REPORT

INTERREGIONAL WORKSHOP ON
MULTIDRUG THERAPY REGIMENS FOR LEPROSY CONTROL

Manila, Philippines
25 - 29 October 1984

Manila, Philippines
August 1985
INTERREGIONAL WORKSHOP ON MULTIDRUG THERAPY REGIMENS FOR LEPROSY CONTROL

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NOTE

The views expressed in this report are those of the participants in the Interregional Workshop on Multidrug Therapy Regimens for Leprosy Control and do not necessarily reflect the policies of the World Health Organization.

This report has been prepared by the Regional Office for the Western Pacific of the World Health Organization for the governments of Member States in the Region and for the participants in the Interregional Workshop on Multidrug Therapy Regimens for Leprosy Control, which was held in Manila, Philippines, from 25 to 29 October 1984.
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1. SUMMARY

The Interregional Workshop on Multidrug Therapy Regimens for Leprosy Control was held on 25-29 October 1984. It had as its goals a review of the rationale and need for multidrug therapy (MDT) in leprosy control and the planning for implementation of this strategy through primary health care in endemic countries in Asia. Particular attention was given to the identification of constraints and feasible solutions and an appropriate monitoring system. After a series of presentations relating to these topics and reports from various countries in the Western Pacific and South East Asia regions, the participants were divided into four working groups to develop guidelines for the implementation of multidrug therapy in national leprosy control programmes in these two regions. The findings may be summarized as follows:

(1) A detailed plan of action is necessary before the multidrug treatment is implemented.

(2) A national level leprosy coordinating board or equivalent body should be set up at an early stage to oversee the programme.

(3) The leprosy programme should be integrated into the general health services when the incidence is manageable by peripheral health workers.

(4) Voluntary agencies and international organizations should be involved at an early stage.

(5) In most countries, multidrug therapy should preferably be introduced in a limited area at first to gain experience and identify problems in programme implementation.

(6) The regimens recommended by the WHO Study Group on Chemotherapy of Leprosy for Control Programmes (TRS 675, 1981) should be followed.

(7) Community participation and support for the programme are vital for its successful implementation.

(8) Health education is an important component at all stages of the programme.

(9) Efforts to reduce the stigmas of leprosy are an essential part of the control programme.

(10) Patient education and other approaches to improve participation in treatment are critical to the success of multidrug therapy.

(11) Defaulter retrieval must be initiated as early as possible if the control programme is to succeed.
(12) Adequate personnel should be available from the start of the programme.

(13) Adequate training of all personnel involved in the programme is vital to its success.

(14) A working manual is essential for efficient programme implementation and should be prepared prior to the commencement of the project.

(15) Case detection is vital but the methods to be employed will depend on the circumstances.

(16) A carefully planned referral system for severe reactions, suspected drug toxicity, etc. should be in place before the start of the programme.

(17) Adequate and continuously available drug supplies are essential and the programme should not commence until these are assured.

(18) Good record keeping is essential for proper monitoring and should cover all aspects of patient care.

2. INTRODUCTION

During the meeting of the Study Group on Chemotherapy of Leprosy for Control Programmes, held in Geneva in October 1981, the review of the global leprosy situation indicated that, while secondary dapsone resistance was rapidly increasing, there was evidence that primary resistance was also emerging as a serious problem. The Study Group therefore recommended the use of multidrug regimens for the treatment of both multibacillary and paucibacillary leprosy patients.

In view of the urgency of the situation, it was considered imperative to promote the implementation of these new regimens at the country level as expeditiously as possible. However, appropriate planning at the country level is essential if implementation of this new technology is to succeed.

The Regional Office for the Western Pacific of the World Health Organization and the Sasakiwa Memorial Health Foundation, Japan accordingly co-sponsored an interregional workshop on the implementation of multidrug therapy in the leprosy control programme. The workshop was held in the Western Pacific Regional Office in Manila from 25 to 29 October 1984, and was attended by participants from 22 endemic countries in both the South-East Asia Region and the Western Pacific Region of WHO. Representatives of WHO Headquarters, WHO Regional Office for South-East Asia and international non-governmental organizations assisting control programmes in these two regions also attended the workshop. (See Annexes 7 and 8, Agenda and List of Participants).
3. OBJECTIVES

The workshop had the following objectives:

3.1 General

To discuss the constraints, understand the rationale of multidrug therapy and to appreciate the need for its urgent implementation in leprosy control programmes at the country level.

3.2 Specific

To enable the participants:

(a) to understand the rationale for multidrug therapy and appreciate the need for its urgent implementation in leprosy control programmes;

(b) to formulate a plan of action for the implementation of WHO-recommended multidrug regimens through the primary health care approach in endemic countries in Asia. Particular attention should be given in this context to the identification of (a) constraints and feasible solutions, and (b) an appropriate monitoring system.

4. INAUGURATION

The workshop was formally inaugurated by Dr H. Nakajima, Regional Director of the WHO Regional Office for the Western Pacific on 25 October 1984 at 9 a.m. In welcoming the participants, Dr Nakajima stressed that the problem of dapsone resistance had recently created serious operational difficulties, which continued to hamper the successful implementation of the existing strategy for leprosy control. It was necessary to urgently implement the multidrug therapy regimens recommended by the WHO Study Group in Geneva in 1981. In this context, he identified the need for intensification of case-finding, effective laboratory support and an efficient system of data collection and recording to promote the effective monitoring of programme implementation. That would involve sound planning, manpower development and increasing community involvement to ensure success in implementing the strategy. He stressed that the implementation of the programme must be consistent with the primary health care approach, in the context of the global strategy of health for all by the year 2000.
Professor M. Ishidate, Chairman of the Board, Saaakawa Memorial Health Foundation (SMHF), in welcoming the delegates, emphasized the continuing interest of the Foundation in the effective chemotherapy and control of leprosy, including manpower development. On behalf of SMHF he expressed his pleasure at being given the opportunity to co-sponsor the workshop with the World Health Organization.

The participants, observers from voluntary organizations, temporary advisers, consultants and personnel of the secretariat then introduced themselves at the plenary session.

The following participants were elected officers for the workshop:

Chairman - Dr Li Huan-ying, China
Vice-Chairman - Dr K.C. Das, India
Rapporteurs - Dr N.R. Honey, Hong Kong
- Dr S.Y. Anayat, Bhutan

Dr Li Huan-ying, in her opening remarks, stressed the importance of leprosy as a major public health problem in the tropical and sub-tropical countries of both the South-East Asia and Western Pacific Regions which were represented at this workshop. She drew attention to the multidrug therapy regimen recommended by the WHO Study Group in 1981, and emphasized that the workshop was a unique opportunity to present experiences and exchange ideas regarding the implementation of the new strategy for the treatment of leprosy. She hoped the workshop would give the participants renewed confidence to meet the challenges which lay ahead.

5. METHODOLOGY OF THE WORKSHOP

The workshop consisted of plenary sessions during which the regional profile of leprosy in the South-East Asia and Western Pacific Regions, and the situation of leprosy in the 22 countries represented were reviewed. The constraints and bottle-necks of programme implementation were identified and discussed, especially the implementation of multidrug therapy.

The speakers then presented various papers relating to the following topics, which were accompanied by extensive discussions:

(a) leprosy control in a global context;
(b) use of multidrug therapy in leprosy control;
(c) technical considerations in the use of multidrug therapy;
(d) planning considerations in multidrug therapy;

(e) primary health care approach in multidrug therapy implementation; and

(f) the role of WHO, national governments and non-governmental organizations in hastening the promotion of programme implementation.

The workshop coordinator introduced "Lepraland" to the participants for the work group discussion. He mentioned that the Lepraland model exemplified the successful implementation of leprosy control in endemic countries in Asia. The model country was a small one with eight health districts and a prevalence of leprosy that varied from just over 1 per 1000 in some parts to over 10 per 1000 in others. The three countries surrounding it had similar leprosy problems. The country was viewed from the vantage point of the year 2000 when they had successfully controlled leprosy; the process by which they had achieved success was outlined. It was noted that, in the 1970s and early 1980s, the prevalence of leprosy had been rising and primary dapsone resistance had been found more frequently. The situation in the surrounding countries was similar. It was at this time that Lepraland had decided to allocate sufficient resources to undertake a well-organized large-scale control effort utilizing multidrug therapy. They had begun by developing a detailed formal plan of action, which was useful in helping them obtain sufficient resources for the programme, mainly internally but also through some assistance from voluntary agencies and international organizations. A National Leprosy Advisory Board had been set up to oversee the programme and update the plan of action as necessary. The programme had begun by establishing exact prevalence figures so that the approximate quantities of personnel, transportation, drugs, etc. needed for the programme could be determined. This had been followed by an intense training phase for all involved in the programme. The programme had then been initiated in several areas and extended to the entire country as rapidly as possible. Several problems had been encountered but these were eventually overcome and the programme overall had been able to reduce the prevalence to around 0.1 per 1000 by the year 2000. Based on the lessons learnt from Lepraland's success, even though it was imaginary, control efforts could be incorporated into any leprosy programme.

After an introduction to the group discussions, the participants were divided into four groups to discuss in detail the following topics and submit their recommendations for review at the plenary session:

Group I - Training requirements for the introduction of multidrug therapy

Group II - Case detection and case holding

Group III - Operational aspects of implementation of multidrug treatment

Group IV - Planning, monitoring and evaluation of control programmes utilizing multidrug therapy
The group reports were discussed in detail at the reconvened plenary session, amendments were made in accordance with the suggestions of the participants, and the consolidated group report was unanimously adopted by the workshop.

Prior to the closing ceremony, the proceedings of the workshop were reviewed and followed by the presentation on the "Perspective of multidrug therapy in leprosy control".

6. CONSTRAINTS ON THE IMPLEMENTATION OF MULTIDRUG THERAPY

From the regional profiles and country reports, the following constraints were identified as impeding programme implementation at the country level:

(a) lack of knowledge and skills in programme management, especially pertaining to integration with the general health services;

(b) shortage and maldistribution of trained manpower due to rapid turnover;

(c) shortage of drugs and bottle-necks in their procurement, stocking and the logistics of their delivery to the peripheral areas;

(d) operational and organizational inadequacies;

(e) ineffective laboratory services at the periphery;

(f) shortage of transport, which impedes mobility of personnel;

(g) lack of effective supervision and coordination;

(h) inadequate training of the field staff;

(i) poor planning and inadequate definition of priority;

(j) lack of financial resources.
7. PLANNING FOR MULTIDRUG THERAPY

7.1 Plan of action

A detailed plan of action should be formulated before the MDT programme is implemented. This should be done in collaboration with those concerned with service delivery to the population, i.e. non-governmental agencies and programme managers. Thus, the plan of action should contain the following elements:

7.1.1 Situational analysis of the country

A very brief description of the country's health service, policy of leprosy control, community participation and involvement including non-governmental agencies.

7.1.2 Leprosy situation

A review of the leprosy situation, which should include the following:

(a) case load, distribution according to geographic, type of the disease and age group

(b) prevalence rate, incidence rate

(c) structure of the leprosy service, organizational structure, staffing and facilities

(d) treatment policy and referral services

(e) performance of the service in terms of coverage, scope

(f) constraints and their analysis.

7.1.3 Setting objectives

Objectives should be directed towards improvement of the situation. General objectives should include reducing the period of infectiousness, preventing drug resistance, shortening duration of treatment and improving the infra-structure of the existing leprosy control service to facilitate effective MDT implementation.

Specific objectives should be adopted and directed to identified problems and constraints in order to attain improvement.

Objectives set must be achievable in the light of existing conditions such as resources and population attitude. Specific objectives must contribute to or facilitate the attainment of the general objective.
7.1.4 **Target setting**

The target set for MDT implementation should follow the priorities as identified, taking into consideration the expected load of the existing delivery system. Example of a priority target - all multibacillary cases, all cases of leprosy in a particular area or cases among the children.

7.1.5 **Strategy for programme delivery**

A detailed operational procedure for programme implementation should be prepared and agreed. This should include specific procedures for strengthening the infrastructure to cope with the complexity of the new technology, the method of drug allocation, delivery and distribution, criteria for clinical assessment, follow-up, referral procedures and release from treatment. One vital activity is the recording and reporting of cases, including monitoring. Specific responsibility of the health personnel, the non-government agencies and the community should be clear. A manual of procedures for the field personnel should be available and serve as a reference in case of doubt in the absence of the supervisor. Treatment and laboratory procedures must be included.

7.1.6 **Scheduling of activities**

Day-to-day programme activities should be prepared in consultation with the supervisor. Timetable for phasing implementation will be of help. Scheduling of activities will depend on the strategy of programme implementation. This may be different when the national programme is implemented as an integrated, partially integrated or a vertical programme.

7.1.7 **Monitoring and evaluation**

Built-in monitoring and evaluation must be incorporated in the action plan. This will be useful in directing activities or changing the strategy to attain the objectives. The forms together with content must be carefully prepared to capture the information relevant for programme management and technical improvement.

7.1.8 **Budget**

A detailed budget must be part of the action plan. It must be specific to support the planned activities when needed. If possible, a budget flow chart must be available to ensure the timeliness and amount needed.

