Third Edition

WE CAN DETECT TREAT CURE LEPROSY

A Guide for Public Health Doctors

Prelude

Third Edition

Leprosy disease lingers on in our country despite the great stride made in the MDT era. The integration phase that began in 2002 has changed the role of all health service providers towards leprosy control efforts.

ALERT-INDIA as a duty bearer acknowledges the right of people affected by leprosy (PALs) for timely detection, prompt diagnosis, adequate treatment and quality care contributing to the objectives of leprosy control through the general health care system.

To fulfil this duty, it is vital to nurture leprosy expertise in terms of the acumen needed to confirm difficult to diagnose cases, manage reactions and other complications – above all detect early nerve involvement and prevent deformity – the sole contributor to social fear and ostracism.

This effort will help lessen the disease burden and its morbidity. Thus, significantly reducing the need for tertiary care and minimise the burden for socio-economic rehabilitation measures.

ALERT-INDIA has seized of the ground reality where the diminishing of leprosy expertise in the public health system might result in total absence of it in the near future.

This guide by ALERT-INDIA team is to fulfil the above critical gap by enabling and enhancing the clinical acumen of the medical fraternity in India.

Mumbai
April, 2013

A. Antony Samy
Chief Executive
ALERT-INDIA

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Presentation : text & design
A. Antony Samy
Rajeev B. Dudhalkar
S. Kingsley
'Ethos' (Cover)

Photographs
Joy Mancheril
Ashutosh Prabhavalkar
P. R. Dewarkar
Balakrishna Mangad
Kamlesh Chavan
Dr. A. Mahulkar
DANLEP
WHO

Production Assistance
Rupesh M. Zad
Stella Mancheril

Special thanks to
Dr. B. K. Girdhar
Dr. Anil Kumar
Dr. P. R. Manglani
Dr. Rashmi Shukla

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B-9, Mira Mansion, Sion (W), Mumbai - 400 022
Tel.: 022-24033081/2, Fax: 022-24017652
Email : alert@bom5.vsnl.net.in; URL : www.alertindia.org

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Preface

This guide is a response to a felt need by the doctors in public health system for an easy reference to detect and treat leprosy patients at the Out Patient Department (OPD) level. This guide was prepared, based on the experiences of trained leprosy workers and doctors at ALERT-INDIA.

We are confident that this publication will reach out to all public health personnel, as visualised in LEAP (Leprosy Elimination Action Programme) strategy, to transfer the knowledge and skills from the vertical leprosy personnel to General Health Care (GHC) personnel.

Practical tips are outlined for diagnosis and treatment of leprosy. Academic jargon has been avoided to provide an easy guideline along with simple text and photos that can help in basic clinical practice.

We are immensely grateful to Dr. Colin McDougall and Dr. B. K. Girdhar for their valuable comments on the manuscript and for writing the foreword.

This manual would have never been made so attractive without the guidance and efforts of Mr. A. Antony Samy, the Chief Executive of ALERT-INDIA. His keen spur to make this manual simple and explicit in his style of presentation is highly appreciable. We express our gratitude for his magnanimous contribution in designing this manual.

Dr. Vijaykumar Vinayak Dongre
M.B.B.S., D.V.D., GFAM, LMP,
PGD-PR&A, PGD-MLS, DSW, DHE, DHA
Senior Consultant, LEAP, ALERT-INDIA
Hon. Secretary,
The Society for the Eradication of Leprosy,

Dr. Sachin R. Salunkhe
M.B.B.S., D.V.D.,
Consulting Dermatologist, Venereologist and Leprologist,
LEAP, ALERT-INDIA

Foreword

First Edition

It is a great pleasure to be invited to write a Foreword to this book, specially prepared for the guidance of medical officers of the Mumbai Municipal Corporation, to facilitate the integration of leprosy services into the General Health System (GHS).

Following the pioneering example of Tamil Nadu in 1997 in making the change from a long-established and very successful vertical program to integration, it became clear that the process is more complex and difficult than had at first been perceived. Since that date, progress in establishing integration in the other states of India has been rather slow, but many of the problems are gradually being solved and it is envisaged that the entire National Leprosy Eradication (formerly Control) Program will, by the year 2007, be absorbed into the GHS. It is now recognised that to do this effectively is an enormous task, calling for a huge input or re-training and orientation of health staff at all levels.

It is probably not an exaggeration to say that integration is the most important single activity calling for attention and professional input in the field of leprosy worldwide. Many of the shortfalls in the generally accepted strategy for leprosy control, notably the continued detection or presentation of new cases every year, despite dramatic falls in prevalence, are attributed by experts to inadequate population / geographic coverage by the vertical services, including the availability of Multi-Drug Therapy (MDT), free of charge to all patients with this disease.

This “Guide for Public Health Doctors” is one of a series of excellent publications by ALERT-INDIA in recent years, calling for attention to the continued need to maintain leprosy services, not only until the WHO goal of less than one case per 10,000 of the population has been achieved, but beyond. I wish ALERT-INDIA every possible success in this momentous venture.

Oxford, UK
2004

A. Colin McDougall, MD FRCP, FRCP Edin.

Honorary Consultant, Department of Dermatology
The Churchill Hospital, Oxford, United Kingdom.
Formerly Editor, “Leprosy Review”

Foreword

Third Edition

It is indeed a matter of pride and honour for me to pen a foreword for this practical guide book on leprosy for medical doctors and paramedical workers published by ALERT-INDIA. This revised edition with profusely illustrated version is being brought out at a time when the interest of the general health care staff in India, has considerably waned following the declaration by the Union Government of India on achieving the elimination of leprosy in the country.

Despite the above declaration, a fair number of persons affected by leprosy are being newly detected in the field or getting self reported. When persons with suspicious signs of leprosy are seen by the primary health care workers, this book will definitely come in handy and help them in "what should I do now". With practically non availability of clinical expertise and experienced medical personnel to help the health workers and no worthwhile training program to guide them, this book is sure to fill the gap both at medical officer and paramedical staff level. Most importantly the simple illustrations and flow-charts would help the health workers to give better care to the leprosy sufferers.

The continued initiative and the efforts by ALERT-INDIA team in bringing out an appropriate and updated teaching material for medical fraternity and the health care providers is commendable.

I hope the various stakeholders in leprosy will make full use of this guide to eventually overcome the consequences of this disabling disease in the community.

I congratulate the authors, Mr. A. Antony Samy and his team at ALERT-INDIA for this great service to the cause of leprosy.

Agra, India
2013

Dr. B. K. Girdhar, M.B.B.S., M.D. Skin (A.I.I.M.S.)
Senior Consultant, Dermatologist, Venereologist & Leprologist,
Shanti Manglick Hospital, Fatehabad Road, Agra, Uttar Pradesh

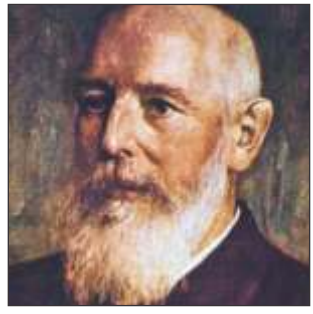
Dy. Director (Retd.), National JALMA Institute for Leprosy and
other Mycobacterial Diseases (ICMR) Taj Ganj, Agra, Uttar Pradesh, India

Contents

1. Cause and spread

Leprosy Cause

- Bacillus called Mycobacterium leprae causes leprosy.
- It is Acid Fast Bacillus (AFB) and an obligatory intra-cellular organism.
- Cannot be cultured in an artificial medium.
- Does not produce any toxins, hence the affected persons feel no discomfort.
- Only bacillus that invades peripheral nerves and causes neuropathy.



Discovered by Dr. G.A.Hansen on 28 February 1873 in Norway.

Leprosy Infection

- Leprosy bacilli multiply very slowly.
- One bacillus takes 15-20 days to divide into two (generation time), hence the long incubation period of more than 3 years.
- Response of the natural immunity to the presence of bacteria is limited (low antigenicity) in susceptible individuals.

Leprosy is the ***least infectious*** of all the communicable diseases. Tuberculosis, measles and chicken pox are far more infectious than leprosy

Leprosy Host

- Majority of the people (95 – 98%) are naturally immune to the disease.
- Among the people infected with M.leprae, only 2 – 5% (susceptibles) develop the disease because they have deficient natural resistance (CMI - *Cell Mediated Immunity*) .
- Early signs appear 3-5 years after infection in susceptible individuals. Therefore, difficult to identify the source of infection.

Leprosy Spread

- Untreated person with infectious type of disease (skin smear positive) is the main source for spread of leprosy.
- Leprosy spreads when they release large number of bacilli from upper respiratory tract while sneezing or coughing.

Airborne transmission by droplet infection.

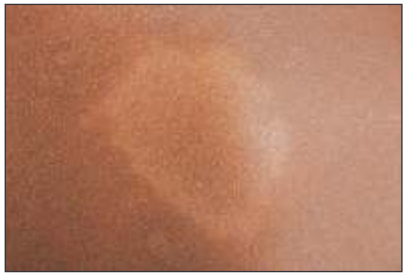
Educating the public to identify persons with infectious leprosy at an early stage is the key to achieve leprosy control.

'Danger to others, if any, arises not from the leprosy patients under treatment but from the undiagnosed cases'.

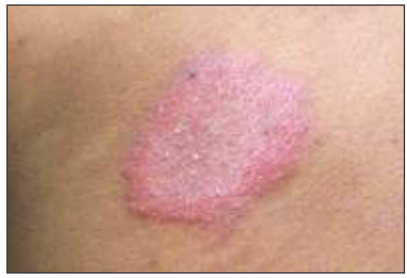
W. H. Jopling, Consultant Leprologist, London

2. Clinical manifestations

1 Feel the skin lesion

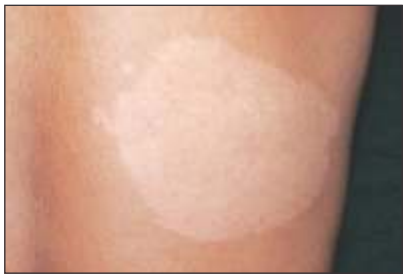


Flat (Macule)

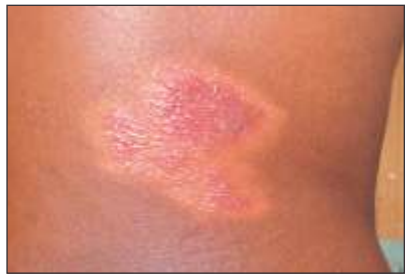


Raised (Plaque)

2 Observe the colour

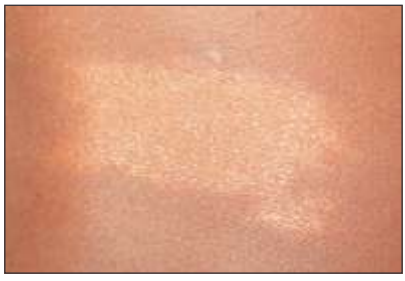


Pale (hypo-pigmented)

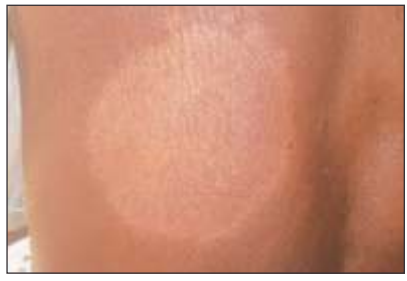


Reddish (erythematous)

3 View the margin



Skin patch with ill defined margin

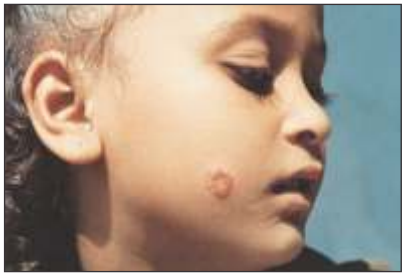


Skin patch with well defined margin

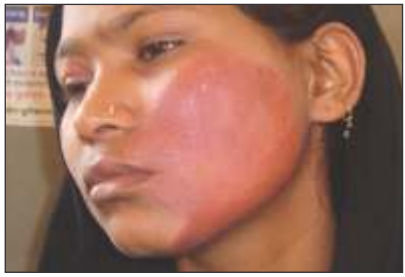
- Onset of skin patch is gradual and insidious.
- Can be of any size and does not hurt or itch.
- Can show loss of sensation, sweat and hair growth.
- Satellite patches are a special characteristic of certain clinical type of leprosy.

Skin patch ***may heal spontaneously*** (self healing)
or progress to a definite type of leprosy

4 Record the size

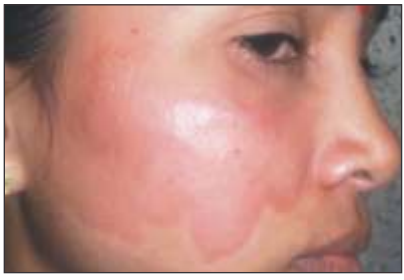


Small patch (up to 1 cm)

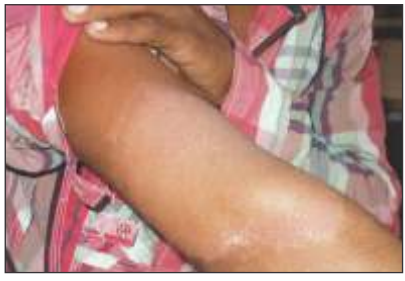


Large patch (more than 3 cms)

5 Note the site



Patch on face

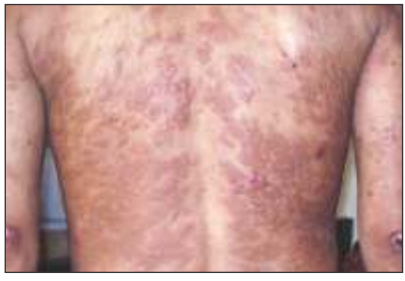


Patch along the course of a nerve

Patients with skin lesions over nerve trunk or on face are at risk for developing sensory or motor deficit.

