

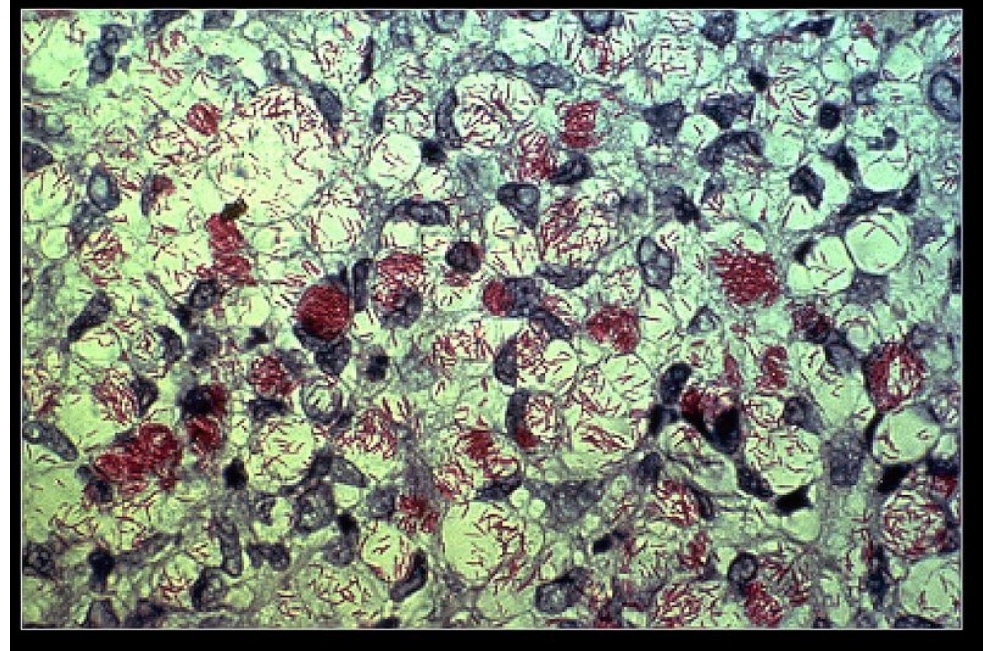
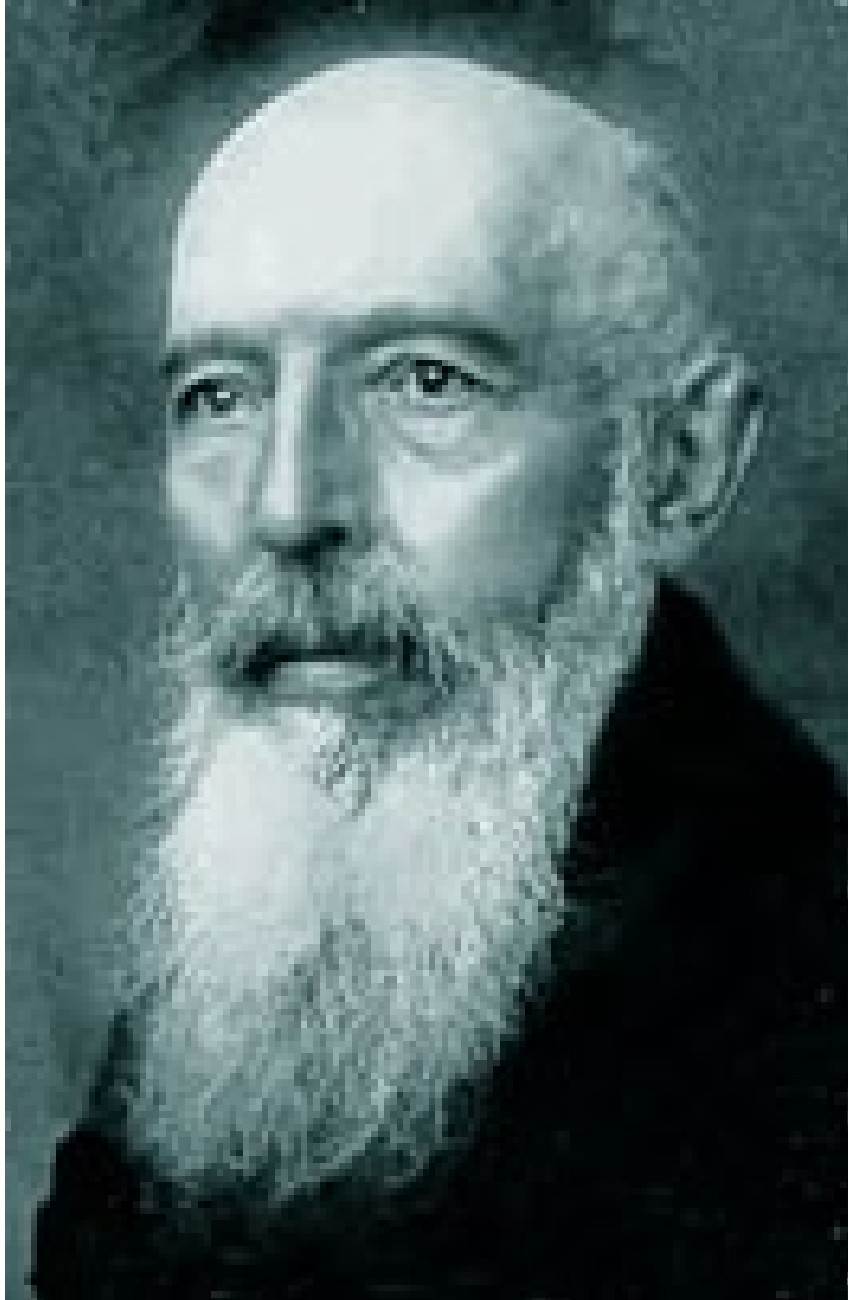
Leprosy

