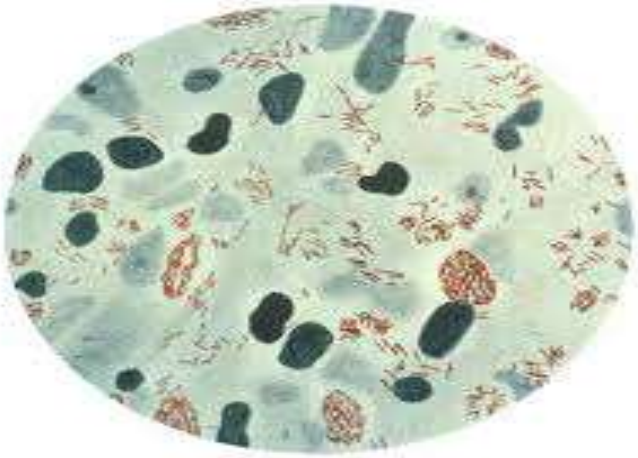
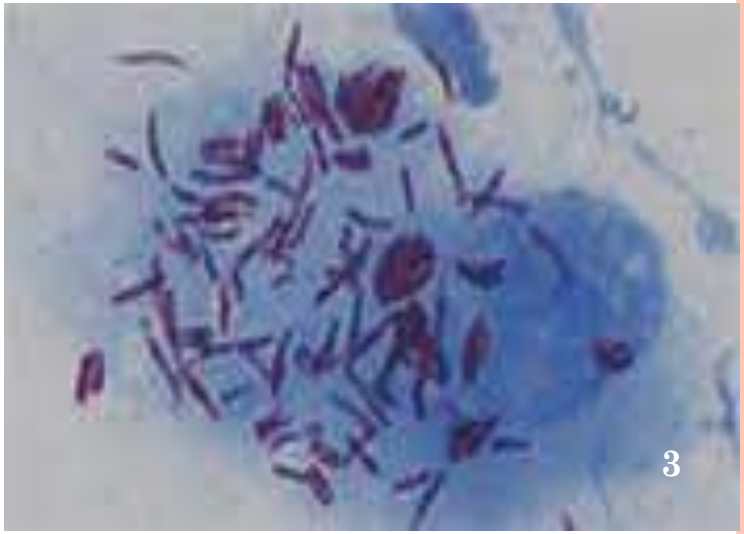
LEPROSY

Ancient trace of Leprosy

Mycobacterium Leprae Bacilli

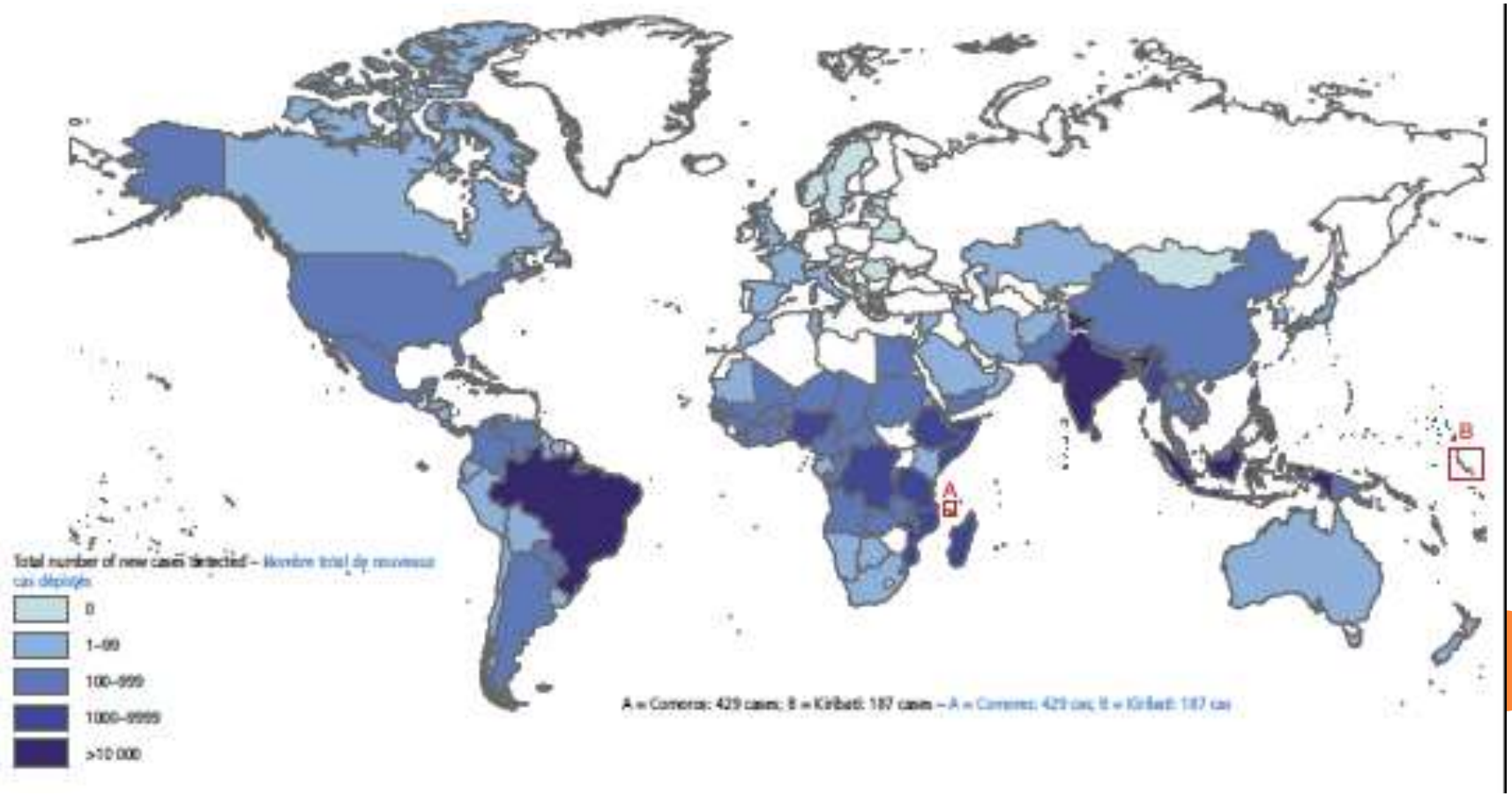




G. H. A. Hansen:
Norwegian physician identified *Mycobacterium leprae* as the cause of leprosy in 1873

LEPROSY GLOBAL SCENARIO

Year	1981	1985	1995	2005	2015	2017
Registered Cases	120,00,000	52,00,000	12,98,480	2,86 ,063	2,13,899	2,10,671



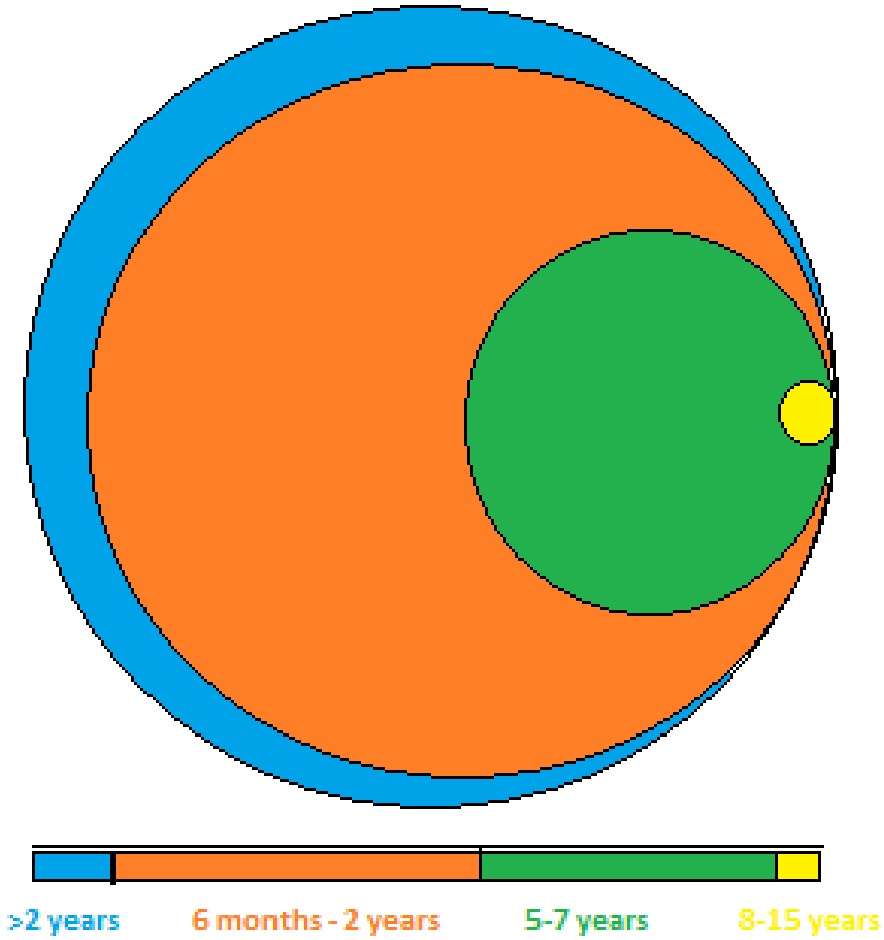
Top 3 High leprosy Burden Countries

Rank	Country	No. New Leprosy Case	
		2016-17	2017-18
1	**India**	135485 (67%)	126164 (59.89)
2	**Brazil**	25218 (12%)	26875 (12.76)
3	**Indonesia**	16826 (8%)	15910 (7.55)

Source: WHO/WER/35,2018;93:445-56.

