps prevent disability due to leprosy.
- No place for segregation
- Accept persons affected by leprosy in society
- Treat the potential with compassion and empathy. Discrimination of patients is inhuman.

IEC- Generic Information

- Deformities and disabilities are unfortunate remnant conditions of leprosy, which can be avoided if treated early.
- Treated persons even with residual disability do not spread bacteria.
- People do not contract leprosy by dressing ulcers and attending to leprosy patients.
- Continued self- care by patients themselves improves their physical impairments and social life.
- Some deformities can be corrected by operations to restore appearance and function.
- Treated person affected by leprosy can lead a normal life and become economically independent.

Annexure I : Slit Skin smear Examination

Some people show features like leprosy, but cardinal signs 1 and 2 are not elicited from them – e.g. extensive and /or symmetrical skin patches all over the body without definite sensory deficit or involvement of peripheral nerves, shiny oily skin (infiltration), nodules over the body or over the ears or other conditions resembling leprosy. In such conditions, slit-skin-smear examination for presence of *Mycobacterium leprae* can be helpful in diagnosing leprosy.

Skin smear examination is essentially three steps; first is the collection of the specimen, second is the staining of the slide and third is the microscopic examination of the material. Reasonably accurate report is obtained in terms of positivity if proper technique is followed. In this section it is our endeavour to retain the skin smear examination technique alive at the secondary and tertiary care centers since it has largely been discontinued in the field area situation. Thus, the onus of accurate reporting falls at secondary and tertiary care level personnel.

Step 1: Collection of the specimen
Note: Before taking each smear wash hands and put on gloves.

Preparation of slide
Take a new, clean, unscratched microscope slide. Using a slide marker, write the patient identification (ID) number at the bottom of the slide. This number must be on the request form.

Collection of smear

Clean the skin at the smear sites with a cotton wad drenched in alcohol or spirit. Allow it to dry. Light the spirit burner. Put a new blade on the scalpel handle. If you put the scalpel down, make sure the blade does not touch anything. Pinch the skin firmly between your thumb and forefinger; maintain pressure to press out the blood.

Make an incision in the skin about 5 mm long and 2 mm deep. Keep on pinching to make sure the cut remains bloodless. If bleeding, wipe the blood with cotton wad. Turn the scalpel 90 degrees and hold it at a right angle to the cut. Scrape inside the cut once or twice with the side of the scalpel, to collect tissue fluid and pulp. There should be no blood in the specimen, as this may interfere with staining and reading. Stop pinching the skin and absorb any bleeding with a wad of cotton. Seal the cut site with Tr. Benzoin.

Spread the material scraped from the incision onto the slide, on the same side as the ID number. Spread it evenly with the flat of the scalpel, making a circle 8 mm in diameter. Rub the scalpel with a cotton wad drenched in alcohol. Pass the blade through the flame of the spirit burner for 3 to 4 seconds. Let it cool without touching anything. Repeat the steps above for the second site. Spread this smear next to, but not touching, the first one. Discard the scalpel blade safely. Thank the patient.

Fixation of smear on slide

Let the slide dry for 15 minutes at room temperature, but not in direct sunlight. Fix the smears by passing the slide, with the smears upwards, slowly through the flame of a spirit burner, 3 times. Do not overheat. The slide should not be too hot to touch. Put the slide in a slide box and send to the laboratory with the skin smear request form

Step 2: Staining the smear (Ziehl-Neelson Technique)

Filter the 1% carbol fuchsin solution through ordinary filter paper. Cover the whole slide with 1% carbol fuchsin solution. Heat the slide gently by holding a burning spirit lamp underneath it until vapour begins to rise from the carbol fuchsin. Repeat this 3 times during a period of 5 minutes. Make sure the stain does not boil. If the stain dries, add some more reagent and heat again. Wash gently under a running tap. Rinse until the run-off water is colourless, although the smears will remain dark red. Register the slide in the lab register.
Put the slide on the staining rack with the smeared side upwards. Up to 10 slides can be stained together. Make sure that the slides do not touch one another.