6 Observe distribution

Asymmetrical

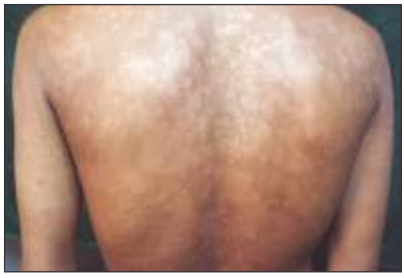


Symmetrical

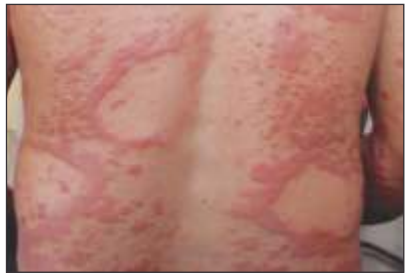
Increase in number of skin patches during treatment may indicate 'lepra reaction' and after completion of treatment may indicate a reaction or a 'relapse'.

3. Infectious type of leprosy

1 Look for multiple skin patches



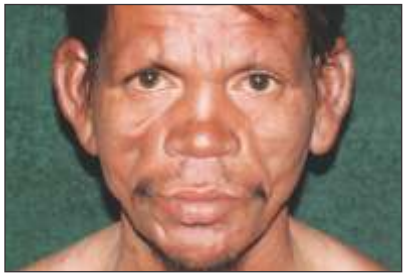
Multiple hypopigmented skin patches



Multiple reddish skin patches

Multiple skin patches (macules) seen in **lepromatous leprosy** typically do not show loss of sensation

2 Look for infiltration of the skin

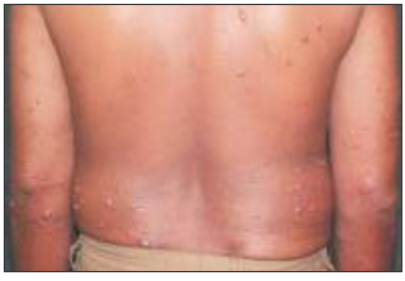


Smooth, oily and shiny skin

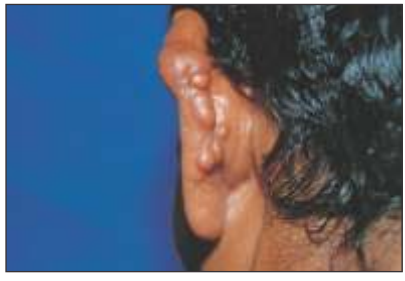
Thick & erythematous (infiltrated) skin

Infiltrated skin does not show loss of sensation. There may be loss of eyebrows and eyelashes.

3 Look for nodules on the skin



Multiple nodules on body

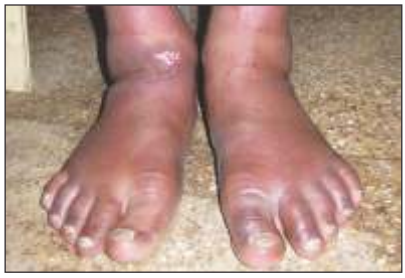


Multiple nodules on ears

Nodules appear on ears, face, extremities and trunk with normal or red skin colour. May be small or large and soft or hard. Nodules generally contain large number of leprosy bacilli.

4 Look for swelling of limbs

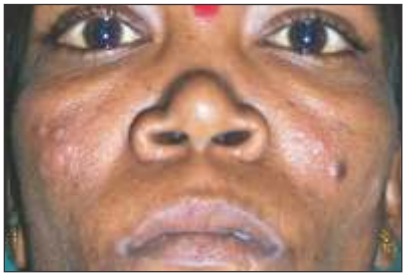
Swelling of hands



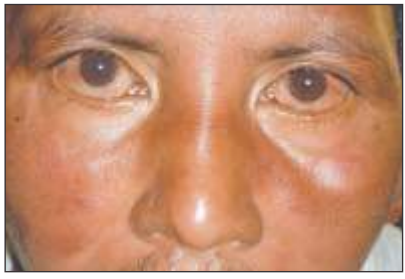
Swelling of feet

- Swelling of hands and feet may occur in lepromatous leprosy - may also indicate lepra reaction.
- Bilateral 'glove and stocking' type of anaesthesia is a common feature of advanced lepromatous leprosy.

5 Look at nose and eyes



Collapse of nose



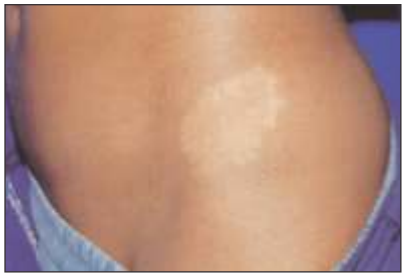
Infiltration of eye

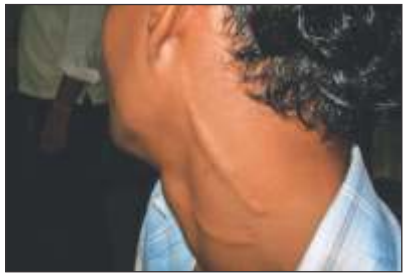
- Nose and eyes are frequently affected in advanced type of leprosy.
- Ulceration of nasal mucosa results in bleeding. Destruction of nasal septum and cartilage causes nose collapse.
- Anterior parts of the eye - cornea, sclera and iris (red eye) - are commonly involved along with lacrimal sac (watering from eyes).
- Involvement of eye, larynx, testes, kidneys and lymph glands are late manifestations of lepromatous leprosy.

Leprosy consciousness is a pre-requisite for diagnosing leprosy at an early stage. What mind knows, eyes can see. If you think about leprosy, you can diagnose it.

4. Classification of leprosy

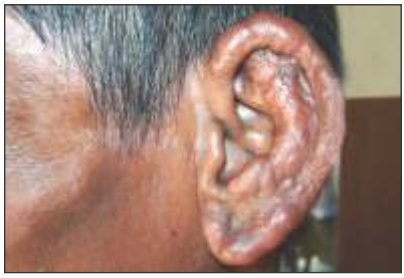
1 Tuberculoid leprosy (TT), specific CMI is good





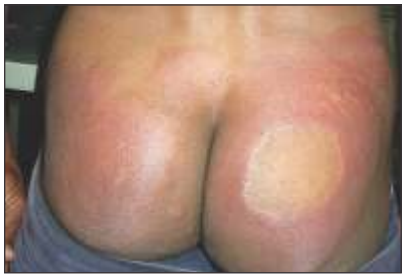
- Localised form of disease. Skin lesions are few in number with definite loss of sensation and may show central healing. Nerve trunks are usually enlarged. Bacilli are scarce and mostly found in nerves.

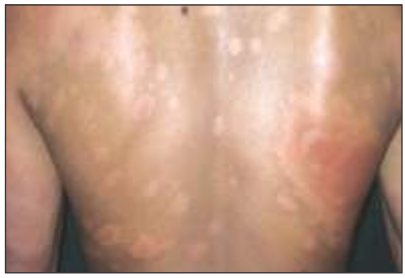
2 Lepromatous leprosy (LL), specific CMI is poor or nil



- Generalised form of disease, well established. Multiple skin patches may appear in the early stages. Body areas with high temperature are spared. Multiple organs are affected. Tissues contain millions of bacilli.

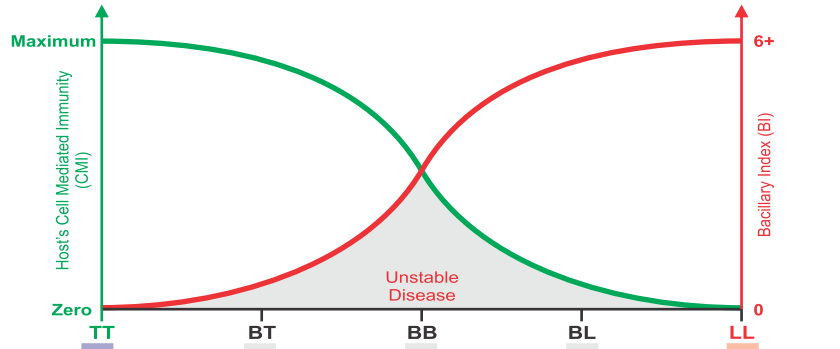
3 Borderline leprosy (BB), specific CMI is unstable



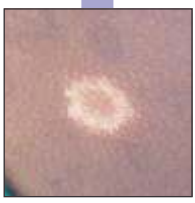


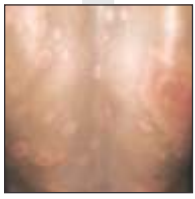
- Unstable form of disease. May change towards either TT or LL based on specific CMI response. Borderline tuberculoid (BT), borderline (BB), and borderline lepromatous (BL) are intermediate forms of leprosy. Upward or downward shift in CMI, can cause nerve damage leading to disabilities and deformities.

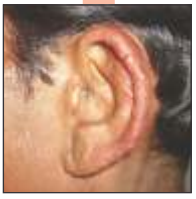
5. Spectrum of leprosy



More steeper the slope, greater the instability
Most leprosy patients develop unstable forms of disease

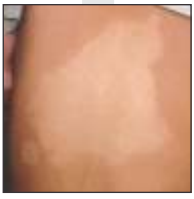






PB
(Pauci-bacillary)

Few bacilli
are seen.



MB
(Multi-bacillary)

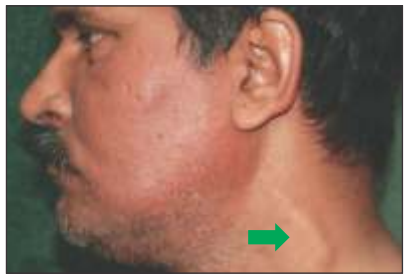
Many bacilli
are seen.

Skin Patches	TT	BT	BB	BL	LL
Number	Usually single	Single or few	Several	Many	Innumerable / no patches
Size	Usually large or small	Large & small with satellite patch	Large & small	Usually small	Small or no patch (infiltration)
Surface	Very dry / scally	Dry	Slightly shiny	Shiny	Shiny & oily
Margin	Well-defined	Well-defined	ill-defined & defined	Slightly ill-defined	ill-defined
Distribution	Localized	Asymmetrical	Bilateral & asymmetrical	Symmetrical	Symmetrical
Sensation	Absent	Markedly diminished	Moderately diminished	Slightly diminished	Not affected
Nerve involvement	Nil or 1	1 or many	Many (bilateral)	Many but late (bilateral)	Many but late (bilateral/symmetrical)
Skin smear (BI)	Negative	Negative / 1+	2+ to 3+	4+ to 5+	5+ to 6+
CMI	Very high	Moderate	Very unstable	Low	Absent
Lepra reaction	Type I	Type I	Type I	Type I / Type II (ENL)	Type II (ENL)
Grouping	PB		MB		

6. Consequences of nerve damage

1 Palpate nerves to detect changes

Thickened Ulnar nerve

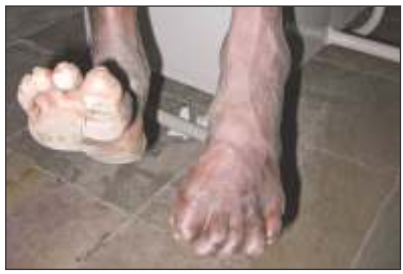


Thickened Greater Auricular nerve

- M.leprae is the only bacterium that can enter nerve tissues. Schwann cells are the target cells.
- Bacilli that enter either the dermal (cutaneous) or nerve trunks slowly multiply and may elicit inflamation (granuloma) with consequent nerve thickening and functional impairment.
- Nerves that are superficial to skin are most vulnerable to damage by M.leprae as the temperature is less.
- Nerve damage is more common in TT and BT type of leprosy.
- Involvement of peripheral nerve without skin lesions is known as 'pure neuritic' type of leprosy.

2 Look for visible deformities on face & limbs

Lagophthalmos



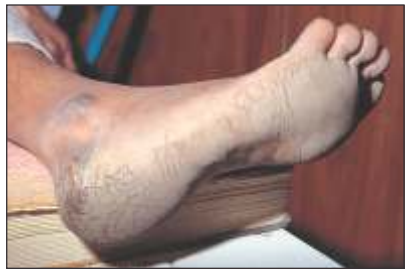
Foot drop

- Damage to sensory nerve fibers results in blisters on hands following suspected burns and ulcers on soles due to prolonged walking / standing or trauma.
- Damage to motor fibers of nerve trunks results in weakness or paralysis of muscles leading to deformities of eyes and limbs.

Nerve damage in leprosy is ***progressive*** and becomes ***irreversible***, if not detected early and treated appropriately.

3 Look for wounds and dry skin

Blister / injury

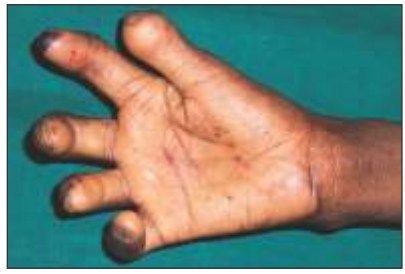


Cracks and callous

- Loss of sensation (touch, pain and temperature) make the patient prone for repeated injuries.
- Loss of sweating causes dryness, cracks and thick skin (callous) in hands and feet.
- Deep cracks may get infected and gradually develop into wounds.

