Chapter: 6

Confirmation of diagnosis of leprosy & Examination of person affected by leprosy

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Learning Objectives: At the end of the session trainees will be able to
- Enlist the common symptoms/complaints that help providers to suspect leprosy
- Elicit/describe cardinal signs for diagnosis of leprosy
- Discuss grading of disability
- Assess treatment needs of leprosy disabled person
- Appreciate the complexity of diagnosis and need for referral

Teaching method – Lecture discussion and case demonstration, re-demonstration & discussion, group exercises. Trainees are grouped into 4-5 groups, a case is allotted to each group, and trainer observes/facilitates the clinical assessment & its recording.
6.1 Introduction

A leprosy affected person may not come with leprosy related complaint due to the following reasons:

- Leprosy related skin lesions do not hurt due to loss of sensation
- Lack of awareness about the disease and curability of the disease
- May not know that treatment is available at the health centre
- May not know that treatment is available free of cost
- Not able to afford traveling cost
- Hides the disease for the fear of stigma.

Health worker(s) may refer the person, suspected to have leprosy or persons may come to health centre for some other problem on their own. Therefore, whenever you come across a person having signs and symptoms related to leprosy or its complications, the person should be evaluated to confirm the diagnosis.

Medical Officers are responsible for:
  i) Confirmation of diagnosis,
  ii) Complete assessment of the affected person,
  iii) Assessment of treatment needs
  iv) Starting treatment after registration of the affected person.

Who is a case of leprosy?

A person with cardinal clinical signs of leprosy,

Who has never taken treatment,

And needs anti-leprosy treatment
6.2 Suspecting Leprosy

If any of the following is present, suspect leprosy!

6.2.1 Skin Patch

Pale or reddish patch on the skin with lost/impaired sensation for heat/cold, fine touch & pain on pinprick:

- Hypo-pigmented, erythematous or copper colored
- Small / Large
- Flat, raised or nodular
- Can be located anywhere (but more on cooler exposed body parts)
But not if, lesion is:

- White (depigmented), dark red or black in colour
- Shedding scales (except after Type-1 reaction)
- Itchy
- Present since birth
- Painful and hurts
- Appears or disappear suddenly or, changes with seasons.

6.2.2 Infiltration/ thickening of skin

Infiltration/ thickening of skin and/or papules, plaque(s) nodule(s): such as

Reddish or skin coloured **nodules**

or **smooth shiny diffuse thickening of skin** without loss of sensation

Swelling / nodules in the face and earlobes
6.2.3 Involvement of peripheral Nerves

Painful and tender/ palpably thickened nerves

Cord like thickening of nerves with or without pain and tenderness: esp. behind the ear, around elbow, wrist, knee and ankle joints

Numbness or tingling of hands or feet

or

Loss of sensation: (temperature, touch, pain) esp. in tips of fingers and sole of the foot and over skin lesions.

6.2.4 Disabilities and Deformities of hands feet & eyes

Usually, the following deformities/ disabilities may be found in leprosy cases.

Weakness of hands, feet, and/or eyelids and inability to perform certain movements:

- Inability to hold, pinch, run, retain chappal, touch tip of fingers with tip of thumb
- Move hand backward on wrist (Wrist Drop),
- Move foot upwards on ankle (foot drop) or
- Close eyes completely may be due to leprosy.

Claw hands or claw feet
Drop foot: Inability to move foot upwards on ankle joint & inability to retain chappal in the foot & walks with high stepping gait

Drop wrist: Inability to move hand backward on wrist joint

Inability to close eyes completely

6.2.5 Repeated painless injury/ burn marks:

Repeated painless ulcers/ burns in soles and palms may be due to leprosy.

Late stages deformities due to bone absorption / bone destruction may also be seen
6.2.6 Leprosy Reactions

A person with leprosy can have a reaction at almost any time: before treatment, at diagnosis, during treatment and after completion of treatment.

There are two Types of Lepra reactions.

a. Existing lesions may expand, become red, swollen and hot and painful to touch. (Type-I reaction).

b. Occurrence of painful red nodules on face, arms and legs with fever, body ache, loss of appetite etc. (Type-II reaction); involvement of ocular tissue especially iridocyclitis & recent deterioration of vision.

Swelling of hands and/or feet may be present in reaction

6.2.7 Other signs

Also suspect and look for other symptoms & signs for confirmation of leprosy - trichiasis, thinning of eyelashes and/or eye brows, sagging of lower eyelid, epiphora (watering of eyes), Epistaxis (bleeding from nose), chronic blockage of nose due to infiltration and crust formation or, wasting of muscles of limb with/without shiny skin and loss of hair and/or hoarseness of voice (Refer chapter 5: Pathogenesis of leprosy-manifestation of disease)

6.3 Cardinal signs for confirmation of Leprosy

Diagnosis of leprosy is confirmed by eliciting at least one of the three cardinal signs of leprosy through systematic clinical / bacteriological (whenever required) examination.

The three cardinal (very important) signs for confirmation of diagnosis of leprosy are:

The three Cardinal Signs of Leprosy

1. Hypo-pigmented or reddish skin lesion(s) with definite sensory deficit
2. A thickened or enlarged peripheral nerve with loss of sensation and/or weakness of the muscles supplied by that nerve.
3. The presence of Acid-fast bacilli in slit skin smears or histopathology

Presence of any one out of three cardinal signs is essential to diagnose leprosy.
In a suspected case of leprosy if the first two cardinal signs are absent, the person should be referred to an identified referral centre for slit skin smear examination.

Other investigations that can be used for diagnosis of leprosy are histopathological examination of tissue after skin biopsy is taken from the edge of the lesion, nerve biopsy of affected cutaneous nerve, fine needle aspiration from lymph nodes and polymerase chain reaction.

### 6.4 Assessment of person affected by leprosy

After confirming the diagnosis of leprosy by the presence of one or more of the cardinal signs, the PAL must be clinically evaluated in detail (as outlined below), to determine their disease management needs.