7.1.9 **Allocation of resources**

The allocation of resources must include the manpower, facilities and budgets. It must depend on the target activities, case load and available support activities from the existing health service delivery system.
7.1.10 **Estimation of drugs, equipment and supplies**

The quantity of drugs, supplies and the kind of equipment will depend on case load, priority, and strategy to be adopted. Equipment for the laboratory to support case finding and transport to ensure mobility of the drug distribution service, supervision, retrieval of defaulters should be included to ensure satisfactory level of drug intake, case finding, case holding and follow-up activities.

7.2 **National leprosy coordinating body**

A national leprosy coordinating board or committee should be established before the commencement of the project, in order to promote programme implementation. Its terms of reference should include policy guidance, mobilization of resources, and periodic appraisal of performance. In countries where there are existing bodies for health development, strengthening these bodies is preferable to creating a new one. However, a great deal of effort must be made to orient and convince the existing board of the need for MDT implementation in the leprosy programme.

7.3 **Priorities**

Clearly defined priorities and targets must be established for programme implementation. When there are constraints affecting the financial and manpower resources, such as shortage of drugs, priorities must be set so that available resources are put to optimal use. Such priorities must be decided at the country level. Multibacillary patients are of the highest epidemiological importance and should be the principal target for multidrug therapy.

In large countries, geographical phasing of programme implementation may also be necessary. A limited but representative contagious areas must be selected for the introduction of multidrug therapy to gain operational experience and identify bottle-necks in recognition of the limitations of manpower, transport and drugs. Once the programme has been successfully implemented in this area, expansion to other areas should be undertaken as rapidly as possible, until coverage of the whole country is achieved. The speed of expansion will depend on the constraints of workload and available personnel but it should begin as early as possible and preferably within one to two years.

Re-evaluation of the original area of implementation is essential once the coverage of the country is complete in order to:

(a) assess the epidemiological impact of the programme on disease transmission;

(b) ensure that effective surveillance is being maintained.
7.4 Case detection

Case detection will continue to be an integral component of the revised strategy and will have to be intensified in all areas. Multibacillary patients, i.e. those in the BB-LL portion of the leprosy spectrum, are excretors of M. leprae and have a greater potential for disease transmission. They thus have a clear priority for chemotherapy and should be the principal target of case finding.

Both active and passive methods may be employed for case finding. Active methods remain the basic approach and include total population surveys, contact surveys, selective surveys e.g. school surveys and focal surveys. Multipurpose surveys, using well trained personnel, can be a very useful and cost-effective method of detecting leprosy, including a wide range of other communicable diseases.

Passive methods of case detection involve intensive health education which increases community awareness and leads to symptom-motivated patients presenting voluntarily for treatment. Such patients are more likely to be regular during a prolonged treatment schedule. Since increased voluntary reporting is directly related to community awareness of the disease, it is a sensitive parameter for monitoring the efficiency of health education activities. It is also a useful indicator of the quality of the peripheral health services and the reputation it enjoys among the community.

The choice of a strategy for case detection will depend on the prevalence rate, nature of terrain, density of the population, urban/rural location and resource constraints. In low endemic areas, the most effective and practical method of case-finding is the examination of household contacts of patients and of persons reported to be suspected cases. When prevalence rates are higher, selective surveys of school children and other selected population groups may be necessary. Total population surveys are recommended only for hyperendemic areas since they are expensive to perform and time-consuming.

When low cost, sensitive and specific immunological tests are developed which are feasible to perform under field conditions, they will be useful to identify high risk individuals.

7.5 Laboratory services

Bacteriological examination is an essential prerequisite for the introduction of multidrug therapy. It is the most sensitive and objective method of assessing clinical response and monitoring the progress of multibacillary patients on combined chemotherapy. It is, therefore, essential to organize an efficient service for taking slit skin smears and their processing, to ensure uniformity and reliability of smear microscopy.

Essential laboratory investigations must also be available when clinical screening of patients indicates the need for such investigations.

Laboratory facilities must, therefore, be strengthened to ensure minimal operational standards by provision of suitable equipment and reagents, retraining of staff and continuous monitoring and supervision.
7.6 Treatment

7.6.1 Multibacillary leprosy

Multibacillary leprosy includes both lepromatous (L) and borderline (B) in the Madrid classification and LL, BL and BB leprosy in Ridley and Jopling's classification.

**Recommended standard regimen:**

- **Rifampicin** - 600 mgm once monthly supervised
- **Dapsone** - 100 mgm daily self-administered
- **Clofazimine** - 300 mgm once monthly supervised and 50 mgm daily self-administered

Every effort should be made to persuade patients to agree to treatment with clofazimine, since the acceptability of ethionamide/prothionamide has not yet been established. Where clofazimine is totally unacceptable owing to the coloration of skin lesions, its replacement by 250-375 mgm self-administered daily doses of ethionamide/prothionamide should be considered. The dose should be proportionately reduced for children and adults with low body weight.

7.6.2 Paucibacillary leprosy

This includes indeterminate (I) and tuberculoid (T) leprosy in the Madrid classification and I, TT and BT leprosy in Ridley and Jopling's classification.

**Recommended standard regimen:**

- **Rifampicin** - 600 mgm once monthly supervised for 6 months
- **Dapsone** - 100 mgm daily, self-administered for 6 months

If treatment is interrupted, the regimen should be recommended where it was left off to complete the full course. Patients should be considered to have completed treatment if six supervised monthly doses are taken within a period of 9 months. Treatment can then be discontinued provided:

- there is no extension of existing lesions
- there is no occurrence of new lesions

If relapse occurs, the treatment regimen should be restarted. Should reversal reactions occur during the course of chemotherapy, the regimen should not be interrupted.

The dose should be appropriately reduced in children and adults with low body weight.
7.6.3 Treatment delivery

A more sustained effort is now necessary to ensure regularity of drug intake. The flexibility of the treatment delivery system must be tailored to meet the individual needs of patients. Regularity of drug intake and completion of chemotherapy are the keys to the success of the new strategy. A careful and well planned referral system to the appropriate level of health care must be established for the investigation of drug allergies and toxicities, including the treatment of reaction.

7.7 Case holding and compliance

Irregularity or premature cessation of chemotherapy has serious consequences not only for the patient but for the community as a whole.

Defaulter retrieval action must be initiated as early as possible when the patient fails to report for treatment. The necessary precautions to handle this should be a built-in element of the treatment organization. Proper documentation is necessary to identify defaulters and, once identified, action taken to retrieve them may be direct or indirect. Direct action implies personal contact with the patient and involves visits by auxiliary medical staff. This is the most effective method to remotivate patients to continue regular treatment. Indirect action consists of letters and messages written or verbal. This is more easily performed and less expensive but is usually less effective than direct action.

The first contact with the patient is the most important factor in generating confidence and motivating his regular attendance for treatment. He should be given adequate information regarding:

- nature of the illness
- medication to be used
- the need for regular treatment
- approximate duration of treatment
- possible side-effects and adverse reactions to drugs
- the results that can be expected.

Health education of the other members of the family will also generate family pressures to promote compliance.

Other factors which can contribute to improve patient compliance are:

- a high quality reliable services
- accessibility of clinics
- convenient clinic schedule
full primary health care
- an effective treatment of complications
- an efficient referral system
- cordial staff/patient/family relationships.

Patients should be provided with suitable containers for the drugs supplied. Home visits for tablet counts and testing random urine samples for dapsone are useful methods to identify non-compliers, who should then be given special and intensive health education.

7.8 Primary health care approach

Integration of the leprosy control programme into the general health service should proceed as expeditiously as possible with wisdom and careful timing. It should ensure that the leprosy control service is strengthened, and does not deteriorate in scope and function. It must be appreciated, that while a vertical system for leprosy control can function within the framework of the primary health care system, integration is more desirable for effective services delivery.

Community participation in support of the programme is vital for its success. The community should be involved in planning and decision making at the peripheral level to promote such participation. This could be done through women's organizations and other peer groups within the community as well as by community leaders, both formal and informal.

7.9 Health education and social stigma

Health education will continue to remain the sine qua non for the success of the leprosy control strategy or any other health programme. The challenge today is for more dynamic health education, based not on teaching people to utilize available resources as passive receivers, but on the fact that individuals, regardless of their level of education, are capable of making suitable decisions regarding their own health, when properly informed and motivated. This can be achieved by person-to-person communication, group talks, puppet shows, use of the mass media, posters, booklets, etc.

The stigma of this disease continues to hamper control efforts as it has for several decades. Attempts to reduce or eliminate it are therefore vital to the successful use of multidrug therapy. In addition to general health education measures to eliminate misconceptions among the medical personnel and general public about leprosy, discriminatory laws against these disease, if they exist, should be repealed. The gradual elimination of special institutions for the treatment of leprosy patients, and their integration into the general health services as the prevalence declines, should be the ultimate objective of the leprosy control service.
7.10 Information support, monitoring and evaluation system

A simple and uniform information support system must be designed, which is appropriate and concise, for the revised strategy. Clinical, operational and epidemiological information should be standardized to permit valid comparisons of the control measures taken in different areas and countries. A modification of the OMSLEP system now in preparation for implementing multidrug therapy may be suitable for most control programmes.

The following prerequisites are essential for an effective assessment to be undertaken:

- relevant baseline information
- quantitatively defined objectives
- established priorities
- valid, simple and relevant information support system.

Assessment includes the following distinct activities:

(a) epidemiological assessment - identifies the kind of the disease under the influence of control measures;

(b) operational assessment - evaluates the degree of success achieved in organizing leprosy control activities.

Simple indicators should be identified at the planning stage itself for both epidemiological and operational assessment. Some essential indicators which may be useful for both epidemiological and operational assessment are:

(a) prevalence rate of registered cases;

(b) proportion of registered among estimated cases;

(c) case detection rate;

(d) proportion of MB patients among newly detected cases;

(e) proportion of children (0-14 years) among newly detected cases;

and

(f) proportion of patients with disabilities among newly detected cases.

7.11 Manpower development and training

Manpower development will involve training and retraining of staff health personnel, including leprosy staff at various levels, according to job-oriented tasks which will have to be redefined in accordance with the revised multidrug therapy strategy. The training must be a planned and
organized part of the programme and should take into consideration new knowledge and technology on traditional practices that are useful and beneficial. It should prepare each type of personnel to perform clearly defined activities and functions.

The following aspects should receive particular attention:

(a) Training in case detection, case holding, classification and management, including the detection and handling of side effects of the drugs being given, reactive episodes, etc. Emphasis should also be placed on the criteria for relapse.

(b) Training in the techniques of patient and general health education.

(c) Instruction of laboratory personnel in testing procedures for the detection of drug toxicity.

(d) Training of skin smear technicians in the taking, staining and interpretation of skin smears.

(e) A quality control scheme. This should be an integral part of any control programme and should include periodic retraining of personnel where any problems are found.

(f) Training in epidemiology with emphasis on the collection, interpretation and utilization of data for the control programme.

(g) Training of programme managers. This is vital and the type of training they receive will depend on the scope of their assignment. Those who work in countries where the leprosy problem is relatively minor will generally receive training in leprosy control as part of their overall instruction as managers for the primary health care systems. Those working in countries with a large number of leprosy cases, however, will require a much stronger orientation toward leprosy control in their training.

(h) Regional training centres may be useful and cost-effective wherever these can be set up.

(i) Programme managers and planners from countries within a region may benefit from meeting periodically to assess and exchange views and experiences on the implementation of multidrug therapy.

A working manual is absolutely necessary for the programme and should be carefully prepared prior to the commencement of the projects, possibly with the assistance of a WHO consultant. It should state the national leprosy policy for multidrug therapy and should give full details of the procedures for implementing the multidrug therapy and the responsibilities of each level of worker. In addition to the detailed manual, there should be a simplified shorter version, with diagrams, suitable for paramedical workers which can be taken into the field.
Adequate and well trained personnel within the scope of the project should be available from the commencement of the programme.

7.12 Supervision and coordination

Supervision entails regular monitoring of the critical activities provided by the service. It stretches from the logistic of supplies to the management of patients. Supervision should be systematic and continuous and correct action must follow where indicated.

When the primary health care system is involved, coordination will be necessary to ensure that all the different components are in proper functional relationship with each other.

7.13 Drugs, equipment and supplies

The present approach requires a continuous supply of rifampicin, clofazimine, dapsone and ethionamide/prothionamide in adequate quantities. Drugs for anti-reaction treatment and other common ailments will also be necessary to ensure comprehensive health care, which alone can meet the highest expectations of leprosy patients and promote regular treatment.

Transport, microscopes and other equipment will also be necessary at the peripheral level to ensure programme implementation.

The logistics of their procurement, storage and delivery to the periphery will require careful planning. It was emphasized that at least 6 months' supply of drugs should be stockpiled before commencement of the programme and guaranteed replenishments should be available for a minimum period of two years. In developing countries external agencies who could provide drugs should be tapped to ensure adequate supply.

7.14 International agencies and non-governmental organizations

International agencies and non-governmental voluntary organizations both national and international, have a vital role to play in the success of the new strategy. They should be involved in the programme at the planning stage itself and encouraged to supply technical and logistic support as far as possible. Good coordination should be established among those involved in service delivery to delineate their responsibilities to prevent duplication and waste of efforts and resources.