4 Look for stiff joints and bone absorption

Stiff finger joints



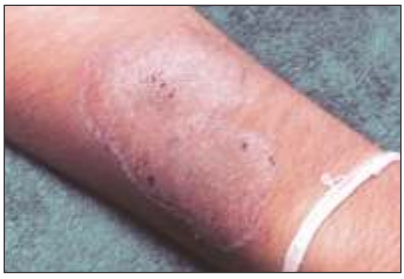
Absorption of fingers

- Loss of muscle power results in paralytic deformities of hands and feet that can cause joint stiffness over a period of time.
- Loss of sensation leads to repeated injuries and chronic infection in hands and feet that may result in absorption of bones.
- Patients engaged in hard manual labour are at more risk of developing wounds due to excessive pressure.

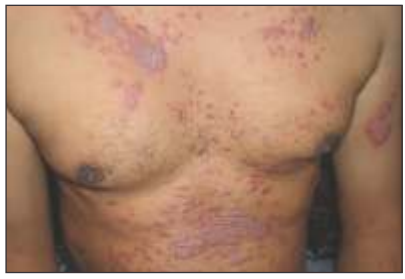
Deformities can be prevented by early detection. Regular treatment with MDT and physiotherapy can help to correct early disability and deformity.

7. Lesions that look like leprosy

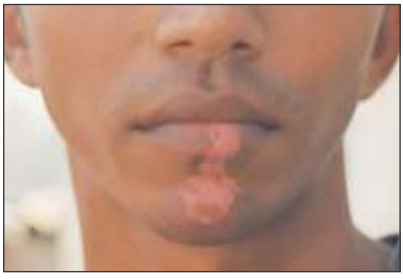
1 Macular lesions



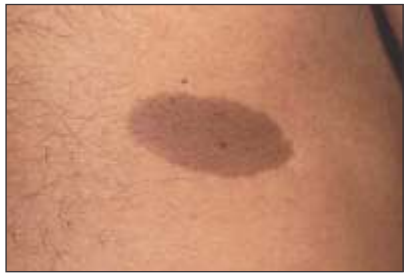
Tinea Circinata : Scaly, itchy lesions, superficial look, sensations and sweating normal. Fungus can be demonstrated.



Psoriasis : Erythematous, silvery / micacious, scaly plaques, sensations normal, heal with hypo/ hyper-pigmentation, scalp commonly affected.



Vitiligo: Depigmented lesions, sensations and sweating normal. Hairs present over the lesion - may be milky white in color.

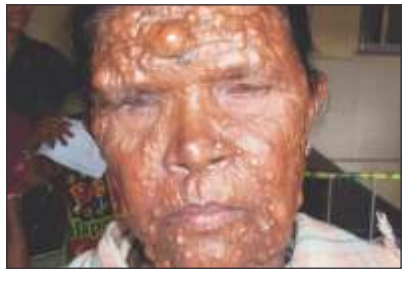


Birth mark or naevus : Present since birth. Margin serrated / sharply defined. Sensations and sweating normal.

Nutritional dyschromia: Scaly, hypopigmented lesions on face in children who are malnourished and / or with intestinal worm infection. Sensations normal. It may be due to deficiency of vitamins and / or minerals.

2 Nodular lesions

Dermal leishmaniasis : Nodular lesions. Sensation and nerve normal. History of kala-azar. Skin smears negative for AFB.



Neurofibromatosis : Soft, multiple nodules. Coffee colour dark areas present. Skin smears negative for AFB.

3 Other plaque lesions

Lichen Planus : Lesions are violaceous, flat topped and itchy. On healing leave dark areas. Sensations and sweating normal.

Pityriasis rosea : Symmetrically distributed small plaques and patches with mildly erythematous edges, sensations normal. Herald patch present.

Lupus vulgaris : Raised / indurated patch often with central scarring of long duration. Sensations normal, lymph nodes may be enlarged.

Scar & keloid : History of injury or surgery. May itch. Sensations normal.

Xanthomatosis : Uncommon condition. Elbow region is the common site. Skin smears are negative for AFB, Blood cholesterol level high.

Rule out leprosy, if skin lesion is present since birth; de-pigmented, itchy, scaly, show any seasonal variation and appear or disappear suddenly.

4 Neurological conditions

Diabetic neuropathy : Distal bilateral 'glove and stocking' type of sensory loss, 'burning feet' syndrome, nerves not enlarged, commonly ankle reflex lost. May develop trophic ulcers. High level of sugar in blood.

Alcoholic neuritis : History of alcoholism, red eyes, angry looking tongue, cheilitis present. May develop ulcers or sores. Nerves not enlarged.

Syringomyelia : Heat and pain sensations lost. Touch sensation intact. May develop muscle paresis and loss of autonomic nerve function. Nerves not enlarged.

Tabes dorsalis : Intense, recurrent pain in legs, stamping type of gait, Romberg's sign positive, Knee reflex absent, FTA – ABS test positive for syphilis. Diminished tactile sensation. Nerves not enlarged.

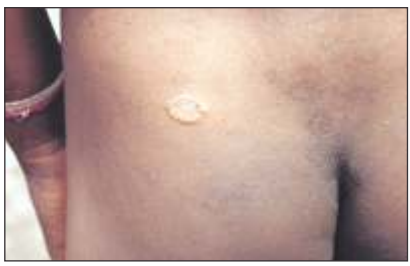
Most skin diseases do not show sensory changes, hence may not be leprosy. Definite nerve thickening with NFI and presence of AFB in skin smear are confirmative signs of leprosy.

8. Clinical Examination

1 Ask for detailed history

- the origin, duration and progress of the signs and symptoms.
- any area on the body with sensory impairment.
- history of leprosy in the family or contacts.
- treatment taken in the past (show the MDT blister pack).

2 Examine skin and nerves for signs of leprosy



Skin lesions on covered areas

Thickened nerve on neck

- Examine the entire skin surface including those covered by clothes for hypopigmented or erythematous skin patch/s.
  - should be done in daylight or in a well-lit room with due respect for privacy of the patient.
  - female must be examined in the presence of another female.
- Test for loss of sensation in the skin patch.
- Look for changes in skin such as smooth, oily and shiny skin.
- Look for any thickening and / or nodules on ears and elsewhere.
- Palpate nerve trunks for any thickening and / or tenderness.
- Assess nerve function for sensory and motor loss.
- Look for any visible deformity in eyes, face, hands and feet.

Eliciting ***sensory loss in skin patch on face*** may be difficult due to rich nerve supply as well as in children. When in doubt, keep under observation for six months & review periodically.

3 Test for sensation on skin patch

Touch the normal skin with eyes open.

Patient indicates the spot with eyes closed.

- Touch the skin patch and the areas supplied by trunk nerves lightly with tip of a ballpoint pen / wisp of cotton wool.
- Ask the patient to point skin area with tip of finger where touch was felt, while keeping *eyes open.*
- Ensure that patient understands the procedure of testing.
- Repeat the same *with eyes closed.*
- Check randomly on the normal skin and then affected part of skin.
- Always test for sensation in more than one skin patch.
- For skin patch on the back, ask the patient to count numbers loudly.

4 Palpate trunkal and cutaneous nerves

Palpating Ulnar nerve

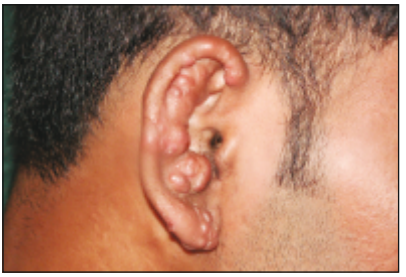
Palpating Common Peroneal nerve

- Palpate at least ulnar and common peroneal (lateral popliteal) nerves to find thickening and / or tenderness.
- Thickening can be confirmed by comparing the nerves on both sides on palpation. Nerves may be smooth or irregular and rarely a uniform swelling (nodules) may be felt.
- Tenderness can be judged by observing the expression on the patients face while palpating the nerve.

Most leprosy cases can be diagnosed clinically. Eliciting at least one cardinal sign can confirm the diagnosis.

9. Bacteriological examination

1 Indication for skin smear test



Nodules on ear lobes

Smooth, oily and shiny skin

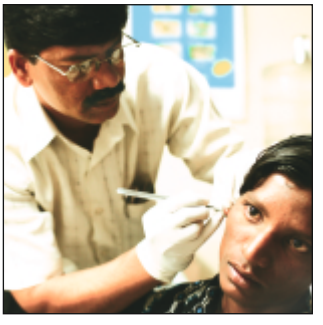
- Patients with suspected signs of infectious leprosy such as innumerable patches without sensory loss, nodules, smooth, oily and shiny skin should be subjected to skin smear test.
- Presence of AFB in skin smear confirms the diagnosis of an infectious case of leprosy and also helps to diagnose bacterial relapse after MDT.

Skin smear is not necessary, if definite sensory loss is present and leprosy can be diagnosed clinically.

- Refer people with suggestive signs of leprosy but without sensory loss for skin smear examination to referral centres / laboratory facilities / DOTS centres.

NLEP no longer advises skin smear routinely for starting MDT.

2 Method of skin smear test (slit & scrape technique)



- **Collect** blood-free tissue pulp by skin incision (5mm length, 2mm depth) from ear lobe, periphery of skin lesion or nodule and fix it on a slide.
- **Stain** the smear by Zeihl-Neelsen method using weak differentiating agent (5% Sulphuric Acid).
- **Examine** for presence of AFB under microscope (100 X oil immersion).

Skin smear examination is the ***only tool to diagnose early lepromatous*** (infectious type) leprosy.

10. Cardinal signs of leprosy

1 Examine for loss of sensation

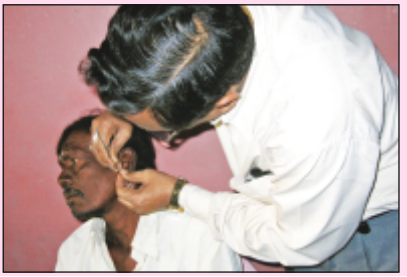
Definite sensory loss on hypo-pigmented or erythematous patch. *(Ref. Page 14)*

2 Palpate nerves for thickening and tenderness

Thickened and / or tender nerves with sensory loss in the area of distribution with / without muscle weakness. *(Ref. Page 19)*

3 Take skin smear

Presence of acid fast bacilli (M.leprae) in skin smear - slit and scrape method. *(Ref. Page 15)*



Presence of any one of the above signs and symptoms confirms the diagnosis of leprosy.

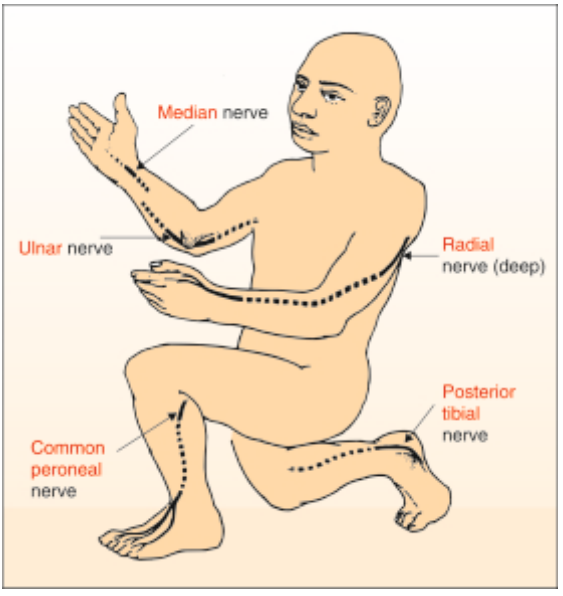
A new case of Leprosy

A person with any one of the above cardinal signs who has never taken multi-drug treatment (MDT).

Only 10 - 12 % of all new leprosy patients are likely to be infectious - skin smear positive.

11. Nerve examination

1 Site of damage to peripheral nerves



Nerve trunks commonly affected in leprosy

Thickened or tender peripheral nerve(s) with sensory loss in its distribution is a definite diagnostic sign of leprosy.

2 Palpate nerves commonly involved

Ulnar

Ask patient to flex elbow at 110 degree. Ulnar nerve runs in the groove between medial epicondyle & olecranon.

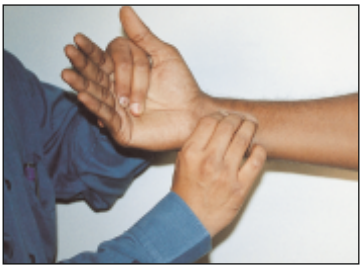
Palpate ulnar nerve in the groove and proximally at the inner side of elbow.

Median

Ask patient to flex wrist slightly.

Median nerve runs parallel to palmaris longus tendon.

Palpate median nerve medial to palmaris longus at wrist in line with middle finger.

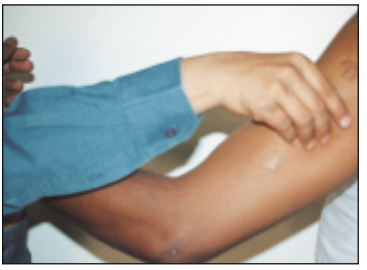


Radial

Ask patient to flex forearm & rotate internally.

Radial nerve passes obliquely in the radial groove.

Palpate radial nerve at groove on humerus bone.

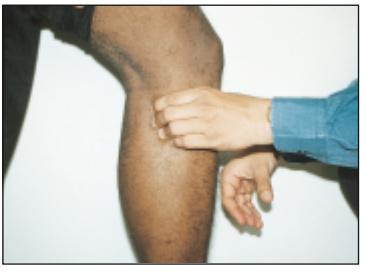


Common Peroneal

Ask patient to flex knee slightly.

Common Peroneal nerve winds downwards at knee.

