



National Leprosy Eradication Program

Disability Prevention & Medical Rehabilitation
(DPMR)
2007



OPERATIONAL GUIDELINE

(Secondary Level)



Central Leprosy Division

Directorate General of Health Services, Government of India
Ministry of Health & Family Welfare, New Delhi, India.

DISABILITY PREVENTION & MEDICAL REHABILITATION

**OPERATIONAL GUIDELINES
SECONDARY LEVEL CARE**

**(Includes All Head Quarters Hospitals,
and District nucleus units)**

2007

**NATIONAL LEPROSY ERADICATION PROGRAMME (NLEP)
DIRECTORATE GENERAL OF HEALTH SERVICES
MINISTRY OF HEALTH & FAMILY WELFARE
GOVERNMENT OF INDIA**

NIRMAN BHAWAN, New Delhi 110011

Tele/Fax: 91(11) 23062401 email: ddgl@nb.nic.in Gram: Hospital

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LIST OF ACRONYMS

| | |
|--------------------|---|
| ANM | Auxiliary Nurse Midwife |
| ASHA | Accredited Social Health Activist |
| ASLO | Assistant State Leprosy Officer |
| AWW | Angan wadi worker |
| BCP | Blister Calendar Packs |
| BEE | Block Extension Educator |
| CHC | Community Health Centre |
| CLTRI | Central Leprosy Training & Research Institute |
| CMO | Chief Medical Officer |
| DLO | District Leprosy Officer |
| DDRO | District Disability Rehabilitation Officer |
| DPMR | Disability Prevention & Medical Rehabilitation |
| DRPD | District Rehabilitation Programme for Disabled |
| DRPA | Disability Rights Protection Act |
| DLP | Disabled Leprosy Person |
| DLS | District Leprosy Society |
| EHF Score | Eye Hand Feet disability Scoring |
| GOI | Government of India |
| GHCS | General Health Care System |
| IEC | Information Education & Communication |
| ILEP | International Federation of Anti Leprosy Associations |
| JALMA | Japanese Leprosy Mission for Asia |
| LAP | Leprosy Affected Person |
| LT | Laboratory Technician |
| LTC | Leprosy Training Centre |
| MB/PB | Multi Bacillary / Pauci Bacillary |
| MDT | Multi Drug Therapy |
| MO | Medical Officer |
| MOHFW | Ministry of Health & Family Welfare |
| MPHW | Multipurpose Health Worker |
| NGO | Non-Governmental Organisation |
| NLEP | National Leprosy Eradication Programme |
| NRHM | National Rural Health Mission |
| PCR | Polymerase Chain Reaction |
| PHC | Primary Health Centre |
| PMW | Paramedical Worker |
| PMR | Physical Medicine and Rehabilitation |
| PWD | Persons with Disability |
| POD | Prevention of Disability |
| POWD | Prevention of Worsening of Disability |
| PR | Prevalence Rate |
| PRI | Panchayati Raj Institutions |
| PT | Physiotherapist |
| RCS | Reconstructive Surgery |
| RLTRI | Regional Leprosy Training & Research Institute |
| RSU | Reconstructive Surgery Unit |
| SC | Scheduled Caste |
| SHG | Self Help Group |
| SIS | Simplified Information System |
| SLS/O | State Leprosy Society/Officer |
| SIHR&LC | Schieffelin Institute of Health Research and Leprosy Centre |

GLOSSARY

| | | | |
|---------------------------|---|-----------------------------------|---|
| Accompanied MDT: | Provision of more than 1 BCP of MDT at a time. | | |
| Aanesthesia: | Loss of sensation | | |
| Blindness: | refers to a condition where a person suffers from any of the following conditions, viz., (i) total absence of sight; or (ii) visual acuity not exceeding 6/60 or 20/200 (Snellen's method) in the better eye with correcting lenses; or (iii) limitation of the field of vision subtending an angle of 20 degrees or worse. | Leprosy cured person: | period of 9 months, similarly 12 months treatment for MB leprosy must be completed within 18 months. Any person who has completed a prescribed course of MDT (6 months PB/12 months MB Regimen). |
| Clawing: | Deformity wherein there is hyperextension of the joints between the fingers and the palm and flexion of the joints of the fingers. | Multi-bacillary: | A leprosy patient with six or more skin patches. |
| Crack: | Discontinuity of the epidermis, usually seen in joint folds or on the sole where the skin is thick. | Nerve function impairment: | a loss of normal nerve functioning, demonstrated by loss of muscle power and/ or loss of sensation (numbness) in the skin supplied. |
| Cure: | A person who has completed a full course of fixed duration MDT (6 doses for PB & 12 doses for MB) is cured. | Orthoses: | A treatment device especially for hands and feet, such as splints and MCR footwear |
| CBR: | A Strategy within general community development for the rehabilitation, equalization of opportunities and social inclusion of all people with disabilities. | Pauci-bacillary Case: | Case having 1 to 5 skin patches, with definite loss of sensation. |
| Disability: | A broad term covering any impairment, activity limitation or participation restriction affecting a person. | Passive movement: | Movement not produced by active effort but done by an external force.. |
| Deformity: | Abnormal appearance, disfigurement | Person with low Vision: | Person with impairment of vision even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with an appropriate assistive device and having vision less than 6/18. |
| EHF Score: | The sum of the individual disability grades for each eye, hand and foot. | Rehabilitation: | Includes all measures aimed at reducing the impact of disability for an individual, enabling him or her to achieve independence, social integration, a better quality of life and self-actualization. (Reference: UN Standard rules for equalization of opportunities for persons with disabilities (PWD).) |
| Extension: | Straightening | Self-Help Group (SHG): | "A small, economically homogeneous and affinity group of rural/urban poor, voluntarily formed to save and contribute to a common fund to be lent to its members as per the groups decision and for working together for social and economic upliftment of their families and community". |
| Flexion: | Bending | Social integration: | The active participation of disabled and handicapped people in the mainstream of community life. |
| Foot-Drop: | Inability to move the foot up, caused by the paralysis of the muscles which lift the foot. | Ulcer: | Discontinuity of the skin or mucous membrane |
| Impairment: | Any loss or abnormality of anatomical structure or function caused by the disease. It may be visible or invisible, temporary or permanent and progressive or regressive. Single impairment may lead to the development of secondary impairments. Example: loss of foot, defective vision, mental retardation. | Wrist drop: | Inability to move the wrist into extension. |
| Indicator: | Measurable aspect of a programme, which can indicate the level of performance and/or changes in performance | WHO Disability Grade 1: | Loss of sensation in palm / soles due to damage of main peripheral nerve trunk supplying that area |
| Lagophthalmos: | Inability to close the eye | WHO Disability Grade 2: | Visible disability / deformity or damage of hand & foot; or person cannot count fingers at a distance of 6 feet, lagophthalmos, iridocyclitis, and corneal opacity. |
| Leprosy case: | One who is having cardinal signs of Leprosy and has not completed a full course of treatment with MDT. | | |
| Leprosy defaulter: | is an individual who fails to complete treatment within the maximally allowed time frame i.e., six months treatment for PB leprosy must be completed within a maximum | | |



Government of India
Ministry of Health & Family Welfare
Dr. P.L. Joshi, MD, F.A.M.S.,
Dy. Director General (Leprosy)
Nirman Bhawan, New Delhi

Foreword

National Leprosy Eradication Programme is one of the most successful national health programme in India. After achieving the goal of 'leprosy elimination' at national level i.e. reaching the prevalence rate below 1 per 10,000 population, thus overcoming Leprosy as a public health problem, the next priority is Disability Prevention & Medical Rehabilitation (DPMR) of all leprosy affected persons.

Operational guidelines on DPMR related functions are simple to follow and it covers all the essential components. The purpose is comprehensive care of leprosy cases, including rehabilitation. I believe that these operational guidelines will be useful in implementing DPMR related activities at all secondary care level health institutions.

Yours sincerely

Dr. P. L. Joshi

OPERATIONAL GUIDELINES ON DPMR

Secondary Level Care (Second Level)

Introduction:

National Leprosy Eradication Programme (NLEP) is implemented with major objectives of reducing the disease burden, Preventing disabilities and to improve awareness about leprosy in the country through a vertical programme. Multi Drug Therapy is used as an important instrument to reduce the burden of active cases of leprosy. Some new cases have presented with deformities of hands, feet and eyes. Vertical services have been integrated into General health care. Following which, the Leprosy services are being provided through all Govt. hospitals, Primary Health centres and other health care facilities. Services, for Diagnosis & Multi Drug Therapy, drug procurement and Simplified Information System, have been established and are available in general health care system. Prevention of disability (POD) and the concept of comprehensive care are to be strengthened now. Deformities in leprosy cases affect the image of leprosy and impact of health program in the minds of people hence the priority to POD. While millions, of cases of leprosy have been treated, there still remain a considerable number of cured leprosy patients with disabilities who will need physical and socio-economic rehabilitation.

The actual number of cured leprosy patients with disabilities is not known. It is estimated that around one million leprosy patients with disabilities exist in the country. There will be around 2000 cured leprosy patients with disabilities in a district. To institute care for individual leprosy patients with disabilities, it is essential to identify each patient and his/her disability status in a given area. This will also help in preparing the action plan and resource allocation. At present there is no organized system in place to identify cured leprosy patients with disabilities. Therefore, there is a need to develop a strategy at the national level.