GLOBAL STRATEGY: WHO (2016-2020)

DYNAMICS OF LEPROSY TRANSMISSION



PATHOGENESIS

M. Leprae

Enters → **Transient Bacillemia**

Schwann cells, cooler places (Cutaneous nerves & Peripheral nerves trunks of limbs and face)

Strong Immunological Response ↔ **Weak immunological Response**

Nerves only: **Pure Neural Leprosy**

Escape to skin: **Skin lesions appear**

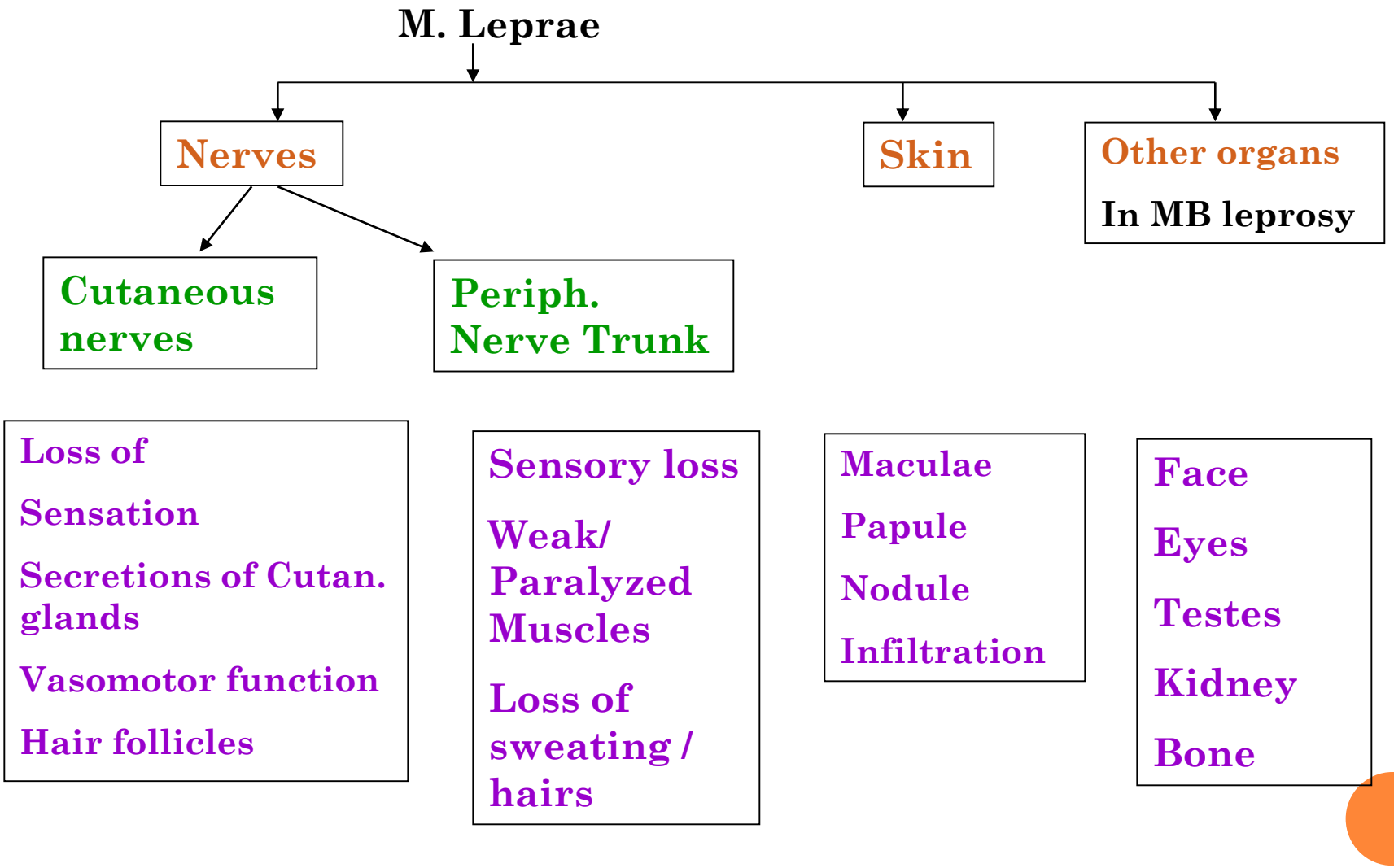
Lesions may heal spontaneously

M. Leprae multiply in Schwann cells or

Engulfed Histiocytes – wandering Macrophages

Affect other organs in the body

PATHOGENESIS



Cardinal features

1. **Hypopigmented patches**
2. Partial or total **loss of cutaneous sensation** in the affected areas
3. Presence of **thickened nerves**
4. Presence of **acid-fast bacilli** in skin or nasal smears

Agent factors

- M.leprae
- **Source of infection:** multibacillary cases
- **Portal of exit:** nasal mucosa
- Highly infectious

Host factors

- **Age:** all ages
- **Sex:** higher among males
- Migration
- Immunity

Environmental factors

- Humidity favours

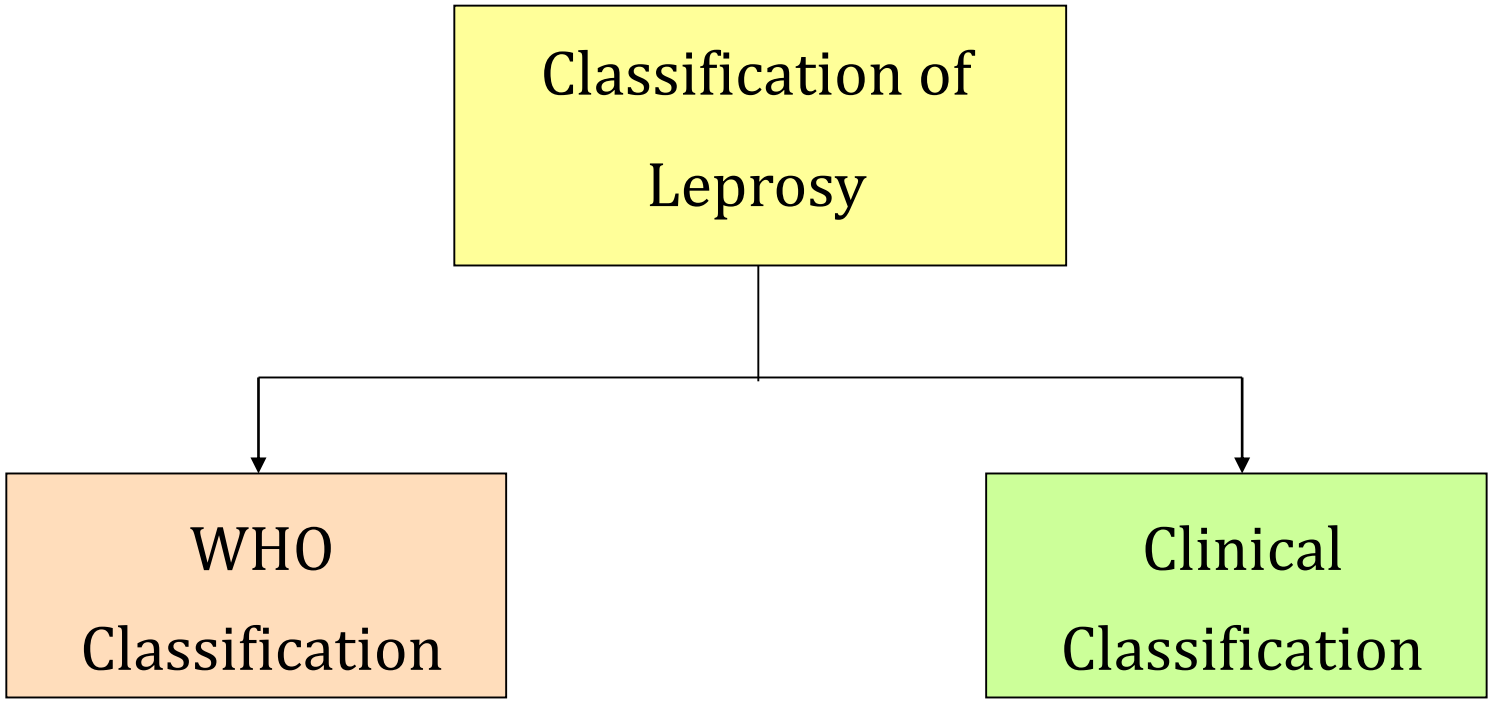
Remains viable:

- In dried nasal secretion – 9 days
- Moist soil – 46 days

Mode of transmission

- Droplet infection
- Contact transmission
- IP: 3-5 years

CLASSIFICATION OF LEPROSY



WHO CLASSIFICATION :

Two types: Purpose of treatment .