Palpate common peroneal nerve at neck of fibula.

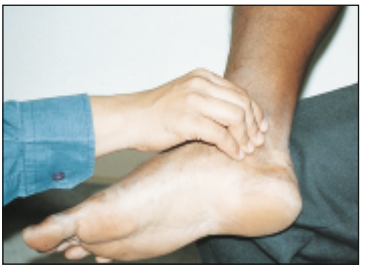


Posterior Tibial

Ask patient to plantar flex ankle slightly.

Posterior tibial nerve runs at inner side of ankle joint.

Palpate posterior tibial nerve behind medial malleolus.



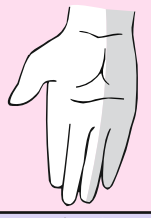
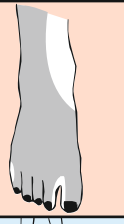
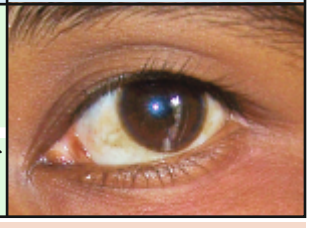
3 Method for nerve examination

1. Use pulp of fingers and do not tickle the nerve
2. Palpate nerve gently without applying too much pressure
3. Watch the facial expression
4. Feel along the course of nerve and compare both sides
5. Check for irregularity or swelling

In India, about 7% of leprosy patients reported to have ***pure neuritic type*** of leprosy (without skin patch).

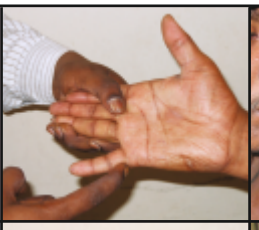
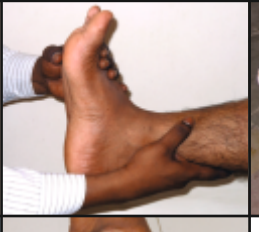
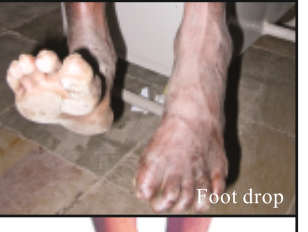
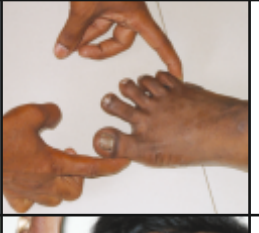
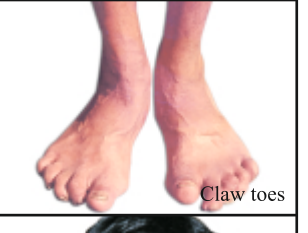
In the absence of any other signs of leprosy on the skin, nerve thickening alone without sensory loss and / or without muscle weakness is often not a reliable sign of leprosy.

12. Testing nerve functions

Nerves	Sensory	Site
Ulnar	Distribution : Little & ring finger & medial 1/3 of palm (both sides).	
Median	Distribution : Thumb, index, middle finger & lateral 2/3 of the palm (palmar side).	
Radial	Distribution : Small area of thumb, index, middle finger & lateral 2/3 of the hand (dorsum side).	
Common Peroneal	Distribution : Outer side of leg and dorsum of foot.	
Posterior Tibial	Distribution : Majority of area on the sole of foot.	
Trigeminal (5^{th} cranial) / **Facial** (7^{th} cranial)	Distribution : Cornea of the eye (Ophthalmic branch). Testing Corneal sensation is not recommended. Distribution : Muscles of eyelid closure. (Zygomatic branch)	

Stages of nerve damage in Leprosy

Involvement	Damage	Destruction
Thickening of nerve	Loss of sensation	Complete paralysis
Tenderness or pain	Muscle weakness	Nerve is destroyed
No loss of function	Recovery possible	No recovery possible

Motor	Method of testing	Deformity
Test small muscles of ring and little fingers. Ask to abduct little finger against resistance **(Little finger out)**		 Ulnar claw hand
Test small muscles of thumb, index & middle fingers. Ask to abduct thumb against resistance. **(Thumb up)**		 Total claw hand & Ape thumb
Test extensor muscles of wrist, thumb and fingers. Ask to extend wrist against resistance **(Wrist & finger up)**		 Wrist drop
Test dorsiflexor and evertor muscles of the foot. Ask to dorsiflex the foot against resistance **(Foot up)**		 Foot drop
Test small muscles of the foot. Ask to spread the toes against resistance **(Toes spread)**		 Claw toes
Test muscle of eyelid (Orbicularis oculi). Ask to close eyelid tightly against resistance. **(Eye lids closure)**		 Lagophthalmos

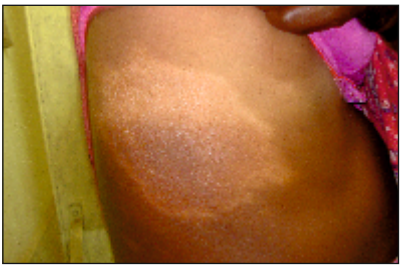
Grading the strength of muscle

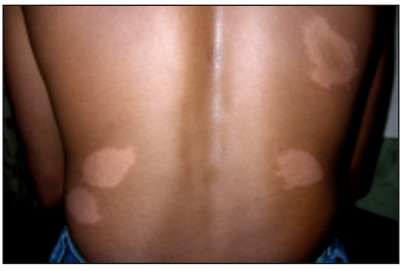
Strong - 'S'	Weak - 'W'	Paralysed - 'P'
Able to perform movement against full resistance.	Able to perform movement against little resistance.	Unable to make any movement without resistance.

13. Grouping for Multidrug Therapy

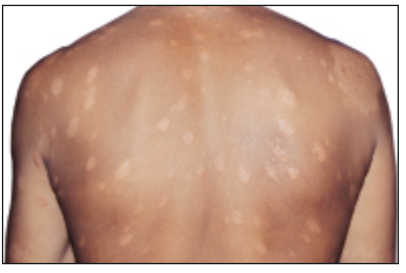
1 Paucibacillary Leprosy (PB)

- 1 – 5 skin patches with definite sensory loss





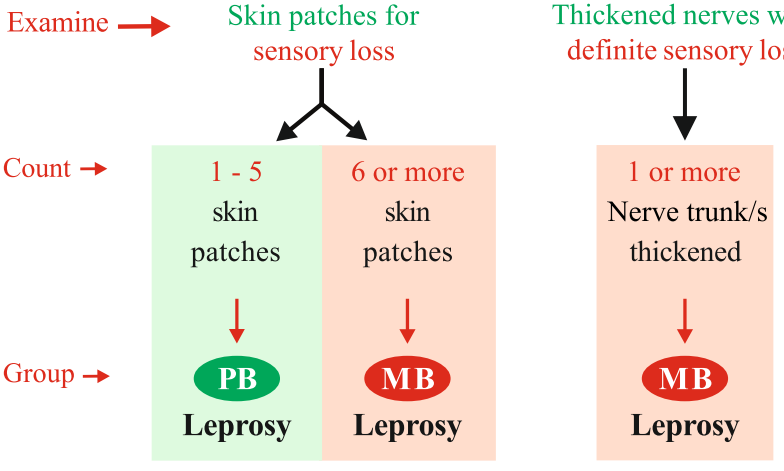
2 Multibacillary Leprosy (MB)



- 6 or more skin patches with definite sensory loss OR
- Thickened nerve trunk/s with definite loss of sensation in its area of distribution OR
- Positive for AFB in skin smear at any site

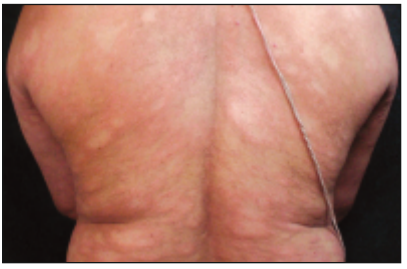
3 Group newly diagnosed leprosy cases for MDT

Count number of skin patches & nerve trunks affected



All leprosy patients with ***skin smear positive*** must be ***grouped as MB*** irrespective of the number of skin patches or nerves affected.

4 Signs of MB leprosy with no sensory loss



Multiple skin patches with no sensory loss

Red or skin colour nodules or shiny, oily and thickened (Infiltrated) skin only.

- Patients with above signs can only be diagnosed by skin smear examination.
- If the skin smear test is positive for AFB, group the patient as MB.

5 Method to grade the disabilities (WHO, 1998)

	Hands & Feet	Eyes
Grade 0 :	No anaesthesia / no disability / deformity.	No eye problem due to leprosy.
Grade 1 :	Anaesthesia present. No deformity.	Eye problem due to leprosy. Vision normal.
Grade 2 :	Visible deformity or damage.	Vision impairment, lagophthalmos, iridocyclitis, corneal opacity.

6 Method to assess EHF (Eye - Hand - Foot) Score

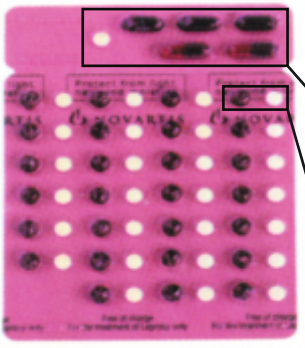
- Assess the maximum disability grade in each Eye, Hand and Foot (EHF) separately in each patient.
- EHF score is the sum of the individual disability grade for each eye, hand and foot, which ranges from 0 to 12 score.
- Compare the EHF score every six months with initial score recorded at the time of diagnosis.

EHF score is useful to monitor the progress of disability and deformity during and after MDT.

14. Treatment of leprosy

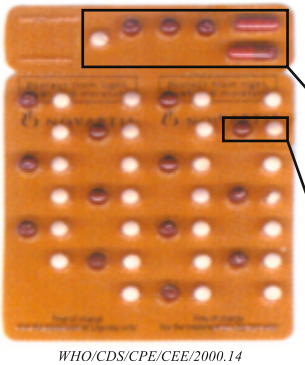
1 Pauci-bacillary (PB) **&** **2** Multi-bacillary (MB)

MDT Blister Calendar Packs for treatment of leprosy



PB Adult	6 months' course
MB Adult	12 months' course

Once a month : At clinic (Supervised)
2 caps of Rifampicin (300 mg x 2)
3 caps of Clofazimine (100 mg x 3)
1 tablet of Dapsone (100 mg)
Days 2 - 28 : **At home** (Unsupervised)
1 cap of Clofazimine (50 mg)
1 tablet of Dapsone (100 mg)



WHO/CDS/CPE/CEE/2000.14

PB Child (10 - 14 years)	6 months' course
MB Child (10 - 14 years)	12 months' course

Once a month : At clinic (Supervised)
2 caps of Rifampicin (300 mg + 150 mg)
3 caps of Clofazimine (50 mg x 3)
1 tablet of Dapsone (50 mg)
Days 2 - 28 : **At home** (Unsupervised)
1 cap of Clofazimine (50 mg) Alternate day
1 tablet of Dapsone (50 mg)

Give proportionately ***smaller doses*** for children under 10 years.

MDT Blister Calendar Packs for treatment of leprosy till March 2025.

3 MDT in special situations

- For young (under 10 years) or underweight child leprosy patients, dosages must be adjusted according to age and weight.
- Leprosy patient having active pulmonary tuberculosis, should receive appropriate MDT except Rifampicin in addition to chemotherapy for active pulmonary tuberculosis as per schedule.
- No component of MDT should be used alone due to risk of drug resistance. In case of contraindication to any one of MDT, newer drugs such as Ofloxacin or Minocycline can be given alternatively in consultation with experts.
- Inform patient about the common side effects of MDT drugs and advise to protect from moisture and heat.

4 Manage MDT related complications

- Instruct to report, if patient develops any clinical events such as increase in signs or nerve function loss either during or after completion of MDT.
- Suspect either 'lepra reaction' or 'relapse' in such cases and treat accordingly. Relapses in leprosy do occur, but are uncommon.
- Differentiate 'relapse' from 'lepra reaction' by treating with a course of Prednisolone. Good clinical response indicates 'lepra reaction' and non response indicates 'relapse'. Re-treat relapse cases with same MDT regimen or refer to the referral centre for investigations.

5 Accompanied MDT

- Dispense first dose at health centre and issue full course of appropriate MDT to leprosy patients who cannot reach the health centre due to long distances, chronic illness or old age.
- Motivate one of the family member of leprosy patient to take full responsibility of drug administration without interruption as instructed.
- Counsel about warning signs of complications and ask the patient to report for a check up after completing the full course of treatment.

Multidrug therapy as recommended by WHO is safe and can be given even during pregnancy and lepra reactions. It is available at all public health centres free of cost.

15. Action and dosage of MDT

Rifampicin — a strong bactericidal

Mode of action

- Interferes with RNA function of M.leprae.
- One dose (600 mg) can kill 99.99% of viable bacilli.
- Renders MB patients non-infectious within few days of treatment.
- Does not act on dormant bacilli.

Dose : 600 mg once a month for adults.

450 mg once a month for children between 10 - 14 years of age.

Side effects (common), but harmless

- Reddish colour of urine.
- Gastrointestinal symptoms.

Side effects (rare), but may be serious

- Hepatotoxicity / nephrotoxicity.
- 'Flu-like' syndrome.
- Thrombocytopaenia.

Clofazimine — a weak bactericidal

Mode of action

- Interferes with DNA function of M.leprae.
- Has anti-inflammatory property, if given in high doses.
- It is highly anti-cholinergic, hence there is loss of sweat resulting in dry skin.
- Helps to reduce the incidence and severity of ENL reactions.

Dose : 50 mg daily for adults.

50 mg alternate days for children between 10 - 14 years of age.

