QUANTUM OF MYCOBACTERIUM LEPRAE AND INCIDENT OCULAR COMPLICATIONS IN MULTIBACILLARY LEPROSY
WHO definition of multi-bacillary (MB) leprosy

All patients having more than 5 patches irrespective of their skin smear and all patients whose skin smears are positive for *Mycobacterium leprae*. 
Newly detected cases: WHO Region - 2010 % MB CASES

- Africa: Kenya 90% Comoros 35%
- Americas Argentina 84% Ecuador 34%
- E.Mediter Egypt 90% Yemen 52%
- SE Asia Indonesia 80% Sri Lanka 45%
- W Pacific Philippines 91% Kiribati 35%
It is not known whether the amount of bacteria in newly diagnosed multi-bacillary patients undergoing treatment with the multi-drug therapy is associated with incident ocular complications.
BACTERIOLOGICAL INDEX (B.I)

0 0 bacilli in 100 fields

• 1+ 1 – 10 bacilli in 100 fields
• 2+ 1 – 10 bacilli in 10 fields
• 3+ 1 – 10 bacilli, on average, in each field
• 4+ 0 – 100 bacilli, on average, in each field
• 5+ 100 – 1000 bacilli, on average, in each field
• 6+ > 1000 bacilli, on average, in each field
Patients

Active Case Finding
2 District Blocks
301 MB Patients enrolled over a period of two years.
Patient population was set to be 300 based on the assumption that accurate estimates of incidence would range from 3% to 10%. The anticipated drop-out was expected to vary between 5% and 10%
BASELINE RISK FACTORS

Patient Demographic Characteristics:
- Age,
- Sex

Ocular Characteristics:
- Visual Acuity
- Orbicularis Oculi muscle weakness, Lagophthalmos
- Ectropion, Entropion, Trichiasis
- Conjunctival and Corneal B663, Scleritis, Episleritis,
- Corneal opacity, Corneal Ulcer, Corneal nerve beading
- Uveal Involvement (Keratic Precipitates, Irregular
  pupil, iris atrophy, Flare and cells, Posterior synechia)
- Cataract
- Glaucoma
Base Line Leprosy Characteristics

Lesion type: BL/LL
Face Patch: Hypopigmented, Erythematous
Reactions: Type 1: Past and Present, Type 2: Past and Present
Skin Smear
Deformity
Risk factors were first evaluated by univariate analysis using Cox proportional hazard model.

The multivariate model included predictors with $P<0.05$. 
Skin smear at Baseline

- Smear negative at enrolment: 55 18.3%
- Smear positive at enrolment: 246 81.7%
- Average bacterial Range 0 to 6: Mean (SD) of 1.3 (1.4).
- The highest smear Range 0 to 6: Mean (SD) of 2.3 (1.7).
DURING MDT
CORNEAL NERVE BEADING

Smear bacterial index >3.00+ vs ≤3.00+

Crude HR 8.7 95% CI 1.1 - 69.79  p=0.041
Adjusted HR 4.2 95% CI 1.3 - 13.88  p=0.018
AFTER MDT
UVEAL INVOLVEMENT

Crude HR: 2.38  95% C.I 1.0 - 5.5  p=0.044

Adjusted HR: 2.32  95% C.I: 0.99 - 5.4  p=0.043
AFTER MDT
IRIS ATROPHY

Negative vs Positive

Crude HR  2.8  95%CI 1.1 - 7.0  p=0.028
Adjusted HR  3.5  95%CI 1.3 - 9.2  p=0.011
IRIS ATROPHY AFTER MDT AND SMEAR

- smear = Negative
- smear = <1
- smear = 1-1.99
- smear = 2-2.99
- smear = 3-3.99
- smear = >=4

YEAR
CONCLUSION

- High Bacterial Index in MB patients at baseline predicts corneal nerve beading during MDT

- High Bacterial Index in MB patients at baseline predicts uveal involvement, particularly that of iris atrophy after Rx with MDT