1. **Paucibacillary Leprosy (PB)**
2. **Multibacillary Leprosy (MB)**

Based on:

Number of skin lesions

Number of nerves involved

	Paucibacillary Leprosy (PB)	Multibacillary Leprosy (MB)
Skin Lesions	**1 to 5 lesions** **Asymmetrical** **Definite Loss of sensation**	**> 5 lesions** **Towards Symmetrical** **Loss of sensation** **(May be / May not be)**
Nerve Lesions	Only 1 nerve involved	2 or more nerve involved

CLINICAL CLASSIFICATION :

Ridley and Joppling classified leprosy clinically into the following :

1. **Tuberculoid (TT)**
2. **Borderline Tuberculoid (BT)**
3. **Borderline (BB)**
4. **Borderline Lepromatous (BL)**
5. **Lepromatous (LL)**

BB Leprosy is immunologically the least stable , and therefore the rarest .

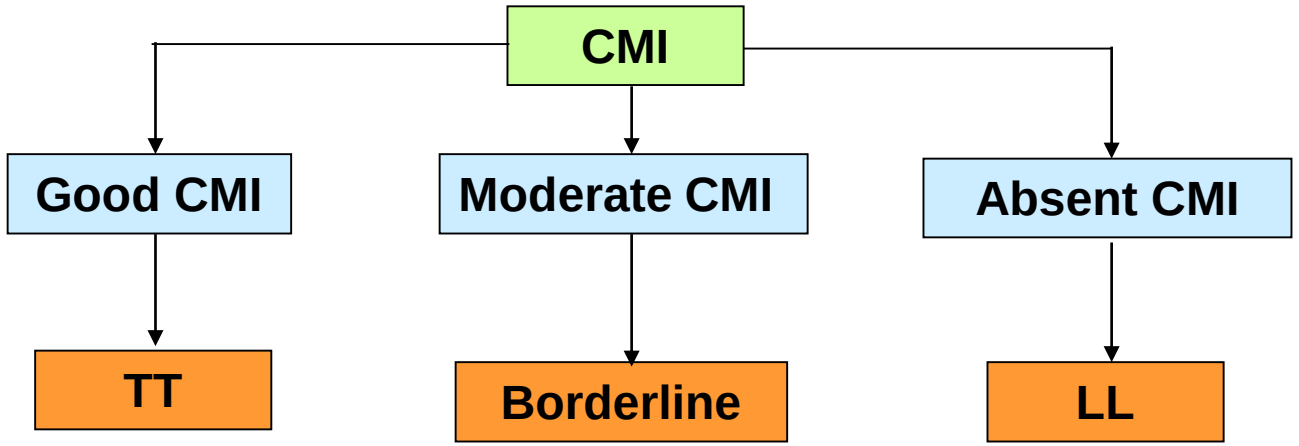
PURE NEURAL LEPROSY :

- May not have any clinical evidence
- Leprosy can involve nerves without any skin changes
- This unusual occurrence is called Pure Neural Leprosy

SPECIAL FEATURES

Cell Mediated Immunity (CMI): Most importantly which the Infection is contained Healing takes place .

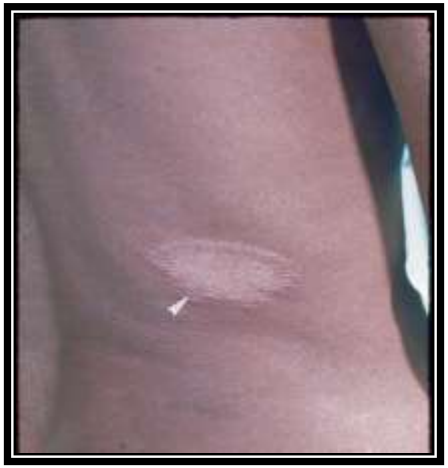
DETERMINANT OF CLINICAL FEATURES

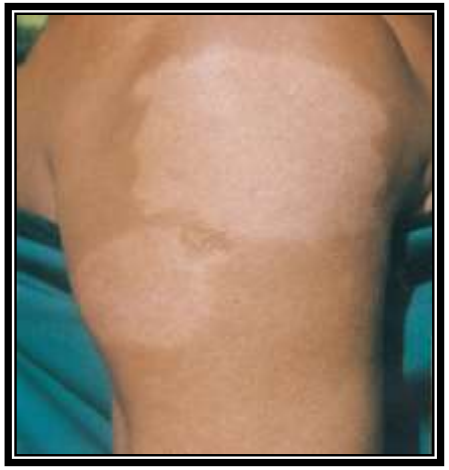


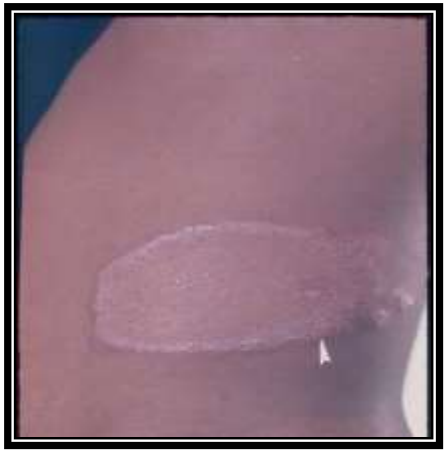
PATHOGENESIS: SKIN LESIONS

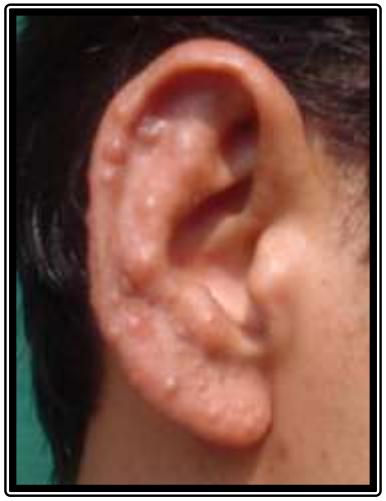
Leprosy Lesions	Exclude Leprosy
• One/ Few/ Many • Small/ Large • Hypo- pigmented / reddish/ pale / coppery • Ill defined / well defined margins • Dry/ wrinkled / granular to shiny soft • Sweating +/- • Hairs – sparse/ fragile / absent • Macule/ Papule/ nodular	• Present since birth • Black / dark red / De-pigmented • Itches • Appears disappears suddenly • Painful • Scaly • Shows any seasonal variation

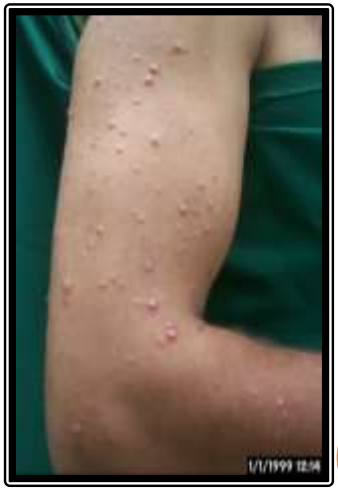
SKIN LESIONS:



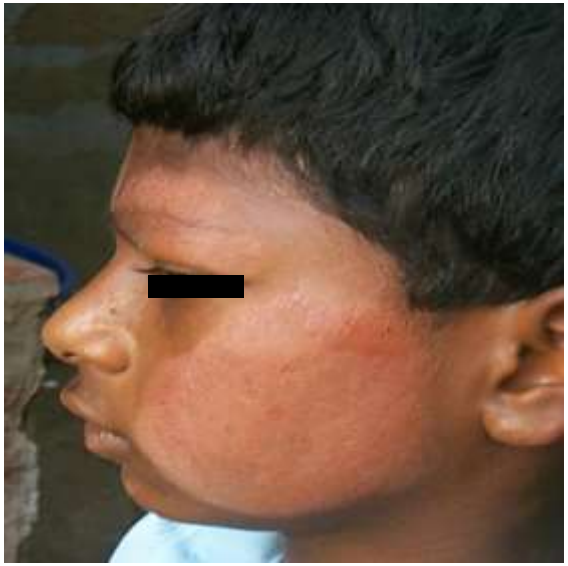


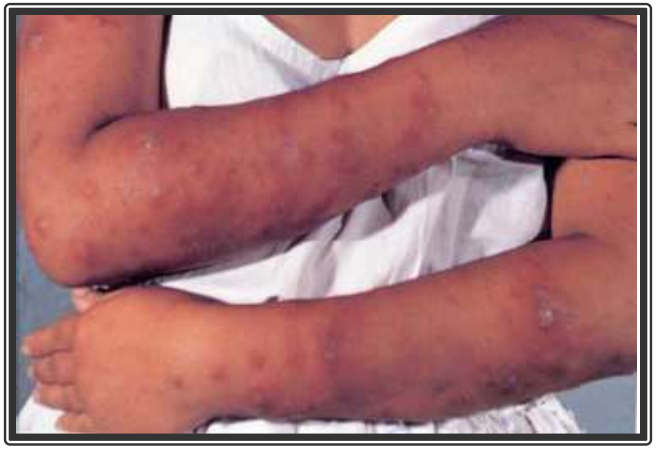


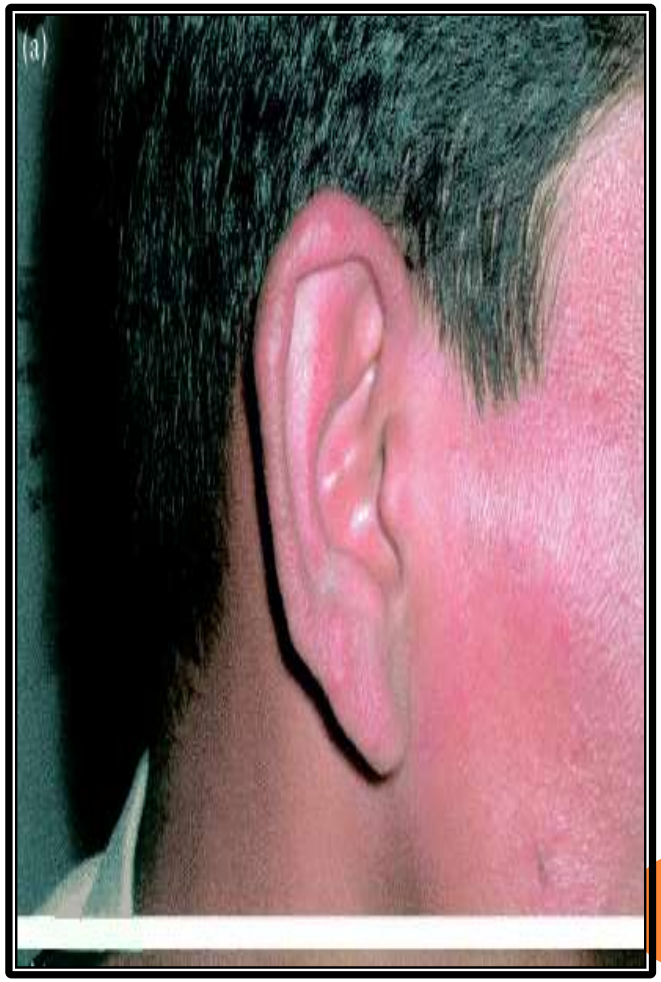




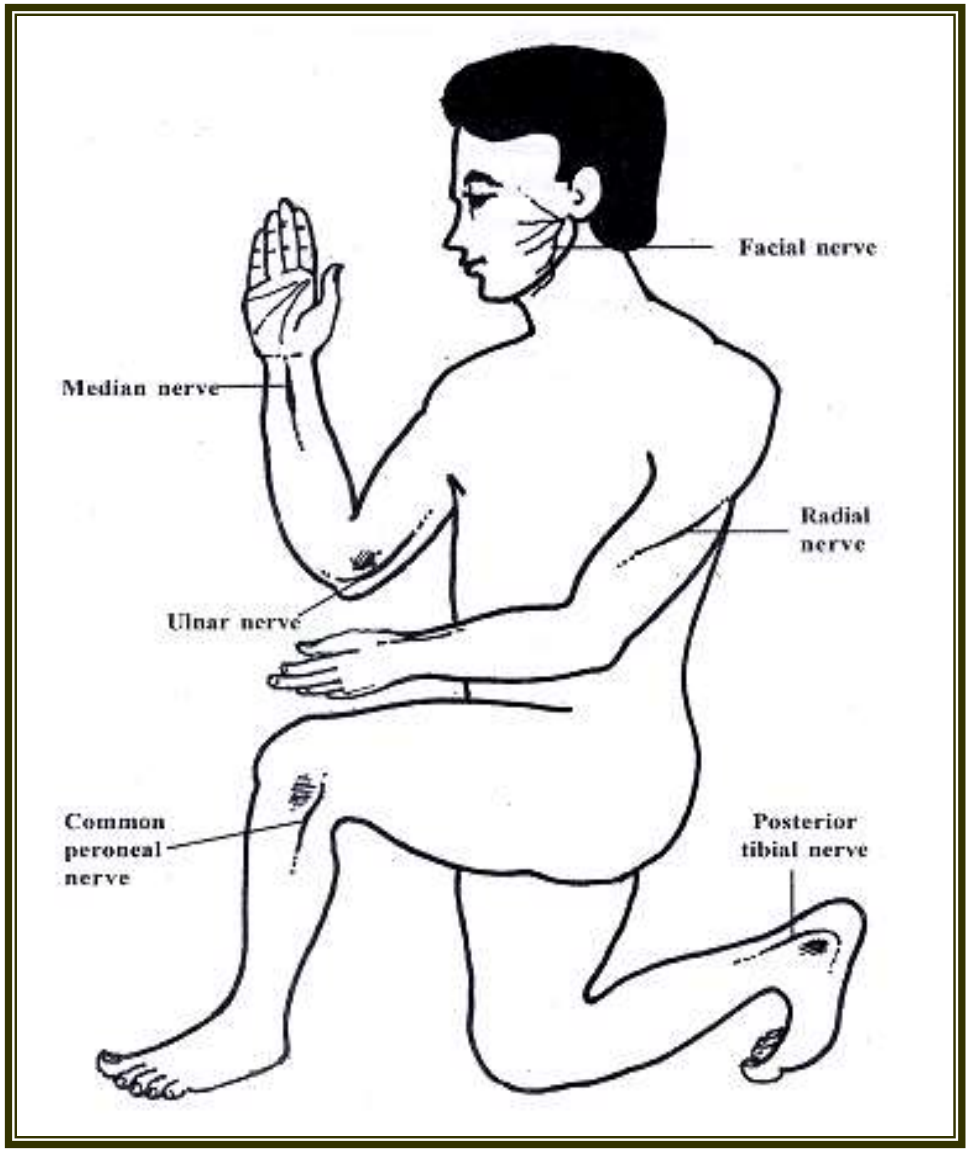
SKIN LESIONS







COMMONLY AFFECTED NERVES



NERVE INVOLVEMENT

Stage I

- Thickening of nerve trunk
- Pain & tingling along the nerve trunk
- Tenderness along the course of nerve trunk
- No evidence of loss of nerve function

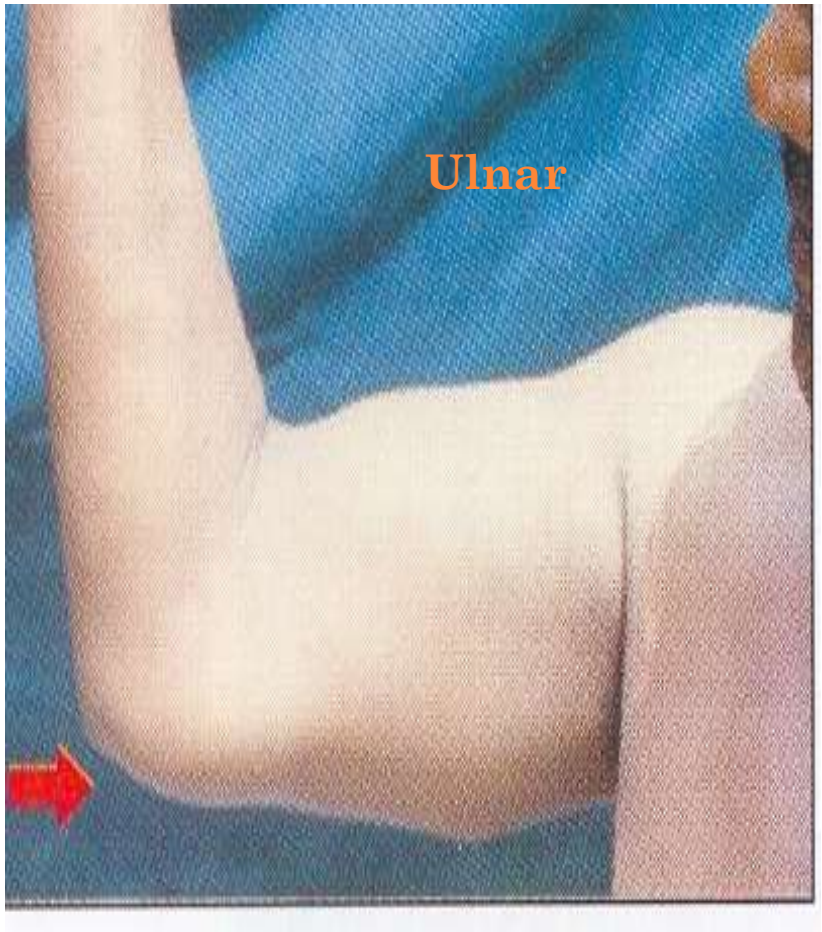
Stage II

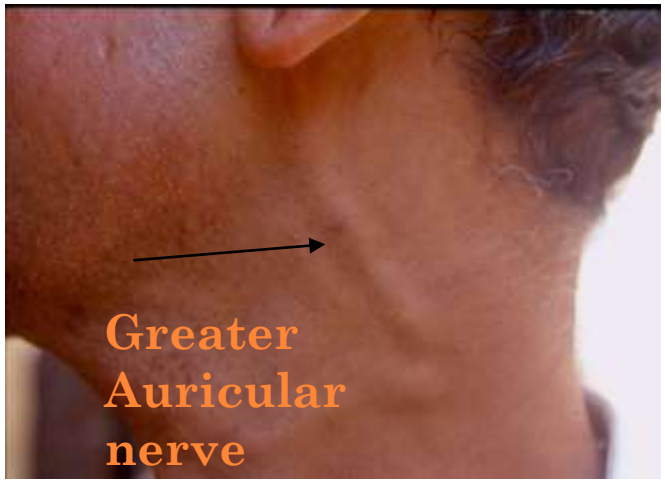
- Incomplete / complete paralysis of recent origin
- Loss of sweating
- Loss of sensibility
- Muscle weakness/ Paralysis