De-colorising:

Cover the smear with 1% acid-alcohol for 10 seconds. An alternative method is to cover with 5% sulphuric acid for 10 minutes. Rinse gently with water.

Counter-Staining

Cover with 0.2% methylene blue for 1 minute. Rinse with water, and let the slide dry in the drying rack in an inclined position, with the smeared side downwards. The slide is now ready to be read.

Step 3: Microscopic Examination

Look for the presence of acid-fast bacilli under oil immersion lens. They appear as fine red rods against a blue background. They can be straight or curved, and the red colour can be uniformly distributed (solid bacilli) or unevenly distributed (fragmented and granulated bacilli). Clumps of bacilli are called globi. Solid bacilli may suggest the presence of viable organisms and may be seen in new, untreated cases or in relapse cases. After examining the first field, move to the next field. Examine approximately 100 fields per smear.

Note on reading the skin smears

You need a microscope with a 10x eye piece and 10x and 100x objectives. Start the examination using the 10x objective. If acid-fast bacilli are seen, quantify them according to the following scale for the Bacteriological Index (BI). Calculate the BI for each smear separately. The bacilli may be in the following forms solids, globi, fragmented and granular. Write the result of both smears in the lab register. Give the result in the referral slips. Report the BI for both smears on the slide. For smear positive patients, the average BI will be taken as the BI for that patient.

Rinse the slide in xylene. Do not wipe it. Store the slide in a slide box for future quality control. Slides that are not kept for quality control should be destroyed, or disinfected, boiled and washed for re-use in routine examinations (of stool or urine, for example).

Slides should not be re-used for other skin smears or for sputum examinations.

Bacteriological Index (BI)

0, No bacilli seen in 100 fields

1+, 1 to 10 bacilli in 100 fields

2+, 1 to 10 bacilli in 10 fields

3+, 1 to 10 bacilli, in each field

4+, 10 to 100 bacilli, in each field

5+, 100 to 1000 bacilli in each field

6+, more than 1000 or globi in each field

Annexure –II : NLEP Recording and reporting formats

U.L.F. 01

NATIONAL LEPROSY ERADICATION PROGRAMME (NLEP) **PATIENT CARD**										
Subcentre			PHC							
Block/CHC		District		State						
Registration Number						SC	ST	Others		
Name						Age	Female	Male		
Address (with mobile No.)										
Duration of signs/ symptom in months	……..Duration of disability, if any……..									
Mode of detection	Voluntary/byASHA/referred by other/by contact survey/other mode									
Classification	PB	MB	New Case		Other Cases (specify)					
Disability	Gr-I	Gr-II	EHF score							
Date of First Dose										
AFTER ENTERING ABOVE INFORMATION IN THE PHC TREATMENT RECORD, THIS PATIENT CARD IS TO BE TRANSFERRED TO SUB-CENTRE FOR DELIVERY OF SUBSEQUENT DOSES									Signature of Medical Officer	
Date of subsequent doses:										
2	3	4	5	6 (PB final)	7	8	9	10	11	12 (MB final)
Date of Discharge	Date:				RFT/otherwise deleted (specify)					
End Status	EHF score	Follow up required (after RFT) for reaction, deformity, Ulcer or eye care								
THIS CARD IS TO BE MAINTAINED AT SUB-CENTRE AFTER EVERY DOSE UPDATE THE PHC TREATMENT RECORD AFTER ACHIEVEING END STATUS THE MPW SHOULD SIGN THIS CARD AND RETAIN AT SUB-CENTRE FOR FUTURE REFERENCE									Signature of Sub Centre MPW	
CONTACT SURVEY IN MB/CHILD CASE	No. Examined-				Cases Detected: MB- PB-					
Record of Lepra Reaction/Neuritis										
Type – I/II					Neuritis - Yes/No					
Prednisolone doses issued with dates at PHC/District hospital Dates of MCR footwear if issued Date of referral for RCS Contact examination done on …… new cases suspected/confirmed……										
NB: this patient card is for use for the new cases as well as other cases. In urban situation this card can be used by changing sub-centre/PHC/CHC with appropriate health unit area/region.										