- **Leprosy (Hansen's Disease)** is a chronic granulomatous disease caused by the acid-fast bacilli (AFB) *Mycobacterium leprae* & *Mycobacterium lepromatosis*.
- The disease mainly affects the skin, mucus membrane and the nerves.
- Leprosy is curable and treatment in the early stages can prevent disability.
- The WHO's global elimination strategy is the provision of effective **multidrug therapy (MDT)** with **Dapsone, Rifampicin** and **Clofazimine** free of cost to all the leprosy patients worldwide.

Leprosy is caused by an acid-fast, rod-shaped bacillus known as *Mycobacterium leprae*



**Discovered by Norwegian Physician Gerhard Armauer Hansen
(1873)**



M. leprae appears red when a Ziehl-Neelsen stain is used.

Types of Leprosy

WHO Classification

Paucibacillary (PBL)

(non-infectious)

2-5 lesions

Multibacillary (MBL)

(infectious)

more than 6 lesions

Ridley-Jopling

Classification

Tuberculoid (TT)

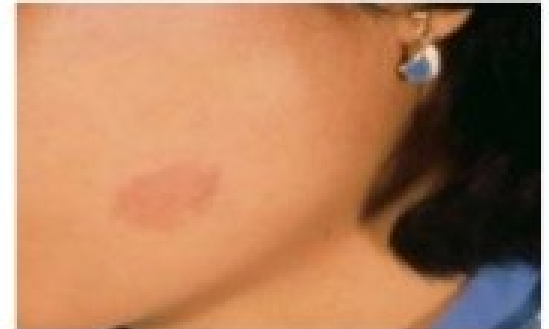
Borderline Tuberculoid (BT)

Borderline (BB)

Borderline Lepromatous (BL)

Lepromatous (LL)

NLEP 2009 Classification



Paucibacillary (PB) - TT and BT

- 1- 5 skin lesions
- No nerve/only one nerve involvement +/- 1-5 skin lesions
- Skin smear negative at all sites

Multibacillary (MB) - LL, BL and BB

- 6 or more skin lesions
- More than one nerve involved irrespective of skin lesions
- Skin smear positive at any one of the sites

1981: WHO Proposes Multi-Drug Therapy (MDT)

To deal with dapsone resistant strains of *M. leprae* and to shorten the duration of multidrug therapy with **rifampin, dapsone and clofazimine** was introduced by the WHO in 1981.

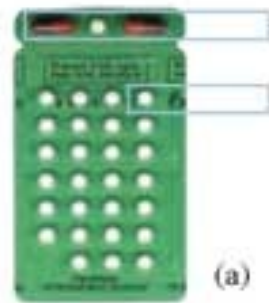
This was implemented under the NLEP in 1982. The MDT is the regimen of choice for all cases of leprosy. Its advantages are:

- Effective in cases with primary dapsone resistance.
- Prevents emergence of dapsone resistance.
- Affords quick symptom relief.
- Reduces total duration of therapy.