7.15 Research

Operational research studies designed to develop and improve case finding, drug delivery and patient compliance, including alternate approaches to leprosy control should be energetically pursued and actively encouraged. This could be done in collaboration with external agencies.
8. CHECKLIST FOR IMPLEMENTING A PLAN OF ACTION TO INTRODUCE MULTIDRUG THERAPY

8.1 Select an area (e.g. province or district) in order to identify problems in the implementation of MDT. This area should preferably be representative of the whole country.

8.2 Discuss with the local authorities the importance of multidrug therapy in order to secure political commitment and support.

8.3 Decide which health unit(s) will be selected for implementation of multidrug therapy.

8.4 Prepare the operational manual for introduction of multidrug therapy including systematic recording and reporting and formulation of job descriptions for all levels of staff concerned.

8.5 Undertake selection and training of staff of all levels.

8.6 Establish the line of control together with supervision.

8.7 Upgrade or establish the skin smear service, including systematic quality control.

8.8 Secure an adequate system of supplies of drugs and equipment and ensure proper storage and distribution.

8.9 Ensure transportation for the staff.

8.10 Remove from registration those patients who are "cured" or disease arrested (according to national criteria).

8.11 Identify those patients eligible for multidrug therapy and categorize them into PB and MB patients.

8.12 Start a comprehensive health education programme directed to the patients, their families and the community.

8.13 Start with multidrug therapy for the selected patients according to the priorities previously decided.

8.14 Establish an adequate defaulter retrieval system.

8.15 Undertake a periodical assessment of the patients as indicated in the manual.

8.16 After the multidrug therapy programme has been successfully implemented, extend the programme to other operational areas (the original area can subsequently be used for training of the staff of other areas).
SUMMARY OF PRESENTATIONS MADE AT THE
INTERREGIONAL WORKSHOP ON MULTIDRUG THERAPY
FOR LEPROSY CONTROL, 25-29 October 1984*

1. Leprosy control in a global context, by Dr. K. Lechat

Dr. Lechat, in his keynote address, drew attention to the importance
and priority of leprosy as a public health problem. The world estimates of
leprosy patients continue to remain static at approximately 15 million, of
whom only 5.3 million patients have been registered for treatment according
to recent information. The major importance of leprosy is however, related
to the crippling deformities it causes and the unique psycho-social
dimensions of the disease. He emphasized that chemotherapy still continues
to remain the standard strategy for leprosy control. Recently, however,
dapsone resistance has emerged as a major constraint impeding the
successful implementation of leprosy control programmes. Secondary dapsone
resistance is now being reported from more than 30 countries, while primary
dapsone resistance is rapidly increasing in frequency in several countries.

Dr. Lechat therefore stressed the imperative need to introduce
multidrug regimens in accordance with the recommendations of WHO, without
further delay and a greater sense of urgency. He underlined the importance
of restructuring the programme and integrating its various components
within the framework of the primary health care system. This will not
always be easy as the present approach involves utilization of more complex
technology. It will therefore be absolutely essential to strengthen the
infrastructure, in order to ensure that an effective leprosy control
service is strengthened and fortified and does not deteriorate in scope and
function.

The need to evaluate and monitor control activities was also
emphasized, especially since new, more complex and more expensive
technology is not being utilized previously. This will require the use of
a simple and uniform information support system, and the identification of
appropriate indicators for both operational and epidemiological assessment
of leprosy control programmes. He emphasized the important role of
non-governmental organizations and international agencies in promoting
patient care and supporting leprosy control activities.

2. Use of multidrug therapy for leprosy control, by Dr. H. Sansarricq

Dr. H. Sansarricq, in his keynote address, explained how in
tuberculosis, well established concepts of drug resistant mutants in
relation to the size of the bacterial population have resulted in a more

*Original paper are available on request at WHO, WPRO.
logical approach to chemotherapy. In order to prevent the selection of drug resistant mutants, at least two bactericidal drugs should be used simultaneously. He however pointed out that the monitoring of chemotherapeutic effects in leprosy has serious limitations in contrast with tuberculosis, because of the inability to cultivate M. leprae *in vitro* and the limited sensitivity of the mouse foot-pad model in leprosy.

He then reviewed the achievements obtained with dapsone monotherapy over three decades, until resistance to the drug became a major problem. He identified the constraints recently being encountered in leprosy chemotherapy, i.e. the emergence and spread of both secondary and primary dapsone resistance and the phenomenon of microbial persistence in multibacillary leprosy.

He reviewed the other bactericidal drugs proposed in recent years, in addition to dapsone, as well as the present status regarding resistance to these drugs. He then discussed the standard regimens recommended by the WHO Study Group on Chemotherapy of Leprosy for Control Programmes (1981) and explained their rationale. These regimens are based on critical assessment of available information pertaining to the activity of bactericidal drugs in both patients and experimental models, including reasonable extrapolations when such data are lacking.

In conclusion, he emphasized that multidrug regimens should be implemented at the country level as expeditiously as possible, and briefly reviewed the technical and logistic requirements necessary for this purpose.

3. Recent developments in immunology, by Dr M. Abe and Dr P. Brennan

3.1 Dr Abe reviewed the role of serological tests as tools for monitoring multidrug therapy in leprosy. He stated that tests to measure CMI response were inadequate to monitor the effect of multidrug therapy in leprosy. However, tests to measure humoral immune responses, especially those specific for M. leprae, are useful for monitoring the effects of multidrug therapy. Serum antibodies are mainly contained in IgG and IgM immunoglobulins and are less frequently found in IgA immunoglobulins. IgG antibodies show higher values in lepromatous and borderline patients than in tuberculoid patients. IgA antibodies are, however, more frequently found in the saliva of tuberculoid patients than in that of lepromatous patients. The deficiency of salivary IgA antibodies in lepromatous leprosy can be explained by the neutralization which occurs with antigens discharged from the mucous membrane.

He stated that circulating antibodies against M. leprae are not bactericidal since the organisms are protected by the phagocytic membrane and bacterial cell wall.
Based on recent findings he proposed a scheme for humoral immunoregulatory mechanisms in leprosy. He emphasized that humoral immune responses in leprosy are complex and regulated by several mechanisms. They therefore cannot be measured by a single serological test. The first choice should be a test which is specific for *M. leprae* since antibody titres are parallel to the B.I.

3.2 Dr P. Brennan stated that leprosy is a spectral disease that presents a diversity of clinical manifestations. He emphasized that *M. leprae* is composed of many different antigenic determinants, which are present in three major classes of antigens: glycolipid, poly-saccharide and protein. Lymphocytes in the infected host react individually towards these epitopes. The one unique antigen that has so far been identified is phenolic glycolipid I. It is produced in abundance in infected tissues and 80% is found free and not associated with the bacilli. It has been implicated in both humoral and cell-mediated immunological aspects of leprosy. IgM antibodies to this glycolipid are present in the sera of most leprosy patients and accordingly it has found considerable favour as a solid phase antigen for the specific sero-diagnosis of leprosy.

Phenolic glycolipid I has also been implicated as a factor in the selected unresponsiveness to antigens of *M. leprae* seen in lepromatous leprosy patients. Since it is the only unique species of antigen demonstrated in *M. leprae*, recent experiments have explored the possibility that it might activate the suppressor cells from lepromatous patients. Based on these findings it is now possible to tentatively advance a model for the state of immunological unresponsiveness in lepromatous leprosy.

When *M. leprae* encounters a macrophage, it results in "presentation" of bacterial antigens and production of interleukin 1. T-cells specific for bacterial antigens are stimulated. Induction of effector cells takes place following a phase of T-cell proliferation and regulation. This involves a number of T-cell subsets and various other factors. In the end, a dynamic equilibrium between cell types allows net "help" or suppression to emerge.

One form of T-cell help is directed towards B-cells. If properly presented with antigen and non-specific factors (B-cell growth factor), B-cell proliferation eventually leads to antibody production.

T-cell help is also provided to other T-cells, one of which may be functionally called "delayed-type hypersensitivity T-cell (T dth). Once activated it may promote its own proliferation through IL-2 production. The population of T dth cells is responsible for initiating the events leading to inflammation and granuloma formation. A chain of other factors may result in differentiation to "activated" macrophages. In leprosy, this response gradually leads to clearing of infection although tissue damage may occur at the same time.
He emphasized that this scheme does not involve the major polysaccharide determinants or the specific epitopes within it. Even though much of this is conjecture, it is at least a working model to explain one of the most fundamental aspects of the aberrant cell mediated immune response in lepromatous leprosy.

4. Technical considerations on the use of MDT, by Dr M.F.R. Waters

Dr Waters stated that until recently the control of leprosy depended on active case finding, early diagnosis and long-term treatment with dapsone monotherapy, priority being given to lepromatous and borderline lepromatous patients. This strategy, which was initially satisfactory and was also cheap and safe, was now failing due to three main reasons:

(1) Poor compliance

Dapsone monotherapy had to be continued for perhaps five years in tuberculoid leprosy and for at least 20 years and often for life in lepromatous leprosy. The social stigma inhibited early presentation and regular attendance for treatment. Doctors also often interrupted dapsone therapy during reactive episodes, thereby inducing an iatrogenic fear of the drug. Compliance was therefore very often poor, even among those who collected their tablets and many patients eventually absconded.

(2) Dapsone resistance

This is now a major cause for concern in several endemic countries. The incidence and prevalence of secondary dapsone resistance is steadily increasing among treated LL and BL patients. When secondary dapsone resistance was first proved by Petit and Rees in 1964 from Malaysia, the prevalence was estimated at 0.2% and the incidence at 0.1% per annum. By 1973, the figure was 2.5% and 0.3% respectively, while in 1981 10.1% of all registered LL and BL patients in West Malaysia were dapsone resistant.

Dapsone resistance (DR) surveys based on sensitivity testing of M. leprae in mice have now been performed in at least 11 areas in nine countries. The prevalence has varied between 29 and 100 per 1000 lepromatous patients. DR relapses can occur even more than 30 years after the commencement of dapsone therapy.

Primary dapsone resistance is now being also increasingly reported from several countries. In the WHO THELEP trials in South India and in Mali, 37.5% and 35% respectively of newly admitted previously untreated lepromatous patients showed some degree of primary dapsone resistance.
(3) **Persistence of M. leprae**

A tiny sub-population of dapsone sensitive bacilli is able to survive despite many years of dapsone therapy in lepromatous leprosy, and can cause clinical relapse should the patient discontinue treatment. Such bacilli are considered to be physiologically dormant. Dapsone-sensitive strains of *M. leprae* were isolated from 3 to 12 lepromatous patients who had received 10-12 years of standard dapsone therapy under good conditions. Among 362 LL and BL in-patients treated for 18.5 to 22 years up to 1970 with dapsone monotherapy, which was then stopped, 25 (8.8%) relapsed over the next 8-9 years. Of those tested, half-relapsed with varying levels of dapsone-resistant organisms and half with dapsone-sensitive *M. leprae*. Bacterial persistence is a generalized phenomenon and persisting *M. leprae* have been detected after five years daily rifampicin and even after ten years of treatment with clofazimine.

For these reasons dapsone monotherapy is now considered inadequate for the treatment and control of leprosy. Multidrug therapy based on the same chemotherapeutic principles and comparable to the treatment of tuberculosis is therefore considered essential in leprosy. Rifampicin is very rapidly bactericidal against *M. leprae* and is effective even if given in monthly doses. However, when given as monotherapy, rifampicin may produce resistance within 4 to 7 years. Therefore a third bactericidal drug in addition to dapsone is essential for the treatment of multibacillary leprosy in order to kill rifampicin resistant mutants of *M. leprae*, should a patient suffer from either primary or secondary dapsone resistance. In this context, it is essential to assume that any new multibacillary patient may be suffering from primary dapsone resistance, and any treated multibacillary patient may have (if relapsed) or be incubating (if apparently quiescent) secondary dapsone-resistant leprosy. The least toxic third drug is clofazimine, resistance to which appears to be very rare. When clofazimine is totally unacceptable because of its effect on skin colour, the alternate drug is ethionamide/prothionamide, although the latter drug gives an unacceptably high incidence of hepatotoxicity with jaundice in certain areas of the world.

The WHO-recommended combined chemotherapeutic regimens will overcome dapsone resistance, and the supervised monthly doses of rifampicin and clofazimine will aid and promote compliance. The effect on persisters is not yet fully known, but there is evidence from the Malta trial (in which Isoprodian containing dapsone, prothionamide and isoniazid was used) that the relapse rates after treatment will be acceptably lower. The continuation of treatment until smear negativity is achieved is based on the concept that the higher the initial bacterial load and the lower the patient's resistance to *M. leprae*, the longer should be the duration of treatment.
In paucibacillary leprosy in which the initial bacterial load is minimal, the chances of drug-resistant mutants occurring are minimal and monotherapy is still considered satisfactory. However, because of the possibility of primary dapsone resistance and since short course chemotherapy with rifampicin has already been shown to be effective in both TT and BT leprosy, the drug of choice is rifampicin. Dapsone has also been included in the WHO-recommended regimen for paucibacillary patients, so as to prevent the emergence of rifampicin-resistant strains in patients, clinically undetectable or misclassified, who have already commenced to downgrade to BB-BL, with a resultant increase in their total bacterial load, sufficient to make probable the presence of rifampicin resistant mutants.

