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LEPROSY ELIMINATION CAMPAIGNS

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Leprosy Review

A journal contributing to the better understanding of leprosy and its control

LEPRA

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CALL FOR PAPERS

Papers wanted for special issue of *Leprosy Review* on the topic of SOCIO-ECONOMIC REHABILITATION

A recent ILEP Workshop held in Wurzburg, Germany, concentrated on the issue of Socio-Economic Rehabilitation. Issues discussed included Self-Stigmatization and Psychological Impact, Special Needs Groups, Gender Issues, Impact Assessment and Quality of Life. The **December 2000** issue of *Leprosy Review* will focus on SER, setting out current thinking and understanding on best practice in all the social and psychological aspects of leprosy. We are keen to publish as much data as possible in this issue and would like to encourage potential authors.

If you have data that you would like to publish in this Special Issue, please analyse it and write it up. Papers for this issue should be submitted to the *Leprosy Review* office by **1 February 2000 at the latest** and will go through the usual peer review process.

Diana N. J. Lockwood (Editor)

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Lepr Rev (1999) **70,** 402

Colin McDougall

It is a great pleasure to dedicate this issue of *Leprosy Review* to Colin McDougall. Colin is a tireless worker for leprosy. His work with mycobacteria started with tuberculosis work in Singapore and he later moved into leprosy work in Zambia. He then returned to England and specialized in leprosy histopathology. A key collaboration at this time was with the Oxford neuro-anatomist Graham Weddell, with whom he studied leprosy nerve damage. Colin established a leprosy research unit at The Slade Hospital in Oxford and worked with Dick Rees and Michael Waters in a unique series of studies documenting the ability of *Mycobacterium leprae* to remain in a persister form. In the 1980s, Colin quickly recognized the potential of multidrug therapy and as medical adviser to Lepra ensured that this treatment was implemented as quickly as possible. Without effective, time limited multidrug therapy it would have been impossible to conceive of the Leprosy Elimination Campaigns that are reported and discussed in this special issue edited by Colin. Colin's record of collaboration and teaching is almost unsurpassable; with his histopathological expertise he supported studies all over the world, notably the Lepra-funded Karonga studies in Malawi. Perhaps Colin's greatest contribution has been in his generous and warm encouragement for people interested in working in leprosy. I have met people from Africa, Asia and the Americas who say that without Colin's encouragement their own work would never have developed and his aerogrammes of hand-written encouragement are legendary. He is also a hawkeyed editor and skilfully edited *Leprosy Review* for 10 years. He continues to support the journal and takes particular care in helping authors who have little support or help with their research. Colin has been enthused by the Leprosy Elimination Campaign and the possibilities that it offers for disease control. He has been the perfect choice as a guest editor and I would like to thank him for all the work he has put into producing this issue and dedicate it to him as a token of our appreciation.

Diana N. J. Lockwood

0305-7518/98/070402+01

Lepr Rev (1999) **70,** 403

Editorial

Welcome to this special issue of *Leprosy Review* on leprosy elimination campaigns (LECs), which brings together a range of contributions from agencies and individuals in many parts of the world, all with direct experience of control programmes and the use of LECs in different situations. We are immensely grateful to all who have responded. Due to pressure on space in this issue, we have had to hold over some articles for publication in the March 2000 issue, and by that time we hope that readers will have received and read this considerable collection of information on a subject which is clearly a major step forward in the control of this disease.

The papers include contributions from the WHO Leprosy Elimination Team in Geneva (Communicable Diseases Eradication and Elimination), together with items from India, Nepal, Myanmar, Bangladesh, Nigeria and the Philippines. Richard Croft has supplied a stimulating commentary ('Leprosy elimination—sprint or marathon?'), balancing the remarkable achievements of LEC to date against the need to plan a longer term 'marathon' of activities, including basic leprosy control and disability management, well into the next century. In his Summary article, Cairns Smith reviews the future scope and expectation of LECs, emphasizing sustainability, comprehensive and cost-effective leprosy control, the detection of suspect and hidden cases on a repeated basis and the improvement of all aspects of LECs through feedback, evaluation and exchange of ideas.

A strategy which started as recently as 1995 and which has already revealed more than half a million new cases clearly calls for serious attention and analysis. Furthermore, as many of our contributors note, it has increased public and professional awareness about leprosy and the availability of effective treatment to an extent not previously seen. Many observations in the following pages, however, underline the need constantly to review certain aspects of the operational strategy of LEC, so that weak points are addressed. It is our hope that the information presented in this (and the next) issue of the journal will represent a useful collection of information and opinion on a subject which is clearly of such great importance for the elimination of leprosy worldwide.