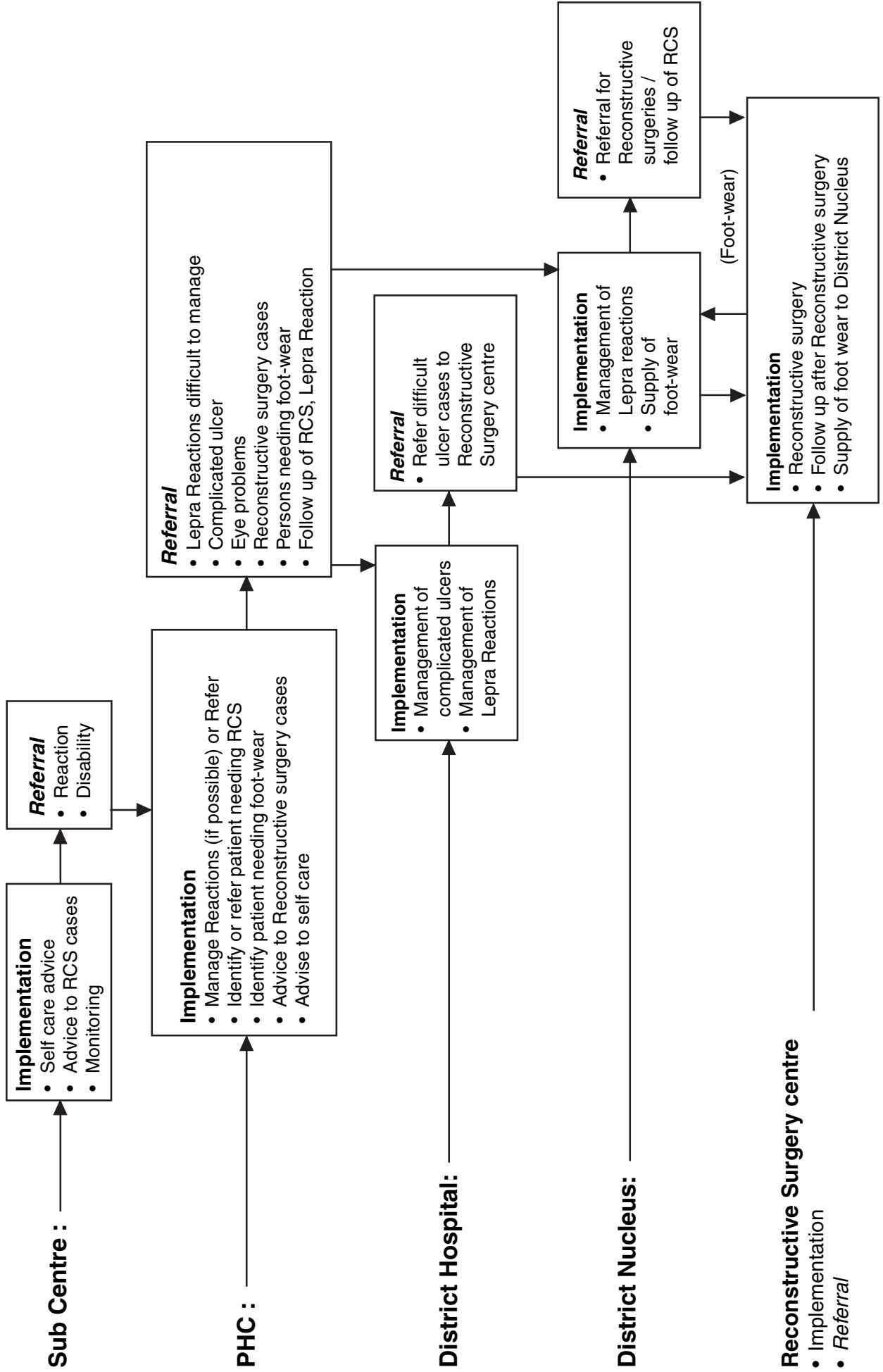
Now, that the country has achieved the primary goal of eliminating leprosy as a public health problem, it is felt that prevention of deformities and disabilities need to be given higher emphasis during the 11th Five Year Plan period (2007-2012). The services are to be provided through the infrastructures existing in the country.

Objectives of DPMR (Disability Prevention & Medical Rehabilitation):

To prevent disabilities and worsening of existing deformities in all needy cases, both patients on treatment and those released from treatment.

To develop a referral system for providing POD services to all deformed cases in an integrated set up.

REFERRAL SYSTEM



OPERATIONAL GUIDELINES ON DPMR

Secondary Level Care (Second Level)

Preamble:

Govt. of India circulated the plan for DPMR for the 11th plan period (April 2007 – March 2012) vide letter No. Z.16025/4/2006-Lep. Coordn. dated 29th June 2006.

The DPMR activities are planned to be carried out in a three-tier system i.e. the primary level care (First level), Secondary level care (Second level) and the Tertiary level care institutions (Third level).

The Secondary level care institutions are all District Head Quarter Hospitals and District Nucleus Units.

Operational Guidelines on each component and group of activities are indicated in this document. These Operational Guidelines have been prepared to facilitate proper implementation of the DPMR activities at secondary level.

1. Source of patient

Patients referred by primary care units and voluntarily reporting patients.

2. Service Components

A) District Hospitals

Identified Physician/Medical Specialist or Dermatologist at district hospital is to coordinate DPMR services there. Patients to be managed, may be referred to other specialists e.g. Ophthalmologist, Orthopaedic Surgeon, etc. in the same hospital, as and when needed. For the cases reporting to the hospital directly, they will be diagnosed, registered and treated as in PHC and their records will be maintained on LF 01 & LF 02 (SIS forms). For cases referred from PHCs, they will be clinically assessed, hospitalized and treated or referred to tertiary care unit, if needed.

Cases referred from primary care units may be of following types:

- 1.1 Cases difficult to diagnose leprosy, and in need of confirmation
- 1.2 Cases with Severe Lepra Reaction
- 1.3 Cases with suspected relapse
- 1.4 Cases with adverse effects of MDT

1.5 Cases with disability grade II requiring medical or surgical treatment

1.6 Cases requiring material support, like MCR foot-wear, crutches, protective goggles etc.

1.7 Laboratory facilities for smear examination

2.1 How to confirm the diagnosis of Leprosy in difficult cases:

Some cases of leprosy don't manifest by visual skin patches or nodules but with some changes in the skin i.e. redness and swelling of skin, which may be noticed if examined carefully. Such cases (with infiltration) are always multi-bacillary with positive skin smear, they are cases of consequences. In such suspected cases, skin smear examination will help to confirm the diagnosis.

Some cases of leprosy manifest with thickening / enlargement of peripheral nerves with sensory impairment along the course of affected nerves without skin patches. Careful sensory testing in the area supplied by the thickened nerve will help in establishing the diagnosis.

Some cases may present with deformity such as claw hand, foot drop, lagophthalmos or planter ulcer with no confirmatory nerve thickening and no definite sensory loss. In such cases, investigations like skin smears, histopathology (biopsy from the skin or nerve) or PCR will help in arriving at conclusion.

Sometimes hypo-pigmented lesions over the face (? indeterminate leprosy) especially in children with no definite loss of sensation are seen or referred for confirmation Such cases may be kept under observation, if no cardinal signs are elicited.

First presentation in some cases may be in the form of nodules with fever and lymph adenitis i.e. ENL reaction. Fine Needle Aspiration Cytology (FNAC) from the glands or biopsy from the lesion will diagnose / rule out leprosy, in case if skin smear is reported negative. These cases may be referred to tertiary care unit for investigation and management.

Some skin lesions mimicking leprosy, such as that of Post-Kalazar Dermal Leishmaniasis (PKDL), Psoriasis under treatment and so on will also require lab investigations.

2.2 How to Diagnose and manage cases with Lepra reactions:

Lepra Reactions are usually diagnosed by clinical examination only. Inflammatory changes in skin lesions or appearance of new lesions, patches or nodules with acute onset, draw the attention of patient to report. Some cases develop signs of nerve damage without obvious changes in skin lesions. Cases which cannot be managed at primary level are referred to district hospital.

There are two types of reaction: Reversal reaction (or Type 1) and Erythema Nodosum Leprosum (ENL or Type 2). Both types can occur before the start of multi drug treatment, during treatment, or after treatment has been completed. Both types can be mild or severe. Only severe reactions are treated with corticosteroids.

Differentiating features of two types of Reactions are –

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

| Type I (Reversal Reaction) | Type II (ENL) |
|--|---|
| 1. Delayed hypersensitivity | 1. Antigen antibody reaction |
| 2. Occurs in both PB & MB cases in unstable types like BT.BB.BL. | 2. Seen in MB cases only (BL & LL type) |
| 3. Skin lesions suddenly become reddish, swollen, warm, painful, and tender. New lesions may appear. | 3. Red, painful, tender, sub-cutaneous nodules - ENL may appear, commonly on face, arms, legs, bilaterally symmetrical. They appear in crops and subside within few days even without treatment (Evanescent skin nodules). Nodules are better felt than seen and these are recurrent (episodic) |
| 4. Nerves close to skin may be enlarged, tender & painful (neuritis) with loss of its functions (loss of sensation and muscle weakness) which may appear suddenly. | 4. Nerves may be affected but not as common or severe and acute as in Type I |
| 5. Other organs - Not affected | 5. Other organs like eyes, testis, and kidney may be affected |
| 6. General symptoms - Not common | 6. Fever, joints pain, red eyes with watering may be associated |

Signs of a severe Reversal reaction

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

- Loss of nerve function – that is, loss of sensation or muscle weakness in the area supplied by nerve
- Pain or tenderness in one or more nerves
- Silent neuritis / Quiet nerve paralysis i.e. signs of nerve damage without symptoms
- A red, swollen skin patch on the face, or overlying another major nerve trunk
- A skin lesion anywhere that becomes ulcerated
- Marked oedema of the hands, feet or face

Severe reversal reactions should be treated with a course of steroids, usually lasting 3 – 6 months. There are a number of important side-effects associated with steroids, so a careful assessment must be made of any patient requiring steroids.