Stage III

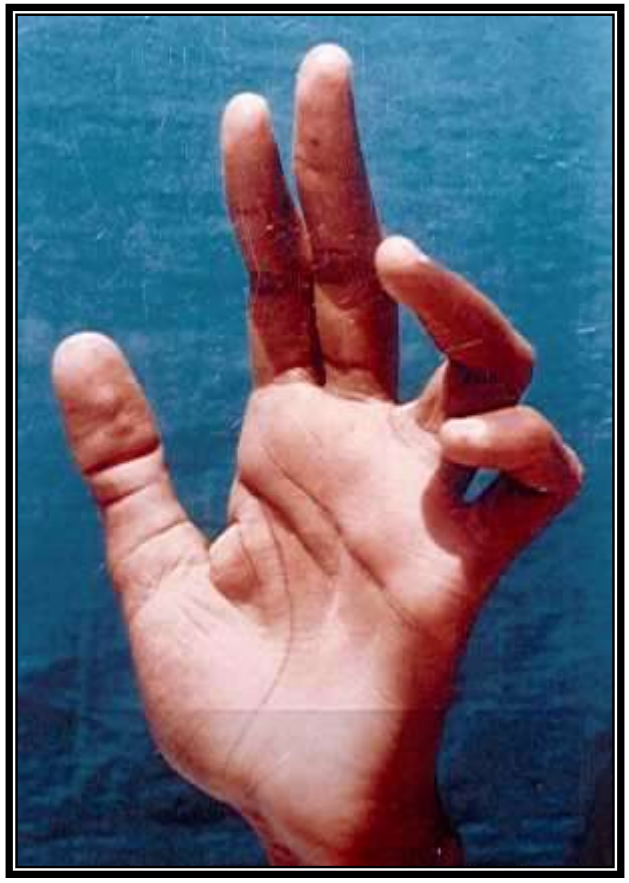
- Complete Nerve Paralysis for 1 year/more
- Recovery of Nerve function not possible

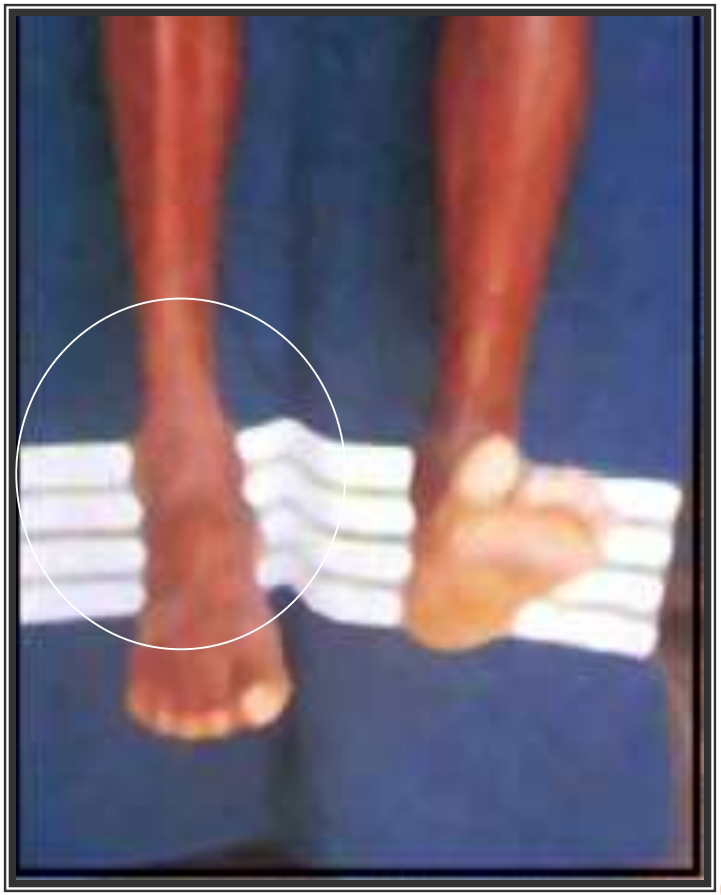
ENLARGED/ TENDER NERVES



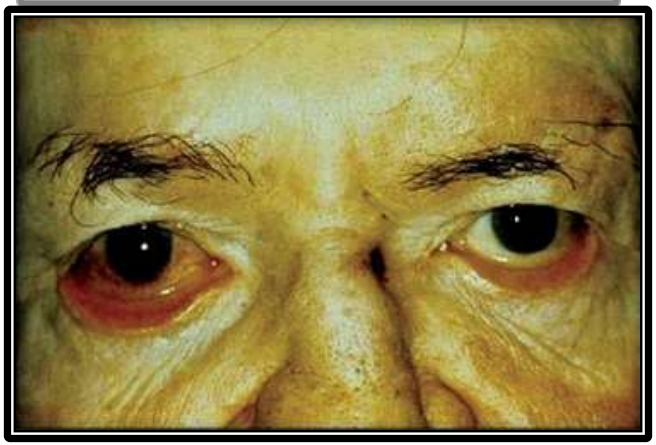


DISABILITY & DEFORMITIES





Other Manifestations of the disease: Eye



1. Thinning of eyebrows
2. Entropion
3. Trichiasis
4. Madarosis
5. Scleritis
6. Dacrocystitis
7. Superficial punctate keratitis
8. Acute iridocyclitis
9. Iris atrophy
10. Lagopthalmos
11. Exposure Keratitis
12. Impairment of vision

Other Manifestations of the disease:

1. Anosmia
2. Perforation of nasal septum
3. Saddle nose deformity
4. Hoarse cough & husky voice
5. Leonine facies
6. Orchitis, Gynaecomastia
7. Loosening of upper central incisors
8. Glomerulonephritis
9. Pyelonephritis

Suspect Leprosy:

- Pale or reddish patch on the skin
- Shiny thick skin of face
- Swelling / nodules in the face and earlobes
- Reduced / loss of sensation in the skin patch
- Numbness or tingling of hands or feet

SUSPECT LEPROSY:

- **Painful and tender/ palpable nerves** (esp near elbow, wrist, knee, ankle)
- **Weakness** of hands, eyelids and feet
- **Painless wounds or burns on the hands and feet**
- **Visible deformities** of hands feet & eyes (claw hands and feet)

Suspect Leprosy: On Complaints

- Chronic blockage of nose due to Infiltration and crust formation
- Things tend to fall/ slip out of the hand
- Things feel different while holding in the hand
- Hands or feet feel weak, slimmer with shiny skin , loss of hair
- Loss of sweating in an area
- Inability to retain chappal (foot wear without back strap)

- Big toe coming in way while walking
- Recent Impairment of vision
- Red painful eye
- Recent / worsening of existing Lagophthalmos (Inability to close eye/s)
- Trichiasis
- Epiphora
- Epistaxis
- Hoarseness of voice

LEPROSY DURING PREGNANCY AND PUERPERIUM

Depression of Cell mediated immunity (CMI)

- **Sub-clinical disease may become overt**
- **Established disease may worsens**
- **Deterioration of nerve function**