<table>
<thead>
<tr>
<th>Assessing Leprosy Affected Person</th>
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<tbody>
<tr>
<td>✈ Elicit detailed history</td>
</tr>
<tr>
<td>✈ Carry out general physical examination</td>
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<tr>
<td>✈ Examine skin for presence of skin lesions</td>
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<tr>
<td>✈ Test for loss of sensation in the skin patch (es).</td>
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<tr>
<td>✈ Note the number of skin patches</td>
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<tr>
<td>✈ Palpate nerves for thickening/ tenderness/ consistency and number affected</td>
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<tr>
<td>✈ Test sensation in the palm and soles</td>
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<tr>
<td>✈ Look for normal blinking and redness of the eyes and visual acuity</td>
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<tr>
<td>✈ Observe for presence of any disability due to leprosy</td>
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<tr>
<td>✈ Perform voluntary muscle testing Grade the disability and record the EHF score</td>
</tr>
<tr>
<td>✈ Record the findings</td>
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<tr>
<td>✈ Decide the needs of the person</td>
</tr>
<tr>
<td>✈ Register the person for treatment and counsel the PAL</td>
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</table>

### 6.5 Eliciting detailed History

Leprosy affected person may present with any of the following complaints related to affected part of the body.

#### 6.5.1. Leprosy related complaints may include

- Skin lesion(s) lighter than the surrounding skin and/or reddish patch with raised border, examine for presence of sensation.
Lesion(s) may be dry to touch (or having reduced sweating), with/without noticed loss of sensation and/or loss of hair
Loss of eye brows /eyelashes, inability to close eye completely or impairment in blinking of eye
Nodules / lumps on the skin or earlobes
Chronic blockage of nose (may give history of epistaxis)
Recent Impairment of vision or red painful eye, watering from eye, impaired blinking
Pain / tenderness at the elbow (Ulnar nerve), wrist (Radial cutaneous nerve/ Median nerve), at back of Knee (Common peroneal nerve) and/or at ankle (posterior tibial nerve)
Presence of unusual sensation in hands and feet like tingling, numbness, burning, or sensation of crawling insect may be the presenting symptoms of nerve involvement
Weakness of grip, inability to pinch, things tend to fall/ slips out of the hand, things feel different while held in the hand. Painless/ repeated wounds or burns on hands and feet
Hands or feet feel weak, slimmer with shiny skin, loss of hair
Inability to retain chappal (footwear without back strap) in the foot and/or foot interferes/ gets turned while walking
Person walking with high stepping gait to clear foot from the ground in foot drop.

6.5.2 Case History
Detailed history of the presenting complaint must be elicited

If person does not complain, ask the following leading questions to find clinical involvement, its sequence of evolution and duration of each positive clinical feature

Details of skin lesions

- **Duration of skin lesion:** Since when is it present? A patch of a few days or one present since birth is not leprosy.
- **Progress of skin lesions:** How did it start? Has it changed? Skin lesion/s of sudden onset, are unlikely to be leprosy (except reactions). Leprosy patches usually appear slowly.
- **Characteristics of skin lesions:** Leprosy patches do not itch and are usually not painful. There may be associated loss of hair
- **Sweating:** Area of the skin lesion may not sweat.
- **History of recurrence** - A recurrent lesion which “comes and goes” or seasonal is not leprosy
Other details: Try to find, whether

- Skin has become drier in a particular area?
- History of redness or swelling of skin lesions or appearance of firm, painful nodules under the skin in crops that disappear with in a week (reaction) is present
- Hands or feet have become weaker?
- Feels loss of sensation or abnormal sensation in hands and/or feet? Has problem with holding, manipulating or lifting things or any other activity?
- Has problem in moving hands and feet; or close eyes completely, eyes are painful &/or blurring of vision is present?
- Presence of any disability: Ask time of its onset, duration of disability and nature of its progress?
- Any other associated illness: Ask whether person is taking medication for any other illness and if yes, find details about the nature of the illness and treatment being taken for it. H/o anaemia (needs treatment of anaemia along with MDT) jaundice (start MDT after jaundice subsides) cough (if taking treatment for tuberculosis; continue Rifampicin in the doses recommended under RNTCP), HIV/AIDS ((on ART) and rule out any other illness.
- Treatment history: Type of treatment taken, name of the drugs taken (show blister packs), duration of treatment taken, whether treatment was taken regularly or not. Any treatment taken for disability, response of the treatment, place from where the treatment was taken, whether treatment was completed as advised by the treating physician, reason for discontinuing the treatment or coming to this centre.
- History of drug allergy: eg. for sulpha drugs (avoid Dapsone)
- Family History: Any other person in the family or close contacts having similar disease or treated for it.
- If patient is female: Take detailed menstrual history to exclude pregnancy especially if reaction is suspected. Though MDT can be used safely during pregnancy, advice the person to take precautions to avoid pregnancy till taking medication because it is better to avoid all medications during first trimester of pregnancy.

For history and evaluation of ocular lesions; refer chapter 9, on ocular leprosy.

6.5.3 General physical examination

- General condition: General condition is usually satisfactory and PAL do not show any signs of toxicity except during lepra reactions.
- Temperature: A person affected by leprosy is usually not febrile except during reactions or secondary infection of ulcers/ bone/ any other affected organ.
- Symmetry of face: Angle of mouth may be pulled towards normal side (paralysis of facial nerve) absence of folds and creases of face on the affected side indicate facial nerve involvement. Loss of forehead folds may indicate involvement of frontalis muscle.
**Pallor:** Look at the palpebral conjunctiva for anemia (pallor). Colour of tongue, hands & nails help to suspect anaemia that can be confirmed by testing blood for hemoglobin. Dapsone causes anaemia and can increase/decompensate pre-existing anemia. If haemoglobin is less than 10 gm%, start iron, folic acid, ascorbic acid and advise person to take high protein diet along with MDT.

**Icterus:** Look for icterus on bulbar conjunctiva on first as well as on every follow up visit of patient; because it may also occur as one of the side effects of MDT. Look for yellow discolouration in natural light. If present, advise serum bilirubin (Total, Direct & Indirect) if total bilirubin is more than 1mg%; refer the person to higher centre for further management. Start MDT after serum bilirubin level becomes normal.

**Involvement of lymph nodes:** May become palpably enlarged in all MB cases and become tender in ENL.

**Other systemic diseases**— Other systems are not affected normally in leprosy but may get affected during reactions. Exclude hypertension and diabetes because in case of reactions or neuritis corticosteroids are used and these people then require referral.

**Swelling/oedema of hands and feet:** If present the patient should be screened for kidney function.

**Condition of the skin:** Look for dry skin, presence of cracks, callosities, wounds or ulcers; presence of small frail hair / absence of hair & absence of sweating in the area of the affected nerve.