Signs of a severe ENL reaction

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

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

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

Treatment of Lepra reactions (moderate to severe cases) – It includes bed rest, rest to affected nerves by splint, analgesics, Prednisolone. Each case of reaction should be assessed for his / her fitness to put on Prednisolone as per check list given.

| Prednisolone regimen | Add Clofazimine in ENL |
|--|--|
| 40 mg O.D. for first 2 weeks 30 mg O.D. for weeks 3 & 4 | One capsule (100mg) 3 times a day x 4 weeks |
| 20 mg O.D. for weeks 5 & 6 15 mg O.D. for weeks 7 & 8 | One capsule (100mg) 2 times a day x next 4 weeks |
| 10 mg O.D. for weeks 9 & 10 5 mg O.D. for weeks 11 & 12 | One capsule (100mg) once a day x third month |
| For neuritis , treatment with Prednisolone should be prolonged to four weeks from 20 mg onwards | |

Prednisolone tablets issued must be entered in 'Prednisolone card'. Tapering of Prednisolone may be done according to its response. Patient must be instructed on salt restriction, no Prednisolone intake on empty stomach and reporting adverse effects / symptoms immediately.

Adding Clofazimine for Type II reaction may be extremely useful for reducing or withdrawing corticosteroids in patients who have become dependent on them; though it is less potent than steroids and often takes 4-6 weeks to develop its full effect in such cases. Total duration of Clofazimine therapy should not exceed 12 months.

If a patient develops Lepra reaction during the treatment, do not stop MDT (rather complete the course of MDT). Lepra reactions, which occur after completion of treatment, should also be managed as mentioned earlier. MDT should not be restarted for such cases.

Response to treatment should be monitored and assessed, including check on adverse effects of Prednisolone.

Treat other conditions:

Before starting the treatment, one should question the person and examine them to make sure that they do not have any of the conditions described below, all of which may be made worse by steroids.

- Worm infestations
- Diarrhoea, with blood and/or mucus
- Fungal infections
- Scabies
- Epigastric pain

Treatment for all these conditions can be started at the same time as steroids are started.

Explain the treatment to the patient

Before starting treatment with steroids, explain the following to the person:

- *The reason for treatment:* Explain that the person needs the drugs because of the new nerve damage, and that symptoms such as pain and loss of feeling and/or strength, if present, are likely to improve within one to two weeks. If the person has no pain, explain that untreated nerve damage could lead to disability and deformity. It should also be mentioned that some symptoms might remain after treatment (for example, sensory loss or muscle weakness may only partially recover), but that treatment is essential to prevent the damage from becoming worse
- *How long the treatment will last:* Explain that, in order to prevent the problem from recurring, the treatment lasts 3-6 months
- *Taking the correct dosage:* Explain the importance of taking Prednisolone daily, according to the instructions given by the health worker. Regular dosage gives the best chance of success
- *Treatment should not be stopped suddenly:* Steroids have a powerful effect on the body. If a person suddenly stops taking them, he or she can become seriously ill, with symptoms including weakness and low blood pressure. This is why the dosage is gradually decreased during the course. It is important to take the complete course of treatment
- *What to do if pain or loss of feeling increases or strength decreases-* If the original symptoms in the nerve get worse, the person should come back to the clinic. One may need to give a higher dose of steroids, maintain the same dose for a longer period than usual or refer the patient for more specialized care
- *Possible side effects* There are many side effects of steroids. Tell everyone receiving steroids that the drugs may have side effects, and advise them to report any unusual symptoms to their health worker as soon as possible, so that further complications can be prevented. Side effects may include gastritis, secondary infections, cushingoid syndrome, osteoporosis, secondary cataract, precipitation of hypertension / diabetes mellitus etc.

Follow-up after treatment with steroids

People who have been given a course of steroids for reaction or nerve damage should be followed up closely because of the risk of recurrence.

Each person must understand that a reaction or new nerve damage may recur. They must know how to recognize the early signs of nerve damage and be aware of how important it is to return promptly to the clinic for treatment. These signs include pain or tingling sensations, further loss of feeling or loss of muscle strength and inability to close the eye.

People still on MDT should have their nerve function checked monthly by the health worker when they come to collect their treatment. Any deterioration should be noted and the person referred.

People who have already completed MDT by the time they come to the end of a course of steroids should be asked to come back three months and six months after the end of the course for review and nerve function assessment.

People who still have lagophthalmos (weakness of eyelids) after completion of treatment with steroids should be referred to ophthalmic surgeon.

Groups requiring special precautions when prescribing steroids

The following groups of people require special precautions when steroids are prescribed. One must not give steroids to people with tuberculosis, diabetes, deep ulcers, osteomyelitis, corneal ulcers or other serious conditions without starting treatment for the underlying condition.

Pregnant women

All pregnant women should be treated at referral level, so as to minimize the steroid dose they are given and thus avoid harmful effects, such as growth retardation on the foetus. If steroids are given in the third trimester, this may cause adrenal suppression in the newborn infant. Ideally, such infants should be monitored in a referral centre for a few days after birth. Here are the doses of Prednisolone to be given during pregnancy:

- PB cases: start at 30 mg daily instead of 40 mg and limit the course to ten weeks rather than the usual twelve weeks regime
- MB cases: starting at 30 mg daily but lasting for twenty weeks

Children

All children under the age of twelve should be treated at referral level, so as to minimize the effects of steroids on their growth. Children can be given a course similar to that for pregnant women, but the starting dose of Prednisolone should not exceed 1 mg per kilogram of body weight per day.

Giving children steroids on alternate days may reduce the effect on their growth. A suitable regimen for PB cases would be 30 mg of Prednisolone daily for two weeks, then 30 mg on alternate days for two weeks, with a gradually reducing dose over the total course of ten weeks. For MB cases, one should double the duration of each stage of the course.

Diabetes

People who show symptoms that suggest diabetes or whose urine tests positive for glucose should be referred to confirm whether the diagnosis is correct and, if it is confirmed, for management of the condition. Steroids may increase the diabetic's requirement for insulin.

A person taking steroids may also develop diabetes for the first time. This possibility must be considered when people develop typical symptoms of diabetes during treatment with steroids. These symptoms include excessive thirst, increased urination and increased hunger.

If sugar is found in the urine, serial blood sugar examinations must be made, firstly to establish the diagnosis and then to monitor the response to treatment. Insulin may be required in the first instance, but the condition usually resolves itself when steroids are stopped.

Ulcers or osteomyelitis

People with deep or dirty ulcers or osteomyelitis should be referred for surgical treatment and antibiotics. Starting steroids before such treatment may lead to a worsening of the sepsis and more permanent damage, including the need for amputation. One should suspect osteomyelitis if the person's hand or foot is warmer than normal, with or without swelling. Any person with a wound discharging pus should be referred for surgical advice and debridement (removal of dead and infected tissue) before taking steroids, or osteomyelitis may develop.

Eye involvement

People who have corneal damage or iritis should be referred for specialist diagnosis and management at a centre properly equipped for eye care. Corneal ulcers and Keratitis are inflammatory conditions of the cornea – the central, transparent part at the front of the eye. They are often caused by exposure, as a result of the person being unable to close the eye properly: there is pain, redness and often some loss of vision. The treatment usually consists of local antibiotics, sometimes with a pad to keep the eye closed.

Steroids, whether taken by mouth or locally applied, may make these conditions worse. Iritis, uveitis, iridocyclitis and scleritis are all types of inflammation inside the eye and they can all occur as part of a Type 2 reaction. These conditions cause pain, redness, photophobia and loss of vision, although the symptoms are not always severe. The treatment includes atropine eye ointment to prevent adhesion.

When to refer a case of severe reaction to tertiary care centre:

Complicated cases of reactions, which need to be referred to tertiary care centres may be -

- Those not responding to Prednisolone therapy
- Contraindications for Prednisolone therapy
- Recurrent / repetitive ENL reaction
- Lepra Reaction in children, pregnant woman, patient with diabetes, tuberculosis, osteomyelitis, infected ulcer, gastric or peptic ulcers
- Lepra Reaction with undiagnosed associated disease under investigations
- Lepra Reaction with nerve abscess or compressed nerve requiring surgical intervention

2.3 How to suspect Relapse and how to differentiate it from Lepra Reaction:

Suspected relapses would be referred by medical officer of primary care unit for further investigation & management at the secondary level.

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 an MB case, by evidence of an increase in BI of 2 or more units on skin smear. It is difficult to be certain that a relapse has occurred, as new lesions may appear in leprosy reactions also.