Planning considerations in the implementation of multidrug therapy, by Dr M. Christian

Dr Christian emphasized that the new challenge resulting from the increased complexity of the treatment technology will involve fundamental consideration of the various activities relating to leprosy control involving:

- restructuring of services and redeployment of staff
- strengthening of the laboratory services
- retraining of staff
- close collaboration with the primary health care system
- full community participation
- formulation of priorities in accordance with manpower and financial constraints
- substantially increased costs for definite periods, requiring mobilization of funds on a much wider scale.

He stated that case finding will continue to remain an integral component of the revised strategy and will have to be intensified in all areas. Patients in BB-LL spectrum who are excretors of M. leprae are a clear priority for chemotherapy, and should therefore be the principal target of case finding.

With the advent of multidrug therapy correct classification has become a critical factor for the success of the new strategy. A clinical examination is also now essential to exclude contraindications to drugs which can be potentially toxic.

Bacteriological examination is an axiomatic corollary to the clinical examination and an essential prerequisite prior to the introduction of multidrug therapy. It is therefore of special importance to organize an efficient service for taking slit skin smears and their processing, in order to ensure uniformity and reliability of smear microscopy.
He emphasized that the treatment delivery system must be flexible and tailored to meet the individual needs of patients. Regularity of drug intake and completion of chemotherapy will be the keys to the success of the new strategy. Other factors which could contribute to improvement in clinic attendance include proper siting of clinics, convenient timings, full primary health care and an efficient referral system with facilities for hospitalization when complications arise.

To promote compliance the first visit of the patient is the most important. He should be given adequate information and health education during this visit. Home visits for tablet counts and collection of random urine samples to estimate D/C ratios where feasible, or a simple field test to detect dapsone are other methods which can help to promote compliance. He emphasized the importance of staff/patient relationship and the need for health education to the family members in order to generate family pressures for improving the regularity of drug intake.

A period of surveillance will be necessary to detect relapses that may occur after cessation of chemotherapy. This can be done annually for a period of two years in paucibacillary patients and for five years in multibacillary patients.

He stressed that health education will continue to remain the sine qua non for the success of the revised strategy. The active involvement of the community in support of the leprosy control service will also be necessary for programme implementation.

Vital to the strategy was a simple and uniform information support system carefully structured to permit concise, appropriate and relevant recording of data. Assessment and evaluation should also be a built-in element of the revised strategy.

Supervision, which entails regular monitoring of the critical activities provided by the service and effective coordination when the primary health care system is involved, will also be required.

He emphasized that manpower development, appropriate training, and redeployment of staff will be necessary for the successful implementation of the programme.

The present approach requires a continuous supply of drugs and equipment. An effective procurement, supply and logistic system must therefore be established to avoid bottle-necks.
Annex I

In planning, programme managers will have to decide on the choice of the strategy to be adopted for programme implementation. This will depend on:

- available infrastructure
- available manpower
- population density and coverage of health services
- proportion of lepromatous patients
- nature of terrain, etc.

In conclusion he stated that the programme should be less bureaucratic and more humane in its approach, otherwise there will be no possibility of reaching out to the estimated eleven million patients in developing countries who require treatment services today.

6. Primary health care in MDT implementation, by Dr Y.T. Kuo

Dr Kuo drew attention to the four levels of primary health care viz:

- home level
- community level
- first health facility level
- first referral level.

The community consists of several components or peer groups, each of which has an important role in community development and health related activities. They include:

(a) community groups, e.g. women’s organization, youth clubs, cooperatives, etc.

(b) community leaders, e.g. village council, village health committee, etc.

(c) government sectoral programmes, e.g. health, education, agriculture, social welfare, etc.

(d) health workers, e.g. community health workers, traditional birth attendants, traditional healers, etc.

The community health worker is the interface between the community and the primary health care delivery system. It is important that he/she should be community-based and community-oriented.

He drew attention to the tasks involved and the activities necessary at the various levels to promote case finding, case holding and treatment regularity. He also identified the conditions required to facilitate the performance of these tasks.
7. The role of WHO, national governments and voluntary agencies in the implementation of multidrug therapy, by Dr S.K. Noordeen

Dr Noordeen stressed the need for the coordinated utilization of all existing and potential resources in order to promote the main objective of controlling leprosy through the implementation of multidrug therapy.

The function of the World Health Organization includes, besides other activities, coordinating international health work. At the global and regional levels, it will continue to provide information, counselling and technical assistance when requested by Member States. At the country level, the organization will collaborate with national governments in preparing plans of action for implementing multidrug therapy, through WHO Representatives and Programme Coordinators. Monitoring, evaluation and coordination is another important area in which WHO will continue to provide technical support.

He emphasized that national governments play a pivotal role in all activities relating to programme implementation. National coordinating committees should be formed in which both national and international collaborating agencies participate. The role of national governments will include:

- political commitment
- preparation of detailed plans of action
- programme implementation
- full utilization of the general health services.

He identified the important role of voluntary organizations in ensuring the successful implementation of the programme. This stretches from women's organizations and youth committees at the peripheral level to national bodies of professional societies at the central level. He underlined the important role of LLEP in the fight against leprosy. Non-governmental organizations have a very important and crucial role to play for the successful implementation of health-for-all strategies in the years ahead.
ANNEX 2

STATEMENTS OF VOLUNTARY ORGANIZATIONS

The representatives of voluntary organizations made brief statements on their activities with special reference to the implementation of multidrug regimens in leprosy control programmes.

1. **Damien Foundation - Professor M. Lechat**

   The Damien Foundation provides direct support to leprosy control activities in 15 countries in Europe, the Americas, Africa, the Eastern Mediterranean Region, South-East Asia and the Western Pacific Region. Close cooperation is maintained with national governments and the WHO. The activities of the Foundation are coordinated by ILEP.

   The Damien Foundation provides drugs and equipment for the implementation of multidrug regimens in leprosy control programmes. It is now advocating a complete package which includes training, laboratory equipment, recurring costs and the supply of drugs.

   In 1982, the Damien Foundation established a drug fund for providing clofazimine, dapsone and rifampicin to countries which lack the financial resources or the foreign exchange to do so.

2. **Follereau Foundation, France - Professor J. Grosset**

   The Follereau Foundation, France is supporting many countries in their fight against leprosy, mainly in Africa, the Americas and the Asian and Pacific Regions. The implementation of multidrug therapy is given the utmost priority. The Follereau Foundation also supports primary health care activities that are linked with anti-leprosy work.

   This organization also participates in the Drug Fund established by the Damien Foundation for supply of drugs to endemic countries.

3. **Sasakawa Memorial Health Foundation - Dr Y. Yuasa**

   The Sasakawa Memorial Health Foundation is keenly interested in the chemotherapy of leprosy. It has organized a number of workshops on this topic commencing with the First International Workshop on Chemotherapy of Leprosy in Asia at Manila in January 1977. An outcome of this workshop was the joint chemotherapeutic trials in lepromatous leprosy organized in collaboration with the Republic of Korea, the Philippines, Thailand and the Leonard Wood Memorial Laboratory in Cebu (Philippines) including some Japanese experts. This trial has also helped in achieving two other objectives, viz training and institutional strengthening. Two new mouse foot pad testing facilities have also been established in the Republic of
Annex 2

Korea and Thailand, which will contribute considerably to the proper implementation of multidrug therapy in these and neighbouring countries. The central laboratory of the Leonard Wood Memorial at Cebu, Philippines, has also been strengthened by SMHF.

Several activities of the Organization have been directed towards support of the WHO-recommended MDT regimens at the country level. They include:
- organizing and sponsoring international workshops
- granting fellowships and scholarships
- provision of consultants
- producing, procuring and distributing teaching and training materials
- supply of drugs and equipment
- supporting research activities.

All activities are closely coordinated with WHO. A special fund has now been started for the supply of drugs similar to the Drug Fund of Damien Foundation.

SMHF is a member of ILEP and works in close collaboration with many of its members who are active in the South-East Asia and Western Pacific Regions.

4. Leonard Wood Memorial Foundation - Dr Ger Steenbergen

The Leonard Wood Memorial is committed to carry out leprosy research, the results of which will enhance knowledge in leprosy and assist leprosy control activities. The Leonard Wood Memorial Foundation makes its facilities, personnel, expertise and funds available at the Leprosy Research Centre in Cebu, Philippines.

The current scientific interests are within the following fields of activities:
- cultivation of M. leprae
- multidrug therapy trials
- immunotherapy trials
- population-based sero-epidemiological studies
- monitoring and evaluation of leprosy control programmes
- training in leprosy-related laboratory techniques.

5. German Leprosy Relief Association (DAHW) - Dr Mary S. Joseph

DAHW is one of the member associations of ILEP. It assists in leprosy control activities in many developing countries including Asia. The organization has given much attention to the successful implementation of the new multidrug regimens in the programmes supported by it. It works in close collaboration and cooperation with existing government policies of the region.
DAHW follows the recommendations of the ILEP Medical Commission and WHO. The organization has prepared a manual for implementation of multidrug therapy. It also contain details regarding regimens containing Isoprodian.

In Thailand all the voluntary agencies supported by DAHW have been specifically instructed to introduce multidrug therapy. A DAHW volunteer leprologist is assisting the Government in one of the sanitoria in the country. A well-planned health education programme is also being operated in this country.

6. **Philippine Leprosy Mission - Mrs S.S. Grino**

The Philippine Leprosy Mission has worked with the Ministry of Health since 1969 as a matter of policy. It has no separate programme other than those undertaken in partnership with the Ministry of Health. Its activities are specific and long term:

- family planning among leprosy patients
- physical rehabilitation and reconstructive surgery
- health education
- training.

The Philippine Leprosy Mission is involved in preparing all educational materials required for dissemination of knowledge regarding leprosy in the country. It is at present closely associated with the planning and implementation of multidrug therapy in Ilocos Norte and Cebu. PLM personnel and resources will be made available for this project during the next two years. The organization is also involved in coordinating the activities of non-government organizations in leprosy through the Philippine Leprosy Coordinating Committee.
REGIONAL PROFILES

1. Western Pacific Region by Dr Andres A. Galvez

Dr A. Galvez reviewed the leprosy profile in the Western Pacific Region. The total number of estimated cases in 29 countries or areas in this region was 2,000,000 (WHO, 1975). The number of registered patients was 128,325.

There are significant and substantial differences in the distribution of leprosy between countries and areas within the Region. The disease is not uniformly distributed, even within endemic countries or areas, showing a distinct tendency to focalization. Leprosy still continues to remain an important public health problem in Cook Islands, Fiji, French Polynesia, Papua New Guinea, Nauru, the Philippines, China, the Republic of Korea, Samoa, Solomon Islands, Trust Territory of the Pacific Islands, Vanuatu, Viet Nam, and Malaysia. In Singapore, it is a restricted urban problem with a steadily declining incidence. The disease is a negligible public health problem in Australia, Japan, Guam, New Zealand and Tonga.

The prevalence rate varies from 0.02 per 1000 in New Zealand to 33.4 per 1000 in Ponape of the Trust Territory of the Pacific Islands. Only 50% of registered cases are under treatment while the regularity of treatment of registered patients is also approximately only 50%. A significant proportion of patients in this Region is being treated in leprosaria.

Most endemic countries in this Region have established leprosy control services since the past 10 to 15 years. In many countries, however, dapsone monotherapy still continues to remain the sheet anchor in the treatment of leprosy. Recently several countries have been integrating their leprosy control services into the primary health care system. Some countries adopt a combination of specialized and integrated services.

Experience in the implementation of multidrug therapy is very limited. Only about 5,500 patients are on WHO-recommended regimens or modified multidrug regimen schedules.

Dr Galvez identified the constraints which hamper the implementation of multidrug regimens as follows:

- lack of knowledge and skills in programme management especially pertaining to integration with the general health services;
- shortage and maldistribution of manpower;
Annex 3

- the negative attitude of both patients and health workers;
- bottle-necks in the procurement of drugs and the logistics of their supply to the periphery;
- the intense social stigma which continues to persist against the disease.

He reiterated that WHO proposes to accelerate its collaboration with all countries in the Western Pacific Region in order to hasten the pace of introduction of multidrug therapy. Another area of priority concern is the integration of the leprosy control services into the general health system under the umbrella of primary health care.

He summarized the present situational analysis of leprosy in some of the countries of the Region for which information is available and the pace of introduction of MDT as shown in Table 1.

2. South East Asia Region, by Dr N.K. Shah

Dr N.K. Shah reviewed the leprosy profile in the South-East Asia Region. Leprosy is endemic in 9 out of 11 countries in the Region. The disease is an important public health problem in Bangladesh, Bhutan, Burma, India, Indonesia, Maldives, Nepal and Thailand. In Sri Lanka, the problem is relatively of less importance and restricted only to certain areas.