Side effects (Uncommon)

- Reddish brown discoloration of skin (dose-related and reversible).
- Ichthyosis - dry scaly skin.
- Abdominal pain on taking large dose for long period.

MDT helps to ***prevent emergence of drug resistance*** and arrest the chain of transmission in the community.

Dapsone — a weak bactericidal

Mode of action

- Interferes with folic acid synthesis of M. leprae.

Dose : 100 mg daily for adults

50 mg daily for children 10 - 14 years.

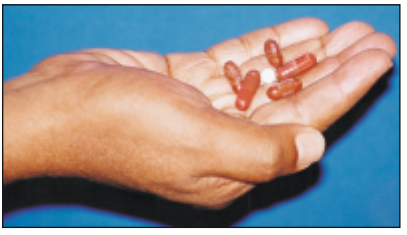
Side effects (Uncommon), but serious

- Hepatotoxicity & Exfoliative dermatitis (Dapsone syndrome)
- Hemolytic anaemia in patients with G-6-PD deficiency
- Malaise, weakness and acute psychosis (very rare)

Enquire . . . before starting MDT

MDT should not be given if the patient is known to have,

- severe anaemia (treat anaemia)
- renal or hepatic damage,
- sensitivity to sulpha drugs.



Ensure . . . treatment compliance

- MDT available in blister calender pack (BCP) is easy to dispense by health staff and convenient for the patients to understand the treatment schedule that improves the compliance.
- PB patient should complete 6 doses of MDT within 9 months and MB patient should complete 12 doses of MDT within 18 months.
- When a leprosy patient defaults from treatment for 3 consecutive months, re-evaluate and restart MDT, if 'active signs' are seen.
- The 'active signs' of disease are raised erythematous lesions, increase in size or number of patches, nerve tenderness and or function loss.
- Advice to report immediately if patient develops reappearance of skin patches or nerve function loss during and after stopping MDT.

Encourage patients to take MDT regularly without any interruption and to ensure better treatment outcome

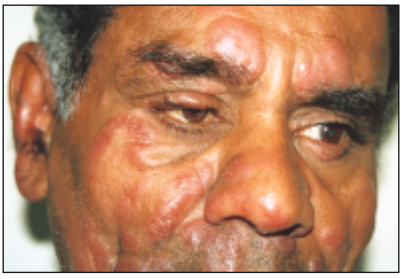
16. Lepra Reaction : a medical emergency

Type I — Reversal Reaction

Mechanism:

- antigens from broken bacilli react with T-lymphocytes resulting in alteration of cell-mediated immunity (CMI).

  (delayed hypersensitivity reaction, a Type IV allergic reaction - Coombs and Gell)



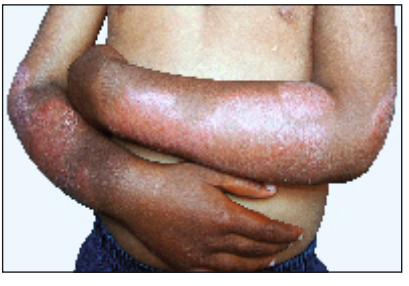
Existing skin patches become raised, erythematous and oedematous.

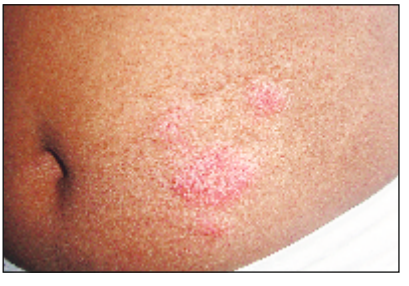
Occurrence:

- Usually in the first 6 months of starting MDT
- Very common in borderline (BT & BB) leprosy and occasionally in tuberculoid (TT) leprosy.
- May occur all of a sudden and in multiple episodes.

Clinical changes:

- Existing skin patches become raised, erythematous and oedematous.
- Neuritis (pain and tenderness) with or without sudden loss of nerve function may occur.
- Occasionally new lesions may appear.
- Necrosis and ulcerations are seen rarely in severe reactions.
- Systemic complaints are uncommon.



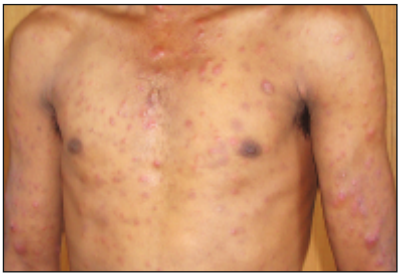


Reactions are body's immune response to M.leprae antigens and may occur ***before, during or after*** MDT.
Reactions are not caused by MDT, hence ***do not stop MDT.***

Type II ENL Reaction

Mechanism:

- Circulating antibodies react with M.leprae antigens and form immune complex resulting in inflammatory lesions (ENL).
  (antigen-antibody reaction a Type III allergic reaction - Coombs and Gell)



Pink colour & tender (ENL) nodules appear in crops.

Occurrence:

- Usually 6 months after starting MDT.
- Mostly lepromatous (LL) type of leprosy and occasionally borderline lepromatous (BL) type of leprosy.
- It may be intermittent or continuous and may persist for several months.

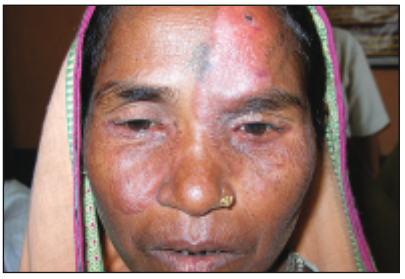
Clinical changes:

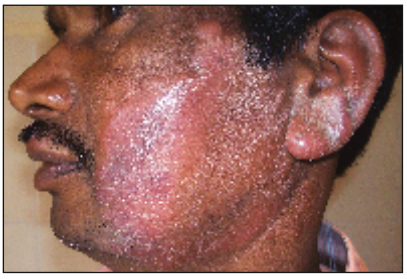
- Pink colour tender (subcutaneous) nodules - Erythema Nodosum Leprosum (ENL) appear and may be ulcerated in severe reaction.
- ENL lesions are symmetrical in distribution and appear in crops.
- Existing skin patches in BL type may show change (swelling).
- Swelling of joints with systemic complaints like fever and malaise are common.
- Other tissues such as nerve, muscle, bone and organs such as liver, testis and lymph nodes may be involved.
- Inflammation of eye such as acute iridocyclitis may occur and can results in blindness, if not detected and treated early.
- Lucio phenomenon is a severe form of Type 2 reaction characterized by necrotic and ulcerated lesions occur in untreated lepromatous leprosy cases. Seen mainly in Central America.

Counsel the patient on signs and symptoms of reaction are not related to MDT. If patient has recurrent reaction, refer to the nearest referral centre.

17. Treatment of lepra reactions

1 Treat 'Lepra reactions' as a medical emergency





- Prednisolone is the drug of choice for both type of reactions.
- Lepra reactions with nerve impairment is considered as severe and must be treated with a course of Prednisolone.

2 Precipitating factors (list not comprehensive)

- Intestinal worms, inter-current infections (malaria, typhoid, tuberculosis etc.), drug such as KI (Potassium Iodide), vaccination.
- Physical or mental stress / strain, puberty, pregnancy (last trimester and 3 months post-partum), parturition, surgical interventions.

3 Treatment for Type 1 reaction

Initial dose - Prednisolone 40 - 60 mgs daily (minimum 1mg per kg body weight) according to severity.

Taper by - Prednisolone 5 - 10 mgs every 2 or 4 weeks for a period of 20 to 24 weeks according to response.

4 Treatment for Type 2 reaction

Initial dose - Clofazimine 300 mgs (100 mg TDS) daily in addition to Prednisolone 40 mgs according to severity.

Taper by - Clofazimine 100 mgs every 4 to 8 weeks over a period of 24 to 30 weeks according to response and necessity.
Prednisolone 5 - 10 mgs every 2 or 4 weeks for a period of 16 to 20 weeks according to response.

5 Side effects of Prednisolone

- Moon face
- Striae / Acne
- Weight gain
- Hypertension
- Peptic ulcer
- Hyper-acidity
- Precipitate infection
- Hormonal imbalance
- Increase blood sugar

6 Take precautions during steroid therapy

- Prednisolone should be taken as a single dose in the morning after breakfast / milk and never on empty stomach.
- Warn the patient not to stop steroid treatment abruptly.
- Advice the patient to have a low salt diet & regular exercise (eg. walking or cycling for 30 minutes).
- Enquire history of Hypertension, Peptic ulcer, Tuberculosis, Diabetes, HIV-AIDS before starting steroid therapy.
- Provide calcium supplements and antacids, if required.
- Avoid steroid therapy during pregnancy unless absolutely necessary and take advice from the Gynaecologist or Physician.
- Take special precaution when patient with reaction has chronic foot ulcer or nerve abscess or uncontrolled nerve pain.
- In case of recurrent or chronic Type 2 reaction, treat patient with Thalidomide in consultation with medical experts on indications.

7 Ensure compliance for steroid therapy

If patient misses the morning prednisolone dose, inform or advise:

- Take as soon as the patient remembers any time during the day.
- Skip missed dose, if the time for next dose is near and resume the usual schedule.
- Do not double the steroid dose to catch up with the missed dose.

If patient drops out for more than 2 weeks, take the following action:

- Assess for any active signs of reaction (erythematous skin patch or acute neuritis or increase in nerve function loss or painful ENL).
- Restart full course of steroid therapy, ONLY if the reaction signs persist or if the nerve function deteriorates.
- If nerve function deteriorates despite adequate steroid therapy, refer patient to referral or surgical centre for evaluation and management.
- Refer such patient to the nearest referral centre for physiotherapy.

Patients with lepra reactions are at high risk of developing nerve damage leading to disabilities and deformities.

18. Treatment of Neuritis

1 Neuritis a critical feature of lepra reaction

Symptoms : Neuritis is characterized by pain together with swelling and tenderness of the nerve due to inflammation.

Types : Neuritis may be acute (symptomatic) or silent (Quiet Nerve Paralysis).

Occurence : Both types of reaction, but most common in Type 1.

Complications : May result in sudden onset of sensory loss or muscle paralysis leading to irreversible damage, if not detected.

2 Management of neuritis

Medical : Treat with Prednisolone 40 - 60 mgs daily dose to control nerve pain or tenderness and taper gradually over a period of 6 months to prevent nerve function loss.

Treat associated complaints with analgesics and antipyretics, if any.

Physical : Immobilize the affected nerve and joint by applying a well padded splint in a functional position.

Encourage active assisted or resisted exercises to prevent muscle atrophy and paralysis after nerve pain subsides.

Advise muscle stimulation or provide dynamic splints, if there is muscle weakness (paresis - partial paralysis).

Surgical : If nerve pain is not relieved by medical treatment within 2 to 4 weeks or develops nerve abscess, refer for nerve surgery.

3 Detect and treat 'silent' neuritis

- Insidious or acute onset or increase in sensory loss and / or muscle weakness may indicate 'silent' neuritis and must be treated with a full course of steroid therapy (Prednisolone) same as 'acute' neuritis.
- Periodical nerve function assessment (NFA) of patients with thickened nerves helps to detect early nerve impairment and prevent new disability.

Leprosy patients with loss of nerve functions (sensory or motor) for ***less than 6 months of duration must be treated*** with a course of steroid therapy and monitor the progress.

19. Prevention of Disability

Flow chart for ***early identification***
of nerve damage and management of disability and deformity

Risk factors for nerve damage

1. Lepra Reaction (Type I & II)
2. Thickened nerve with or without neuritis (acute & silent)
3. Patch on face / over trunk nerve
4. Multi-bacillary (>5 skin patches) leprosy cases
5. Adolescent age group / pregnancy and child birth

Disability and deformity

1. Hand - sensory loss in palm, injury, blister/ulcer, claw finger, wrist drop, absorption of hand
2. Foot - sensory loss in sole, injury, crack, plantar ulcer, claw toe, foot drop, absorption of foot
3. Eye - red eye, lagophthalmos, dim vision, facial palsy, blindness

Periodically assess NFI

- ⌘ Palpate the trunk nerves
- ⌘ Test for sensation
- ⌘ Test for muscle strength

Assess for severity

- ⌘ Examine the skin of hand & foot
- ⌘ Test joints for range of motion
- ⌘ Test for vision

Medical & Surgical | **Physiotherapy** | **Aids & appliances**

Educate and counsel

1. Make patient aware about possible complications and advise about treatment compliance.
2. Motivate patient to practice self care regularly and report, if develop any warning signs / symptoms.
3. Teach patients to adopt safe functions and activities that help to prevent or correct deformities.

