Disability, MB and Child proportion -
Epidemiological significance and interpretation

The main objectives of the National Leprosy Eradication Programme are to detect and cure people with leprosy, to stop the transmission of the disease and to prevent disabilities. It is essential to measure progress towards the achievement of these objectives. Indicators are used to assess the progress. The indicators important from the program point of view are as below -

1. **Main or Core indicators**
    a. New case detection rate.
    b. Treatment completion rate.

    These two indicators have been discussed in the earlier communication entitled 'NLEP – Monitoring and Evaluation tools for implementation of new paradigms during 11th Plan period – note on '.

2. **Epidemiological indicators**.
    a. Disability proportion.
    b. MB case proportion.
    c. Child proportion

a) Disability proportion:

It is the percentages of people with grade I and grade II disability among the new leprosy cases detected during the reporting year and for whom a disability assessment was carried out.

Disability grade I proportion = <u>Number of new cases with disability Gr I x 100</u>
                                            Total number of new cases detected

Disability grade II proportion = <u>Number of new cases with disability Gr II x 100</u>

Total number of new cases detected

Interpretation:

i)   The disability proportion is influenced by the operational phase of leprosy control programme activities. The Gr. II disability proportion will be high at the beginning of the programme activities, as a result of accumulated backlog, and will subsequently decrease and stabilize at a lower level. More thorough and more frequent active care detection will find people with an earlier stage of the disease and these decrease the disability proportion.

One of the main reasons for assessing the Gr.II disability proportion is the fact that a high reporting of such cases is a sign of late case detection. The proportion of grade II disability is used more widely because it is visible and can be more reliably measured.

ii)   Case detection campaign in unserved leprosy endemic pockets would reveal backlog and thus increase the disability proportion. Another reason for an increase in the disability proportion may be diminishing awareness and poor skill among health workers for diagnosing cases early, when leprosy becomes less frequent.

iii)   Grade I disabilities i.e. people with anesthetize hands or feet need to protect themselves. If not protected timely it may lead to ulcers - infection and Grade II disability. The best way of protection of Leprosy affected people is education for self care and wearing MCR footwear.

Table: Factors influencing the disability proportion:

Increased by	Decreased by
i. Long delay before diagnosis.	i. Shorter delay before diagnosis.
ii. Case detection carried out intensively	ii. More thorough case detection.
iii. Case detection in untouched leprosy pockets.	iii. More frequent case detection.
iv. Belated case detection.	iv. Better community awareness and health staff training concerning leprosy.
v Failure to assess all new patients for disabilities (Grade II)	v. Failure to assess all new patients for disabilities (Grade I)
vi High rate of Lepra reaction.	vi Low rate of reaction cases.

Disability proportion is a highly relevant indicator as the prevention of disabilities should be one of the major objectives of a leprosy control programme. It gives an indication. about delay before diagnosis also. A stable proportions of new patients with grade II disabilities helps to confirm that the trend of case detection is good proxy of the trend in incidence.

b) <u>MB Proportion</u>: - It denotes the percentage of MB cases among the total number of new leprosy cases detected during the reporting year. Since 1997, every one who shows more than five anaesthetic hypo-pigmented patches in addition to those who have positive skin smears are considered MB cases.

As the people with MB leprosy are considered to be more infectious and this more likely to be responsible for leprosy transmission, it is important to know how many of the newly detected cases fall into this category. It is also necessary for calculating drugs requirement.

How to calculate –

Number of MB cases among newly detected cases x 100
Total number of new cases detected

Interpretation:

The MB proportion can vary from place to place. It is, therefore, impossible to state what a 'normal value' should be. However, some general trends can be described that are observable at different stages of leprosy control programme.

i.   The proportion of MB cases among newly detected cases with leprosy is usually high at the beginning of the program or in the population recently covered by leprosy control services. This is because MB cases will have self accumulated over the years, whereas proportion of PB cases will have self healed and thus will no longer present any sign of active disease when the programme starts. After some years of the programme implementations, the MB proportion usually stabilizes at a lower level.

ii.   In view of the fact that Multibacillary Leprosy usually occurs in the older age group, in the declining stages of the Endemicity more of the incidence cases will tend to be Lepromatous leprosy (MB) due probably to two factors –

(a) The long time it usually takes for these cases to be clinically manifest after infection.

(b) Occurrence and crowding of the cases in the advancing age groups due to a genetic improvement of the younger cohorts.

iii.   Since MB leprosy is usually less frequent among women and children, its proportion will be affected by age and sex of the population targeted for case detection.

iv.   In companion with self reporting cases, people whose leprosy has been detected as a part of active campaign are more likely to be PB, some of them would otherwise self heal, while others would shift to MB disease.

v.   Thus, factors influencing the MB proportions are:

Increased by	**Decreased by**
i. The start of leprosy control programme	i. A shift from initial phase to intermediate leprosy control
ii. Wide definition of an MB case	ii. Narrow definition of an MB case.
iii. A shift form active to passive case detection.	iii. Active case detection including school survey.

c.) Child proportion: It denotes the percentage of children among all new cases detected during the reporting year. A high child proportion may be a sign of active and recent transmission of the disease. It is thus an important epidemiological indicator. The child proportion (rather the number of new PB and MB children) is also valuable for calculating drug requirements.

How to calculate –

Number of Children(<15 yr age) among new cases detected   x   100

Total number of new cases detected

Interpretation:

At the beginning of leprosy control programme, an accumulated backlog of adults and elderly with leprosy, containing a high proportion of disabled and MB cases, will be detected. By contrast, the child proportion is low at the beginning of a programme. Subsequently it tends to stabilize at a higher level. When the transmission in decreasing among the general population, it is to be expected that fewer and fewer children will develop the diseases. The child proportion should therefore decrease. This is, however, a very slow process.

Certain operational factors can also affect the child proportion:

i.   Greater thoroughness in case detection, such as school survey, will increase the proportion, through inclusion of many children with self healing PB leprosy that otherwise would not have been detected.

ii.   Proportion will decrease as a result of case detection in previously untouched leprosy pockets, as this will reveal a backlog of cases.

iii.   Increasing immunity among the population as a result of natural factors such as natural selection or immunity induced by other mycobacterial infections such as Tuberculosis or of BCG vaccination.

iv.   Factors influencing the child proportion can be summarized as below:

Increased by	Decreased by
i. A shift from the initial phase to the intermediate phase of leprosy control.	i. A shift from the intermediate phase to the elimination phase of leprosy control i.e. decreasing transmission.
ii. Greater thoroughness in case detections.	ii. Case detection in untouched leprosy pockets.
iii. Active case finding including school surveys.	iii. Increased immunity of the population on account of BCG vaccination and to other mycobacterial infections.