MDT is very effective treatment for leprosy. If a full course of treatment has been taken properly, relapse is generally rare fortunately. The use of a combination of drugs has prevented the development of drug resistance in leprosy, so relapse cases can be treated effectively with the same drug regimen of MDT.

To suspect relapse, the most useful distinguishing feature is the time that has passed since the person was treated: if it is less than 3 years a reaction is most likely, while if it is more than 3 years, a relapse becomes more likely. A reaction may be treated with steroids, while a relapse will not be greatly affected by a course of steroids, so using steroids as a 'therapeutic trial' can clarify the diagnosis.

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

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

On diagnosis of relapse, the case may be referred back to the same PHC with prescription for treatment with another course of MDT. Patient should also be properly counselled.

2.4 Management of adverse effects of MDT / Prednisolone:

MDT is remarkably safe and serious adverse effects are very rare. However the management is as follow -

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

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

Dapsone poisoning – It is rare but if encountered, case should be hospitalized, gastric lavage is done, Oxygen is started. Vital functions are assessed, if there is need 1% Methylene blue is given in doses of 2 mg per kg body weight. Activated Charcoal 25 mg 8 hrly is given orally, Ascorbic acid 500 mg 8 hrly may be added. Detailed clinical assessment is required frequently. Laboratory aids may be asked to assess Hepato-Renal functions and hemogram.

Occasionally cases with exfoliative dermatitis or Stevens Johnson Syndrome may be referred for management. These drug reactions are serious & life threatening, therefore such cases should be hospitalized for the maintenance of vital functions, electrolytes & fluids and close observation.

Commonest side effect of Prednisolone is retention of salt / water leading to swelling or oedema, hypertension, secondary cataract and cushingoid syndrome, hence salt restriction in diet during Prednisolone intake. Gastric irritation leading to Gastric ulcer, malena and ultimately perforation should be kept in mind. Secondary infections, fungal infections, osteoporosis, or any other complication of Prednisolone therapy should be managed without delay. Rarely adrenal crisis due to sudden stoppage of high dosage may be life threatening. Patient may need counselling for tapering & stoppage of Prednisolone when Lepra Reactions are controlled, other wise temptation to continue due to euphoria may lead to more complications.

2.5 How to Manage cases with disability grade II:

The secondary level care institutions will get all grade II disability cases newly diagnosed at primary level, for assessment and further necessary actions. These cases are to be re -assessed. Paralytic deformities, ulcers, eye lesions, poor vision, facial deformities and absorption of peripheral digits are included in disability grade II.

Disability assessment – Disabilities are to be assessed to judge the extent, whether reversible / irreversible and prognosis with or without treatment. Careful clinical examination -

- By taking history of duration of disability, previous treatment & its response
- By sensory testing over the area
- By examination of nerves through palpation & voluntary muscle testing
- Eyes are to be examined for acuity of vision, redness, blink and proper closure of eye lids
- Oral and nasal examination should be done in cases of lepromatous leprosy
- Disabilities assessed are to be graded and recorded

a) Management of complicated ulcers

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

- Sudden injury (e.g. sharp objects that cut or pierce through the skin like thorns or broken glass)
- Repetitive pressure, friction or shear forces (e.g. foot ulcers from walking or hand ulcers from using unprotected hand tools)
- Burns
- Secondary infection in macerated skin of web space with candidiasis can lead to deep abscess
- Rarely rat bite can also lead to ulcer

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

- Rest
- Good wound environment
- Hygiene
- Protection

Rest:

Almost all wounds will heal if they are rested.

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

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

- Splinting- It will rest hand and finger wounds
- Walking with crutches (or even with a walking stick)- It will rest foot ulcers. Whatever the circumstances, the injured part should not be allowed to perform normal functions whilst the tissue is still being repaired

The best option is for the person to spend as much time as possible, lying down with his foot raised above the level of his heart (bed rest). However, this is very rarely possible amongst people who must struggle to feed themselves and their families, so other options should be explored.

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

Complicated Ulcers

If an ulcer is found to be broken down tissue only in the dermis and epidermis, it is termed a "simple ulcer". If the breakdown of tissue goes deeper than the dermis and other body parts are affected (i.e. tendons, tendon sheaths, bones and joints) the wound is termed a "complicated ulcer". Complicated ulcers usually develop as a result of untreated simple ulcers and are almost always the result of infection.

Management in brief

1. Examination of general condition of a case and local wound area. Probe the wound gently to search pus collection. Drain the pus, if any
2. Flush the wound cavity by saline solution
3. Pack the wound with gauze and bandage it
4. Elevate the part to facilitate healing
5. Start systemic antibiotics
6. Change the dressings daily and check for any further pus collection
7. Surgical debridement after 3 days when inflammation is reduced, pus discharge is controlled and wound is clear. All the dead tissues and avascular tissues are removed. Wound space is packed with gauze soaked in Savlon solution. Dressing on alternate day after checking any more collection of pus, to be done

8. Plaster cast may be considered after two weeks when wound is totally clear, healing has started and no signs of inflammation are there
9. Wide spread use of antiseptics and topical antibiotics are to be avoided
10. Oral preparation of zinc, vitamin C and vitamin A may be supplemented
11. Proper counselling of patient is required for better compliance and coordination

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

b) Management of eye complications

Eye problems:

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

Lagophthalmos:

The muscles which close the eye can become weak or paralyzed, if the facial nerve is damaged in a leprosy reaction. The result is that the eye cannot close completely. There may be watering of the eye. Sometimes there is loss of sensation in the cornea also, which leads to loss of normal blinking.

In the early stages, lagophthalmos can be treated like any other case of neuritis, with steroids. When the condition is permanent, surgery to the eyelids may help to prevent corneal damage.

Regular blinking and complete closure of the eyes at night keep the cornea healthy.

Mild Lagophthalmos:

When asked to close eyes lightly the person has a slight gap (< 6 mm) between the eye lids. In such cases ask the person to try and close their eyes with force. If the face muscles are still strong enough, the person will be able to close the gap. They should keep the eye forced closed while counting to 10. They should do this exercise as often as possible every day.

Severe Lagophthalmos:

When asked to close eyes lightly the person has a large gap (> 6 mm) or sign of exposure Keratitis between the eye lids. In such cases, ask the person to try and close their eyes with force. Sometimes the face muscles are too weak to force the eyes closed. If the person still has a gap between the eye lids, they will need to do passive exercises to prevent the deformity from worsening and help keep the eye as healthy as possible. When eyes cannot be closed fully, the person should place their fingers at the outer corner of the eye and gently pull outwards until the eye closes. This exercise should be done to a count of 10 as often as possible through the day. All people who are unable to close their eyes, or who do not blink should wear glasses.

Visual acuity:

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

Red eye:

A less common complication of leprosy is inflammation inside the eye itself. The main signs of inflammation are pain and redness of the eye.

Conjunctivitis and corneal exposure cause redness of the eye: they can be treated in a general clinic with antibiotic eye ointment and an eye pad. However, if the redness persists after a few days of treatment the person should be referred to an eye clinic.

Managing permanent corneal anaesthesia:

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

Activities to which can be done by the person at home:

- Inspection of the eye in a mirror every day to look for redness
- Learning to blink frequently to keep the eyes moist and exercise the lids
- Wearing a hat or sunglasses to prevent dust from getting into the eyes
- Using a sheet or mosquito net to cover the head at night
- Frequent washing of eyes with clean water
- Checking for vision change

c) Management of cases requiring RCS and other surgical interventions

Reconstructive surgery aims to restore function and form as far as possible and to prevent further disability. It also plays an important role in the prevention of disability and rehabilitation process. Some patients can benefit from reconstructive surgery but not all patients are suitable. Secondary level centres are to screen all grade II cases referred, only suitable cases will be referred to tertiary level for RCS & other complication which can not be managed at secondary level. A copy of referral should be marked to District Nucleus for record.

The conditions which require surgical intervention are –

1. **Claw hand:** due to paralysis of ulnar, median or both nerves
2. **Foot drop:** due to paralysis of lateral popliteal nerve
3. **Claw toes:** due to the paralysis of posterior tibial nerve
4. **Lagophthalmos:** due to the paralysis of the zygomatic and temporal branches of the facial nerve.
5. **Wrist drop:** due to paralysis of radial nerve. It is rare and can be corrected by RCS.
6. **Recurrent wounds of hands and feet:** Patients who have recurrent wounds of the hand or foot should be referred for surgical advice.
7. **Chronic nerve pain and nerve abscesses:** Patients who have chronic pain and swelling in peripheral nerves which does not respond to analgesics and a course of steroids, should be referred for consideration of nerve decompression.

8. Facial & others deformities for cosmetic restoration:

- **Madarosis:** The loss of lateral parts of eye brows is due to lepromatous infiltrate destroying the hair follicles. Free graft from scalp or a temporal artery island flap usually gives satisfactory result
- **Sagging face / Mega lobule:** This is due to rapid disappearance of the lepromatous infiltrate following treatment with chemotherapy and destruction of elastic and collagen fibres in the dermis
- **Nasal deformity:** These are due to the invasion and destruction of the nasal tissues by M. Leprae. Depressed nose is mainly due to the destruction of the nasal septum. The septal perforation is caused by non-specific infection destroying the cartilage. Nasal deformities are the most prominent stigma of leprosy
- **Gynaecomastia or enlargement of male breast:** This causes a lot of embarrassment to the patient in lepromatous leprosy. Destruction of seminiferous tubules of the testis by lepromatous granuloma results in hormonal imbalance producing gynaecomastia. It may follow testicular atrophy resulting from the orchitis of type II reaction
- **Cataract** in one or both eyes with visual acuity <6/60

Criteria for referral for reconstructive surgery:

For most patients there is a period of a few years in which surgery is most likely to be beneficial. This starts when the disease is stable (free of reactions and neuritis), MDT is established, and the muscle paralysis is not likely to progress or to recover. District hospital staff should be aware of the criteria for selecting patients to refer and the optimal timing of referral. Motivation is a key factor as patients may need to be in hospital for at least 6 weeks and will have to work at physiotherapy. Patients in whom surgery will make a difference should be considered for referral.