Regaining of CMI - First six months of puerperium

- **Increased incidence of lepra reaction**

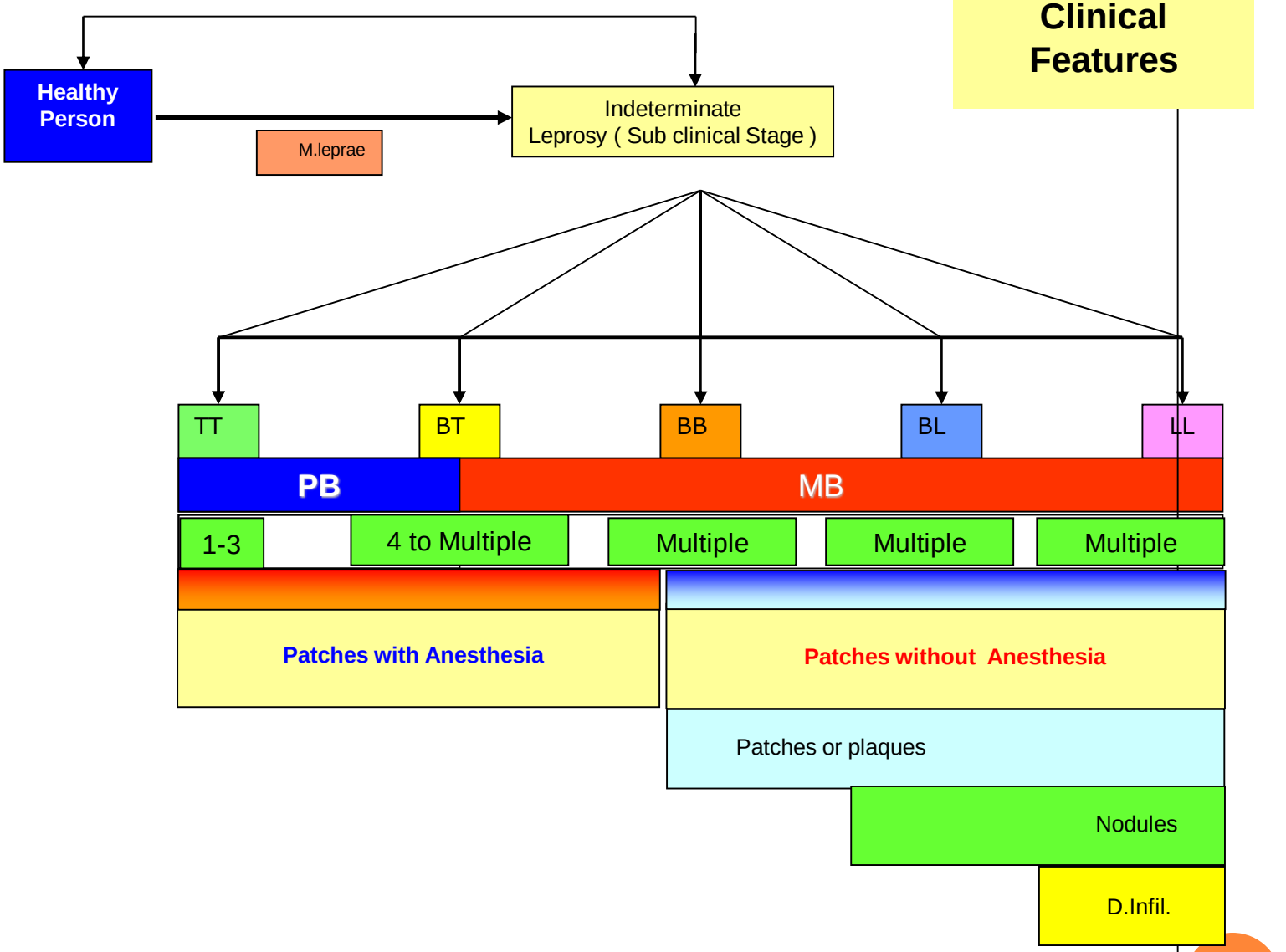
New born

- **LBW**
- **High risk of getting infected with leprosy**

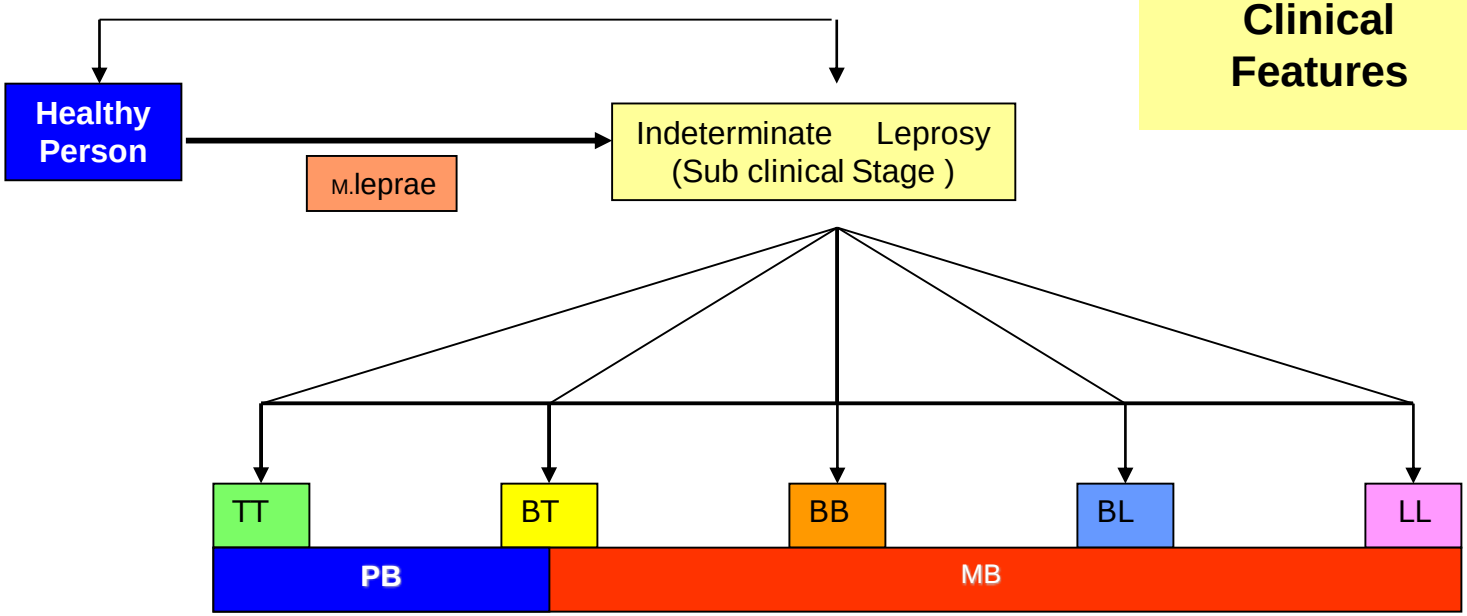
DIAGNOSIS

- Clinical examination
- Bacteriological examination – skin smear
- Foot-pad culture
- Histamine test – Lewis triple response
- Biopsy
- Lepromin test – early and late reaction

Clinical Features



Clinical Features



	TT	BT	BB	BL	LL
No.of Patches	1-3	4 to multiple	Multiple	Multiple	Multiple
Size of Patches	Big	Big	Medium to Small	Small	Small
Anesthesia	+++	++	+ / -	-	-
Border	Clear	Clear	Clear at some places	Slightly ill - defined	Ill - Defined
Symmetry	Asymmetrical	Asymmetrical	Symmetry starts	Symmetrical	Symmetrical

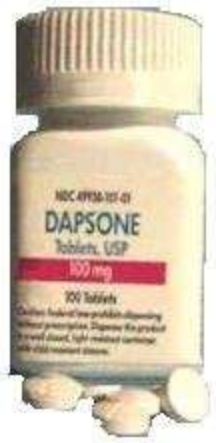
Treatment

Chaulmoogra tree, oil

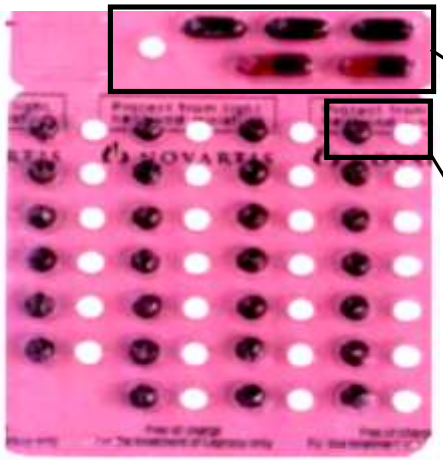
Until late 1940 leprosy was treated by injecting Chaulmoogra oil in skin

Early 20 TH Century

- 1941: Promine a sulfone drug used for treatment
- 1950s: Dapsone, pioneered by Dr. R. G. Cochrane at Carville
- 1983: MDT introduced by WHO



MDT Blister packs

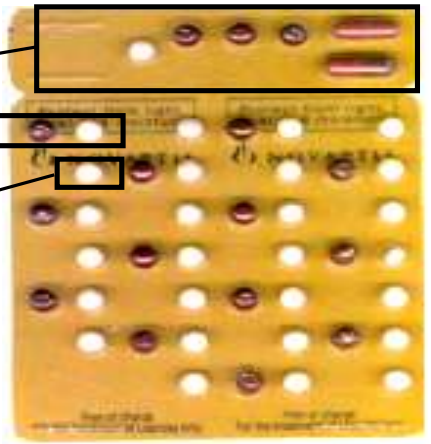


MB (Adult) Blister pack

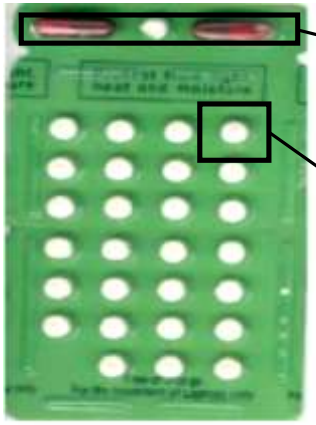
First dose of the month

Doses for alternate day

Daily dose from second day



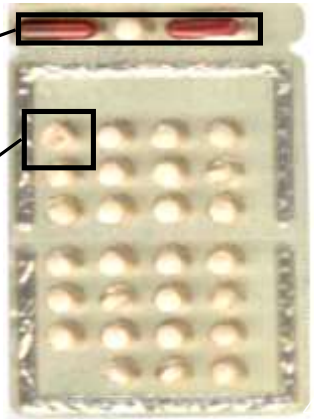
MB (Child) Blister pack



PB (Adult) Blister pack

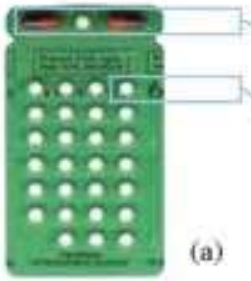
First dose of the month

Daily dose from second day



PB (Child) Blister pack

Multi drug therapy (MDT)