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### 6.6 Examination of skin lesions:

Skin lesion(s) are common and may be the only presentation of the disease. Skin lesions in leprosy can appear anywhere. Examine the whole body surface preferably in natural sunlight and always test the skin lesions for presence of any sensory deficit (Refer section 6.3.2) and look for loss of sweating and/or hair over the lesions.

#### 6.6.1 Precautions for examination of skin lesion

- Examine the person under good light (preferably natural light)
- Provide privacy during examination
- Examine as much as possible of the whole skin, i.e. from head to toe.
- Always use the same order of examination, so that you do not forget to examine any part of the body.
- Ensure presence of a female attendant while examining women.
6.6.2 Details of skin lesions

Observe & palpate to note the following about skin lesions

- **Site and distribution:** Noting the site of skin lesion is useful for follow-up and to ensure identification of fresh lesions later. Note the site of all the lesions on the patient card/chart. Larger asymmetrical / unilateral lesions are more frequently seen in PB type of leprosy.

- **Margin(s):** Margins may be well-defined or ill defined. The edges of the lesions tend to get progressively more irregular and indistinct as the immune status of patients worsens.

- **Number:** This is most useful for grouping and follow-up. 1-5 skin lesions means PB (including a single nerve trunk), six or more skin lesions indicates MB type of leprosy (or 2 or more nerve trunk involvement).

- **Colour:** Lesion are usually hypo-pigmented (lighter in colour than the rest of the skin), or erythematous (reddish). Lesions of leprosy are never completely de-pigmented.

- **Surface:** May be smooth, shiny or dry.

- **Hairs on the lesion:** May be normal, scanty, small frail or absent.

- **Sensory deficit:** This is a cardinal sign for diagnosis when elicited over a lesion. The sensory impairment/loss may lie over skin lesion(s), area of nerve distribution or glove and stocking in pattern.

- **Tenderness:** Tenderness of skin lesions is seen in reactional state. Tenderness over the nerves is indicative of neuritis.

- **Palpate around the edges of the lesions** to find the thickened nerves entering the skin lesion (Pathognomic of leprosy – “nerve to patch”)

- **Presence of infiltration:** This term refers to skin that is thickened, shiny and erythematous. All three features must be present in the same area. This infiltration may be localised to form plaque(s) or become diffuse. Diffuse infiltration may be the only early presenting sign in some cases of MB leprosy (lepromatous leprosy). Papule(s) / nodule(s) may develop when infiltration becomes coarse.

- **Presence of Nodules:** Firm nodules may be present/ appear on the skin of the extensor surface of limbs and face in some cases of MB leprosy and in Type 2 reaction. (If present, press them gently to elicit tenderness and blanching to confirm ENL of type-2 reaction). These tend to be evanescent (last for a few days) and come in crops.

- **Inflammation and expansion of existing skin lesion:** Presence of erythema and discomfort (paresthesia, warmth and/or pain) are signs of activity of skin lesions. Swelling, redness, discomfort of skin patch (es) is present in type 1 reaction.
Differences between nodules of Leprosy and ENL Nodules:

<table>
<thead>
<tr>
<th>Differentiating Features</th>
<th>MB Leprosy Nodule</th>
<th>ENL Nodule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of evolution</td>
<td>Slowly appearing, one at a time at individual rates of progression</td>
<td>Sudden appearance in crops, commonly in late evenings</td>
</tr>
<tr>
<td>Tenderness</td>
<td>Usually not tender</td>
<td>Usually tender</td>
</tr>
<tr>
<td>Associated Symptoms</td>
<td>That of MB leprosy</td>
<td>Acute constitutional symptoms like fever, loss of appetite, malaise, etc.</td>
</tr>
<tr>
<td>Spontaneous resolution</td>
<td>Not Seen, tend to persist</td>
<td>Typically evanescent, individual lesions tend to resolve over some days leaving behind pigmentation</td>
</tr>
</tbody>
</table>

6.6.3 Eliciting sensory loss in skin patches

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

- A ball point pen is needed to examine the sensory deficit.
- Make person comfortable (sitting / lying)
- Explain the procedure to the person and demonstrate it with open eyes on normal skin.
- Touch the skin with the pen (pen being perpendicular to the skin) lightly using weight of the pen (do not press), teach the individual to point to the touched spot with his index finger/ or count on each touch felt by the person or say yes on each touch while testing the lesions over inaccessible areas i.e. unapproachable areas of back & buttocks).
- Repeat this procedure a few times until the person is familiar and comfortable with the procedure.
- Now ask the person to close the eyes and repeat the procedure over the area to be tested (first touch on the normal skin then over the affected area).
- Repeat test on insensitive area again.
- Keep varying the pace of touch
- Test as many lesions as possible
- 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 force of contact must be the same each time the skin is touched by the ball-point pen.

**Remember the first Cardinal Sign:**
Definite loss of skin sensation is characteristic of Leprosy

Note:
(i) Leprosy patch on the face may **not** have elicitable sensory deficit because of the overlapping nerve supply of the skin of the face
(ii) Areas of **thick skin** which are otherwise normal may **not** feel the above “standardized” touch. (Soles, elbows).
(iii) It may be difficult to obtain cooperation in **children**. Ask the child to sit or play in the sun and then examine for sweating and look for loss of sweating in the patch. For small children touch the sleeping child on the patch, if sensation is present it may disturb the child.

**Note: While examining the skin**

Interpretation of test for loss of sensation:
- Loss of sensation if patient does not respond to touch
- Reduced or impaired sensation if person touches >3cm away from the touched point (> 1 cm for flexor surface of limbs)
- Normal sensation if localized within 3 cm
- Compare with opposite side or adjacent skin to elicit subjective impairment of sensation (doubtful loss but helps in clinical decision making)

Look for thickened nerves like ulnar, lateral popliteal, posterior tibial nerves, radial cutaneous, median, greater auricular, supra orbital and supra trochlear. While examining the skin also look for existing disability or deformity, callosities, painless blisters/ ulcers. These indicate the involvement of the nerve supplying the affected area.
6.7 Examination of the Nerves

Usually peripheral nerves are involved and get thickened with or without loss of sensation in the area supplied by the affected nerve & weakness/ paralysis of muscles supplied by the nerve.