The criteria have been grouped into three categories: social and motivation, physical, and the leprosy treatment criteria.

Social and motivational criteria:

Surgery should have the potential to make a difference to patients' acceptance in their society and their family and to improve their socio-economic situation.

Patients who are not well motivated in self-care are not likely to be willing to participate in essential pre and post operative physiotherapy. Major surgery may involve loss of economic activity for a period of several months.

Physical criteria

The best age for referral for tendon transfer is between 15 - 45 years, but patients younger than 15 years or older than 45 years may be operated depending upon the particular circumstance.

The muscle paralysis should be present for at least one year and preferably not longer than 3 years. There may be exceptional cases where there has been muscle paralysis for longer than 3 years and the individual has kept the joints supple through passive exercises. The patient may not remember accurately how long muscle paralysis has been present, so suppleness of the joints may be a more useful criterion.

Patients with severe contractures or stiff joints are not suitable, although physiotherapy or surgery can reverse some contractures.

There should be no infection of the skin such as scabies, and any deep cracks, wounds or ulcers at time of referral.

Leprosy treatment criteria:

Patients should have completed the scheduled course of MDT or at least a minimum of 6 months MDT.

Patients should be free from reactions and symptomatic neuritis for at least 6 months.

Patients should not have taken steroids during the past 6 months unless the surgery is for neuritis.

There should be no tenderness of any major nerve trunk in the limbs.

Priorities for reconstructive surgery:

Operations for lagophthalmos are usually considered as a high priority because of the possibility of secondary damage to the eye. Feet are usually considered the next priority followed by hands, but this may depend on the needs of individual patients.

The proposed surgical procedure and its positive consequences should be balanced against the consequences of not doing surgery. This should be discussed with the patient and the decision whether to undergo surgery should be taken by the patient. Methods of managing to live with the deformities without causing further damages to the affected parts should be explained to patients who do not want or are not suitable for surgery.

Physiotherapy is helpful in:

1. Restoring the normal tone of muscles and preserving the physiological properties of paralysed muscles
2. Preventing muscle atrophy and the over stretching of paralysed muscle
3. Preventing contractures and keeping joints mobile by improving the range of movements
4. Maintaining and improving blood circulation
5. Making the skin soft and supple

Physiotherapy comprises exercises, oil massage, wax bath, hydrotherapy, splinting, electrical stimulation of muscles, short-wave diathermy, ultrasonic therapy, etc. Physiotherapy is very useful in the management of deformities and is essential in both pre as well as post-operative care of deformity patients. RCS requires the patient to use a different muscle in place of the paralysed muscles. The operated part is still vulnerable, and patient needs post operative muscle training and instructions in the use of anaesthetic extremities.

2.6 Provision of material support to the patients:

All disabled cases should be assessed for requirement of materials necessary for preventing disability. MCR foot wears, goggles, gloves, cooking utensils with insulated handles, , grip aid, splints, crutches etc may be provided as per need of individual case.

Protective foot wear

Loss of feeling on the sole of the foot and ulceration are very common in people affected by leprosy, so the use of appropriate foot-wear is very important to prevent disability. The best solution is for people to wear locally available and socially acceptable shoes whenever they are on their feet and walking. It is of no help to use shoes only for special occasions.

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

Leprosy Affected Persons (LAP) with anaesthetic palms engaged in cooking in routine must use utensils with insulated handle to avoid frequent burns

Splints and other materials

Provision of splints, crutches, grip-aid, etc is also required in some cases and these can be arranged at secondary level / district hospital. Splints used in patients with leprosy are

- a) Static splints
- b) Dynamic splints

A static splint does not permit either active or passive movement of the joint, e.g. a plaster of Paris splint. A dynamic splint is defined as any splint which incorporates qualities of elasticity, or principles of recoil and permits active and or / passive movements in the joint. Dynamic splints need constant observation and supervision to ensure correct fitting, and require technical skill for their manufacture.

In severe Leprosy reactions, immobilization of the affected limb with a well – padded splint is helpful to relieve pain and stimulate healing, while un splinted limbs are prone to develop contractures and deformities. Splints are very helpful in the mechanical correction of the claw hand, a deformity very commonly seen in patients with leprosy. Splints enable tendons of non-paralysed muscles to act effectively and thereby prevent and correct deformities. In patients with a mobile claw hand, the proximal inter phalangeal joints can be extended and the fingers can be straightened by flexing the hyper extended metacarpo-phalangeal joints with assistance. Mobile claw hand are suitable for splinting, exercises and tendon transfer surgery, while tendon transfer surgery is of no use and therefore not indicated in fixed claw hands.

Rehabilitation :

Rehabilitation includes all measures aimed at reducing the impact of disability for an individual, enabling him or her to achieve independence, social integration, a better quality of life and self – actualization.

Those patients who lost self esteem, lost the job or earning, have activity limitation and participatory restriction, need to be rehabilitated. In all such, needs are to be assessed in detail, services related to medical rehabilitation are to be provided and patient may be referred for other services (e.g. vocational training, micro credit loan, self help groups) to respective departments / institutions, developing links with social welfare department and to liaise frequently. Networking among existing services should be actively promoted.

Community Based Rehabilitation (CBR) - It is a strategy within general community development for the rehabilitation, equalization of opportunities and social inclusion of all people with disabilities.

Referral level

The following are examples of interventions that may be available.

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

2.7 Laboratory facilities for smear examination:

What is a skin smear?

A skin smear is a test in which a serum sample of material is collected from a tiny slit in the skin and then stained for *M. leprae*, an acid-fast bacillus.

Why take a skin smear?

- To confirm a diagnosis of Lepromatous leprosy in suspected cases
- It help to substantiate the diagnosis in doubtful cases
- To help diagnose multi bacillary relapse in a patient who has previously been treated

Who can take a skin smear?

Any one who has been trained to take a skin smear and who is authorized to do so.

Remember: Taking a skin smear is an invasive procedure. Wash hands, wear gloves, and use sterilized equipment and a new blade for each patient. Do not take skin smears unnecessarily. (Caution: if sterilization is not practiced and not methodically done there is a possibility of spread of Hepatitis B & C AND HIV)

Preparing to take a skin smear

Equipment: Slide box and new slides, Gloves, Swabs & spirit, Scalpel handle and new blades, Dressing strips, Spirit lamp, slide marker and laboratory request form

Selection of sites

Take a smear from two sites only:

1. One ear lobe
2. One lesion. Select the most active-looking lesion, but not on the face. 'Active' means raised and reddish in color

Take the smear in the most active area of the lesion (usually the edge).

If there is no suitable skin lesion, take the second smear from the other ear lobe, or from a site where active lesions were originally recorded or where a previous smear was positive.

Explain to the patient:

Ask the patient to sit down and relax. Explain what you want to do and why it is necessary. Answer any questions. Obtain the patient's permission to proceed and enter the details on the request form.

How to do a skin smear examination for leprosy:

Wash hands and put on gloves.

Step 1: Preparation of slide

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

Step 2: Collection of Specimen

- Clean the skin at the smear sites with a cotton wad drenched in alcohol or spirit. Allow it dry
- Light the spirit burner. Put a new blade on the scalpel handle. If you put the scalpel down, make sure the blade does not touch anything
- Pinch the skin firmly between your thumb and forefinger; maintain pressure to press out the blood
- Make an incision in the skin about 5 mm long and 2 mm deep. Keep on pinching to make sure the cut remains bloodless. If bleeding, wipe the blood away with cotton wad
- Turn the scalpel 90° and hold it at a right angle to the cut. Scrape inside the cut once or twice with the side of the scalpel, to collect tissue fluid and pulp. There should be no blood in the specimen, as this may interfere with staining and reading
- Stop pinching the skin and absorb any bleeding with a wad of cotton
- Spread the material scraped from the incision onto the slide, on the same side as the ID number. Spread it evenly with the flat of the scalpel, making a circle 8 mm in diameter
- Rub the scalpel with a cotton wad drenched in alcohol. Pass the blade through the flame of the spirit burner for 3 to 4 seconds. Let it cool without touching anything
- Repeat the steps above for the second site. Spread this smear next to, but not touching, the first one
- Discard the scalpel blade safely
- Dress the wounds and thank the patient

Step 3: Fixation of smear on slide

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

Step 4: Staining the smear

Ziehl-Neilsen stain is used in common, other stains are - Fite Ferraco stain and florescent stains used in histopathology

1. Stain the smears using the hot Ziehl-Neilsen method
2. Stain with 1% carbol fuchsin, which colours everything red
3. Wash out the stain with 1% acid-alcohol, which removes the stain from everything except *M. leprae*
4. Counter-stain the slide with 0.2% methylene blue