The estimated total number of patients in the South-East Asia Region is 5.36 million. Till 1982, 3,424,545 patients, i.e., 63.8% of the estimated case load had been detected and registered for treatment. No cases have been reported from the Democratic People's Republic of Korea and Mongolia. Details of the estimated and registered cases in SEAR countries can be seen in Table 2.

The regularity of attendance for treatment ranged from 100% in the Republic of Maldives to 57% in India. Secondary dapsone resistance is being reported from eight endemic countries of the Region while primary resistance is now being reported with increasing frequency from India and a few other countries. Laboratory facilities for foot-pad studies are now available in five countries of this Region.
<table>
<thead>
<tr>
<th>Country</th>
<th>PR per 1000</th>
<th>Number of registered patients</th>
<th>Number of estimated patients</th>
<th>Type of health service infrastructure</th>
<th>Status of MDT implementation</th>
<th>Constraints</th>
<th>Future plans</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>0.1</td>
<td>~</td>
<td>200,000</td>
<td>Combination of specialized and integrated service</td>
<td>Implemented since 1970s. Thiomides discontinued due to hepatotoxicity, WHO regimens being followed in most areas</td>
<td>1) Difficult terrain 2) Shortage of clofazimine</td>
<td>Eradication of leprosy by 2000 AD i.e. to lower prevalence to less than 0.01 per 1000</td>
<td>~</td>
</tr>
<tr>
<td>Fiji</td>
<td>0.5</td>
<td>375</td>
<td>~</td>
<td>Integrated who regimens introduced</td>
<td>Transport and communication</td>
<td>Expect to cover 72% of patients with MDT by June 1985</td>
<td>~</td>
<td>~</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>0.45</td>
<td>5,458 (total cases registered from 1954 to 1983)</td>
<td>~</td>
<td>Integrated with Dermatology and Social Hygiene Services</td>
<td>Implemented since 1977. Now using modified WHO regimens with one week of initial daily rifampicin</td>
<td>Nil</td>
<td>Nil</td>
<td>Case detection rates show a steady decline in the occurrence of new patients from 436 in 1957 to 38 in 1983</td>
</tr>
<tr>
<td>Japan</td>
<td>0.08</td>
<td>8,944</td>
<td>~</td>
<td>Through skin clinics particularly in Okinawa</td>
<td>Being implemented in different schedules</td>
<td>Nil</td>
<td>Nil</td>
<td>Majority of patients are institutionalized</td>
</tr>
<tr>
<td>Macau</td>
<td>0.25</td>
<td>1,000</td>
<td>~</td>
<td>Through Dermatology Department of Government Hospitals</td>
<td>Being implemented</td>
<td>Nil</td>
<td>Nil</td>
<td>Number of new cases detected annually declining, only 40 in 1983</td>
</tr>
<tr>
<td>Country</td>
<td>PR per 1000</td>
<td>Number of registered patients</td>
<td>Number of estimated patients</td>
<td>Type of health service infrastructure</td>
<td>Status of MDT implementation</td>
<td>Constraints</td>
<td>Future plans</td>
<td>Remarks</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
<td>-------------------------------</td>
<td>------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Malaysia</td>
<td>0.62</td>
<td>7 404</td>
<td>-</td>
<td>Combination of specialized and integrated services</td>
<td>Modified regimen being implemented with rifampicin 600 mg daily for 12 days followed by</td>
<td>Financial due to drug costs, increased supervision</td>
<td>Total integration with the general health services by 1990 and implementation of WHO-recommended regimen.</td>
<td>-</td>
</tr>
<tr>
<td>New Caledonia</td>
<td>3.29</td>
<td>487</td>
<td>-</td>
<td>Combination of integrated and vertical structure</td>
<td>Being implemented. Not in accordance with WHO recommended regimen. 46 patients are now on MDT.</td>
<td>-</td>
<td>To continue MDT and expand to all patients.</td>
<td>50% of patients are institutionalized</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>2.7</td>
<td>8 875</td>
<td>-</td>
<td>Integrated</td>
<td>Drugs, supplies and equipment. Transportation and manpower</td>
<td>Implementation of MDT from 1985</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>0.71</td>
<td>53 702</td>
<td>-</td>
<td>Combination of integrated and vertical structure</td>
<td>Since 1981 on a limited scale-modified WHO regimen</td>
<td>-</td>
<td>To commence implementation of MDT in accordance with the WHO recommendation in two provinces - Iloco Norte and Cebu.</td>
<td>In provinces, leprosy is still a major public health problem e.g. North-western part of Luzon, Central Visayas and Western Mindanao</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>0.71</td>
<td>27 148</td>
<td>50 000</td>
<td>Combination of vertical and integrated structure</td>
<td>Being implemented in different combinations; 1749 patients are now on different schedules of MDT.</td>
<td>-</td>
<td>To further expand MDT in accordance with WHO schedules</td>
<td>50% of patients are residing in leprosy sanatoria and resettlement villages</td>
</tr>
<tr>
<td>Country</td>
<td>PR per 1000</td>
<td>Number of registered patients</td>
<td>Number of estimated patients</td>
<td>Type of health service infrastructure</td>
<td>Status of MDT implementation</td>
<td>Constraints</td>
<td>Future plans</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------</td>
<td>-------------------------------</td>
<td>------------------------------</td>
<td>---------------------------------------</td>
<td>-----------------------------</td>
<td>-------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Samoa</td>
<td>1.0</td>
<td>284</td>
<td>-</td>
<td>Integrated with Tuberculosis</td>
<td>Introduced in a few cases only</td>
<td>-</td>
<td>Integration with the basic health services and implementation of WHO recommended MDT</td>
<td>-</td>
</tr>
<tr>
<td>Singapore</td>
<td>0.9</td>
<td>7,882</td>
<td>-</td>
<td>Services are through the Government skin clinic</td>
<td>Since 1978 with rifampicin, ethionamide and dapsone. From March 82 modified WHO regimes being used</td>
<td>Nil</td>
<td>Nil</td>
<td>The occurrence of new cases is declining. 24% of the new cases detected annually are among immigrants</td>
</tr>
<tr>
<td>Trust Territory of the Pacific Islands</td>
<td>-</td>
<td>-</td>
<td>Ponape 33.4 Truk 12.0 Yap 5.06 Kosrae 7.28</td>
<td>Integrated</td>
<td>Since July 1984 all leprosy cases in FSM have been put on MDT regimes recommended by WHO</td>
<td>Stigma, inadequate funding, shortage of drugs, equipment and transportation</td>
<td>To promote case finding</td>
<td>An epidemic situation is now prevailing in Ponape and Truk. The majority of patients are however indeterminate and tuberculoid</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>1.7</td>
<td>36,616</td>
<td>-</td>
<td>Combination of specialized and integrated services</td>
<td>It is now being implemented on a wide scale since 1982. Till 31/12/85 3400 patients were on MDT.</td>
<td>Difficult mountainous terrain, shortage of drugs and equipment, transportation</td>
<td>New programme of eradication has been launched in a phased manner</td>
<td>The prevalence is now in the mountainous area than in the coastal plains</td>
</tr>
</tbody>
</table>

**Annex 3**
### Table 2. Estimated and Registered Leprosy Cases in South East Asia Countries in 1982

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of cases</th>
<th>Per cent.</th>
<th>Registered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimated</td>
<td>Registered</td>
<td>Registered</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>150 000</td>
<td>35 802</td>
<td>23.9</td>
</tr>
<tr>
<td>Bhutan</td>
<td>10 000</td>
<td>2 756</td>
<td>27.6</td>
</tr>
<tr>
<td>Burma</td>
<td>700 000</td>
<td>275 377</td>
<td>39.3</td>
</tr>
<tr>
<td>Democratic People's Republic of Korea</td>
<td>Nil</td>
<td>Nil</td>
<td>-</td>
</tr>
<tr>
<td>India</td>
<td>4 000 000</td>
<td>2 900 000</td>
<td>72.5</td>
</tr>
<tr>
<td>Indonesia</td>
<td>250 000</td>
<td>122 568</td>
<td>49.0</td>
</tr>
<tr>
<td>Maldives</td>
<td>2 000</td>
<td>1 772</td>
<td>88.6</td>
</tr>
<tr>
<td>Mongolia</td>
<td>Nil</td>
<td>Nil</td>
<td>-</td>
</tr>
<tr>
<td>Nepal</td>
<td>100 000</td>
<td>33 159</td>
<td>33.2</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>14 000</td>
<td>9 821</td>
<td>70.2</td>
</tr>
<tr>
<td>Thailand</td>
<td>140 000</td>
<td>120 879*</td>
<td>86.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5 366 000</td>
<td>3 424 545</td>
<td>63.8</td>
</tr>
</tbody>
</table>

*Only 43,000 cases remain to be treated.*
While most of the countries in the Region have accepted the multidrug regimens recommended by the WHO Study Group in 1981, the pace of introduction has largely been unsatisfactory owing to the following constraints:

- shortage of trained manpower;
- unsatisfactory financial resources;
- bottle-necks in the procurement, supply and distribution of drugs;
- operational and organizational inadequacies;
- lack of supervision and coordination including improper planning.

The pace of introduction of multidrug therapy in the South-East Asia Region until 1983 is reviewed in Table 3.

From this table it can be observed that three countries, Bhutan, India and Thailand are using modified multidrug regimens since 1981. Both Thailand and Bhutan have since commenced introduction of the WHO-recommended regimens. The Indian health authorities have an initial intensive phase of two weeks during which the patients receive daily rifampicin, clofazimine and dapsone in full doses as out-patients. Thereafter in the continuation phase, the schedule is similar to the regimens recommended by the WHO.

The Regional Office for South-East Asia proposes to accelerate its collaboration with Member States of the Region, to hasten the expansion of multidrug therapy to all patients in the global context of health for all by 2000.

He then briefly reviewed the leprosy situation in the nine endemic countries of the Region.
### TABLE 3. IMPLEMENTATION OF MULTIDRUG THERAPY IN THE SOUTH-EAST ASIA COUNTRIES

<table>
<thead>
<tr>
<th>Country</th>
<th>Year started</th>
<th>Scope</th>
<th>No. of cases</th>
<th>Regimen</th>
<th>Integrated to General Health Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Nation</td>
<td>PB</td>
<td>MB</td>
<td>WHO</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1982</td>
<td>-</td>
<td>382</td>
<td>632</td>
<td>+</td>
</tr>
<tr>
<td>Bhutan</td>
<td>1981</td>
<td>-</td>
<td>359</td>
<td>570</td>
<td>+</td>
</tr>
<tr>
<td>Burma</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>1981</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Indonesia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maldives</td>
<td>1982</td>
<td>-</td>
<td>-</td>
<td>25</td>
<td>+</td>
</tr>
<tr>
<td>Nepal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1982</td>
<td>+</td>
<td>841</td>
<td>684</td>
<td>+</td>
</tr>
<tr>
<td>Thailand</td>
<td>1983</td>
<td>+</td>
<td>74</td>
<td>181</td>
<td>+</td>
</tr>
</tbody>
</table>

*Other regimens.
The participants gave a brief review of the situational analysis of leprosy in their respective countries with special reference to the implementation of multidrug therapy and the constraints encountered.

1. **Bangladesh - Dr M.D. Serajul Islam**

Bangladesh is situated in the eastern part of the Indian subcontinent and has a population of 93 million. The population density is 1110 per sq km. The total estimated case load in the country is 150 000 of whom so far 42 000 patients have been detected and registered for treatment, i.e., 28%. The overall estimated prevalence rate is 1.6 per 1000. Six districts in the country with a population of 35 million have prevalence rates above 5 per 1000.

The leprosy control service is integrated with the general health service and the primary health care system. Multidrug therapy was first implemented in Dhaka in 1982 and is since being gradually extended to other areas. The WHO-recommended regimens are being followed. One thousand four hundred seventy-two patients are now on combined monotherapy. The compliance rates are above 95%, side-effects are minimal and the results are gratifying.

Some of the existing constraints which need to be rectified are as follows:

1. shortage of laboratory technicians;
2. difficulty in supervision due to poor communications;
3. lack of financial resources.

2. **Bhutan - Dr S.Y. Anayat**

This a land-locked country in the Himalayas with an area of approximately 47 000 sq kms and an estimated population of 1.16 million (1982). Two thousand seven hundred eighty-six patients have been registered for treatment till 31 December 1983. The lepromatous rate is 40% and 25% of patients have either Grade I or Grade II deformities.

Since 1979, on the recommendations of an expert committee, 1216 patients have been treated with combinations of rifampicin and dapsone. The Third Expert Committee in 1982 recommended the introduction of the WHO Study Group regimens (1981). A national action group has been established to effectively implement this programme. Nine hundred thirty-four patients are at present on the regimens recommended by WHO. The national action
Annex 4

The group has since decided that all newly detected MB patients in 16 designated areas will receive an initial intensive course of treatment with rifampicin 600 mg daily and dapsone 100 mg daily. Subsequently this will be followed by the WHO-recommended regimens.

In six districts, the programme is integrated with the basic health services, while in the other districts the programme is implemented by the leprosy control service. The constraints experienced in programme implementation are as follows:

- difficult terrain
- lack of proper communication
- inadequate laboratory facilities.