Examination of nerves in all the patients is essential for:
- Diagnosis
- Classification/grouping
- Follow-up
- Interventions for prevention of deformity
  Remember the 2nd “Cardinal sign”!
- Involvement of the peripheral nerves (hands, feet or eyes) is demonstrated by
  Definite thickening / tenderness of nerve on palpation. This is more easily perceived when it is asymmetrical by simultaneous comparison of the two sides
- Loss of sensation in area supplied by the nerve &/or
- Weakness/paralysis of the corresponding muscles
- Presence of Disability or Deformity confirms involvement of the nerves. Thin and fibrosed (cord- like) nerves can be palpated in long standing cases

6.7.1 Clinical Presentation in nerve involvement

- Time of onset of the mentioned problem
- Nature of its progress

At the time of first visit to health center, there may be:
- No demonstrable nerve involvement
- Thickening of the nerve trunk with out any symptom /sign
- Acute neuritis Painful, tender and thickening of one or more nerves
- Chronic neuritis Pain and tenderness is less prominent but damage to the nerve gradually increases
- Complete nerve destruction Complete paralysis for more than one year (fibrosed nerve, “cord like” on palpation)

Two components of nerve examination are:
- Palpation of the nerves: For thickening, tenderness and consistency (cord like/fibrosed)
- Assessment of nerve function: Autonomic, sensory and motor functions.
Assess nerve function for:

- **Autonomic function**: Presence of sweating, hair loss, dry brittle skin, cracks
- **Sensory deficit (ST)**: In the area supplied by the nerve as in Sensory Testing
- **Power of muscles (VMT)**: Assessing the strength of movement of the Voluntary Muscles supplied by the nerve - known as voluntary Muscle Test

### 6.7.2 Procedure for palpation of a nerve

Peripheral nerves are also palpable in healthy persons. Hence, look for thickening (compare the nerves of the two sides), tenderness and consistency of the nerve.

- Position the patient correctly.
- Locate the nerve correctly
- Look at the patient’s face while palpating the nerve gently with the pulp of the finger (not the tip of the finger) to elicit tenderness.
- Always palpate across the course of the nerve.
- Feel along the nerve as far as possible in both directions. A localized fluctuant and tender swelling may represent as nerve abscess.
- Nerves on the two sides must be compared to detect any abnormality
- Besides nerve trunk examination, examine area around / proximal to area of loss of sensation/ around skin lesion for thickening of cutaneous nerves, especially those entering the skin lesions.

### 6.7.3 Assessment of sensory function of nerve

Test the sensory loss in the area supplied by the affected nerve. To detect the sensory loss, use a ball pen and test the sensation at four points in the hand as well as in the foot. (See procedure described above – Sensory testing of skin lesions).

Impairment or absence of sensation at any of the point needs testing of the sensation at more points in that area to identify the exact extent of sensory loss. Refer section on individual nerve assessment for details of sensory supply by peripheral nerve trunks.
6.7.4 Assessment of the motor function of nerve (VMT):

**Range of Movement of joints:** Check the range of movement performed by the muscle to see whether person is able to move the joint through full range or not. If the voluntary movement of the joint is reduced/ absent, it means that the muscle is weak/ paralysed. Assist the person to move the joint through normal range of movement of all the adjacent joints (passive movement) to assess stiffness of the joints and development of contractures of weak / paralysed muscle.

If movement is normal, test the strength of movement of the muscle by applying pressure gently in the opposite direction of the movement and gradually increase the pressure while asking the person to maintain the position. Judge whether resistance applied by the person is normal, reduced or absent. Compare the strength of the two sides. Grading of muscle strength is done as follows:

(for assessment of motor function of individual nerve - refer examination of individual nerve)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>S (Strong)</td>
<td>Able to perform the movement against full resistance</td>
</tr>
<tr>
<td>W (Weak)</td>
<td>Able to perform the movement but not against full resistance</td>
</tr>
<tr>
<td>P (Paralysed)</td>
<td>Not able to perform the movement at all.</td>
</tr>
</tbody>
</table>

**Testing mild muscle weakness in early stages of nerve damage:** Mild weakness of the muscles in early stages of nerve involvement can be assessed rapidly by performing certain rapid clinical tests. Combination of two to three tests can be used to find mild weakness of the muscles as given below.

**For hand muscles:**

(i) **Beak test:** Ask the person to join tips of all the fingers of hand and extend the wrist like head & beak of a bird. Ask the person to keep the hand in this position for 30 seconds. Little finger will stand out in ulnar nerve weakness. Person will not be able to maintain position of thumb in median nerve weakness and wrist will not remain extended in radial nerve weakness.

(ii) Ask the person to keep all the **fingers straight** and together. In ulnar nerve weakness, little finger cannot be kept straight and together with other fingers. It stays a little apart from the rest of the fingers and may also get bent or clawed.

(iii) Ask person to hold the thumb abducted that is perpendicular to the palm and tip of the thumb pointing upwards and not forwards for 30 seconds. Inability to do keep the thumb in this position indicates early stages of involvement of median nerve.

(iv) Ask person to stretch both arms straight in the front and hold wrist and fingers up as much as possible (Dorsiflex). Keep it in this position for 30 seconds. During early stages of radial nerve weakness, person will not be able to hold hands in this position.
Test for lower limb:

(i) Ask the person to lift all the toes (dorsi-flex the foot and toes) and hold them in this position for 30 seconds. Test the resistance against pressure against the toes (big toe in particular). The resistance can be assessed as normal or weak.

Grade the muscle power as ‘S’, ‘W’ or ‘P’ as described above.

6.8 Examination of individual important nerves of the face and the neck

Commonly affected nerves in the face are Trigeminal nerve and Facial nerve. Besides these, thickening of Greater auricular nerve, supra-orbital and supra-trochlear nerve can also be noted.

6.8.1 Trigeminal nerve: Sensory part of the trigeminal nerve supplies the conjunctiva and cornea and part of the facial skin. Most important effect of involvement of the trigeminal nerve is reduced or loss of sensation of cornea that affects blinking of the eye. Hence, irregular/infrequent/absent blinking indicates involvement of trigeminal nerve.

6.8.2 Supraorbital and supratrochlear nerves are cutaneous branches of the trigeminal nerve that may become visibly thickened and can be palpated by passing the finger along the upper border of the orbit.