The leprosy bacilli will be seen as red rods on a blue background

Material required:

Sink with running water

1% carbol fuchsin solution Pipette

1% acid-alcohol Staining rods

0.2% methylene blue solution Slide rack

Spirit lamp Tissue paper

Clock or watch Gloves

Staining:

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

Decolorising:

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

Counter-Staining:

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

Examination under microscope:

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

- Put the slide under the microscope with the smears upwards and the ID number to the left
- Focus the image using the 10x objective
- Put a drop of immersion oil on the smear
- Switch to the 100x objective. This will touch the immersion oil (if necessary, move the coarse adjustment screw to make sure that the oil immersion lens just touches the oil)
- Open the diaphragm completely and raise the condenser to its highest position
- Focus precisely with the fine adjustment screw

How to read a skin smear:

You need a microscope with a 10x eye piece and 10x and 100x objectives. Start the examination using the 10x objective. If acid-fast bacilli are seen, quantify them according to the following scale for the Bacteriological Index (BI). Calculate the BI for each smear separately:

Bacteriological Index (BI)

0, No bacilli seen in 100 fields

1+, 1 to 10 bacilli in 100 fields

2+, 1 to 10 bacilli in 10 fields

3+, 1 to 10 bacilli, on average, in each field

4+, 11 to 100 bacilli, on average, in each field

5+, 101 to 1000 bacilli, on average, in each field

6+, > 1000 bacilli, on average, in each field

The bacilli may be in the following forms solids, globi, fragmented & granular

- Write the result of both smears in the lab register
- Rinse the slide in xylene. Do not wipe it
- Store the slide in a slide box for future quality control
- Slides that are not kept for quality control should be destroyed, or disinfected, boiled and washed for re-use in routine examinations (of stool or urine, for example). Slides should not be re-used for other skin smears or for sputum examinations
- Give the result in the referral slips

Note: Report the BI for both smears on the slide. For smear-positive patients, either the average BI or the highest BI will be taken as the BI for that patient.

B) Functioning of District Leprosy Officer/ District Nucleus in relation to DPMR

District nucleus is the **main coordination centre** for activities under DPMR. It will receive DPMR reports from Primary, Secondary and Tertiary centres on various aspects of the programme. Its role will be:

1. To receive information from Primary level centres in the number of grade I and grade II disability cases detected. Secondary level centers will also send the information about cases reporting to them directly. Monthly Progress Reports in form L.F. 04 will be used for this purpose
2. While referring the grade II disability cases, to the secondary level centres, PHCs will also mark a copy to the District nucleus. The district nucleus will maintain a Register of all such cases referred by PHCs. The secondary level centres will send a list of grade II cases registered by them as referred by PHCs or directly, to the District nucleus every month in form S- VIII for record. Similarly tertiary level centre will also send a list of grade II cases registered by them directly to the District Nucleus for record. Caution is to be taken to avoid duplication of recording same cases

The Disability register to be maintained in the District nucleus may be in the format given as Form S-IX

3. While referring a case of grade II disability from the secondary level to the tertiary level care centres, a copy of the referral slip will be marked to the District nucleus for records
4. Tertiary level care centres will intimate the District nucleus, the leprosy cases operated upon; through a monthly report for updating their record and to facilitate payment of expenditures if any, to the patient or the institution as per GOI rules
5. The District nucleus will be responsible to arrange procurement of all drugs and materials required under DPMR and supply to the primary, secondary and tertiary centres as per GOI rules
6. The District nucleus will keep proper coordination of DPMR activities within the district and among the three level of care centres and keep the State Leprosy Officer informed
7. The District nucleus will also keep liaison with the District Disability Rehabilitation Centre (DDRC) and Composite Rehabilitation Centre (CRC) under the Ministry of Social Justice and Environment for the benefit of the leprosy patient in the district
8. Facilitate and ensure the mobilization of cases for assessment, treatment and referral in time, of persons needing RCS
9. Provide DPMR related trainings – formal & on the job, to GHC staff dealing with leprosy cases
10. Supervise implementation of DPMR plan at all levels
11. Ensure proper record keeping & generation of required reports and its timely submission
12. Facilitate followup and feed back on persons who have had RCS done to the original institute

3. Training Requirements

3.1 Training will be needed for the Dermatologists, Physician, Ophthalmologist, Orthopaedic surgeons, physiotherapy technicians and lab. technicians as appropriate and needed under the program.

3.2 Operational guidelines and DPMR–training module cum manual for the district hospital and district nucleus will be provided.

3.3 Tasks of health staff at secondary level – have been defined and specified.

Physician at district hospital i.e. secondary referral centre

- Provide treatment to cases of Lepra reaction / neuritis referred or reported
 - Provide treatment to eye complications in consultation with Ophthalmologists
 - Provide treatment to cases with ulcers and deformities
 - Provide surgical treatment to cases with eye complications, abscess, foot drop and other surgeries possible at district hospital
 - Get all the treated cases recorded in the **treatment register**
 - Refer the cases to tertiary referral centres, which cannot be managed in district hospitals e.g. major surgery, laboratory investigations, expert's opinion, etc.
 - Ensure pre and post operative physiotherapy
- Refer back the operated cases to PHC with follow up instructions
- Develop linkage with PHC and Tertiary Hospitals
 - To prepare the required reports with assistance from PT / NMS and assess DPMR activity

Job responsibility of Medical officer in District Nucleus Team:

- Assist in planning & implementation of all NLEP activities in the district
- Ensure timely submission of Monthly Progress Report (MPR) by Block PHCs to the district
- Ensure MDT & Prednisolone is indented properly at all levels
- Cross check newly detected cases with their disability status, in the district
- Visit a reasonable sample of Block PHCs, Sector PHC and Sub-centres every month and submit an action taken report on integration, SIS Implementation, MDT stock management, case validation, IEC, DPMR activities, etc.
- Ensure that all the reports of the districts are timely submitted to the state
- Provide technical and operational support to all the peripheral health institutions in the district using different innovative approaches

3.4 Organizing training

District nucleus will assess the training needs of GHC staff engaged in NLEP work and will be responsible for arranging formal & on the job trainings. Trainers will consider the following points.

- a) Plan for preparations, conducting and follow up of training courses should be prepared by the district in consultation with the State Leprosy Officer
- b) Prepare 'learning objectives' according to job / task given to trainee / different category of staff and then design the curriculum
- c) Concentrate on 'how to achieve learning objectives' through active learning process
- d) Select appropriate teaching method for each session e.g. case demonstration, role play, group exercises, case study etc. Select the content and teaching aids required
- e) Try to remove barriers / factors distracting learning
- f) Evaluate the training course, assess the participant's reaction & learning at the end of the course and later on evaluate the performance on the job and effect of training after few months

4. Logistics & Supplies

All District Hospitals should have :-

- 4.1 Drugs like Prednisolone and loose Clofazimine
- 4.2 Materials like MCR foot-wear, splints, POP etc.
- 4.3 Learning material and Treatment protocols
- 4.4 Referral slips.

4.1 Drugs:

Reactions in Leprosy are medical emergencies. Immediate treatment is essential to prevent disability. Steroids are the drug of choice in managing Lepra – reactions, usage in the form of Prednisolone is desirable. Indenting steroids depends on the probability of treating a reaction episode/patient in Health facility. The estimated requirement is 2 % of new cases detected/referred to in the preceding year in your hospital. For example if new cases detected during the period of one year from April 2005 to March 2006 was 50, then the chances of cases developing reaction is 1 per year.

Prednisolone:

It is freely available in the market as Wysolone in 5mg, 10mg & 20mg tablets. Each strip containing ten 5 mg tablets costs approximately 7/-. Total number of 5 mg tablets required to treat an episode is 1680 tablets as per the recommended schedule.

Loose Clofazimine: should be made available in loose form as 100mg capsules apart from its routine availability in MDT Blister Calendar Packs. It has good anti-inflammatory properties when given in 300 to 400 mg per day in divided doses. But it takes nearly a month to act hence steroids should be the first line of treatment. Clofazimine is useful especially in weaning a patient from steroid therapy. Also it can be combined with steroids in patients who require prolonged doses of steroids to control repeated reactions. It should be started as thrice daily for another one month, twice daily for one and tapered off.

Also other supportive therapy like antacids, H₂ receptor blockers, de-worming tablets, calcium supplements, soluble insulin for diabetic patients, antibiotics etc requirement needs to be anticipated and kept ready.

4.2 MCR foot wear:

Special MCR foot-wear is not recommended routinely for all patients. Any suitable foot-wear with pre-requisites such as soft inner sole, hard outer sole (to prevent piercing of thorns/nails), that fits snugly and also has an adjustable straps preferably with a back-strap. The foot-wear should be stuck or stitched by thread but not by nails. Also it should be comfortable, locally available, socially acceptable, may be recommended.

However, if there is a provision available for MCR then it should be indented as per the no of cases with grade 1 & grade 2 disabilities of foot.

Splints like gutter splints, loop splints, adductor bands, arm neck slings and plaster of paris for POP cast should be available as per the estimated number of cases.

Dressing material:

Instruments required may be: trimming & cutting scissors, scalpel, and forceps.

Dressing material required: Gauze pieces, bandage rolls, Savlon – Chlorohexide gluconate (to use after debridement), Betadine solution and soap.

