COMMITTEE 5: WORKSHOP ON EPIDEMIOLOGY AND LEPROSY CONTROL

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Significant progress has been achieved in our understanding of the epidemiology of leprosy since the last International Leprosy Congress. This has resulted in striking changes in the classical strategy for leprosy control which was previously based on dapsone monotherapy.

Epidemiology

Magnitude of the problem. There has been no appreciable change in the global estimates of leprosy during recent years.

Transmission. The importance of airborne spread as one of the methods of transmission of *Mycobacterium leprae* has gained wide acceptance. The viability of *M. leprae* outside the human host for at least ten days has now been firmly established. The role of paucibacillary cases in the transmission of *M. leprae* has not yet been clarified. Similarly, the importance of finding acid-fast bacilli (AFB) in the nasal mucosa and the skin of individuals with no clinical disease poses the question of the carrier state in leprosy and requires elucidation.

Mycobacteria indistinguishable from *M. leprae* have been identified in the environment. Isolation of similar organisms from animals, with or without a leprosy-like disease, raises the question of host specificity of *M. leprae* to man.

Immuno-epidemiology. Significant advances have been achieved in the development of immunological tools for the recognition of *M. leprae* infection. The FLA-ABS test, the ELISA technique using phenolic glycolipid antigens, and inhibition assays based on monoclonal antibodies deserve special mention. Recent studies with currently available tests provide strong presumptive evidence that the incidence and prevalence of *M. leprae* infection far exceeds clinical leprosy in endemic areas. The availability of a sensitive and specific test which is feasible under field conditions to identify *M. leprae* infection is an urgent requirement for the proper understanding of the epidemiology of leprosy and the effects of control measures.

Genetic factors. Data on family segregation analyses of HLA provide evidence of some genetic involvement in tuberculoid and perhaps also lepromatous disease response. Further studies are required in this direction.

Drug resistance. Secondary dapsone resistance has been reported in more than 25 countries, and its prevalence is steadily in-

creasing. Primary dapsone resistance is also being reported with increasing frequency from several countries. Similarly, there have been reports of *M. leprae* showing resistance to rifampin and to other drugs.

Indicators of declining trends. Indicators of declining trends have now been identified by studies from Norway, Japan, The Philippines, and Venezuela, based on the fact that the decline in incidence rates has been paralleled by a change in the distribution of age at onset towards older age groups. The usefulness of such indicators needs to be further evaluated.

Leprosy control

Multidrug therapy. Two threats to the successful implementation of the classical strategy for leprosy control are the widespread emergence of dapsone-resistant strains of *M. leprae* and the problem of persistence of bacilli. The best way to prevent the spread of dapsone-resistant leprosy is to use multidrug therapy. Only four drugs can be recommended for combined therapy: rifampin, clofazimine, dapsone, and prothionamide/ethionamide. The WHO Study Group on the Chemotherapy of Leprosy for Control Programmes in 1981 recommended combined therapeutic regimens for the treatment of both multibacillary and paucibacillary leprosy.

While this workshop endorses the principles underlying the use of multidrug therapy in leprosy, based on the WHO recommendations, it also recognizes the fact that the schedules adopted by different countries vary in details. All regimens need to be evaluated with special emphasis on relapse rates, occurrence of reversal reactions, side effects of drugs, and operational feasibility. Reactions should be clearly distinguished from relapses in such evaluations. The workshop recommends the development of a simple serological test to monitor the success of treatment.

Strengthening the infrastructure. It is now essential to perform bacteriological examinations and to classify patients correctly since drug regimens are different for multibacillary and paucibacillary leprosy patients. The critical factor will be the flexibility of the treatment delivery system which should be tailored to meet the individual needs of the patients. Continuity, regularity, and completion of chemotherapy will be the keys to the success of the new strategy. The logistics of drug availability and their supply to the periphery and the retraining of staff to cope with their increased responsibilities need to be adequately strengthened. Regularity of treatment, completion of treatment, and duration of surveillance should be defined in the context of implementation of multidrug therapy. Patients should be considered to have completed treatment if they have taken six supervised monthly doses within a period of nine months in paucibacillary leprosy, and 24 supervised monthly doses within a period of 36 months in multibacillary leprosy. It is also recommended that surveillance should be continued for at least two years for paucibacillary patients and for five years for multibacillary patients, after completion of the course of treatment.

A patient who has been absent for one calendar year may be considered to be "out of control."

Information system. A suitable recording, reporting, and information support system, based on the OMSLEP pattern, should be designed and used. The information requirements at various levels of the health care delivery system must be explained to the personnel so that the reasons for the collection of data become meaningful to them. Completeness of case ascertainment should be an area of priority, and special attention must be given to the problems of underreporting and multiple registration. Simple and robust indicators for epidemiological surveillance and operational monitoring of control programs should be developed and applied. It is recommended that whenever statistics are quoted, they should include a precise description of their derivation. It is further recommended that patients on treatment be considered separately from those under surveillance.

Primary health care approach. In endemic areas with integrated health services, the full resources of the primary health care delivery system must be mobilized to implement and support the program so that its optimum potential can be put to maximum utilization. Every effort must be made to promote community involvement. The key

factor in the primary health care approach is its focus on the consumers of the health care system. Practical methods to promote awareness and to generate community involvement need to be identified through field-oriented studies.

Urban leprosy control. In the endemic countries, increasing urbanization has resulted in the emergence of leprosy as a major public health problem in the towns and cities. Perspective planning should therefore emphasize the formulation of urban leprosy control programs in order to meet the challenges that lie ahead.

Primary prevention. Non-availability of an effective and practical method of specific protection has been a major impediment in the control of leprosy. Although moderate efficacy of chemoprophylaxis with dapsone and acedapsone has been established under trial conditions, mass chemoprophylaxis is not operationally feasible in a service program. However, in this context, chemoprophylaxis with a single dose of rifampin needs to be investigated.

An armadillo-derived, killed-*M. leprae* vaccine has been shown to confer protective immunity in animal models. Its evaluation in humans is now being undertaken through small-scale studies. Vaccines derived from related mycobacteria are also being developed. It will, however, be several years before accurate information regarding the efficacy of these vaccines can be established.