6.8.3 Facial nerve: Facial nerve (motor) supplies various muscles of the face including orbicularis oculi. Paralysis of facial nerve in leprosy is of lower motor neuron type affecting the muscles of half of the face on the same side with loss of creases and expressions. Face becomes flat and angle of mouth is pulled towards the normal side. Weakness/paralysis of orbicularis oculi is important because it affects the closure of the eyelid. Inability to close the eye is called Lagophthalmos and has grave consequences leading to blindness. (For details please refer chapter on ocular leprosy)

6.8.4 Greater Auricular Nerve: Innervates skin of angle of the mandible and parotid area and can become visibly enlarged (better seen than palpated)

Site: It is visible on the side of the neck, below the ear, crossing the upper third of the sternomastoid muscle, lying parallel to the external Jugular vein.

Palpation of nerve: To palpate the nerve on right side, ask the person to turn head to opposite side (left side) so as to tighten the sternomastoid muscle.

Nerve is seen crossing the upper third of the muscle lying parallel to the external Jugular vein. Gently palpate the structure with pulp of the two fingers to make sure that it is nerve and not vein (can feel fluid inside vein and vein can be emptied)
6.9 Examination of nerves of the limbs

Observation: Look for Autonomic function of the nerve, deformities and other secondary impairment:

- **Dryness of hands and feet**: Presence of cracks and callosities
- **Absence of sweating**: Feel palms/soles of the person with back of your hand to determine whether skin is moist and cool / dry and warmer. Temperature of non-sweating skin is close to the temperature of the surroundings.
- **Condition of hairs**: Hair may be absent / become brittle in the area of skin supplied by the affected nerve
- **Presence of muscle atrophy/wasting**: Thenar eminence (median nerve weakness), hypo-thenar eminence (ulnar nerve involvement)
- **Presence of Abscess / sinus**: Presence of abscess or sinus along the line of course of the nerve indicates localised necrosis of the nerve
- **Impairment & disability**: Claw hand with atrophy of the interossei, clawing of little and ring finger for (ulnar nerve), clawing of lateral 3 ½ fingers (median nerve), Drop wrist (radial nerve), Claw toes (Posterior Tibial nerve), Drop foot (common peroneal nerve)
- **Sensory loss**: Presence of painless blisters, burns or ulcers

6.10 Examination of individual nerves:

A) Examination of individual nerve trunks of upper limb, commonly affected in leprosy:

Nerves affected in the upper limb are ulnar, median and radial nerves.

6.10.1 Ulnar nerve: Ulnar nerve in leprosy is affected at the elbow and can be palpated in the olecranon groove, just above and behind medial epicondyle of the elbow. Person complaints of clumsiness in use of hand, bent little finger, little finger coming in the way / not cooperating, while working.
**Area of sensory loss:** Palmer aspect of medial one and a half finger i.e little finger and medial half of ring finger and corresponding part of the palm and back of the hand.

**Muscle wasting:** Flattening of medial side of the palm, hypo-thenar eminence and bulge of muscle in the back of hand between thumb and index finger.

**Site of nerve palpation:** In the groove above and behind medial epicondyle of the elbow.

**Palpation of the Ulnar nerve:** Both the patient and examiner face each other.
- To examine right ulnar nerve, ask the patient to flex the elbow joint slightly. Hold the right wrist with your left hand.
- Using right hand, feel for the medial epicondyle.
- Pass just behind it and feel the ulnar nerve in the groove.
- Gently palpate with pulp of 2 fingers (index & middle) and feel across the nerve, constantly watching facial expression for signs of tenderness.
- Trace the nerve proximally as far as to possible to ascertain the length of the swelling.
- Some times, cutaneous branch of ulnar nerve may become visibly palpable (see fig)

**Deformity:** Clawing of little and ring finger (hyperextension at Meta-carpo-phalangeal joint and flexion at proximal and distal interphalangeal joint (Ulnar Claw Hand).

**Voluntaey muscle testing:** If nerve weakness is present, test the functioning of ulnar nerve by **Little finger out test** and grade the muscle weakness.

**For ulnar nerve: Little finger out test:**
- Test abduction of the little finger.
- Ask the person to put out the hand with palm facing upwards and support the hand in your hand by holding the fingers except the little finger or keep it on table as shown.
- Ask the person to move the little finger sideways/out i.e. away from the other fingers in the same plane as palm.
- Test with pressure at the base of the little finger as shown by pushing it towards the hand while the person tries to hold it in the test position

6.10.2 Median Nerve
Median nerve is affected at wrist as it passes in the carpal tunnel under the flexor retinaculum of the hand and is palpable (with experience) proximal to the wrist, deep and medial to Palmaris longus tendon, when the wrist joint is semi flexed. Person **complaints** weakness of grip, difficulty in holding and manipulating objects, difficulty in pinching or picking or holding small objects, buttoning of shirts etc

**Area of sensory loss**: Palmar aspect of lateral three and a half finger i.e thumb, index, middle finger and lateral half of ring finger and corresponding part of the palm (refer fig)

**Muscle wasting**: Flattening of thenar eminence.

**Site of palpation**: Proximal to the wrist, deep to Palmaris longus tendon when joint is semi flexed. Nerve lies parallel to the palmaris longus.

**Palpation of the nerve**: Both the person and examiner face each other.
- To examine right median nerve, support the right hand in your left hand
- Using the pulp of index and middle finger of the right hand feel for the palmaris longus tendon in the middle of the wrist. Median nerve lies deep and medial to the palmaris longus in line with the ring finger.
- Gently palpate the nerve medial to the tendon while flexing the wrist slowly against resistance

**Motor loss**: Involvement of median nerve affects the functioning of the hand due to weakness / paralysis of thumb, index finger and middle finger. Inability to oppose fingers by thumb e.g. during grasp and pinch

**Deformity**: Clawing of thumb (bent backwards at the wrist and forwards in the middle and at the tip). Deformity due to median nerve is usually associated with that of the ulnar nerve resulting in complete claw hand (see fig)

**VMT for Median Nerve: ** **thumb up test** (see fig.)
- Abduction of thumb is tested
- Ask the person to put out the hand with palm facing upwards; support the hand with your hand.
- Ask the person to hold his thumb at right angle to the palm (abduct thumb/thumb up position).
- Keeping the wrist slightly extended, apply resistance at the head of the first metacarpal to push the thumb towards index finger, by the side of the palm while the person tries to hold it in the test position. (see fig)

Grade the muscle power as ‘S’, ‘W’, or ‘P’ as described above in section for voluntary muscle testing (VMT). If the person is unable to resist and you can move the thumb down easily, muscle is weak; but if person cannot point the thumb upwards at all, paralysis of muscle is present.