4.3 Learning Material

- a. Learning Material for district hospital staff
- b. Learning Material for health workers (Folders/flash cards for MPS)
- c. Flash card / symptom – signs guide

4.4 Referral slips:

Adequate number of referral slips should be kept ready in the hospital to refer to higher centres if required. Also to refer cases back cases to PHC and below with instructions down on it. Refer annexure for sample.

5. Records & Reports

Records to be maintained at Secondary level are as under:

a) District Hospital

- Disability Register Form – S I
- Assessment of Disability and Nerve Function Form – S II
- Record of Lepra Reaction/ Neuritis (LRN) cases Form – S III
- Prednisolone Card Form – S IV
- Referral Register Form – S V
- Referral Slip Form – S VI
- Record of Disabled / complicated cases treated at Secondary Level Form – S VII

Monthly report of grade II cases registered at district-Hospital, to the district nucleus.

Form- S VIII

b) District Nucleus

- Disability (Grade II) register Form – S IX
- Monthly progress report district to state MLF 05 (Page-2)

Disability Register

Form - S I

District Hospital _____

State _____

| S.No | Name of the patient | Age/Sex | Postal address | Date of Registration | Type of leprosy | Treatment (MDT) status (No. of BCP taken) | Disability Grade |
|------------|---------------------|---------|----------------|----------------------|-----------------|---|------------------|
| Column No. | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | | | | | | | |
| | | | | | | | |

| S.No | Hands | Feet | Eye | Services provided with date | | Change / progress noticed | | Referred to with date | | | | | | | | | | |
|------------|-------|------|-----|-----------------------------|----------|---------------------------|---------|-----------------------|----|----|----|----|----|----|----|----|----|--|
| | | | | Date | Services | Date | Changes | | | | | | | | | | | |
| Column No. | | | | | | | | | | | | | | | | | | |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

How to fill up the Form S I

- Column 1 : Serial no. to disabled cases is to be given
- Column 2 : Complete name with surname along with son / daughter / wife of should be written
- Column 3 : If patient is unable to tell the age, age should be assessed
- Column 4 : Complete postal address with landmark / PIN to be given
- Column 5 : Date of registration for MDT is to be written
- Column 6 : PB or MB is to be written
- Column 7 : Total number of BCP, MDT should be written
- Column 9 to 21 : Tick mark on disability detected, more than 1 disability may be there.
- Column 22-23 : Services such as self care training, ulcer care, surgery, issuing MCR shoes, refer to secondary level etc. may be entered along with respective dates.
- Column 24-25 : Changes like ulcer healed, ulcer recurred, contractual developed, vision deteriorated new nerve damaged noticed etc.

Disability Assessment form
Assessment of Disability & Nerve Function

Name Village Dt. of Regn

S/o, W/o, D/o Sub Centre Dt. of RFT

Gender/Age MDT No. Referred by

Occupation MB/PB Date of assessment

| RIGHT | | | | | | | | | | | | LEFT | | | | | |
|--------------------------------|--|--|--|--|--|------------------------------|--|--|--|--|--|------|--|--|--|--|--|
| | | | | | | ←————— Date —————→ | | | | | | | | | | | |
| | | | | | | Vision (0,1,2) | | | | | | | | | | | |
| | | | | | | Light Closure lid gap in mm. | | | | | | | | | | | |
| | | | | | | Blink Present / Absent | | | | | | | | | | | |
| | | | | | | Little Finger Out | | | | | | | | | | | |
| | | | | | | Thumb Up | | | | | | | | | | | |
| | | | | | | Wrist Extension | | | | | | | | | | | |
| | | | | | | Foot Up | | | | | | | | | | | |
| | | | | | | Disability Grade Hands | | | | | | | | | | | |
| | | | | | | Disability Grade Feet | | | | | | | | | | | |
| | | | | | | Disability Grade Eyes | | | | | | | | | | | |
| On date | | | | | | | | | | | | | | | | | |
| Max. (WHO) Disability Grade | | | | | | | | | | | | | | | | | |
| EHF score | | | | | | | | | | | | | | | | | |
| Signature of Assessor | | | | | | | | | | | | | | | | | |

Muscle power:

S = Strong

W = Weak

P = Paralysed

Score of vision: counting fingers at 6 meters














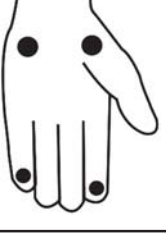






0 = Normal

1 = Blurred vision

2 = Unable to count fingers

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

SENSORY ASSESSMENT

| DATE / ASSESSOR | Palm | | Sole | | Comments |
|--------------------|---|---|---|---|----------|
| | RIGHT | LEFT | RIGHT | LEFT | |
| |  |  |  |  | |
| |  |  |  |  | |
| |  |  |  |  | |
| |  |  |  |  | |
| |  |  |  |  | |

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

| | | |
|----------------------------------|---------------|--------------------|
| ✓ Sensation Present within 3 cms | S Contracture | ○ Scar/Callus |
| X Anaesthesia | ⊗ Wound | ⊕ Shortening Level |
| ∧ Clawing | ≡ Crack | |

Record of Lepra Reaction/ Neuritis (LRN) cases

District Hospital _____ State _____

| Col.No.1 | Col.No.2 | Col.No.3 | Col.No.4 | Col.No.5 | | Col.No.6 | | | |
|----------|---------------------|----------------------|----------------------------|-----------------|----|----------------|----------|---|---|
| S. No. | Name of the patient | Date of registration | MDT No. / registration No. | Type of leprosy | | Lepra Reaction | | | |
| | | | | MB | PB | Type | Neuritis | | |
| | | | | | | I | II | Y | N |
| | | | | | | | | | |
| | | | | | | | | | |

| Col.No.7 | Col.No.8 | Col.No.9 | Col.No.10 |
|--------------------------------------|----------|--|-----------|
| Treatment given | | New disability developed After start of Prednisolone Yes No | Remarks |
| Prednisolone doses issued with dates | | | |
| Other drugs | | | |
| | | | |
| | | | |

How to fill up the Form S III

- Column 1 : Serial no. of reaction cases is to be given
- Column 2 : Complete name with surname along with son / daughter / wife of should be written
- Column 3 : Date of registration of MDT is to be written
- Column 7 : Doses of Prednisolone in milligram with date of issue to be filled
- Column 8 : Enter Clofazimine, Analgesics, Mebandazole, or any other drug given.
- Column 9 : In case of yes, write the nature and site(LT /RT) of disability developed

Prednisolone Card

(This card should be kept with the patient)

INSTRUCTIONS

- Take Prednisolone tablets as single dose daily with milk / food but never on empty stomach
- Restrict salt intake till on Prednisolone
- Inform soon if you notice black stool (malena), pain upper abdomen or vomiting
- Inform immediately if discharge in planter ulcer, any focus of infection, persisting cough, mild fever or any deterioration
- Don't stop Prednisolone before completion of regimen, even if there is improvement or deterioration.
- Report for review / check up and next dosage, every fortnight

NATIONAL LEPROSY ERADICATION PROGRAMME

PREDNISOLONE – CARD

Name of the patient

Reg. No./ MDT No.

Type MB / PB

Date / Due Date of RFT

Indication for Prednisolone therapy:

.....

.....

Date of starting Prednisolone

Signature of MO / Supervisor

PREDNISOLONE RECORD

| Dosage | Date of issue | Next due date | Signature |
|------------------|---------------|---------------|-----------|
| 40mg x 2 wk. | | | |
| 30mg x 2 wk. | | | |
| 20mg x 2 wk. | | | |
| Do (if required) | | | |
| 15mg x 2 wk. | | | |
| Do (if required) | | | |
| 10mg x 2 wk. | | | |
| Do (if required) | | | |
| 5mg x 2 wk. | | | |
| Do (if required) | | | |

Other drugs issued

.....

.....

Progress / Remarks

.....

.....

.....

Signature of MO

Name

Place

Referral Slip

(To be used by District Hospital)

| |
|---|
| Name of the person referred: |
| SL No. in referral register |
| Age and Sex |
| Address: |
| |
| |
| Clinical finding : |
| |
| |
| Reason / indication for referring : |
| |
| |
| Referred to: |
| Copy marked to District Nucleus on date |
| Signature & Date |
| Action taken at referral centres : |
| Instructions for follow up: |
| Referred back by |
| (Designation & Place) |

Disability (Grade II) Register with District Nucleus

District _____

State _____

| Sl. No. | Name of Patient | Age/ Sex | Address | Registered at Primary / Secondary/ Tertiary level Centre (Name) | Date of Registration | Type of Deformity | Action taken by Secondary level centre | Action taken by Tertiary level centre | Amount of Reimbursement made with date | | Remarks | Signature of DLO (only after payment made) |
|----------|-----------------|----------|----------|---|----------------------|-------------------|--|---------------------------------------|--|-----------|-----------|--|
| | | | | | | | | | Patient | Non-ILEP | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

**Grade II cases Registered at Secondary Level Care Centres at District Hospitals.
(to be sent to the District Nucleus)**

District : _____ State : _____ Month : _____

| Sl. No. | Name of Patient | Age/Sex | Address (PHC/ District Hospital) | Date of Registration at PHC/ District Hospital | Type of Deformity | Action taken at district hospital |
|---------|-----------------|---------|----------------------------------|--|-------------------|-----------------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

NLEP- Monthly Progress Report (From District to State/ State to Centre)

District _____ State _____ Month _____

| S. No. | DPMR activity | During the month | Cumulative total From April till date |
|--------|---|------------------|--|
| 1 | No. of Reaction cases recorded | | |
| 2 | No. of Reaction cases managed at PHC - at district hospital - | | |
| 3 | No of suspected relapse cases referred by PHC | | |
| 4 | No. of Relapse cases, confirmed at district hospital | | |
| 5 | No. of patients provided with foot-wear | | |
| 6 | No. of patients provided with self care kit | | |
| 7 | No. of patients referred for RCS to tertiary units | | |
| 8 | No of patients-RCS done | | |

Signature of DLO / SLO _____

6. Supervision & Monitoring

The District Nucleus under the DLO will monitor the DPMR activities at the secondary level.