TREATMENT REGISTER FOR NEW CASES

U.L.F. 02/A

PHC _____ Block PHC/CHC _____

Districts _____ State/UTs _____ Fiscal Year _____

Reg. No.	Sub Centre	Name	Address with mobile tel. number	Age	Sex M/F	ST / SC	PB / MB	Disability Grade I / II	Date of First Dose	Date of Subsequent doses											Date of RFT
										2	3	4	5	6 (PB Final)	7	8	9	10	11	12 (MB Final)	

TREATMENT REGISTER FOR OTHER CASES

U.L.F. 02/B

PHC _____ Block PHC/CHC _____

Districts _____ State/UTs _____ Fiscal Year _____

Reg. No.	Sub Centre	Name	Address with mobile tel. number	Age	Sex M/F	ST / SC	PB / MB	Disability Grade I / II	Date of First Dose	Date of Subsequent doses											Date of RFT
										2	3	4	5	6 (PB Final)	7	8	9	10	11	12 (MB Final)	

*** - Category of case – Relapse, re-entered for treatment completion, referred and changing in classification of MB / PB**

NLEP – LEPROSY MDT DRUG STOCK RECORD

U.L.F. 03

Use separate page for each category of MDT [MB(A) / MB(C) / PB (A) / PB (C)] – Specify category _____

(Same format to be used at PHC/District/State levels – Please specify level with name alongwith next highest level state)

PHC _____ Block PHC/CHC _____

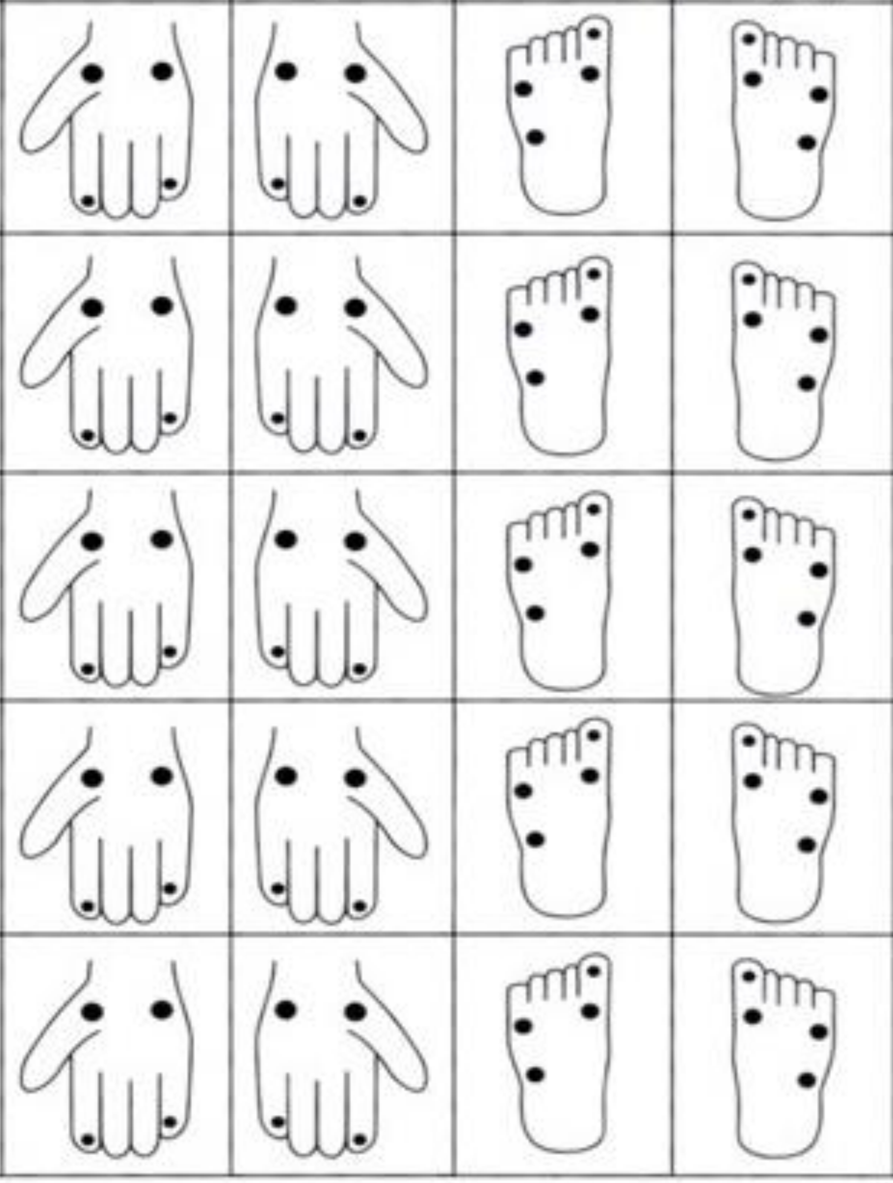
Districts _____ State/UTs _____ Fiscal Year _____