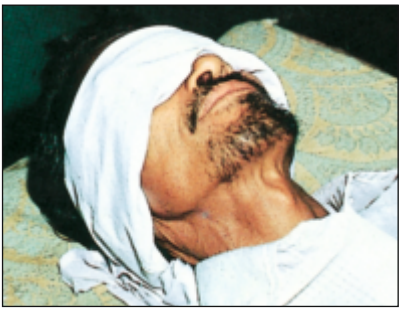
Early detection of nerve function impairment (NFI) by periodic nerve function assessment in high risk group patients helps prevent disabilities and deformities

20. Care of insensitive eyes

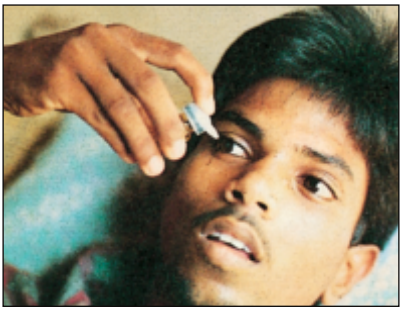
1 Self care for insensitive eyes

Wash with clean water 2-3 times daily

Use dark glasses to prevent irritability

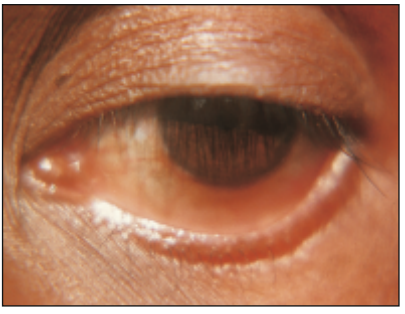


Cover eyes with clean & soft cloth while sleeping

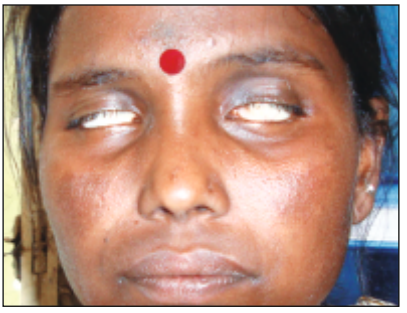


Use eye-drops for preventing dryness of cornea

2 Look for red eye / lagophthalmos



Red-eye



Lagophthalmos

Examine the eyes every time patient attends the clinic.
Warn the patient to ***report immediately,***
if develops any pain, redness or dim vision.

3 Examine the eyes and face

- Enquire about pain in the eye or dim vision
- Observe the eye for normal blink reflex
- Examine the eyelids and eyelashes
- Test the ability to close the eyelids
- Look for excessive watering from eyes (lacrimation)

4 Tips for self care of eyes

Patient with eye problems and lagophthalmos (Disability Grade II)

Advice to . . look for redness and pain in the eye.

wash eyes with clean water daily.

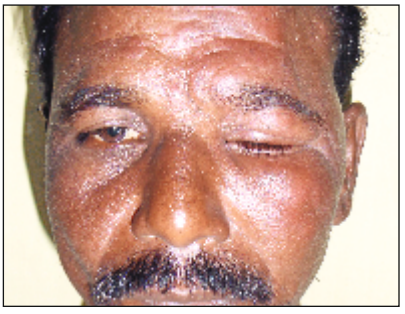
use dark goggles to protect the eye from dust & bright sunlight.

close eye lids passively several times - think and blink.

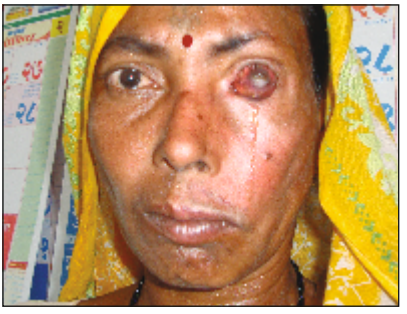
use eye-drops (non steroid tear substitute) in case of corneal dryness.

Refer to . . ophthalmologist or referral centre, if the patient complains of pain and / or redness in the eye.

referral centre for testing visual acuity and to ophthalmologist for corrective eye surgery.



Patch around the eye is at great risk for eye damage

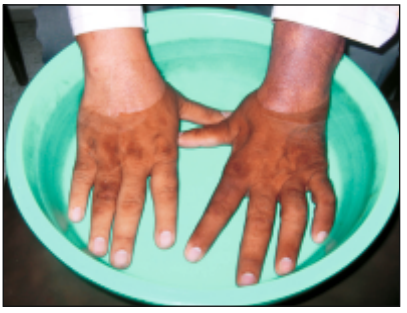


Severe eye complication may result in complete loss of vision

Preventing blindness in leprosy patient is crucial as the patient will neither be able to see nor protect their eyes, hands and feet from injuries

21. Care of insensitive hands

1 Self care for insensitive hand



Soak the hand in water for 15 minutes

Apply oil and massage the fingers

2 Teach safety awareness

Use a piece of cloth, tongs or spoons with long handle to hold hot objects thereby avoiding direct contact with insensitive skin

Cover the rough objects with soft rubber or use gloves while working with hard tools to reduce pressure thereby preventing injuries

Enquire about the activities of daily life and ***the type of occupation*** before giving appropriate advice on safety measures.

3 Tips for self care of hands

Patient with anaesthetic hand (Disability Grade I)

Advice to . . hold any hot or sharp objects with the help of cloth or canvas gloves for protection.

avoid warming hands in front of fire during winter.

cover hard or rough objects with the rubber or any soft material and apply little pressure while holding.

soak in water and apply vegetable oil to prevent dry skin.

Refer to . . referral centre for assessment and dressing, if there is injury or burns.

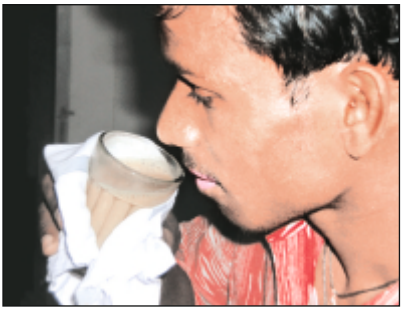
Patient with hand deformities (Disability Grade II)

Advice to . . apply white petroleum jelly or vegetable oil on both side of hands after soaking in water for a while and massage gently.

do active and passive exercises to keep the finger joints mobile.

Refer to . . referral centre for physiotherapy assessment, hand splints, grip aids, wax therapy and muscle stimulation.

tertiary care centre for x-ray, adaptive tools, reconstructive surgery.

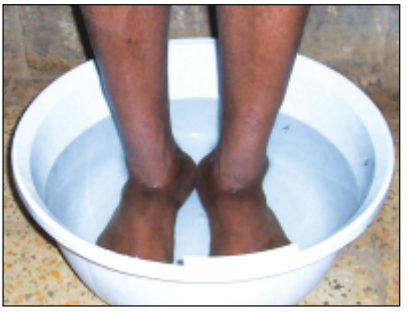


Deformities can be prevented by practicing self care measures

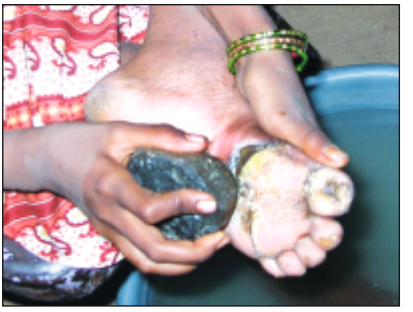
A sense of personal responsibility must be instilled in the patient to take care of anaesthetic hands and feet on his own, regularly

22. Care of insensitive feet

1 Self care for insensitive foot

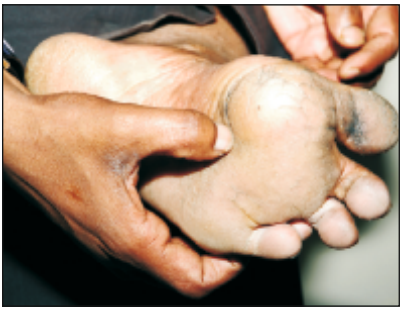


Clean and soak the foot in water for 15 minutes.

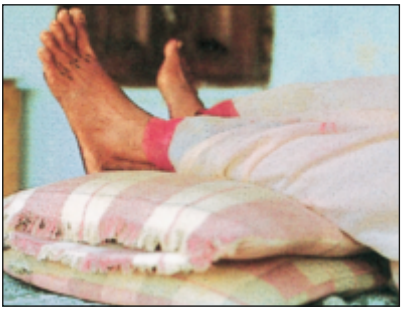


Rub off hard skin with pumice stone and apply oil.

2 Look for dryness, cracks, swelling and wounds

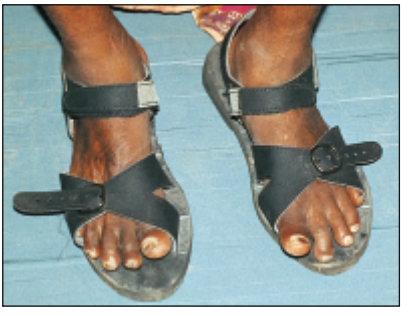


Inspect the foot for blisters, redness or pain on pressure on sole.



Oedema of foot indicates infection and foot should be kept elevated.

Use padded cloth for cross-legged sitting



Use protective (MCR) footwear

Mostly the cause for sole wound is mechanical due to sustained pressure while walking. Hence, ***rest is most essential for healing.***

3 Tips for self care of foot

Patient with anaesthetic foot (Disability Grade I)

Advice to . . recognise the cause for injury or blisters or fissures / cracks and rest the affected part.

soak feet in water for 15 minutes, rub off hard skin with pumice stone or scrubber and apply oil.

avoid sitting close to fire or stand at one place for longer time.

Refer to . . referral centre, if develops wound or swelling.

Patient with blisters or plantar ulcers on the foot (Disability Grade II)

Advice to . . clean the wound with soap or antiseptic solution.

cover the wound with adhesive plaster or gauze dressing and if there is an infection give oral or local antibiotics.

use special footwear or crutches to minimize pressure on the sole wound.

Refer to . . referral centre for dressing kit, plaster (POP) cast and wound debridement (removal of dead tissue), if the wound is infected.

Patient with difficulty in walking due to foot drop (Disability Grade II)

Advice to . . do exercises regularly to prevent contracture of tendo-achillis resulting in joint stiffness.

use MCR (micro-cellular rubber insole) footwear fitted with elastic or sling for normal walking.

take short steps while walking long distances at a stretch.

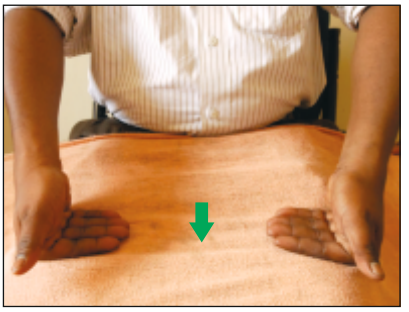
Refer to . . referral centre for physiotherapy and MCR footwear with foot drop splint.

tertiary care centre for walking aids (crutches), special prosthesis and / or corrective surgery for foot drop.

Patient must always bear in mind that walking with a properly fitting footwear is the easiest way to protect insensitive feet from injury.

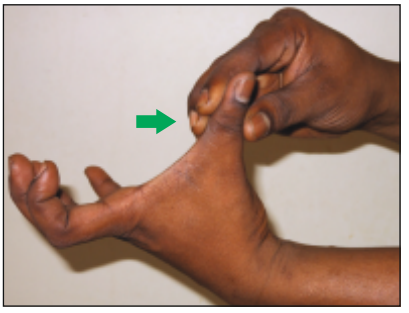
23. Physiotherapy

1 Simple exercises for hand deformities

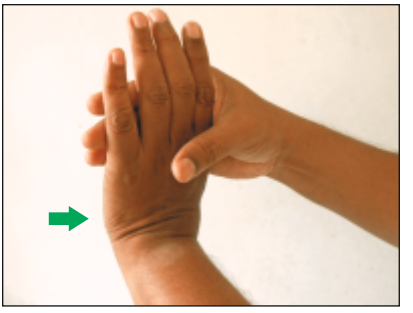


Support hand on soft surface

Bend finger slowly and open



Pull thumb up with other hand

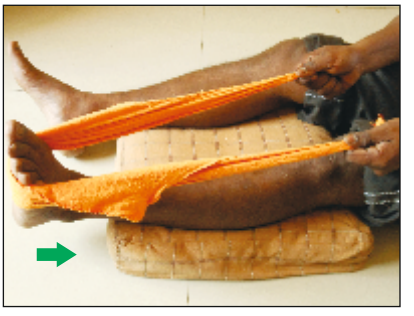


Pull hand up with other hand

2 Simple exercises for foot deformities

For foot drop without plantar ulcer

- Bend leg by leaning forward against the wall without lifting the foot from ground and repulse backward. Repeat the same 30 times in a day.

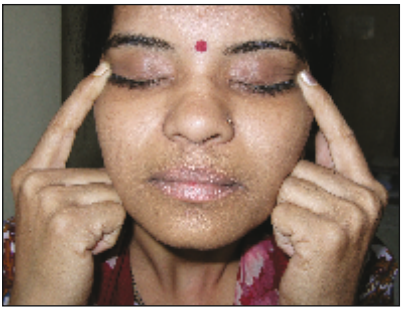


For foot drop with plantar ulcer

- Pull foot upwards with a towel or rubber belt. Hold it for some time and push the foot downwards. Repeat the same 30 times in a day.

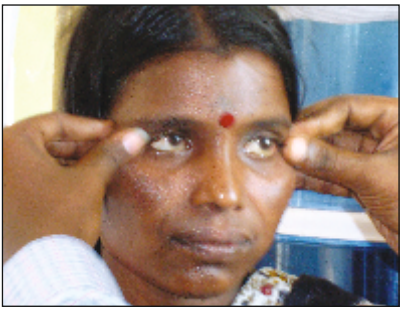
Physiotherapy is the first option; ***Surgery is the last option.***

3 Simple exercises for eye lids



Partial lagophthalmos (muscle weakness)

- Pull eye lids sidewards with index finger and close the eye lids tightly (active exercise) by self 30 times in a day.



Complete lagophthalmos (paralysis)

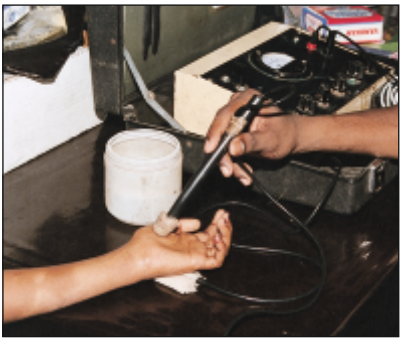
- Pull eye lids sidewards with index finger and close the eye lids with thumb (passive exercise) 30 times in a day.