3. India - Dr K.C. Das

The estimated total number of patients in the country is 3.95 million. Four hundred fifty million people reside in 251 districts in which the prevalence rate is 5 per 1000 or more and are therefore exposed to the risk of infection. Till 1 June 1984, three million patients had been registered for treatment in the various states of the country. Annually 0.3 million cases are discharged as cured or dead, while 0.4 million new cases are added to the prevalence pool.

The implementation of multidrug therapy and the eradication of leprosy by the year 2000 has been accepted as a national commitment at the highest political level. The regimens approved include an initial intensive phase of two weeks during which the patient receives rifampicin 600 mgs, clofazimine 100 mgs and dapsone 100 mgs daily for all multibacillary patients. In the continuation phase thereafter, the regimen is similar to that recommended by WHO in 1981. Paucibacillary patients are treated with the standard regimens recommended by WHO.

Seven districts in the country have been covered by the multidrug treatment programme till June 1984. More than 20,000 patients are now on treatment with combined chemotherapeutic regimens. In the Seventh Five Year Plan it is expected that multidrug regimens will be implemented in all the 98 hyper-endemic districts of the country.

The programme consists of the following phases:

(a) preparatory phase
(b) attack phase
(c) consolidation phase
(d) maintenance phase.
The leprosy control service is a specialized programme in all high and moderately endemic areas, while in low endemic areas it has been integrated into the basic health services.

The main constraints which impede programme implementation are as follows:

(a) shortage of trained and motivated staff
(b) high cost of transport and fuel for effective supervision of staff
(c) shortage of drugs
(d) lack of an effective monitoring and evaluation system
(e) inability to train all the multi-purpose workers in leprosy control activities.

4. Indonesia - Dr M.R. Teterissa

Leprosy is not uniformly distributed throughout the country. High endemic provinces include South Sulawesi, East Java and Irian Jaya. The overall prevalence rate is 0.8 per 1000 and the total estimated case load ranges from 180 000 to 200 000. One hundred twenty-six thousand nine hundred seventy-nine patients have been detected and registered for treatment.

The leprosy control programme is integrated with the general health services in all provinces. Dapsone resistance is being recognized with increasing frequency in recent years.

Multidrug treatment regimens are being implemented in the country since 1982. However, owing to shortage of rifampicin and clofazimine, this programme is at present confined to hyper-endemic areas. At present 443 health centres out of a total of 5500 health centres throughout the country use combined chemotherapeutic regimens for the treatment of leprosy. Nine thousand three hundred ten patients have been treated with multidrug regimens since the programme commenced in 1982.

The following constraints hamper the successful implementation of the programme at the peripheral level:

(a) shortage of drugs
(b) lack of proper supervision
(c) inadequate training of village health volunteers and basic health workers
(d) ineffective monitoring and inadequate emphasis on health education.
Annex 4

5. Nepal - Dr R.B. Adiga

The overall prevalence rate of leprosy in the country is 0.7 per 1000. The total estimated case load is 100,000. Till 1983/1984, 35,150 patients had been detected and registered for treatment. Currently, 26,802 patients are under treatment, 6,454 on combined chemotherapy with WHO-recommended regimens and 20,366 on conventional dapsone monotherapy.

The leprosy control service is a specialized programme under the Ministry of Health, which is advised by the Leprosy Service Development Board. The programme is being implemented in the five development regions of the country - viz Far Western, Mid Western, Western, Central and Eastern.

Multidrug regimens, as recommended by the WHO Study Group (1981), have been introduced in the country since 1982. From its inception till mid-July 1984, 6,436 patients have been treated with combined chemotherapeutic regimens. To promote programme implementation, a simple manual has been designed in both English and the national language specifying the activities that have to be performed. All the workers are trained and the recording and reporting system has been modified to suit the requirements of the revised strategy.

In accordance with the national policy, the programme has to be implemented throughout the country by 1990 and the project has to be integrated with the basic health services. Out of 75 districts in the country, 58 districts have a prevalence of more than 1 per 1000. During the current financial year the programme will be implemented in 36 districts in which leprosy is an important public health problem.

Some of the constraints encountered are as follows:

(1) Training and re-training of both medical officers and para-medical staff is essential. This should be undertaken at periodic intervals.

(2) Techniques for smear microscopy must be standardized.

(3) In some paucibacillary patients, especially those toward the BT end of the spectrum, no subsidence is seen after six months' treatment.

(4) In some multibacillary patients, skin smears do not become negative even, after 36 months of treatment.

6. Maldives - Dr M. Ahmed

The Republic of Maldives is an archipelago of 200 islands. The population estimated for 1982 was 160,000. Among 200 inhabited islands, 143 islands have leprosy patients with an average prevalence of 11 per 1000.
Pilot trials with combined chemotherapy as recommended by WHO commenced in 1982 in Guraikhoo island and some islands of Kaaf atoll. Because of the encouraging results, all the patients in the capital at Malé are now being treated with multidrug regimens. Since the middle of 1983, all newly detected multibacillary patients have commenced treatment with multidrug regimens. Since the commencement of the programme in 1982, more than 250 patients have been treated with these regimens.

In order to achieve the target of completing the introduction of multidrug therapy throughout the country by 1989, the first national training workshop on multidrug therapy was held in Lhaviyani atoll in May 1984.

The problems and constraints which are being encountered in programme implementation are as follows:
(a) lack of trained manpower
(b) difficulties in transportation
(c) insufficient financial resources
(d) shortage of drugs, equipment and other supplies.

7. Sri Lanka - Dr (Mrs) D.R. Devapura

Sri Lanka is an island with an area of 65,610 sq. kms. The population is approximately 15 million. The overall prevalence of leprosy in the island is 0.69 per 1000. Till the end of 1983 10,232 patients had been registered for treatment in all the provinces of the island. Seven hundred to eight hundred new cases are detected every year throughout the country.

The anti-leprosy campaign is a specialized division of the health service. Its main function is case detection, treatment and health education.

Multidrug regimens recommended by WHO were introduced throughout the country in July 1982 for both multibacillary and paucibacillary patients.

8. Thailand - Dr (Mrs) Prachmoomporn Ochasamood

The first random survey in the country was conducted in 1953 with assistance from UNICEF and WHO. The prevalence rate was 5 per 1000 and the estimate total case load was 140,000. The North Eastern Region of the country is hyper-endemic for leprosy. The total number of registered cases at present under treatment is 44,406.

The prevalence declined to 1.26 per 1000 in 1971. During 1972-76 the leprosy control services were integrated into the general health services in 67 provinces under the technical guidance of 10 zonal leprosy centres. Specialized provincial leprosy units, however, still implement a vertical service in 6 hyper-endemic provinces.
Annex 4

Combined chemotherapeutic regimens for the treatment of leprosy were introduced in the country a few years previously. They however differ from the WHO-recommended regimens. At present multidrug regimen are being implemented at the following locations:

(a) 2 leprosy villages at Chiang mai  
(b) 2 skin clinics of the Leprosy Division  
(c) 3 high endemic provinces of the North Eastern Region, which is being covered by the specialized service.

The regimens recommended by the WHO Study Group in 1982 are being implemented at the two skin clinics attached to the Leprosy Control Division. Three thousand seven hundred fifteen patients are currently under multidrug therapy programme. It is proposed to hasten the pace of introduction further in the ensuing years.

9. China - Professor Li Huan-ying

Leprosy is mainly prevalent south of the Yangtze River and along the coastal plains. The number of patients has been reduced from about 500 000 in 1957 to less than 200 000 in about 20 years of control work with dapsone monotherapy.

The leprosy control service is a vertical programme up to the county level. It is integrated to a very limited extent in the three tiered health system.

It is proposed to eradicate leprosy in the country by the year 2000. Grading of endemicity and the target of basic control and eradication are as follows:

| Low prevalence areas | << 0.1 per 1000 |
| Medium prevalence areas | 0.1-1 per 1000 |
| High prevalence areas | >> 1 per 1000 |

| Basic control - Prevalence | << 0.1 per 1000 |
| Control - Prevalence | <= 0.05/1000 |
| Basic eradication - Prevalence | <= 0.01 per 1000 |

By the end of 1983 many provinces had met the standards of basic control or eradication, but prevalence rates persist at medium endemicity in the South-Western Province. This is mainly due to the mountainous terrain.

Mouse footpad laboratories are available at Jiangsu and Shanghai. Dapsone resistance was estimated at 8.6% in 1983.

Combined chemotherapy using dapsone and rifampicin have been used in a limited number of patients since the 1970s. Clofazimine was produced in the country to a limited extent in pilot trials in the 1970s. However, due to the lack of funds, it is not now being manufactured in the country.
Since 1981, many provinces have initiated multidrug treatment with dapsone, rifampicin and the thionamides. However, because of the high incidence of hepato-toxicity reported from Jiangsu and Shanghai provinces, the use of prothionamide has been discontinued. Since then multidrug regimens as recommended by WHO in 1981 are being used in Yunnan Province and a prefecture in Shandong. The acceptability of the drugs has been good, despite the colour changes produced by clofazimine, and the clinical results are extremely encouraging.

Some of the constraints which impede implementation of multidrug regimen project are as follows:

1. Clofazimine is urgently required as it is not produced within the country.
2. Inadequate training of field staff and improper maintenance of records.
3. Regular drug supply to the periphery is essential.
4. There is an urgent need to clarify whether treatment should be given for two years in multibacillary patients or until smear negativity is attained.

10. Fiji - Dr T. Bavada and Dr E. Daulako

Leprosy in Fiji has been showing a sustained decline during the past two decades. The prevalence rate is at present 0.5 per 1000. The total population of the country is 674,000. Three hundred seventy-five active cases were on treatment as on 30 September 1984. The number of new cases detected annually has declined from 76 in 1974 to 29 in 1983.

Multidrug regimens were first introduced in Suva sub-division in November 1983 after adequate preparation. Ninety-five patients representing 25.3% of the total case load are now on combined therapy. The drugs are well tolerated and the results so far are encouraging. It is proposed to extend this programme to four other areas in the country shortly. By June 1985 it is expected that 275 patients will be on multidrug therapy, i.e., 72% of the total case load in the country. In this connection, training programmes for health workers are being rapidly expanded.

The main constraints which impede effective implementation of the programme are:

(a) transport
(b) lack of supervision of the field staff.
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11. **Hong Kong - Dr N.R. Honey**

Leprosy is showing a steadily declining trend in Hong Kong from 436 new cases registered in 1957 to only 38 new cases registered in 1983. It is interesting to note that while 16% of the new cases registered in 1957 were over 50 years of age, this figure increased to 47% in 1983.

Leprosy treatment clinics are integrated with the Government Dermatology and Social Hygiene Services. Combination therapy with clofazimine and dapsone commenced in the early 1970s. Rifampicin was introduced as triple therapy with clofazimine and dapsone in 1977. The drugs are well tolerated and no serious side-effects have been encountered. At the end of 1983 a modified WHO regimen was introduced with an intensive phase of daily rifampicin for one week followed by monthly supervised doses along with clofazimine and dapsone self-administered. Paucibacillary patients are given short course chemotherapy as recommended by the WHO Study Group in 1981; however, dapsone is continued until there is clinical inactivity. Since its implementation in 1977, the modified regimens have now been given to 253 patients.

12. **Japan - Dr Masayoshi Kawai**

Leprosy is a negligible public health problem in Japan. The prevalence rate is 0.08 per 1000. The total number of registered patients in the country in 1983 was 8944. Only 40 new cases were detected during the year 1983. The majority of patients are treated in 16 leprosaria in different parts of the country. There are also three skin clinics providing medical services for out-patients in Okinawa prefecture.

Combination therapy is being used in Japan in accordance with the decision of the treating physician and the clinical condition of the patient.

13. **Macau - Dr M.J.C. Magalhaes**

There are 100 registered patients in Macau in a population slightly over 400 000. The disease is a negligible public health problem in the country. The majority of patients are institutionalized at Kã Ho Leprosarium and are inactive cases. Combined chemotherapy is being given to all active patients at the weekly dermatological clinic.

14. **Malaysia - Dr A. Kumar**

The national leprosy control programme was first implemented in West Malaysia in 1964. The programme was extended to Sarawak in East Malaysia in 1974 and to Sabah in 1983.
The average prevalence rate for the country is 0.62 per 1000. The total number of registered cases in the country in 1983 was 7404.

Initially multibacillary patients were treated with rifampicin 600 mg daily for 21 days. Thereafter treatment was continued with dapsone 100 mg daily for 10 years or for life. Recently 24 cases have commenced combined chemotherapy on the WHO-recommended regimens.

It is expected that total integration between the medical and health services will be achieved by 1990. Future plans include hastening the introduction of multidrug regimens and implementing the revised strategy for leprosy control.

Some of the constraints hindering implementation of the project are:

(a) the high cost of drugs used
(b) lack of continuous supervision
(c) lack of trained personnel, particularly laboratory technicians

15. New Caledonia - Dr P. Bobin

The population of this island territory is 145,368 (1983). The total number of registered patients on 31 December 1983 was 487. The prevalence rate is 3.29 per 1000. Twenty-three new cases were detected in 1983 of whom 3 were children.