Transaction Date	RECEIPT					EXPENDITURE					Balance in Hand	Stock in Patient Month
	Quantity Received	From Where	Vide Ref. No.	Batch No.	Expiry Date	Quantity Received	From Where	Vide Ref. No.	Batch No.	Expiry Date		

SENSORY ASSESSMENT

U.L.F. 04 (Page 1)

DATE ASSESSOR	PALM		SOLE		Comments
	RIGHT	LEFT	RIGHT	LEFT	



Key : (Put these mark/icon on the site where lasion is seen)

✓ Sensation Present within 3 cms	S Contracture	Scar/Callus
X Anaesthesia	Wound	Shortaning Level
Λ Clawing	Crack	

ASSESSMENT OF DISABILITY & NERVE FUNCTION

U.L.F. 04 (Page 2)

Name _____ Village _____ Date of Registration _____

S/O.W/O.D/O _____ Sub-Centre _____ Date of RFT _____

Age / Sex _____ Registration No._____ Referred By _____

Occupation _____ MB/PB _____ Date of assessment _____

RIGHT							LEFT					
						←Date→						
						Vision (0.2)						
						Light closure lid gap in mm						
						Blink Present / Absent						
						Little Finger Out						
						Thumb Up						
						Wrist Extension						
						Foot up						
						Disability Grade Hands						
						Disability Grade Feet						
						Disability Grade Eyes						
On Date												
Max. (WHO) Disability Grade												
EMF Score												
Signature of Assessor												

Muscle Power
S = Strong
W = Weak
P = Paralysed

Score of Vision : Counting fingers at 6 meters
0 = Normal
1 = Blamed Vision
2 = Unable to count finger

(This Form should be filled-in at time of registration and repeated after 3 months (Once in 2 weeks in case of neuritis / reaction)

DISABILITY REGISTER

U.L.F. 05

PHC _____ Districts _____State/UTs _____

Sl. No.	Name of the Patient	Age / Sex	Address Village / Sub-Centre / PHC with phone number	New / UT / Old Case	MB / PB	New Case (NC) / UT Case / RFT	Disability Gr.III	Site of Disability					
								Eye		Hand		Foot	
								Gr-0	Gr.II	Gr.I	Gr.II	Gr.I	Gr.II
1	2	3	4	5	6	7	8	9	10	11	12	13	14

Ulcer Simple / Complicated	EHF Score	Neuritis	Reaction Type I / Type II	DPMR Services Provided				Refer with date				New Disability developed after starting of prednisolone			Referral Services provided / Follow up taken up / Remarks
				Steroid / Dose / Duration	Self-Care Practice	Ulcer Treatment	Other If any	RCS	Complicated Ulcer	Eye	Reaction not responding to Steroid	Eye (Gr.II)	Hand (Gr.I / Gr.II)	Foot (Gr.I / Gr.II)	
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