4 Simple physiotherapy can prevent deformities

Wax - bath

Indication : Dry skin with stiff joints of fingers.

Uses : Reduces pain, softens skin and loosen joint stiffness.



Electrical muscle stimulation

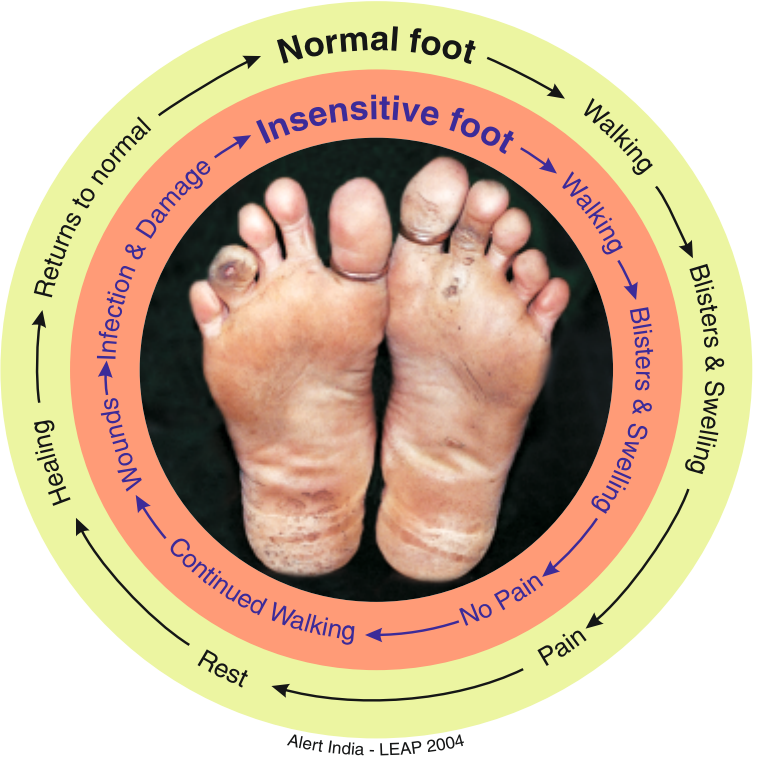
Indication : Early or partial muscle weakness / paralysis.

Uses : Increases muscle power and prevent atrophy.

Prevention of deformities can minimize activity limitation, enhance social participation and increase economic productivity in people affected by leprosy.

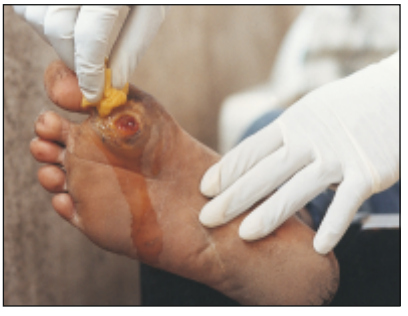
24. Treatment for sole wounds

1 Sequence of damage in insensitive foot

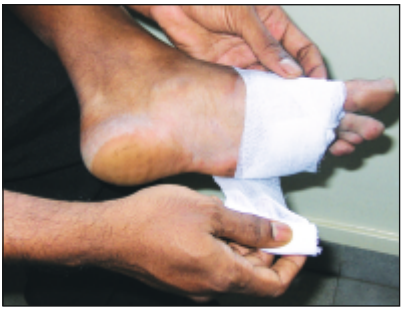


Alert India - LEAP 2004

2 Simple dressing for sole wounds



Clean the wound with antiseptic solution and trim the dead skin



Apply ointment on the wound and fix it with 4 layers of gauze bandage

Due to the loss of pain sensation, ***patients have no natural warning to protect feet*** from the effects of sustained pressure.
This is the predisposing factor for development of sole wounds.

25. Counselling

1 Improve compliance for leprosy services

Counselling is a process of facilitating decision making through personal interaction and enabling the people affected to solve their problems.

Counsel patient about . . .

- Importance of regularity of treatment and practicing self care
- Seek immediate help, if new patches developed or there is increase in area of sensory loss or muscle weakness during and after treatment.
- Involve the family members and community to promote social acceptance of leprosy patients and help them to lead a normal life.

2 Promote self care groups for empowerment

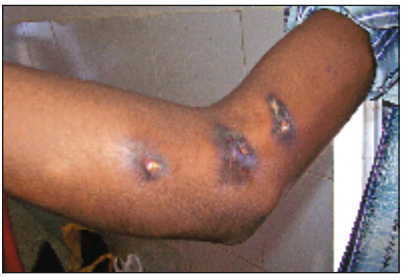
Health worker guiding the patients on self care during peer group session

- Organise peer group sessions for people affected by leprosy to interact with each other and practice self care for prevention of disabilities.
- Demonstrate practical self care measures and give sustainable solutions to do activities of daily life safely.
- Motivate to practice at home regularly and learn together from mutual experience.

Counselling should be an integral part of basic leprosy services. health workers with their positive attitude towards people affected by leprosy can help end stigma and discrimination.

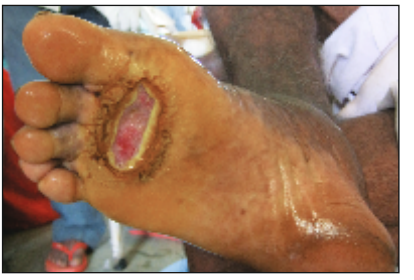
26. Selection of cases for surgery

1 Indications for reconstructive surgery (RCS)



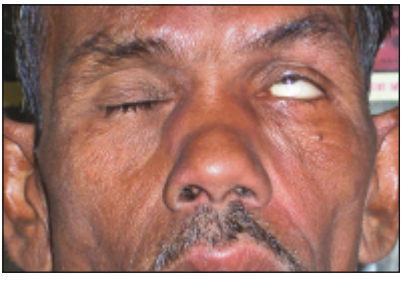
Nerve release surgery

Nerve pain or impending nerve function loss not responding to steroid therapy. Nerve abscess.



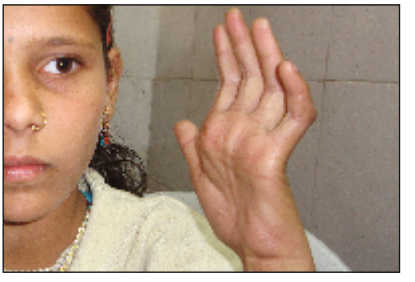
Skin graft for Chronic sole wounds

Complicated wounds on the weight bearing area with involvement of tendons, bones and joints.



Reconstruction of face

Destruction of nose, loss of eyebrows and sagging face due to infection / infiltration of M.leprae.



Tendon transfer for Paralytic deformities

Established deformities of hands, feet and eyes which can lead to severe handicap.

2 Criteria for referral of patients for surgery (DPMR)

Medical : Should have completed at least 6 months of MDT; should not be on steroid therapy and free from reaction and neuritis for past 6 months.

Physical : Should be between 15 to 45 years of age; duration of muscle paralysis should be more than one year; should not have joint stiffness, infection of skin and open wounds.

Social : Should be well motivated and willing to participate in pre & post operative physiotherapy for at least 6 weeks.

Surgery should aim to ***improve functional and economical status*** of leprosy patients as well as ***promote social acceptance.***

27. Aids to prevent deformities

1 Simple aids to correct hand deformities

1. Adductor band

Indication: Abduction of little finger (early Ulnar nerve palsy)

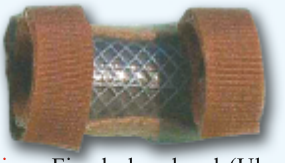
2. Finger loops

Indication: Mobile claw hand (Ulnar & Median nerve palsy)

3. Opponens loop

Indication: 'Ape' thumb (Median nerve palsy)

4. Finger gutter



Indication: Fixed claw hand (Ulnar & Median nerve palsy)

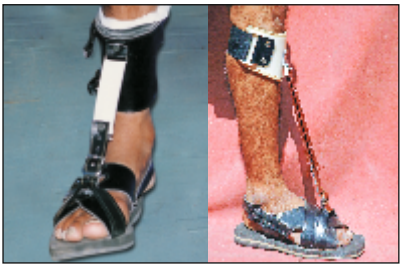
Aids (splints) are to be used for 6 to 8 hours a day in conjunction with exercises to correct early or partial paralytic hand deformities and prevent the development of joint stiffness.

2 Special footwear to prevent injuries in foot

Micro Cellular Rubber (MCR) footwear

Indication : Anaesthesia on feet.

Uses : Prevents foot from damage by distributing pressure evenly on sole.



MCR footwear with foot drop sling

Indication : Foot drop.

Uses : Prevents ankle joint stiffness and facilitate normal walking.

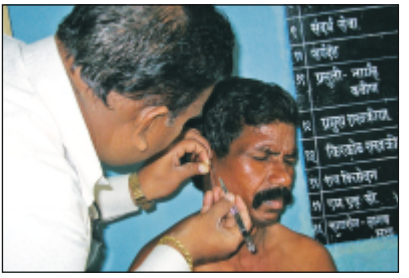
Aids are available on 'made to order at cost price'.

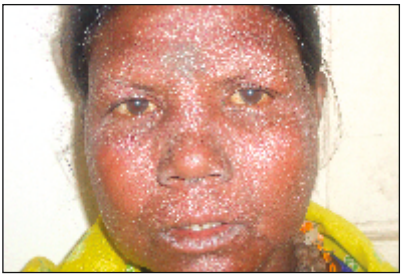
For order contact: ALERT-INDIA Footwear & Splint Unit, Mumbai

Tel: 022-24166947; Email: alertmcr03@rediffmail.com

28. Referral system for quality care

1 Quality care - diagnosis and management





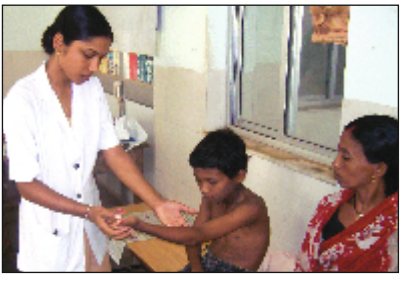
Refer : Cases difficult to diagnose and who need bacteriological examination for confirmation.

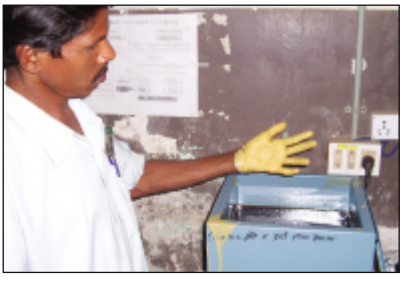
Services : Detailed clinical and bacteriological (slit skin smear) examination by trained clinician.

Refer : Cases with complications such as severe / chronic reactions, relapse & adverse effects of MDT.

Services : Examine and give appropriate medical treatment, provide splints and counselling.

2 Quality care - prevention of impairment and disability





Refer : Cases (specially MB cases) with risk factors who can develop nerve damage.

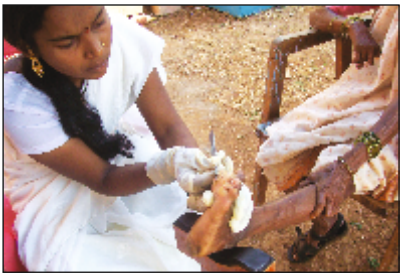
Services : Assessment of nerve function impairment (sensory and motor) once in 6 months.

Refer : Cases with sensory loss (Grade-1) & with visible deformities (Grade-2) due to leprosy.

Services : Teach self care & exercises, provide physiotherapy - wax bath & muscle stimulation.

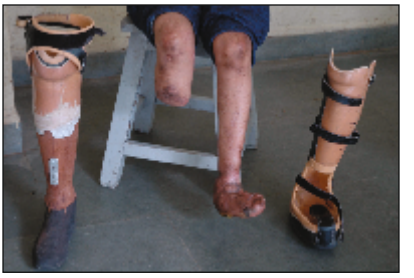
Training health care personnel at different levels of general health care system is crucial to sustain and provide quality leprosy services in the integrated setting.

3 Quality care - linkages for specialised services



Refer : Cases with secondary deformities such as sole wounds, joint stiffness and eye problems.

Services : Provide hand and foot splints, dressing kit, pair of goggles and MCR footwear.



Refer : Cases with infected sole wounds, recurrent reactions, eye complications & social problems.

Services : Develop linkages with NGOs / tertiary care centres and refer for specialised services.

4 Leprosy Referral Centre (LRC) at secondary level

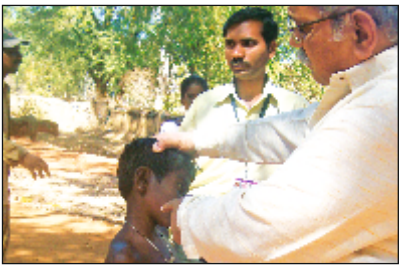
- Train medical and health care personnel at all levels of public health care system to provide quality services to leprosy patients.
- LRC established within the government health facilities at secondary (block / taluk) level should be managed and sustained as a part of general health care delivery.

Task oriented training to general health care personnel on LRC services

Disability Prevention and Medical Rehabilitation (DPMR) activities under NLEP aims to provide quality services and strengthen referrals in the general health care system.

29. Educating the community

1 Inform leprosy is curable and treatment is free



Timely detection and prompt treatment is key to reduce the disease burden in the community and to achieve the goal of leprosy control.

2 Propagate scientific facts to dispel misconceptions

Community education about cause and spread of leprosy can promote early reporting of new leprosy cases for diagnosis and treatment.