Since August 1983 the regimens recommended by the WHO Study Group in 1981 are being introduced in the country. Fourteen multibacillary patients and 5 paucibacillary patients are at present on these regimens.

16. Papua New Guinea - Dr P. Kame

Leprosy is an important public health problem in Papua New Guinea. The prevalence rate is 2.7 per 1000. The total number of registered patients in the country on 31 December 1983 was 8875. In 5 out of 20 provinces in the country the prevalence rates are more that 5 per 1000.

It is proposed to expand the implementation of multidrug therapy in the country in the ensuing years.

Some of the constraints which impede programme implementation are:

(a) lack of trained manpower
(b) difficult terrain
(c) shortage of drugs
(d) poor communications and inadequate transport.
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17. Philippines - Dr A.S. Villarosa

The prevalence rate of leprosy in the country is 0.7 per 1000. In 10 of the 74 provinces, leprosy still continues to remain an important public health problem, such as the northwestern part of Luzon, central Visayas and western Mindanao where prevalence rates range from 1 to 5.5 per 1000.

The programme is implemented by specialized field units such as sanitaria, skin clinics, both stationary and mobile, and 1500 rural health units under the administrative supervision of the regional health office.

Some statistics are given below:

| Total cases registered | 53 702 |
| No. of active cases    | 33 234 |
| No. of inactive cases  | 16 305 |
| No. of cases admitted in hospitals | 4 163 |

During the year 1983, 1730 new cases were detected and registered for treatment.

In 1981 multidrug therapy was introduced in the country but the dosage and duration of treatment varies from the WHO-recommended regimens. In January 1985 the WHO-recommended regimens will be introduced in the endemic provinces of Ilocos Norte and Cebu. After the experience gained in this pilot project, multidrug regimens will be extended to all the other provinces of the country.

18. Republic of Korea - Dr Jeong Ku Park

There are 50 000 estimated patients in the Republic of Korea. Till March 1984, 27 148 patients had been detected and registered for treatment. Thirteen thousand five hundred seventy-five patients reside in resettlement villages and leprosy sanitaria, i.e. approximately 30% of the patients are institutionalized.

Various schedules of treatment with combined drug regimens have been in use in the country since the past few years. Isoprodian and ethionamide/prothionamide are also being used in combination therapy for some patients.

Recently the WHO-recommended regimens have been introduced and it is proposed to expand this gradually to cover all the patients in the country.
19. Samoa - Dr W.J. Vermeulen

Leprosy has been integrated with tuberculosis control in Samoa since 1974. In August 1984 it was estimated that the prevalence rate in this country was 1 per 1000 though earlier studies indicated a higher prevalence of 3 per 1000. The total population of the country is approximately 160,000. There are at present 258 cases on the active list under treatment, and a small but constant in-patient population of 8 to 12 patients.

In April 1984 the health department took two important decisions relating to the leprosy control service:

(1) Leprosy control activities should be integrated with the general health services.
(2) Multidrug regimens should be introduced for all the patients in the country.

The training of the health staff in the new strategy has been well received. It is expected that the implementation of multidrug therapy will commence in 1985.

20. Singapore - Dr T. Tan

The incidence and prevalence of leprosy has been steadily declining since the first registration of 358 patients in 1951. While 96 patients were registered for treatment in 1973, this figure declined to 69 in 1983. Approximately 24% of new cases detected annually are imported from other countries in the South-East Asian Region. The prevalence rate of active cases is 1 per 1000.

Clofazimine was first used in the country in 1968, but it is unpopular with patients owing to the discoloration of the skin, which is quite pronounced. The first four cases of secondary dapsone resistance in the country were clinically diagnosed in 1969 and confirmed by mouse footpad studies in London.

Combined chemotherapy has been used for the treatment of leprosy since 1976. Since November 1978, all smear positive patients are treated with rifampicin (600 mgs), ethionamide (375 - 500 mgs) and dapsone (100 mg) daily for eight weeks. Thereafter, dapsone monotherapy is continued for life. Since March 1982, new chemotherapeutic regimens have been introduced which are modifications of the schedules recommended by the WHO Study Group in 1981. The drug combinations include rifampicin, ethionamide, prothionamide and dapsone. Paucibacillary patients are treated with rifampicin, 600 mgs once monthly supervised and daily ethionamide/prothionamide and dapsone. After six months' treatment, monotherapy with
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dapsone is continued for three to five years. Clofazimine is used only when dapsone resistance is suspected clinically. There was a high incidence of drug-induced hepatitis in patients who were on regimens containing rifampicin and ethionamide/prothionamide.

21. Trust Territory of the Pacific Islands - Dr K. Aniol

The Federal States of Micronesia (FSM) consists of four island states - Ponape, Truk, Yap and Kosrae. These island states with 200 small inhabited islands are scattered over an ocean area of 270,000 sq. miles. FSM has a population of 73,160 (1980) as follows:

- Ponape - 22,081
- Truk - 37,488
- Yap - 8,100
- Kosrae - 5,491.

The prevalence of leprosy in the various states is as follows:

- Ponape - 33.4 per 1000
- Truk - 12 per 1000
- Yap - 6 per 1000
- Kosrae - 7.2 per 100.

The tuberculoid form of leprosy is the most common followed by lepromatous, indeterminate and borderline cases. Over 50% of the cases occur in males with the maximum prevalence in the age group 20-30 years.

Areas of greater prevalence are confined at present to two island populations in Ponape, certain isolated island communities in six islands in Truk and two communities in Yap and Kosrae, respectively. Case finding is efficient in Ponape but has not been effectively established and maintained in the other states.

Treatment has been with dapsone monotherapy till 1984. Since July 1984 all leprosy patients are now on multidrug regimens recommended by the WHO Study Group in 1981. A two-week training course was conducted in Ponape and Truk in 1983. Another such training course is to be conducted at Truk shortly.
Some of the constraints which impede successful programme implementation include:

(a) shortage of drugs, equipment and supplies including transport
(b) financial constraints
(c) inadequate health education
(d) intense social stigma
(e) shortage of trained personnel.

22. Viet Nam - Dr Le Kinh Due

The leprosy control programme is integrated with the dermatological services from the central to the district level. At the peripheral level, the leprosy programme is fully integrated into the basic health services.

The prevalence rate has declined from 2.1 per 1000 in 1959 to 1.7 per 1000 in 1980 in the northern part of the country. The proportion of cases among children has also decreased to 6%.

In 1974, a pilot project was launched for the eradication of leprosy in Ngue-son District with a population of 120,000 based on dapsone monotherapy. This project was successful and no new cases have been reported from this area since 1976. With the experience gained in the pilot project, a new programme was launched to eradicate leprosy throughout the country in a phased manner by implementing the multidrug strategy. The emphasis is on the following aspects:

- training of staff
- regular intake of drugs
- good supervision and monitoring
- community participation and patient coordination.

Until 31 December 1983, 3400 patients were being treated with multidrug regimens recommended by the WHO Study Group in 1981. The drugs are well tolerated and the results have been very encouraging.

Some of the constraints which impede programme implementation are as follows:

(a) shortage of drugs, equipment and supplies
(b) lack of transport
(c) difficult terrain.
The technical aspects of multidrug therapy for leprosy control are now well known. They have been reviewed in detail in connection with all the other aspects of leprosy control. Similarly the complex reasonings which underlie the relatively simple standard regimens recommended by the WHO Study Group in 1981 have been beautifully recalled. The interconnections between leprosy control activities and primary health care have been reviewed at length and a very important overview of the respective role and areas of cooperation between all parties involved in this joint venture has been given. While the window has been opened on the fascinating world of immunology with one of the most promising recently developed techniques, we have also come to grips with the core of the problem in the implementation of multidrug therapy (MDT) in the two-day group discussions.

Personally, from any understanding of the outcome of the discussions on technical aspects, I would like to single out two points: first, it seems that there is some difficulty to clearly understand what is cure in leprosy. The best possible definition of cure in leprosy like in tuberculosis is absence of relapse after adequate treatment. The presence of remaining acid fast bacilli in the skin smears of leprosy patients after completion of chemotherapy based on the use of the strongly bactericidal combinations of drug should not cause undue concern. There is ample evidence that it takes years for the tissues of the human host to clear the huge amount of dead bacilli. My second point is that the infectivity of a new lepromatous patient ceases in a matter of few days after the administration of one single dose of 600 mg rifampicin. Hence multidrug regimens with a minimal dosage of rifampicin such as the WHO Study Group recommended regimens result in practically eliminating infectivity of the patients in a very short period of time. Obviously, initial isolation of the patients, even the multibacillary ones, is unnecessary.

When one looks into the prospect of controlling leprosy today, it is particularly gratifying to see how the problem is attacked enthusiastically by those who have the direct responsibility of insuring that patients are provided with the most adequate and effective treatment, with the ultimate objective of reducing the transmission of M. leprae infection, thus achieving effective control of the disease. In this workshop, we have had fairly detailed reports on the situation of leprosy control activities up-to-date with its essential aspects, and on the state of implementation of multidrug therapy. I understand that this is in general new compared
with the situation, say, ten years ago when it was exceptional to have regional reviews of leprosy control activities. Therefore, it is important to see from a general point of view that information on ongoing activities is nowadays readily available.

The collection of updated information appears to me to be very effective in the two regions which are represented at this meeting. May I say that I did not observe the same level of progress during the last decade in some other parts of the world. From the country reports, as well as from the frank discussions on the various problems faced by the implementation of multidrug therapy at country level and in the two WHO regions, it is not difficult to understand the variety of problems which are being faced on the various levels of leprosy control programmes, whether leprosy control activities are carried out in a vertical manner or whether they are partially integrated in the general service activities or when they are fully integrated in the primary health care system. It is clear that the political decision from governments, and their goodwill are a sine qua non for the successful implementation of multidrug therapy. However, more practical issues must be resolved: the additional training of all categories of personnel, the reorganization of services, with particular attention being paid to the redeployment of staff, be good quality of bacteriological examination, an adequate referral system, an adequate system for the drug supply and drug delivery, and, last but not least, sufficient budgetary provision.

The implementation of multidrug therapy on a large scale is, indeed, facing great difficulties. However, as has clearly emerged from various presentation and discussions, the implementation of multidrug therapy is a must. The development of an anti-leprosy vaccine, which has so far made important progress (which was impossible to conceive 10 years ago) opens the highest and most hopeful prospects of a completely new strategy for leprosy control. But in the best hypothesis, it should be possible to prove the efficacy of a leprosy vaccine in some ten years from now only. Till that time we have to make the best possible use of what we have at hand. In that respect, it should be emphasized that, in view of the small number of drugs with a bactericidal activity against mycobacterium leprae (in practice only the three which are an absolute requirement), we must use these drugs in strict accordance with regimens which do not leave room for the selection of mutants resistant to any of these drugs. Hence the necessity, before expanding multidrug therapy, of insuring that it can be applied without any significant gap in the simultaneous delivery of the three drugs — rifampicin, clofazimine and dapsone.

This necessity of delivery much more complex regimens would have been already a great challenge in itself. The problems are highly increased by the fact that this mandatory change is the therapeutical approach come at the time when in many countries the progress of integration of leprosy control within general health activities require a national modification of methods and procedures. More importantly, in my opinion, this dramatic
change in leprosy control strategy has an important advantage. It has been realized in the last few years how much the infrastructure and facilities available for leprosy control activities were too often not meeting minimal requirements to be effective, even with the dapsone monotherapy approach. Hence, it is our first duty to upgrade the existing facilities for clinical and bacteriological examinations, for case detection and case holding when multidrug therapy is to be put into practice in areas or countries. Clearly, this will make the implementation of multidrug therapy a great challenge in many countries or areas. But if we are to serve the needs of the patients and their families, we must meet this challenge. In view of what I have just said, it was particularly appropriate to devote an essential part of this meeting to the "Lepraland" exercise.

Needless to say, this type of exercise is most appropriate for use at country level or even in administrative or geographical subdivisions. Also, when it is used on a real scale, it entails the incorporation of many data as well as decisions on specific strategies and targets. Hence, it requires time to be carried out. In view of the many different situation prevailing in the many countries represented at this workshop, it was obvious that the exercise should be remodelled and some selection of the most important topics involved in the programming process had to be made. However, a very convenient and effective selection of priority subjects could be effected so that the four respective working groups could come out with concrete and very useful recommendations. Some of these recommendations deal with important prerequisites for the introduction or implementation of multidrug therapy, such as the upgrading of laboratory technicians, the quality control of clinical and bacteriological examinations, the necessity of an information system, to cite only a few of them. Others are very specific and of high practical value, e.g. the training of skin smear technicians and the monitoring of subsequent quality control of smear making, reading and reporting. Among the most important recommendations, I believe, are also those which are concerned with (1) the planning of action to be taken and the different types of support to be obtained; (2) the health education directed towards medical and paramedical staff as well as towards patients and community (I don't dare to say the director general of the Ministry of Health and the chief administrator should also be educated); and (3) the knowledge and understanding once the full acceptance of multidrug therapy by medical and paramedical staff is achieved. Taking into consideration all these recommendations, which have been nicely summarized by Dr Jacobson, I would like to stress the extreme importance and duties of a national leprosy advisory board.
Now I would like to come to two important considerations. The first one relates to the importance of giving to the leprosy patient such a level of appropriate attention and care that he has full confidence in those who are in charge of him. This has essential implications because the reduction of the reservoir of infection through effective chemotherapy is at present the only method by which we can hopefully reduce the transmission of infection and at least produce a significant decrease in the total case load, and at the same time prevent deformities. Therefore, our possible impact on the leprosy problem is to a large extent the sum of positive achievements in individual patients. In other words, in leprosy as in tuberculosis, the so-called Public Health point of view is closely interlinked with the comprehensive care of each individual patient.