NLEP MONTHLY REPORTING FORM
PHC/ BLOCK PHC REPORT

U.L.F. 06 (Page 1)

PHC _____ Block _____
District _____ State _____
Reporting Month _____ Year _____

1	No. of balance cases at the beginning of the month		1.1 New Cases		1.2 Other Cases
		PB			
		MB			
		Total			
2	No. of new Leprosy Cases detected in the reporting month		During Reporting Month		
			PB	MB	TOTAL
		Adult			
		Child			
		Total			
	Among new cases – number from other states	Total			
3	Among new leprosy cases detected during the reporting month, number of	Female			
		Disability – Grade – I			
		Disability – Grade – II			
		SC			
		ST			
4	Number of New Leprosy Cases deleted during the month	RFT			
		Otherwise deleted			
		Total			
5	Number of New Leprosy Cases under treatment at the end of the month (1.1+2-4)				
6	Number of "Other Cases" recorded and put under treatment	(I) Relapse			
		(II) Reentered for treatment			
		(III) Referred			
		(IV) Reclassified			
		Total			
7	No. of other cases deleted from treatment	RFT			
		Otherwise deleted			
		Total			
8	No. of other cases / under treatment at the end of reporting month (1.2+6-7)				
9	Total number of cases under treatment at the end of month	New + Others (5+8)			
10	Leprosy Drug Stock at the end of the reporting month (if required use extra sheets)				

Blister Pack	Quantity	Expiry Date	Total Stock	No. of patients under treatment (New & Others)	Patient Months BCP
MB (A)					
MB (C)					
PB (A)					
PB (C)					

NB. Please calculate patient-t Month Blister packs for MB (A), MB (C),PB (A), PB (C) Quantity in the month of March, June, September and December and include the same in that respective Monthly Report.

REMARKS (If any):-

Signature of Medical Officer

NLEP MONTHLY REPORTING FORM
PHC/ BLOCK PHC REPORT

U.L.F. 06 (Page 2)

S. No.	Indicators	During Reporting Month		
		PB	MB	Total
1	No. of New Leprosy cases recorded			
2	No. of reaction cases managed at PHC			
3	No. of reaction cases referred to Dist. Hospital / Other Inst.			
4	No. of relapse cases suspected and referred			
5	No. of relapse cases confirmed at district hospital			
6	No. of cases developed new disability after MDT			
7	No. of patient provided with footwear			
8	No. of patient provided with self care kit			
9	No. of patient referred for RCS			
10	No. of new cases confirmed at PHC out of referred by ASHA			
11	No. of case completed treatment through ASHA			
12	No. of ASHA paid incentives			
13	No. of Contacts examined			
14	No. of cases detected amongst contacts			
15	No. of cases voluntarily reported, out of new cases recorded (Sl.No.1)			

Signature of the Medical Officer

Glossary

Accompanied MDT	:	A strategy proposed by WHO, where people with Leprosy may, if they wish, receive the whole course of treatment at the time of diagnosis or provision of more than 1 BCP of MDT at a time.
Abduction	:	Movement away from anatomical central line of body
ANCDR	:	Annual New Case Detection Rate
Anesthesia	:	Loss of sensation
ANM	:	Auxillary Nurse Mid-wife
ASHA	:	Accredited Social Health Activist (volunteer from the community identified to act as a link between the health service and the community)
AWW	:	Anganwadi Worker
BCP	:	Blister Calendar Pack
Cardinal sign	:	Essential / unique sign
Claw hand/Clawing	:	Deformity of hand where there is hyperextension of joints between fingers and palm andflexion of joints of the fingers
CLD	:	Central Leprosy Division
CLTRI	:	Central Leprosy Teaching and Research Institute
CMO	:	Chief Medical Officer
Deformity	:	Abnormal appearance, disfigurement
Decompression	:	To relieve from compression/pressure.
Defaulter	:	An individual who fails to complete treatment within the maximally allowed time frame
Disability	:	A difficulty in carrying out certain activities considered normal for a human being. A disability results from impairment. Activity limitation and restricted participation is includedunder disability.
DLO	:	District Leprosy Officer
DLS	:	District Leprosy Society
DPMR	:	Disability Prevention and Medical rehabilitation
EHF Score	:	Eye, Hand and Foot Score
Endemic	:	Continuous presence of disease