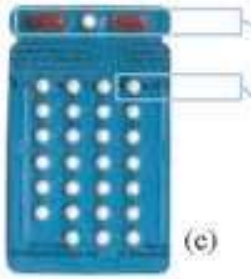
PB adult blister pack

PB adult treatment:

Once a month: Day 1
- 2 capsules of rifampicin (300 mg X 2)
- 1 tablet of dapsone (100 mg)

Once a day: Days 2–28
- 1 tablet of dapsone (100 mg)

Full course: 6 blister packs



PB child blister pack

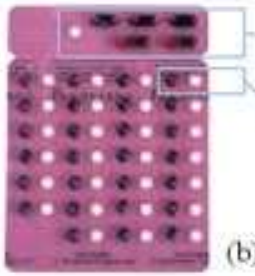
PB child treatment (10–14 years):

Once a month: Day 1
- 2 capsules of rifampicin (300 mg+150 mg)
- 1 tablet of dapsone (50 mg)

Once a day: Days 2–28
- 1 tablet of dapsone (50 mg)

Full course: 6 blister packs

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



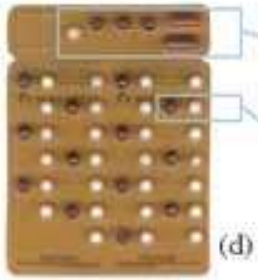
MB adult blister pack

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 dapsone (100 mg)

Once a day: Days 2–28
- 1 capsule of clofazimine (50 mg)
- 1 tablet of dapsone (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 dapsone (50 mg)

Once a day: Days 2–28
- 1 capsule of clofazimine every other day (50 mg)
- 1 tablet of dapsone (50 mg)

Full course: 12 blister packs

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

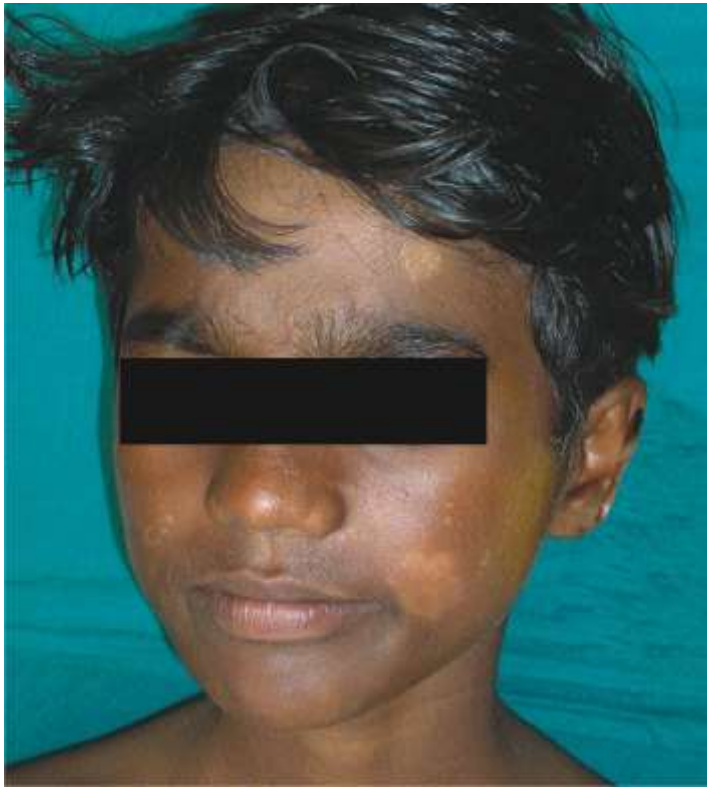
MDT REGIMEN & DOSES

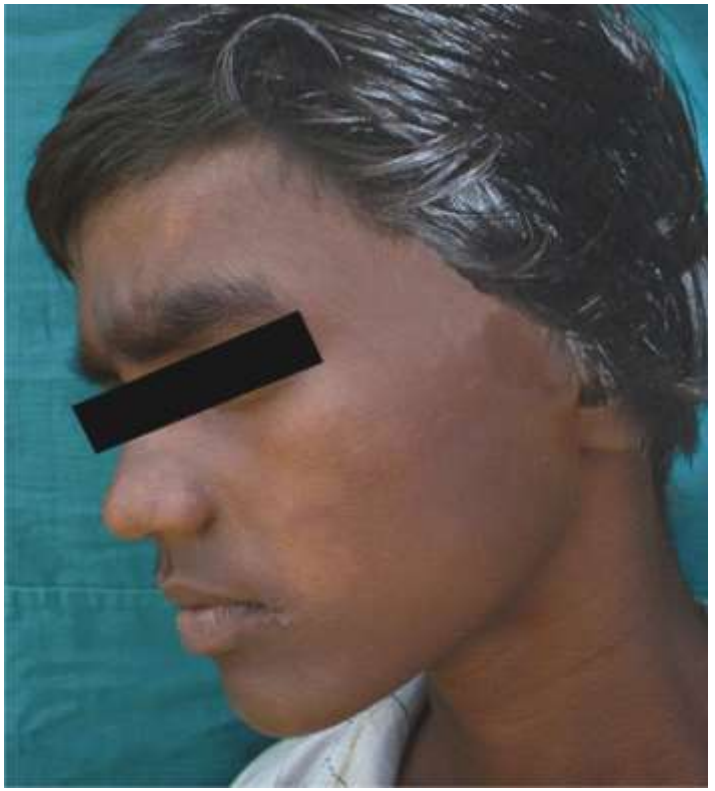
Type of leprosy	Drugs used	Frequency of Administration Adults (children in bracket)	Dosage (adult) 15 years & above	Dosage (Children 10-14 years)	Dosage Children Below 10 years	Criteria for RFT
MB leprosy	Rifampicin	Once monthly	600 mg	450mg	300mg	Completion of 12 monthly pulses in 18 consecutive months
	Clofazimine	monthly	300 mg	150 mg	100mg	
	Dapsone	Daily Once	100 mg	50 mg	25mg	
	Clofazimine	Daily for adults (every other day for children)	50 mg	50mg	50mg (alternate day, not daily)	
PB leprosy	Rifampicin	Once monthly	600 mg	450 mg	300mg	Completion of 6 monthly pulses 9 consecutive months
	Dapsone	Daily	100 mg	50 mg	25mg daily or 50 mg alternate day	

ADVANTAGES OF MDT

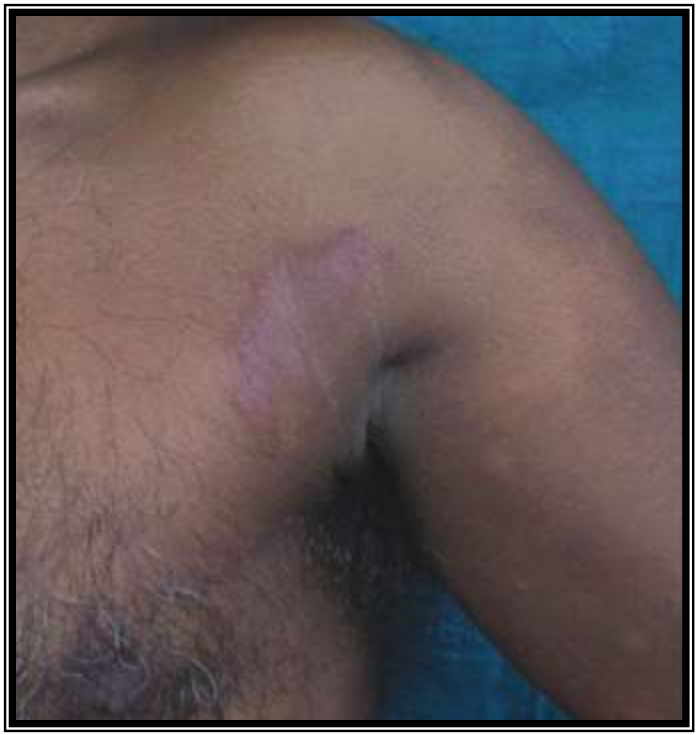
- Safe, minimal side effects and increased patient compliance
- Kills the bacilli
- Stops progress of the disease
- Prevents further complications and reduces chances of relapse
- Renders LAP non-infectious,
- Reduces transmission and spread of disease
- Reduces chances development of resistance
- Reduces duration of the treatment
- Available in blister pack; easy to dispense, store and take