6.10.3 Radial nerve
Radial nerve has two parts. The main nerve in the arm supplies the muscles at the back of the forearm and Superficial cutaneous branch of radial nerve, which supplies the skin on the back of the hand. Superficial nerve is commonly affected in leprosy. Main trunk is only occasionally affected and palpable in the oblique groove posterior to the insertion of deltoid muscle in the arm. Damage to the main nerve trunk causes disability because muscle balance of all the joints of the hand i.e. wrist, fingers and thumbs, is disturbed. Sensory loss in the area of supply of radial nerve does not indicate involvement of main nerve trunk. Radial cutaneous nerve branches out early from the main nerve. Hence, thickening of this branch may not be associated with muscle weakness. Thickened radial cutaneous nerve can be seen or palpated occasionally at the back of the hand (see fig.)
Radial nerve trunk supplies the muscle in the back of the forearm that extends the wrist, fingers and thumbs

**Complaint:** Person is unable to use the hand or extend the wrist, fingers & thumb.

**Palpation of the nerve:** Both the person and examiner facing each other.
- To palpate nerve in the left hand Ask the person to flex left forearm. Hold the forearm at wrist & rotate it slightly internally by the left hand.
- Using the pulp of index and middle finger of the right hand, feel the insertion of deltoid and go behind it to feel the nerve passing obliquely in the radial groove.

**Area of sensory loss:** Skin on the back of the hand. As shown in figure

**Muscle Wasting:** Muscles at the back of the forearm are atrophied
**Motor loss:** Inability to extend the hand at wrist and extend all the fingers and thumb.

**Deformity:** Wrist drop (in ability to extend the hand at wrist)

**VMT of Radial Nerve**
- Test dorsi-flexion of hand at wrist.
- Ask the patient to put out the hand with palm facing down
- Support the hand by holding forearm.
- Ask the person to make a fist and then dorsi-flex the wrist.
- 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’ as described above

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**B) Nerves of the Lower limb**

Most commonly affected nerves in the lower limb in leprosy are lateral popliteal nerve, branch of common peroneal nerve and posterior tibial nerve, a branch of tibial nerve.

**6.10.4 Lateral popliteal nerve**

The lateral popliteal nerve (a branch of common peroneal nerve) gets affected at the knee. During early stages of involvement, patient may complain that big toe gets in way while walking, and may find running difficult, due to weakness of big toe.

**Site of palpation:** It can be palpated at the back of the knee, behind the head of fibula as it winds around the neck of fibula, and traced upwards to the popliteal fossa.

**Position of patient:** Patient standing with knees slightly flexed (not total) and examiner squatting.
- Trace fibula upwards on the lateral aspect of the leg to identify the head of fibula 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 & middle) and feel across the nerve, constantly watching facial expression for signs of tenderness. The palpable course of the nerve is very short.
Area of sensory loss: Lateral popliteal nerve supplies a large area on the outer side of the leg and dorsum of the foot. As the cutaneous branch of the nerve is more commonly affected in leprosy; sensory loss in this area does not necessarily indicate damage to nerve trunk or weakness of muscles supplied by it.

Muscle wasting: flattening of the muscle bulge in the upper part of the front of the leg and tibia becomes prominent

Motor loss: Common peroneal nerve supplies the muscle in front of the leg that lifts the foot and, muscles on the outer side of the leg that turn the foot outwards. Person may not notice any disability until nerve is completely paralysed or may complain that the foot drags on the floor on sudden attempt to move forward quickly.

Deformity: Foot drop. Person is unable to dorsi-flex the foot at ankle joint. Ask patient to walk a few steps and observe.

Person lifts the affected foot high to clear it from the ground (high stepping gait)

VMT for lateral popliteal nerve - Foot up test: (see fig.)

Position of the patient: Ask the person to lift the foot off the ground and support at calf region or make the person sit on the stool so that the legs are hanging.

- Ask the patient to dorsi-flex the foot fully.
- 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

If foot can be pushed down easily, there is muscle weakness. If the patient cannot lift the foot at all, there is paralysis.
6.10.5 Posterior Tibial nerve:

Posterior tibial nerve is a branch of the common tibial nerve and is palpable at a site just below and behind the medial malleolus, approximately at the mid point between medial malleolus and heel. Posterior tibial nerve involvement does not experience any noticeable disability in the early stages. Later it produces claw toes and plantar anesthesia.

Area of sensory loss: This nerve supplies the skin of the entire sole.

Site of palpation: Below and behind the medial malleolus, approximately at the mid point between medial malleolus and heel.

- Ask the patient to keep the leg on the knee of the other limb. Fix the ankle by flexing the foot by exerting slight pressure on toes. Identify the medial malleolus. Locate the nerve just below and behind medial malleolus (approximately at the mid point between medial malleolus and heel)
- Palpate with the pulp of the finger and feel across the nerve constantly watching facial expression for signs of tenderness.
- The palpable course of the nerve is very short.

Deformity: Clawing of toes. When the foot is placed flat on ground there is hyperextension at the metatarso-phalangeal and flexion at the interphalangeal joints so that instead of the pad of the toes, tips of the toes come in contact of the ground

Test for early muscle weakness:
Nerve supplies the small muscles of the foot and there may not be any noticeable disability due to involvement of the nerve.
### Table: commonly affected nerves:

<table>
<thead>
<tr>
<th>Peripheral nerve trunk</th>
<th>Sensory supply</th>
<th>Palpation</th>
<th>Voluntary Muscles Testing (VMT)</th>
<th>deformity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulnar Nerve</td>
<td>Little finger, medial ½ of ring finger &amp; corresponding medial portion of palm and back of hand</td>
<td>Just above the elbow &amp; behind the medial epicondyle</td>
<td>little finger out test</td>
<td>Claw deformity of little and ring finger</td>
</tr>
<tr>
<td>Median Nerve</td>
<td>Lateral 3 ½ fingers &amp; corresponding lateral portion of palm</td>
<td>At the wrist medial to palmaris longus</td>
<td>Inability to abduct thumbs Thumbs up test</td>
<td>Claw deformity of thumb, index finger and middle finger (usually not seen alone)</td>
</tr>
<tr>
<td>Radial Nerve</td>
<td>Lateral 2/3 of dorsum of hand</td>
<td>Oblique groove in Arm</td>
<td>Test dorsiflexion of wrist</td>
<td>Wrist drop</td>
</tr>
<tr>
<td>Common peroneal</td>
<td>lateral leg &amp; dorsum of foot</td>
<td>knee posterior to around neck of fibula</td>
<td>Dorsiflexion of foot</td>
<td>foot drop</td>
</tr>
<tr>
<td>(Lateral popliteal)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poster tibial</td>
<td>Below and behind medial malleoucs</td>
<td></td>
<td>Not much disability</td>
<td>Claw toes</td>
</tr>
</tbody>
</table>
Disability must be assessed, graded and recorded at the time of first examination and periodically at subsequent visits; Risk status of the affected person changes with the disability status of the person.

Disability in leprosy is graded to judge the extent of impairment, progress, early detection of any deterioration in the disability status of the leprosy affected person, to decide the line of management for the person, to monitor the quality of services available and plan services for the management of the leprosy in the area.

The EHF score is used to grade the disability of the individual organ separately and to give an over all disability grade to the person as outlined below.

<table>
<thead>
<tr>
<th>Examination of parts</th>
<th>WHO Disability Grades</th>
<th>Sensory Testing (ST)</th>
<th>Voluntary Muscle Testing (VMT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Sensation present</td>
<td>Muscle power normal (S)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Sensation absent</td>
<td>Muscle power normal (S)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sensation absent</td>
<td>Muscle power weak or paralysed (W/P)</td>
</tr>
<tr>
<td>Feet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Sensation present</td>
<td>Muscle power normal (S)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Sensation absent</td>
<td>Muscle power normal (S)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Sensation absent</td>
<td>Muscle power weak or paralysed (W/P)</td>
</tr>
<tr>
<td>Eye</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Normal</td>
<td>No lid gap</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Can not count fingers at 6 meters</td>
<td>Gap between eyelids present/red eye/corneal ulcer or opacity</td>
</tr>
</tbody>
</table>

**EHF score**: 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.**

The EHF score is calculated from data being recorded routinely. Since the disability grade can be scored as 0, 1 or 2; EHF score, the sum of all the individual disability grades for the two Eyes, two hands and two Feet, ranges from 0 to 12. A score of 12 indicates grade 2 disability of both eyes, both hands and both feet. The EHF score is more sensitive to change over time than the Disability Grade itself. The simplest way to use the EHF score to calculate the score at the time of diagnosis and record the findings of the examination in the disability Assessment Form (P-II) separately for right and left eyes, hands and feet and give separate grade to each eye hand and foot. Write the date of assessment on the form.
After assessment of disability grade, record the grade of disability in the treatment register and patient card. Person with disability need frequent monitoring and called for follow up fortnightly till on steroid and assessed for any deterioration in the disability status and if possible every three months for one year and every six months for next two years after stopping the treatment. The current score is compared with that at the previous visit. An increase in the score, whether of an individual organ or the over all score would indicate some new or additional disability.

**Assessment of Nerve Function must be done at least every three months**

### 6.12 Assessment of risk status

**Patients at high risk for developing disability**

People with following features are more likely to develop lepra reaction and neuritis compared to others.

- Multi bacillary leprosy
- Multiple skin patches
- Past or present thickened/ painful/ tender nerve trunk
- Past/ present reaction, lesion near / on the nerve trunk
- Skin lesion on face
- Pregnancy with or without thickened nerve trunk

Refer to table in section 10.4.2 for risk status and monitoring

### 6.12.1 Counselling of high risk persons

Persons at high risk of development of reactions and disability need frequent counselling and monitoring. They are counselled at the time of registration, during and on completion of treatment regarding possible signs and symptoms of reaction and need to report immediately for treatment/ appropriate referral for prevention of further damage. They are advised to report immediately in case of any nerve pain, loss of sensation, weakness of muscles, appearance of numbness tingling/ paraesthesia in the hand, face and foot and also involvement of eye. Those who come with disability are told how to take care of themselves and to recognize signs and symptoms of worsening of disability.

### 6.12.2 Frequent monitoring of high risk persons

Identified high risk people are monitored more frequently, at regular intervals, for early detection of impairment of nerve function. They are assessed on every visit to health centre i.e every month or at earliest sign of clinical deterioration (skin or nerve lesions), while
taking MDT and even after completion of MDT treatment (three monthly in the first year and subsequently six monthly for another two years). Examine, PAL for development of lepra reaction (refer lepra reaction), neuritis, any nerve function impairment (refer involvement of nerve, examination of nerve function including sign for recognizing early nerve damage) & involvement of eyes (Refer ocular leprosy & pathogenesis, involvement of eye, examination of eye, examination of individual nerves). Assess the disability status and record the findings.

People with lepra reaction and acute neuritis are treated with rest to the affected part, analgesics and steroids (Refer section on lepra reaction)

6.13 Interpretation of signs and symptoms – Assessing disease activity

Monitoring of disease in a person under treatment is done by recording the clinical findings, comparing the finding with that of previous visit, interpreting finding to assess the activity of disease, potential for disabilities (at risk of developing disability), presence of reactional state, reversibility of nerve damage and to decide further management needs of the patient. Signs of active skin lesions are given below

**Table for signs of activity**

<table>
<thead>
<tr>
<th>Signs of Activity in Leprosy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Signs</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Bacteriological</td>
</tr>
<tr>
<td>Pathological</td>
</tr>
</tbody>
</table>

Above mentioned features may be present at the end of Fixed Duration Therapy but slowly disappear with time. These features may reappear in relapse.