The health care professionals should know the definitions and be able to differentiate between commonly used terminologies in the management of programme, such as supervision, monitoring and evaluation.

Supervision:

It is systematic process for increasing the efficiency of health workers by developing their knowledge, Perfecting their skills, Improving their attitudes towards their work and increasing their motivational levels. Supervision is extension of training, intensified immediately after training, to ensure that health workers have fully acquired the skills taught and to provide any guidance needed.

It is carried out in direct contact with the health worker and it is aided by programme monitoring.

All health workers need help to solve problems and overcome difficulties. They also need feedback on their performance and encouragement in their work.

Main levels of supervision can be distinguished.

- Supervision of activities at district hospitals by the district authorities
- Supervision of activities at district level by the State Leprosy Officer

Although there are some differences in the content of supervision at each level; the principles and requirements are the same. The supervisor's personality is important. Good supervisors have a pleasant and friendly manner, and are quick to establish rapport with health workers of all categories. They are ready to listen with an open mind to any problems and to seek solutions that will take into account the suggestions of the health worker concerned.

- Supervisory visits must be planned carefully
- The units visited should be notified in advance
- Remember! It is not a faultfinding mission, rather a problem solving exercise!

Supervisory visits to health units by the District Authorities:

Frequency: Hospitals and health centres with a large number of outpatients should be visited once a month; those Health Centres with fewer patients may be visited once in 2-3 months. The visit should be regular, based on the performance. Number of supervisory visits made to the health units and laboratories.

Items to Check:

A checklist has to be formulated considering the following issues.

1. **Review of disability** - initial/follow-up card
2. **Observation of health workers** doing their work, for example palpating the nerve, method of doing VMT, Active / Passive exercises, dressing the ulcer
3. **Discussion with the health workers** - The supervisor should talk to each category of staff separately, identify their problems, establish its cause and try to solve them with the cooperation of each worker

4. **Control of supplies** - The supervisor should check the availability of following essentials such as Steroids, loose Clofazimine, Dressing materials, MCR etc.
5. **Discussion with the patients** - The supervisor should also talk with individual patients, crosscheck them about their knowledge of the disease and its management
6. **Records & Report** - look for accuracy, completeness, look for problem indicators
7. **Training needs**

Problem-solving: If the health worker is unable to perform a task adequately because of his lack of knowledge, then the supervisor should demonstrate that particular activity and ask the health worker repeat it in the presence of the supervision. Such coaching on the spot would solve the problem permanently. If solution is not available readily, then it should be discussed with the senior. Conclusion should be written in the health facility register.

Supervisory visits to district health units by the CMO/State Leprosy Officer:

Frequency: Visits should be made based on the review of quarterly reports and summary report tables. Hospitals and health centres with a large number of outpatients should be visited once a month, with only a few patients may be visited once in 2-3 months. The visit should be regular, based on the performance.

Items to Check:

A checklist has to be formulated considering the following issues:

1. Supplies of drugs, consumables, registers and forms
2. Quality and completeness of data in quarterly reports. Indicators need to be identified
 - a. % of Grade 1 disability remaining static, worsening or improving
 - b. Status of disability among new cases before and after treatment
3. Training needs- including management, prevention/limitation of disability, laboratories and hospitalization
4. production of educational materials for patients and the community
5. use of mass media for communication and advocacy purposes
6. Discussion with the health workers- The supervisor should talk to each category of staff separately, identify their problems, establish its cause and try to solve them with the cooperation of each worker
7. Control of supplies: the supervisor should check the availability of following essentials such as Steroids, loose Clofazimine, Dressing materials, MCR etc.
8. Discussion with the patients: The supervisor should also talk with individual patient, question them about their knowledge of the disease and its management
9. Records & Reports: Look for accuracy, completeness and problems in indicators
10. Training needs

Monitoring:

It is to ascertain whether activities are being accomplished as planned. It is a daily management activity, to identify problems early so that they can be solved without any delay. It is carried out either by direct contact with the health workers at services delivery unit or by examining the records and reports at managing office (indirect supervision). It indicates where we stand and how far we are from the goal, so that we can make a plan of action to rectify. We make interventions as per the plans made. Monitoring helps assess the impact of these interventions. It provides objective indicators to assess, if they were effective or ineffective, and help identify the problems and plan corrective actions.

The main objective of monitoring is to identify and resolve operational problems as soon as they emerge. Realistic solutions to operational problems will call for identification of causes and corrective action.

During the implementation phase of DPMR initiative, important activities like coverage of training, provision of logistics, information management system, communication, advocacy and laboratory services, nursing and theatre services should be monitored.

Different aspects of each activity need to be monitored like Quality of work performance, Quantity of certain outputs or outcomes, and the Timeliness with which an activity is accomplished.

| Key performance indicators | Aspects to monitor |
|----------------------------|--|
| POD Services provided | |
| Training | <ol style="list-style-type: none"> 1. No. of different category of staff trained 2. Quality of training (duration, % of time devoted to practical, trainee: trainers ratio) |
| Logistics | <ol style="list-style-type: none"> 1. Stocks of Steroids, loose Clofazimine 2. Consumables 3. Forms and Registers, etc. |
| Communication | <ol style="list-style-type: none"> 1. No. of posters on hand care, feet care & eye care 2. No. of participatory methods of ulcer care conducted in a month with patients & families |
| Advocacy | <ol style="list-style-type: none"> 1. No. of coordination meetings conducted with like minded agencies |
| Supervision | <ol style="list-style-type: none"> 1. Frequency of supervisory visits at health units/districts/state 2. Whether visits are made on schedule 3. Whether visits resulted in corrective action to solve the identified problems |
| Operational indicator | <ol style="list-style-type: none"> 1. No. of cases with disability – grade I and grade II 2. No. of cases developing new disability 3. No. of reaction cases put on Prednisolone 4. No. of cases undergone surgery 5. Multi drug treatment completion rates |

Method of monitoring:

- a. Record and report review
- b. Direct observation
- c. Discussion with health worker
- d. Discussion with patients

Evaluation:

Programme evaluation assesses the extent to which, planned targets and objectives have been achieved at a given point of time. It is a periodic assessment of progress towards programme's operational targets and epidemiological objectives. It is a managerial activity, carried out less frequently than monitoring. It includes more than checking activities and measurement of indicators (such as % of patients cured). Targets and objectives have to be measured through properly defined epidemiological/operational indicators. An indicator can be a number, proportion, ratio or rate. Indicator may be different for district and for national level. A program's performance cannot be assessed by a single indicator, hence several indicators are required to conclude. The prerequisites for a good indicator- It should be measurable, valid, reliable and readily interpretable. The reports we generate are based on the records we maintain; hence information we report should be reasonably accurate and complete to derive at a majority of the indicators. However some indicators are not derived readily as information is not readily available; hence it needs to be collected through a special exercise or a survey.

A well planned '**Client's Perspective study**' helps in evaluating quality of services.

7. Coordination and Linkages

A good Coordination will make the best use of limited human and financial resources; facilitate integration and deliver the DPMR activities through GHCS in a cost-effective manner. To perform various activities of DPMR satisfactorily it is mandatory to closely coordinate with the various divisions and departments of the health services possible for the PHC units and hospital services such as essential drugs programme, public health laboratory, training department, health education programme, public relations department, health statistics department, and nursing and theatre services department.

Referral of patients: Adequate number of referral slips should be kept available, filled-in in triplicate (a copy should be retained by HF issuing the same, one with a patient and one to be sent to HF through DN, where the patient is being referred)

Similarly the follow-up instructions / advice given to the patients at referred centre should flow to Health sub-centre / PHC.

- 7.1 The secondary care level institutions will maintain direct linkages with the identified tertiary care institutes for referral of cases for RCS and other complications
- 7.2 The Dermatologist / Physician of the District hospital to coordinate with the ophthalmology, orthopaedic surgery, Physiotherapy departments of the institution for internal referral of cases
- 7.3 The District Nucleus will coordinate and provide linkages amongst the primary, secondary and tertiary level centres for all other issues
- 7.4 The District hospital will refer back cases to the original primary care unit for follow up treatment

Linkages:

Linkages should also be established and strengthened, wherever possible, with local and external NGO's who provide community level health care services. There should be linkages with concerned department of Ministry of Social Welfare, empowerment and social justice, and like minded NGOs working for the upliftment of socio-economically weaker sections affected by leprosy. Socio-economic rehabilitation through the formation of SHG initiated by the local government should be properly harnessed and the likely beneficiaries should be motivated to utilize it to their advantage. Various welfare schemes like low cost housing, pension schemes, especially those meant for disabled such as disability rights issue should be thoroughly utilized.