Multidrug therapy (MDT) of leprosy

	Multibacillary	Paucibacillary
Rifampin	600 mg once a month supervised	600 mg once a month supervised
Dapsone	100 mg daily self administered	100 mg daily self administered
Clofazimine	300 mg once a month supervised and 50 mg daily self administered	—
Duration	12 months	6 months

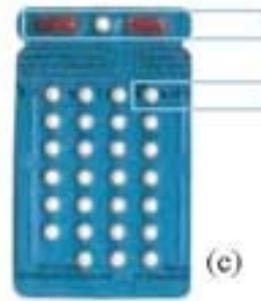
Doses to be reduced suitably for children.



PB adult blister pack

PB adult treatment:

- Once a month: Day 1**
- 2 capsules of rifampicin (300 mg X 2)
- 1 tablet of dapson (100 mg)
- Once a day: Days 2-28**
- 1 tablet of dapson (100 mg)
- Full course: 6 blister packs**

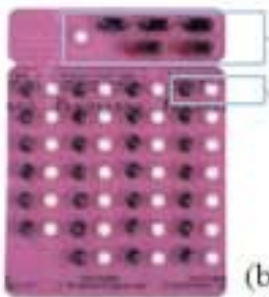


PB child blister pack

PB child treatment (10-14 years):

- Once a month: Day 1**
- 2 capsules of rifampicin (300 mg+150 mg)
- 1 tablet of dapson (50 mg)
- Once a day: Days 2-28**
- 1 tablet of dapson (50 mg)
- Full course: 6 blister packs**

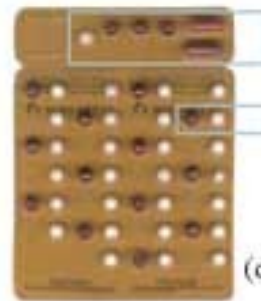
For children younger than 10, the dose must be adjusted according to body weight.



MB adult blister pack

MB adult treatment:

- Once a month: Day 1**
- 2 capsules of rifampicin (300 mg X 2)
- 3 capsules of clofazimine (100mg X 3)
- 1 tablet of dapson (100 mg)
- Once a day: Days 2-28**
- 1 capsule of clofazimine (50 mg)
- 1 tablet of dapson (100 mg)
- Full course: 12 blister packs**



MB child blister pack

MB child treatment (10-14 years):

- Once a month: Day 1**
- 2 capsules of rifampicin (300 mg+150 mg)
- 3 capsules of clofazimine (50 mg X 3)
- 1 tablet of dapson (50 mg)
- Once a day: Days 2-28**
- 1 capsule of clofazimine every other day (50 mg)
- 1 tablet of dapson (50 mg)
- Full course: 12 blister packs**

For children younger than 10, the dose must be adjusted according to body weight.



Nepal is the country with the seventh highest number of new leprosy cases diagnosed each year, with latest WHO figures revealing 3,254 people diagnosed in 2014, an increase from the previous year, of which 6% were children. The number of people being diagnosed with leprosy in Nepal is greatly reduced from earlier years, nevertheless, it continues to be a health issues, in particular in the Terai area neighbouring India.



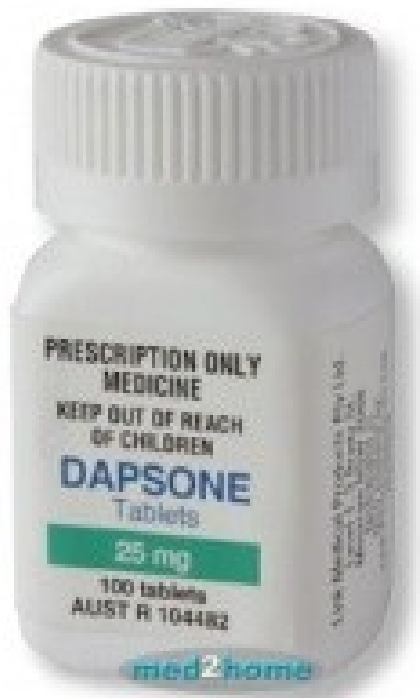
The Leprosy Mission Nepal

transforming individuals and communities



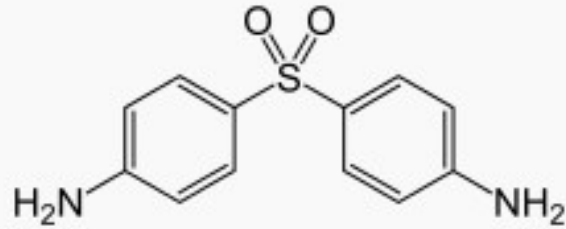
Classification of Antileprotic Drugs

1. *Sulphones*: **Dapsone**
2. *Phenazine Derivatives*: **Clofazimine**
3. *Antitubercular Drugs*: **Rifampicin, Ethionamide**
4. *Other Antibiotics*: **Ofloxacin, Moxifloxacin, Clarithromycin, Minocycline**



Dapsone (DDS)

(4,4' –diaminodiphenysulfone, DDS)



- It is the simplest, oldest, cheapest, most active and most commonly used drug for treatment of leprosy.
- It is structurally related to sulfonamides and is bacteriostatic nature when given in low concentration.
- It has anti-inflammatory immunosuppressive as well as antibacterial properties.