Disabilities of recent origin (< 6 months duration) will require prednisolone therapy along with MDT (if course of MDT not completed earlier). **Disability of more than 6 months duration, are referred to identified higher centre.** immediately after registration.
6.14 Recording of findings

Clinical finding of all the leprosy cases must be recorded in the case card (LF -01). If PAL has come for the first time, register as new case in treatment register. If the person has defaulted from course of MDT and has returned to resume treatment /MDT the person needs to be re-entered in the treatment register as “other cases”. Record the details of clinical examinations of nerve function impairment in form P II and grade of the disability as in the patient card, as well as, in the treatment register. (For recording formats refer to Annexure XV)

6.15 Slit skin smear examination

Note

- Diagnosis of leprosy must be based on “Cardinal signs”
- Suspected / doubtful case should never be registered for treatment
- Skin smear examination is done to confirm doubtful cases, not confirmed by other two cardinal signs
- In the absence of all the three “Cardinal Signs”, consider diagnosis of other diseases
- If still in doubt re-examine for cardinal signs after 3-6 months

If there is no objective/demonstrable loss of sensation in the skin lesions and no palpably enlarged nerves, but there are suspicious signs, such as diffuse infiltration of the skin, papules and/or nodules on the earlobes, face, back and limb extensors, it is important to try and get a slit skin smear test done. In these circumstances, a positive skin smear confirms the diagnosis of leprosy (the third “Cardinal Sign”). In such a situation the Medical officer should take the opinion of a more experienced expert/dermatologist. An alternative diagnosis may also need to be considered. If still in doubt, wait for a period of 3-4 months and review for loss of sensation and/or thickened nerve that may have appeared by this time. The person will need referral to an appropriate centre for bacteriological examination.

Indications for slit skin smear examination:

1. Diffuse infiltration without any sensory impairment or with vague sensory impairment.
2. Innumerable bilaterally symmetrical ill defined macular lesions without any sensory impairment or with vague sensory impairment.
3. Papules, plaques or nodules, on the earlobes, face, back and extensor surface of the limbs without any sensory impairment or with vague sensory impairment.
4. Clinical situations where it is unclear whether the person is suffering from PB or MB leprosy

5. Person presenting with fresh lesions after release from treatment.

**Bacteriological Examination**

- Majority of persons affected by leprosy can be diagnosed without bacteriological examination
- Bacteriological examination is not mandatory to start treatment of leprosy
- If required, facilities for bacteriological examination (skin smear examination) are available at District Hospitals, Referral centre of NGOs, Medical colleges etc.

### 6.16 Diagnosis of 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 cases of MB leprosy, by evidence on a skin smear of an increase in Bacterial Index of 2+ or more. However, for most of the patients, smear examination normally would not have been done at the time of registration and RFT. It is often difficult to be certain that relapse has occurred, as new lesions (at previous lesion sites) may also appear in late leprosy reactions (sometimes lesions previously not clinically obvious become visible during reaction and look like new lesions). **Suspected relapse cases should always be referred to higher centre (with all clinical and treatment records) for confirmation.** (Also refer Annexure V)

MDT is very effective treatment for leprosy. If a full course of treatment has been taken properly, relapse is generally rare. The use of a combination of drugs has prevented the development of drug resistance in leprosy, so **cases of relapse can be re-treated effectively with the appropriate MDT regimen depending on the clinical grouping on the basis of the new lesions.** MB leprosy persons with high bacterial index at the time of diagnosis are more likely to come with relapse.
6.16.1 Difference between relapse & late reversal reaction

Suspected relapses are referred to district hospital (secondary level) for further investigations and management.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Relapse</th>
<th>Late Reversal Reaction (Type 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time since completion of treatment</td>
<td>Variable, usually later</td>
<td>Variable usually early</td>
</tr>
<tr>
<td>History of type 1 reaction while on treatment</td>
<td>variable</td>
<td>Usually positive</td>
</tr>
<tr>
<td>Progression of signs and symptoms</td>
<td>Slow</td>
<td>Fast</td>
</tr>
<tr>
<td>Site of skin lesions</td>
<td>Usually at new places</td>
<td>Usually over old patches</td>
</tr>
<tr>
<td>Skin-Pain, tenderness or swelling of patches</td>
<td>No</td>
<td>Yes – skin &amp; nerves</td>
</tr>
<tr>
<td>Nerve –Neuritis</td>
<td>Usually absent</td>
<td>May be present</td>
</tr>
</tbody>
</table>

6.16.2 Examination of previously treated person affected by leprosy

If a person previously treated for leprosy comes with complaints related to relapse, reaction or disability. Take a detailed history including:

- Details of current problem, its onset, duration, progress, any treatment taken
- Time of completion of treatment
- Duration of previous treatment
- Whether new lesions appeared quickly or over a long period of time
- Relationship of new skin lesions with old skin lesions
- Presence any pain, tenderness or swelling
- Has there been any recent loss of function of nerve (sensory or motor)
- Whether eye are watery, red and painful
- Any recent deterioration of vision
- Presence of a newly developed wound or non healing wound

If suspecting relapse in a person treated for MB leprosy, arrange for a slit skin smear (refer to higher centre). If skin smear was done previously, and shows an increase in bacterial load (Refer Bacterial index & morphological index in Annexure V) compared to the previous smear, relapse is likely.

In case of doubt a short course of steroids as a ‘therapeutic trial’ can be given to clarify the diagnosis. Reaction will show improvement within four weeks but relapse will not show any improvement.

Case of relapse is treated as any new case of leprosy but registered as relapse in the category of “other cases” and not as a new case.
### 6.17 At confirmation of diagnosis of leprosy

Once diagnosis of leprosy is confirmed:

- Explain the findings to the person
- Counsel the person and tell them that the disease can be cured.
- Examine the person more thoroughly to find out how far the disease has progressed, to know whether additional treatment is needed.
- Record the finding of the examination.
- Register the person in the treatment register
- Prescribe the appropriate treatment regime.
- Inquire about the person’s family.
- Household contacts should be examined for leprosy.
- Family should be encouraged to help the person complete treatment.

### 6.18 Ethical responsibility while diagnosing leprosy

**Ethical responsibility in diagnosing leprosy**

If suspecting leprosy but can not confirm the diagnosis, do not label a person as a case of leprosy on suspicion alone,

Note: In a person with suspected pale patches but normal sensation look for other cardinal signs

In the absence of other cardinal signs

- Inform the person about common signs and symptoms of the disease.
- Try to extract history of contact
- Try to extract history or presence of other associated features
- Refer the person to specialist for diagnosis and skin smear examination
- Consider the possibility of other disease
- If possible may ask person to report back after 3 months for reassessment.

**Suspecting relapse:**

To differentiate from reaction start prednisolone and immediately refer to District Hospital (secondary level)