Secondly, because the acceptance of early diagnosis and of complex treatment is strongly related to community involvement, the impact to be expected from leprosy control measures depends largely on community education and participation. On the other hand, a high level of community awareness can lead to success only if the health infrastructure is adequate to meet the needs of patient and population. Thus, educational efforts and the building up of an adequate health infrastructure should progress in parallel lines. It is of critical importance that these two components form an integral part of national health development. This is of critical importance in view of the essential role played by international bilateral and multilateral agencies as well as by the voluntary organizations in providing governments with additional inputs for leprosy control when these are required. This means that there is still a need for strengthening the already established cooperation between governments and other parties concerned. Here is one point that for me is essential. It is that during the preparatory phase of collaborative projects the necessary time is taken to investigate and to spell out in full details all the implications and consequent commitments for both sides of the planned agreement. The importance of careful preparation of the protocol for research is widely accepted and it is clear for me that a similar careful preparation of plans of action is needed as well as the precise definition of respective commitments for all parties involved. Subsequently, during the course of the project, there should be both continuing evaluation of achievements and a periodical review of the respective role of governments and contributing agencies.

Finally, I have had the impression that in our discussion we have perhaps not paid enough attention to an important factor. In my experience, a great obstacle to the implementation of multidrug therapy in tuberculosis has been the reluctance of specialists to accept the value of standardized regimens. Unfortunately, since the introduction of the WHO multidrug therapy standard regimens for leprosy, I have been faced with a similar attitude from some leprologists. It would be a great pity, indeed, when so many other difficulties are to be solved, if additional problems should be created by the medical profession itself.
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CLOSING CEREMONY

1. Dr Li Huan-ying, Chairman

Dr Li Huan-ying remarked that they had made new friends and gained much from each other by reviewing experiences with multidrug therapy. She thanked all the resource persons for their excellent papers and the contributions made to the workshop and also the various non-governmental organizations represented, who were always willing to assist when help was required. She also thanked the representatives of WHO Headquarters, WPRO and SEARO for their contributions and support to this workshop and in particular Dr H. Nakajima, the Regional Director of the WHO Regional Office for the Western Pacific, for making this workshop possible. She expressed sincere thanks to Professor M. Ishidate for his participation and to all the other delegates from the Sasakawa Memorial Health Foundation for their support and interest in the workshop and their kind hospitality. Finally, she thanked the secretariat of the WHO Regional Office for the Western Pacific for their assistance in organizing the workshop so successfully and for their cooperation and contribution. She closed by wishing everyone victory in the common goal for the control and eradication of leprosy.

2. Dr N.K. Shah, WHO Regional Office for South-East Asia

We thanked the Sasakawa Memorial Health Foundation for the idea of having the workshop and the WHO Western Pacific Regional Office for accepting it. We are very happy to have been a part of this important workshop and the discussions will certainly help us in the development of both country and regional programmes. We met many friends from WPRO at this workshop and will strengthen relations between the various countries. On behalf of the Regional Director of the South-East Asia Region and on my own personal behalf, I thank the Regional Director of WPRO.

3. Dr S.K. Noordeen, WHO Headquarters

This was indeed a very important meeting in a series of meetings we have had at the global and regional level on multidrug therapy. Some may say that there have been too many meetings but all are justified. The earlier ones were for clarification of technical issues because of doubts as to whether the regimens would work, their acceptability by patients, safety, etc. We have now completed that phase and the technical issues are accepted. Now we must emphasize the planning and development of country programmes for multidrug therapy. This workshop is therefore very important and has brought out many points which will help countries to start working on specific plans. Such plans are vital not only for the countries but also for the World Health Organization and other international organizations to
help them raise resources for fulfilling their plans. I am happy we have
been able to achieve that objective and I expect that activities on
multidrug therapy will be much greater in the future than it has been
hitherto. It has been a tremendous experience for me interacting with many
of you who have had rich experiences in confronting the problems related to
the implementation of multidrug therapy and in trying to develop ideas as
to how we can work despite these difficulties. I am most grateful to the
Sasakawa Memorial Health Foundation and the WHO Regional Office for the
Western Pacific for this opportunity and for the hospitality shown to us
all.
SHORT REMARKS AT THE CLOSING CEREMONY

Dr Y. Yuasa

Mr Chairman, Dr Paik, Distinguished Guests and Colleagues,

During this Workshop, I was delighted to discover that most of the countries assembled here are really interested in and have committed themselves to the implementation of multidrug therapy as a basic component of leprosy control programme for the years to come.

All of us, of course, look forward to the days when an effective prophylactic vaccine is available for the prevention of the disease. However, as the case of tuberculosis with prophylactic BCG vaccine shows, a complete control of leprosy or eradication of it is likely to depend heavily on the effective chemotherapy based on the principles of multidrug therapy, with possible addition of an immunotherapy, even with the availability of a prophylactic vaccine.

I was particularly gratified to see that the close collaborations between national governments, international technical agencies, like WHO and voluntary organizations such as the members of the International Federation of Antileprosy Organizations (ILEP), is not merely a nice concept but rather a working reality.

As a co-sponsor of this Workshop, I would like to express our Foundation's gratitude to WHO, to its Headquarters and to the two Regional Offices at New Delhi and here at Manila. As already mentioned before by someone, this meeting was originally planned to be one of the series of international meetings our Foundation organizes annually, and this particular one was meant to mark the completion of the first ten years of our activities. However, during the preparatory phase, we learnt that the Regional Offices of WHO had a plan to organize a similar meeting, and in a true spirit of cooperation we came to an agreement to combine our forces and to co-sponsor a single enlarged workshop as an interregional meeting.

I have been asked by a number of people already whether I am satisfied with the outcome so far. My answer is a positive "Yes". As a sponsor, it was gratifying to see such an active participation and effective contribution from all the participants during the past few days. But our real gratification will come when we can see that some concrete actions are taken, along the lines we have been discussing toward the implementation of multidrug therapy, in each and every country represented here at this workshop.
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Before closing, I would like to offer our Foundation's gratitude to WHO, our co-sponsor, for its support, particularly to the staff members of the WHO Regional Office for the Western Pacific which acted as the organizer and the host of the workshop. Our sincere thanks go to the consultants and advisers who acted as resource persons for their valuable contributions. Our deep gratitude goes above all to all the delegates, representing either leprosy-endemic countries in this part of the world or voluntary agencies interested in leprosy.

Thank you.
CLOSING REMARKS
BY DR H. NAKAJIMA, REGIONAL DIRECTOR
WHO REGIONAL OFFICE FOR THE WESTERN PACIFIC
AT THE
INTERREGIONAL WORKSHOP ON MULTIDRUG THERAPY
FOR LEPROSY CONTROL
25-29 October 1984
Manila, Philippines

Madam Chairperson, Professor Ishidate, Distinguished Leprosy Experts, Consultants, Technical Advisers, Participants from Countries of South-East Asia and the Western Pacific Regions, Representatives of Voluntary Organizations for Leprosy, Secretariat and Friends,

Unfortunately, Dr Nakajima, Regional Director, is unable to attend this closing ceremony because of his travel to Geneva.

As Officer-in-charge, let me say a few words at this closing ceremony.

The convening of this Workshop on Multiple Drug Therapy for Leprosy Control illustrates the common interest of WHO, voluntary organizations and the countries of the South-East and Western Pacific Regions in accelerating control of leprosy. The countries represented in the workshop have shown their particular interest in the control of this disease. Judging by what has been brought before the group, some countries have started multiple drug therapy ahead of the others, while others are faced with common constraints which the participants have thoroughly discussed, and have offered alternatives to facilitate multidrug therapy implementation.

Experts have shared their experiences on multidrug therapy implementation and these have resulted in participants evaluating their present chemotherapy programme for leprosy.

The findings of immunology research in leprosy were also discussed and the results so far have indicated hope for further success in the fight against leprosy.

Judging from the active discussion and willingness of the participants to work overtime in order to have an extensive discussion of the constraints and problems of multidrug therapy implementation for an effective plan of action, the efforts to convene this workshop have been more than justified.

As you are aware, the Sasakawa Memorial Health Foundation has provided the needed support for the organization of the workshop and the group tour. On behalf of Dr Nakajima, I wish to ask Professor Ishidate to convey to Mr Ryoichi Sasakawa, the President of the Sasakawa Memorial Health Foundation, our great appreciation and heartfelt thanks. The wholehearted
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The cooperation of Mr Sasakawa and his staff has without a doubt contributed to the success of this workshop. In this respect, I also wish to personally thank Professor Ishidate for his presence as the personal representative of Mr Sasakawa during the entire proceedings of the workshop. This is an indication of the close collaboration which exists between WHO and the Sasakawa Memorial Health Foundation for the control of leprosy.

To the participants from the South-East Asia and Western Pacific, I wish to extend our heartfelt thanks for your contribution to the success of the workshop and in particular, I would ask Dr Shah to convey to Dr U. Koko our warm appreciation for the contribution of the South-East Asia participants to the workshop.

To the non-governmental organizations, consultants and temporary advisers who have all unselfishly given their time and support to ensure the success of the workshop, I wish to thank them all.

In closing, let me thank the Chairperson, Vice-Chairman, Rapporteurs, and the Secretariat for the hard work that has contributed to the success of the workshop. To all of you who are going to leave us soon, Bon Voyage. I hope you have gained knowledge and acquired additional information during the five day workshop that will facilitate multidrug therapy implementation in your countries.

I have the honour to close this Interregional Workshop on Multidrug Therapy Regimen for leprosy control.
AGENDA

Thursday, 25 October

8:30 a.m. Registration

9:00 Opening ceremony

- Introduction
- Opening remarks by the Regional Director, WHO/WPRO
- Greetings by the Chairman of the Board
  Sasakawa Memorial Health Foundation, Tokyo
- Self-introduction
- Election of Chairman, Vice-Chairman and Rapporteurs
- Administrative announcements

9:45 COFFEE BREAK

10:15 Adoption of the agenda

10:20 Keynote speeches:

(a) "Leprosy control in a global context"
   by Professor M.F. Lechat, WHO Consultant

(b) "Use of multidrug therapy for leprosy control"
   by Dr H. Sansarricq, WHO Consultant

11:20 Regional reports

- WHO/WPRO
- WHO/SEARO

12:30 LUNCH BREAK

1:30 p.m. Country reports on experiences in multidrug therapy

3:00 COFFEE BREAK

3:30 Country reports (continuation)

7:00 p.m. Joint reception by Mr Sasakawa and RD/WPRO
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Friday, 26 October

**Multidrug therapy in leprosy control**

8:30 a.m. (1) "Recent developments on immunology in Leprosy" by Dr P. Brennan and Dr M. Abe, WHO Temporary Advisers

8:50 (2) "Technical considerations on the use of MDT" by Dr M. Waters, WHO Consultant

(3) "Planning consideration in MDT" by Dr M. Christian, WHO Consultant

(4) "Primary health care (PHC) in MDT implementation" by Dr Y.T. Kuo, Regional Adviser in Health Services Development, WHO/WPRO

10:00 COFFEE BREAK

10:30 (5) "Role of WHO, national governments and voluntary agencies" by Dr S.K. Noordeen, Acting Chief, LEP/HQ

(6) Statement of voluntary agencies on specific activities in MDT

11:45 Guidelines to working groups

"Planning implementation of MDT in Lepraland" Coordinator - Dr R.R. Jacobson, WHO Consultant

12:30 LUNCH BREAK

1:30 p.m. Working groups (3-4 groups)

3:00 COFFEE BREAK

3:30 Working groups (continuation)

Saturday, 27 October

8:30 a.m. Working groups (continuation)

10:00 COFFEE BREAK

10:30 Drafting of group reports Coordinator - Dr R.R. Jacobson, WHO Consultant

12:00 LUNCH BREAK

p.m. OPEN
Monday, 29 October

8:30 a.m.  Plenary session - Reports of working groups and summary of proceedings by Workshop Coordinator

10:00     COFFEE BREAK

10:30     Plenary session (continuation)

12:00     LUNCH BREAK

1:30 p.m.  "Perspective of Multidrug therapy in leprosy control"
            by Dr. J. Grosset

2:00      Adoption of the report

3:00      COFFEE BREAK

3:30      Closing ceremony
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### Annex 8

<table>
<thead>
<tr>
<th>Organization</th>
<th>Contact Person</th>
<th>Address</th>
<th>Notes</th>
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<tr>
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