3 Campaign against fear and social prejudice

Educating school children helps to disseminate information about leprosy that can effect change in attitude towards people affected by leprosy.

Train and involve members of local community groups and organizations including people affected by leprosy and their family to ***promote awareness*** about leprosy.

4 Promote a sense of community ownership

Mobilize special and peer groups among local communities in planning, implementing and monitoring leprosy awareness activities.

5 Involve community in awareness campaigns

Communication initiatives through inter personal and peer education help in behavioral change among communities towards leprosy.

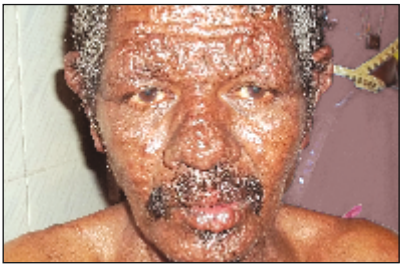
6 Recognise the rights of people affected by leprosy

Promote actions that can effect social change to minimize stigma and discrimination against people affected by leprosy as a matter of right.

Ensuring the rights of people affected by leprosy is the responsibility of health care professionals, social groups and communities.

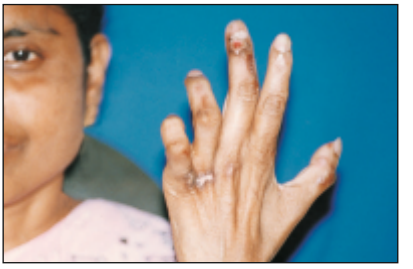
30. Monitoring leprosy control

1 Impact of new case detection



Indicator : Proportion (%) of MB (multibacillary) cases among new cases detected during the year.

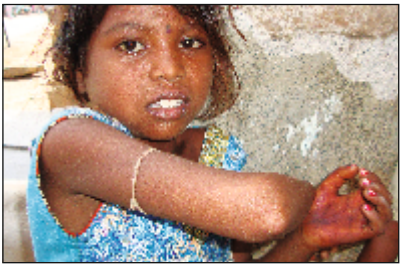
Inference : Increased proportion indicates possible late detection & continued transmission of leprosy.



Indicator : Proportion (%) of cases with Grade 2 disability among new cases detected during the year.

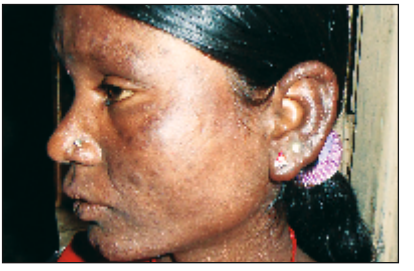
Inference : Increased proportion indicates delay in diagnosis & need to improve case detection activities.

2 Quality of coverage and accessibility



Indicator : Proportion (%) of child cases (under 15 years) among new cases detected during the year.

Inference : Increased proportion indicates active transmission of leprosy in a given area.

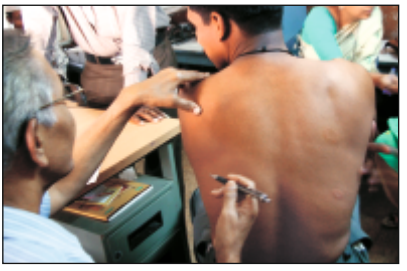


Indicator : Proportion (%) of female cases among new cases detected during the year.

Inference : Increased proportion indicates good access to leprosy services by female population.

Regular reviewing of key indicators are useful to monitor the progress of NLEP at primary level and plan specific interventions to sustain leprosy control efforts in the integrated setting.

3 Effect of epidemiological trend



Indicator : Number of new leprosy cases detected in 100,000 population in a year (ANCDR).

Inference : Decrease in number indicates containing of disease and spread of transmission in the community.

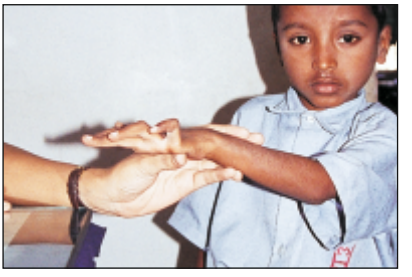
Indicator : Number of new leprosy cases with Grade 2 disability detected in 10,00,000 population in a year.

Inference : Increase in number indicates delay in diagnosis and need for sustained new case detection activity.

4 Outcome of leprosy management

Indicator : Treatment completion rate (Cohort) on time and declared as cured.

Inference : Increase in proportion indicates improved MDT delivery and ensuring better treatment compliance.

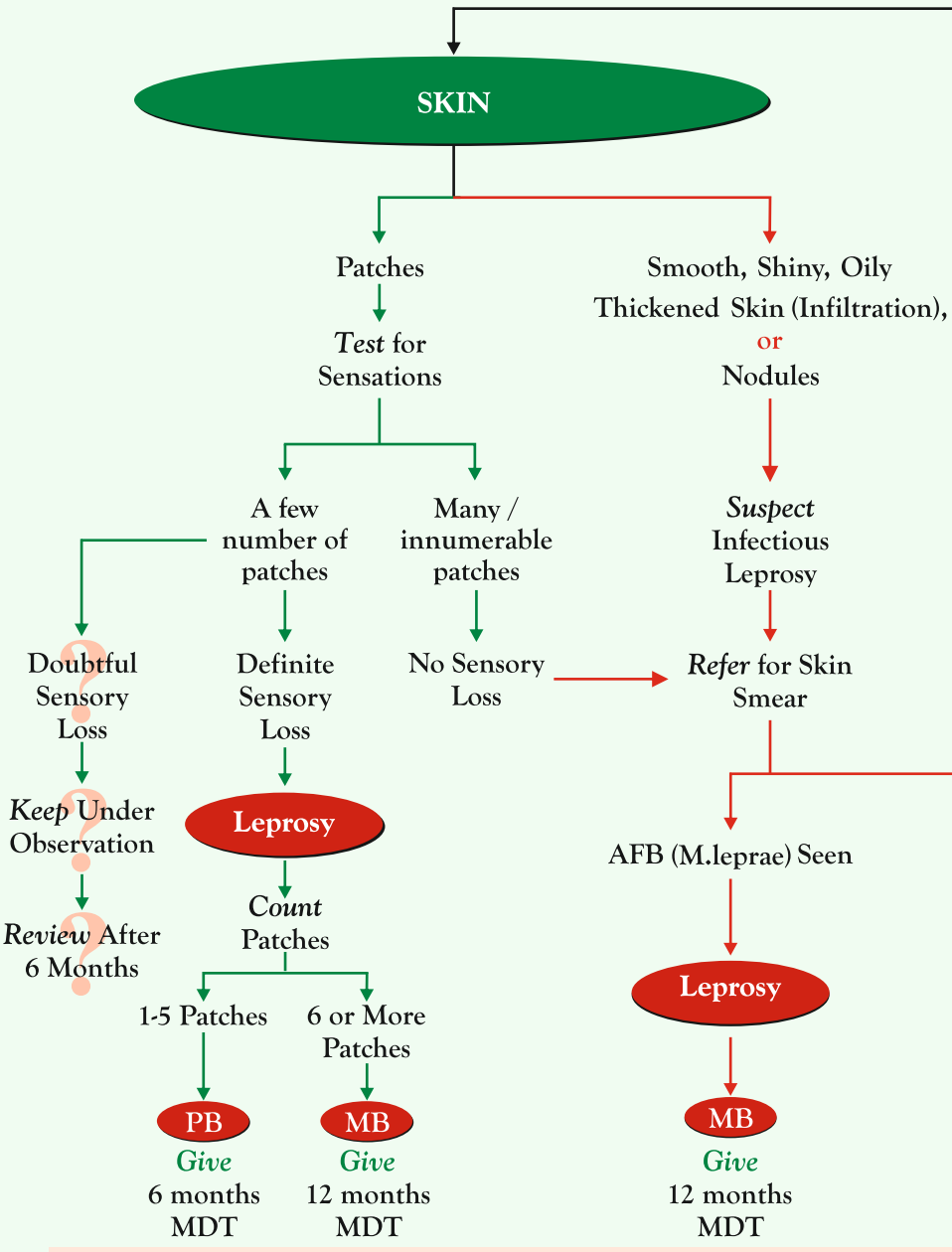


Indicator : Proportion (%) of new leprosy cases developed new disability during treatment.

Inference : Decrease in proportion indicates quality of leprosy services and adequate referral system.

WHO set a target to decrease the visible disabilities (Gr. II) among new leprosy cases to less than 1 per 10,00,000 population by 2020 in comparison with baseline of 2010.

Examine skin and

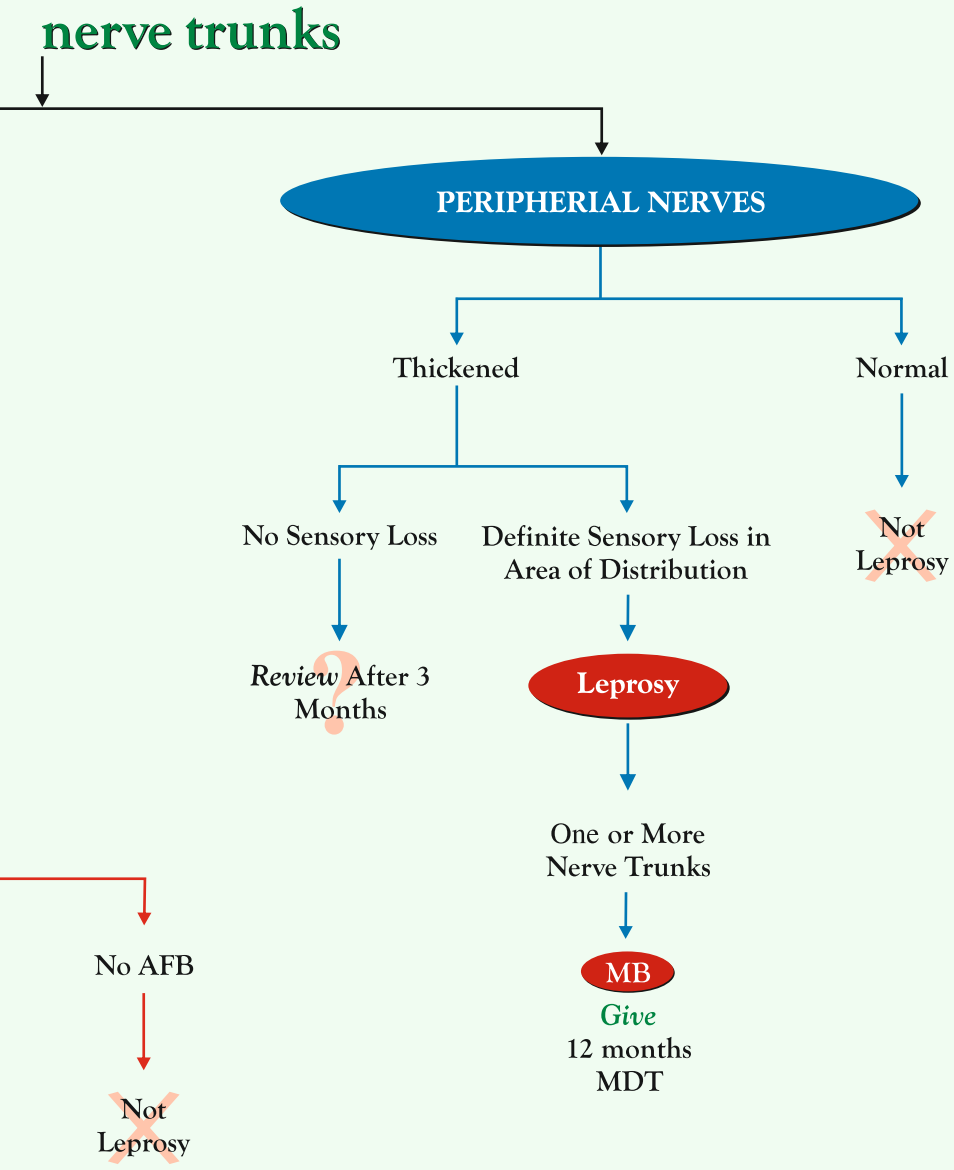


Important considerations for classification (Grouping for MDT) :

A. Paucibacillary leprosy (PB) :
   1. 1-5 skin patches with sensory loss.

B. Multibacillary Leprosy (MB) :
   1. 6 or more skin patches with sensory loss.
   2. One or more nerve trunk thickened with sensory and / or motor impairment irrespective of number of skin patches.
   3. Acid Fast Bacillus (M.leprae) seen in Slit Skin Smear (SSS).

An easy flow chart for diagnosis and treatment of leprosy



Multi-drug Therapy (MDT)

PB (Pauci-bacillary) - 6 months **MB (Multi-bacillary) - 12 months**

Doses		Rifampicin	Clofazimine	Dapsone
Adult (>14 yrs)	Supervised	600 mg monthly	300 mg monthly	100 mg monthly
	Daily	--	*50 mg*	*100 mg*
Child (10 - 14 yrs)	Supervised	450 mg monthly	150 mg monthly	50 mg monthly
	Daily	--	*50 mg alternate day*	*50 mg*
Age 0 - 9 yrs	Supervised	10 mg/kg body weight monthly	6 mg/kg body weight monthly	2 mg/kg body weight monthly
	Daily	--	*1 mg/kg body weight*	*2 mg/kg body weight*

LEAP

LEPROSY
ELIMINATION
ACTION
PROGRAMME

ALERT-INDIA

strives towards
programmes focussing on
community partnership strategies
to achieve the goal of leprosy elimination
during the integration phase of NLEP,
in alliance with all stakeholders,
to make elimination a reality for people.

VISION