ENL	:	Erythema NodosumLeprosum - Type 2 lepra reaction characterised by nodules in the skin
Erythematous	:	Red in colour
Exfoliative dermatitis	:	Condition characterized by universal erythema and scaling. Very often seen as drug reaction (e.g. Dapsone)
Exposure keratitis	:	Damage to cornea due to constant exposer.
FLC	:	Focused Leprosy Campaign
Foot drop	:	Inability to flex foot at ankle due to paralysis
G2D	:	Grade 2 Deformity
GHC	:	General Health Care
GOI	:	Government of India
Haemolyticanaemia	:	Anaemia produced by destruction of red blood cells (can be caused by Dapsone)
Handicap	:	Unable to perform desired normal role in the society.
Hepatitis	:	Inflammation of liver
Ichthyosis	:	Condition where the skin is dry and scaly like that of a fish
IEC	:	Information Education and Communication
Impairment	:	Any loss or abnormality of psychological, anatomical structure or function caused by the disease or injury
Incubation Period	:	Time interval between entry of organism and onset of symptoms
Jaundice	:	Condition characterized by yellowness of skin, Mucous, membranes and white of eyes
Keratitis	:	Inflammation of the cornea.
Lagophthalmos	:	Inability to close the eye due to paralysis of eye lid
Leprosy Reaction	:	Acute inflammatory manifestations in skin and/or nerves in leprosy
MB	:	Multi Bacillary (more than 5 skin lesion or more than 1 nerve trunk involvement orbacteriologically positive)
MCR	:	Micro Cellular Rubber for making footwear
MDT	:	Multi Drug Therapy

MO	:	Medical Officer
MPHW/MPW	:	Multipurpose Health Worker / Multipurpose Worker
MPR	:	Monthly Progress Report
Nephritis	:	Inflammation of the kidney
Neuritis	:	Inflammation of nerve
NFI/NFA	:	Nerve Function Impairement / Nerve Function Assessment
NGO	:	Non-Governmental Organization
NLEP	:	National Leprosy Eradication Programme
Nodule	:	Swelling in the skin
Edema	:	A local or generalized condition in which the body tissues contain an excess amount of fluid
Opposition	:	Bringing together pulp of thumb with pulp of other fingers
Palpate	:	To 'palpate' is to examine by touch
PB	:	Pauci Bacillary.
PHC/APHC	:	Primary Health Centre / Additional Primary Health Centre
Plantar	:	Referring to the sole of the foot
PMW	:	Para Medical Worker
POD	:	Prevention of Disability
Prevalence	:	Number of cases on treatment per 10000 population [31st March]
RCS	:	Re-constructive Surgery
Reaction	:	An inflammatory episode that might occur during the course of Leprosy
Relapse	:	Re-occurrence of disease after cure
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
RFT	:	Release from Treatment (the end of treatment)
Scaling	:	Visible shedding of surface layer of skin in the form of scales
S/C	:	Sub-centre

SLO	:	State Leprosy Officer
ST	:	Sensory Testing
Synechiae	:	Adhesions between iris and anterior lens capsule.
Ulcer	:	Discontinuity of the skin or mucous membrane
USIS	:	Upgraded Simplified Information System
VMT	:	Voluntary Muscle Testing
WHO	:	World Health Organization
Wrist drop	:	Inability to extend wrist due to paralysis of muscles supplied by Radial

Central Leprosy Division,
New Delhi
Directorate General of Health Services
Ministry of Health and Family Welfare
Government of India

Central Leprosy Teaching & Research Institute,
Chengalpattu, Tamil Nadu
Directorate General of Health Services
Ministry of Health and Family Welfare
Government of India