Mechanism of Action

- It has same mechanism of action as sulfonamides by inhibiting incorporation of PABA into folic acid. Thus it inhibits the synthesis of bacterial dihydrofolic acid.

Dose: 50-100 mg daily orally

Indication

- **Leprosy:** Dapsone in combination with other antileprotic drugs.
- **Malaria:** In chloroquin-resistant malaria, dapsone is used in combination with pyrimethamine.
- **Pneumocystis Pneumonia in AIDS:** Dapsone can be used effectively to treat the condition.

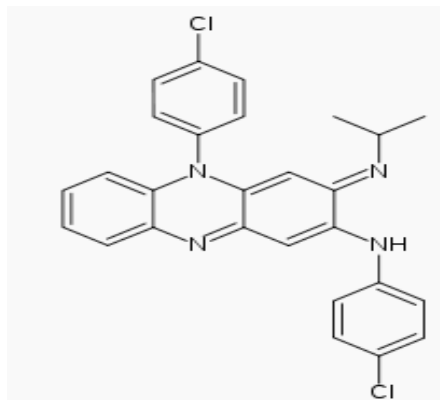
Contraindication and Precaution

- Contraindicated to patients with hypersensitivity
- severe anaemia (Hb <7 gm/dl)
- patients with G6PD deficiency and liver dysfunction.

Adverse Effects

- Sulfone syndrome, Hepatotoxicity
- Mild haemolytic anaemia
- Dose related toxicity, i.e. reflects oxidizing property of drug
- Gastric intolerance i.e. Nausea, Anorexia
- headache, praresthesia

Clofazimine



- Clofazimine is a dye having antileprotic and anti-inflammatory properties.
- Often used in combination with rifampicin and dapsones as multidrug therapy (MDT) for the treatment of leprosy.

Mechanism of Action

- Clofazimine works by interfering with DNA template function and inhibiting bacterial proliferation.
- **Dose:** 50-100 mg/day orally

Indication

- It is used as a component of multidrug therapy of leprosy.
- Occasionally it is used as a component of multidrug therapy for *M. avium* complex.

Contraindication and precaution

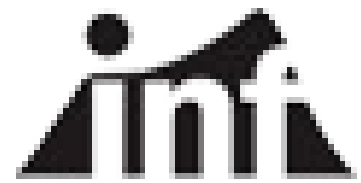
- Contraindicated in patients with hypersensitivity.
- It is to be avoided during early pregnancy and in patients with liver or kidney damage.
- Precaution should be taken by patients with GI disturbance

Adverse Effects

- The most prominent side effect of clofazimine is reddish-black discoloration of skin, urine and sweat.
- GI symptoms: Nausea, Anorexia

- **Alternative regimens:** These are used only in case of rifampin-resistance or when standard MDT regimen is not possible.
- **Clofazimine 50 mg + any two of ofloxacin 400 mg/minocycline 100 mg/clarithromycin 500 mg** daily for 6 month, followed by
- **Clofazimine 50 mg + any one of ofloxacin 400 mg/minocycline 100 mg** daily for additional 18 months.
- **Intermittent ROM:**
- **Rifampin 600 mg + ofloxacin 400 mg + minocycline 100 mg** are given once a month for 3–6 month for PBL and for 12 or 24 month for MBL cases, without any drug in between.

- **Four drug regimen of rifampin 600 mg + sparfloxacin 200 mg + clarithromycin 500 mg + minocycline 100 mg** daily for 12 weeks has yielded equivalent clinical improvement in MBL cases to standard 12 month MDT.
- In case of refusal to accept **clofazimine: ofloxacin 400 mg or minocycline 100 mg** daily can be substituted for it in the standard MDT.
- **Intermittent RMMx:**
- **Moxifloxacin 400 mg + minocycline 200 mg + rifampin 600 mg** is administered once a month: 6 doses given for PBL and 12 doses given for MBL cases have produced rapid and marked clinical response



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