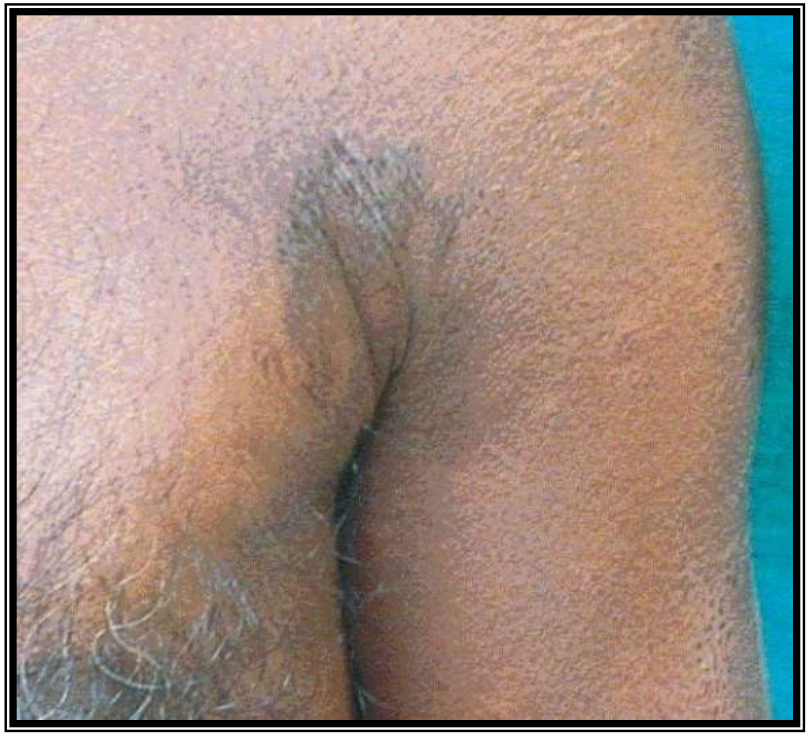
BEFORE AND AFTER TREATMENT





BEFORE AND AFTER TREATMENT





SIDE EFFECTS OF DAPSONE

	Common side effects	Signs and symptoms	What to do if side effects occur
Minor	**Anaemia**	**Paleness inside the lower eyelids, tongue and fingernails, Tiredness, oedema of feet and breathlessness**	**Give anti-worm treatment and iron and folic acid tablets. Continue dapsone.**
	Abdominal symptoms	Abdominal pain, nausea, and vomiting with high doses	Symptomatic treatment. Reassure the patient Give drug with food
Serious	Severe skin complication (Exfoliate dermatitis) Sulphone hypersensitivity Haemolytic aneamia	Extensive scaling, itching, ulcers in the month and eyes, jaundice and reduced urine output Itchy skin rash	Stop Dapsone. Refer to hospital immediately. Never restart.
	Liver damage (Hepatitis)	Jaundice (yellow Colour of skin, eyeballs and urine) Loss of appetite and vomiting	Stop Dapsone. Refer to hospital. Restart after the jaundice subsides
	Kidney damage (Nephritis)	Oedema of face and feet. Reduced urine output	Stop Dapsone. Refer to hospital

SIDE EFFECTS OF RIFAMPICIN

	Side effects	Signs and symptoms	What to do if side effects occur
Minor adverse effects	Red discoloration of body fluids	Reddish coloration of urine, saliva and sweat	Reassure the patient and continue treatment
	Flu like illness	Fever, malaise and body ache	Symptomatic treatment
	Abdominal symptoms	Abdominal pain, nausea, and vomiting	Symptomatic treatment. Reassure the patient Give drug with food
Serious adverse effects	Hepatitis (liver damage)	Jaundice (yellow colour of skin, eyeballs and urine). Loss of appetite and vomiting	Stop Rifampicin. Refer to hospital. Restart after the jaundice subsides.
	Allergy	Skin rash or Shock, purpura, renal failure	Stop Rifampicin

SIDE EFFECTS OF CLOFAZIMINE

Side effects	Signs and symptoms	What to do if side effects occur
Skin pigmentation (Not Significant)	Brownish-red discoloration of skin, urine, and body fluids	Reassure the patient, it disappears after completion of treatment
Acute Abdominal symptoms	Abdominal pain, nausea and vomiting on high doses	Symptomatic treatment. Reassure the patient Give drug with food If intractable stop clofazimine
Ichthyosis (diminished sweating)	Dryness and scaling of the skin, itching	Apply oil to the skin. Reassure the patient.
Eye	Conjunctival dryness	Moistening eye drops/ frequent washing of eyes

NLEP Emblem

The **NLEP Emblem** symbolizes beauty and purity in lotus: Leprosy can be cured and a leprosy patient can be a useful member of the society in the form of a partially affected thumb; a normal fore-finger and the shape of house; the symbol of hope and optimism in a rising sun. The Emblem captures the spirit of hope positive action in the eradication of Leprosy.

NLEP: OBJECTIVES

1. Elimination of leprosy i.e. prevalence of less than 1 case per 10,000 population in all districts of the country.
2. Strengthen Disability Prevention & Medical Rehabilitation of persons affected by leprosy.
3. Reduction in the level of stigma associated with leprosy.

Current NLEP Strategies

- Integrated leprosy services through General Health Care system.
- Early detection & complete treatment of new leprosy cases.
- Carrying out house hold contact survey for early detection of cases.
- Involvement ASHA in the detection & completion of treatment of Leprosy cases on time.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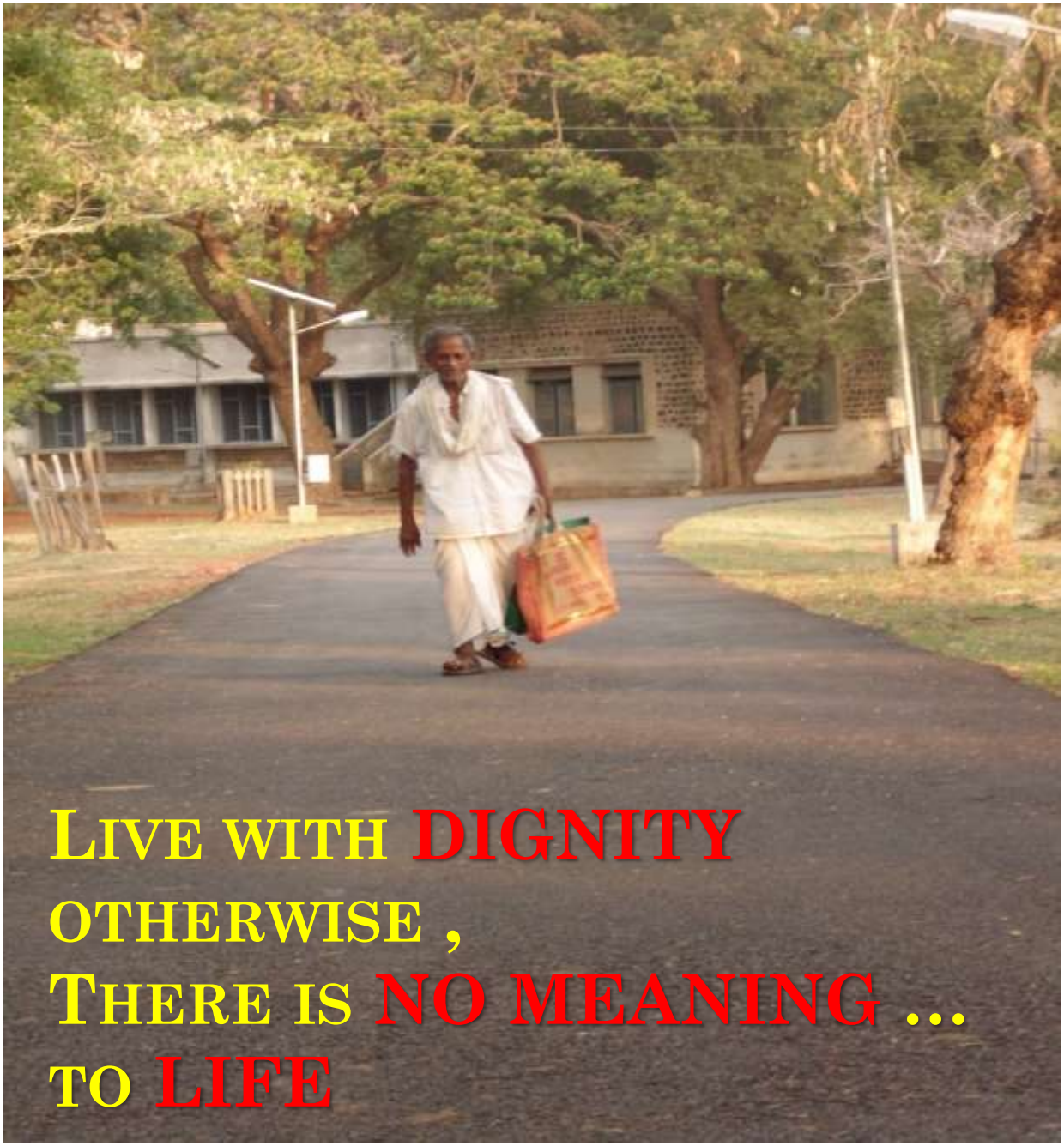
Current NLEP Strategies

- Strengthening of DPMR services.
- IEC activities in the community to improve self-reporting to PHC and reduction of stigma.
- Intensive monitoring and supervision at block PHC/CHC.

TAKE HOME MESSAGE

- Highly prevalent disease (EPIDEMIC)
- Difficult voluntary reporting (ACTIVE CASE DETECTION)
- Easy to diagnose (PATCH/NERVE)
- Easy to treat (MDT)
- Simple physiotherapeutic techniques (DPMR)


LIVE WITH DIGNITY
OTHERWISE ,
THERE IS NO MEANING …
TO LIFE

…Thank you