A. COLIN MCDOUGALL

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Lepr Rev (1999) **70,** 404–407

Leprosy elimination campaigns (LEC)

Introduction

The focus of the elimination strategy is to reduce the burden of disease to below one case per 10,000 population. In pursuit of this goal, WHO was able to obtain the necessary political commitment from governments, and through the support provided by various international and local non-governmental organizations, leprosy elimination activities were improved and strengthened. At the beginning of 1999, more than 820,000 cases were registered for treatment in the world and around 805,000 new cases were detected during 1998.[1]

In most of the endemic countries the geographical coverage of multidrug therapy (MDT) services (diagnosis and treatment) is continuing to expand and this has resulted in an increased detection of new cases. In spite of tremendous progress made in eliminating leprosy in most of the high endemic countries, there are still areas where a significant number of cases remain undetected or where they are being detected late, i.e. at a stage where irreversible disabilities have occurred. In these areas the accessibility of health services, their capacity to provide MDT services and community awareness about the disease are still not at a satisfactory level.

In order to decrease the disease burden, these areas will need leprosy elimination campaigns (LEC) to reduce the pool of undetected cases in the community and cure them. These undetected (hidden) cases are individuals who have not been diagnosed and treated by the health services even though they have had signs and symptoms of leprosy for a considerable period of time. This could be because they do not know they have leprosy, or because they suspect or know they have leprosy but, because of the stigma, do not want to be identified as having the disease. Very often, such individuals do not know where to go for treatment.

Objectives

The main objective of LEC is to detect leprosy cases, particularly the more serious ones referred to as 'cases of consequence', that have remained undetected in the community, and to cure them with MDT. Leprosy of consequence is defined as cases with more than five skin lesions and skin smear positive cases (where facilities for skin smears are available and reliable). It is an initiative which aims at strengthening the ongoing leprosy elimination activities in carefully selected high endemic areas.[2]

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Elements of LEC

The strategy is based on a combination of three elements, namely: capacity building measures for local health workers to improve MDT services; increasing community participation so as to strengthen elimination activities at the local level; and diagnosing and curing patients. This basically is not a new concept as similar activities have been carried out by others in the field. However, under LEC several activities are grouped with the intention of obtaining maximum benefits by carrying them out in a systematic way.

Approaches taken to achieve the objectives vary from country to country, or even between regions within the same country, depending on the local situations and resources. The LEC is not intended to replace routine leprosy elimination activities but is aimed at strengthening and supplementing the ongoing activities.

Activities

The Campaigns first started out in areas with a population of around half-a-million. However, some countries modified this to cover large regions and populations because of the huge problem in hand and also because they have the money and manpower to carry them out. These large-scale campaigns mobilized several thousands of health workers and volunteers, and the case-finding activities were conducted within a period of one to two weeks. Currently, most of the high endemic countries are carrying out LEC as it was originally planned.

The main activities carried out under LEC are:

a) orientation workshops for local health workers and community volunteers;
b) community awareness creation and participation;
c) case-finding; and
d) treating every detected case with MDT and making efforts to ensure that each one is cured.

A) ORIENTATION WORKSHOPS FOR LOCAL HEALTH WORKERS AND COMMUNITY VOLUNTEERS

The aim of these workshops is to enable every health centre to provide MDT services to leprosy patients living within its area so as to improve accessibility. These workshops are expected to refresh the knowledge of the health workers and rekindle their interest in leprosy. In addition, the involvement of motivated and trained community health volunteers promoted greater community participation.

Such orientation workshops should be properly carried out so that the health workers' ability to provide MDT services are improved. Otherwise this will result in poor coordination between the local health workers, volunteers and the staff of the national programme and can cause problems of incorrect diagnosis and poor treatment completion.

B) COMMUNITY AWARENESS CREATION AND PARTICIPATION

This was done by informing the community leaders about the campaigns and ensuring their involvement in the various activities carried out in their community. In addition, before and during the time of the campaign, various forms of mass media were used to create greater

awareness about leprosy, its curability and the availability of services for diagnosis and treatment. In the LECs that were carried out in certain selected districts, the use of mass media was limited (radio messages were broadcast in some cases) and community awareness was mainly promoted through village information meetings, poster displays and the distribution of pamphlets informing the public about leprosy and about the campaigns being conducted in their community. The large-scale campaigns used mass media more intensively, and this was in addition to the above mentioned village-level community awareness activities. The national programmes produced and broadcast various radio messages, interviews, TV spots and documentaries. Articles on leprosy were also published in the local newspapers.

Weakness in promoting community awareness might lead to poor community participation and low self-reporting of cases.

C) CASE-FINDING

The main thrust was on promoting self-reporting by individuals with suspicious signs/symptoms to the campaign teams visiting villages/communities or to the health centre. By increasing community awareness, including through health education, individuals with obvious skin lesions become aware about the signs and symptoms of leprosy and self-report for diagnosis. The community leaders and volunteers play a key role by assisting individuals with suspicious skin lesions to get themselves screened for leprosy. Ensuring that MDT services are available free of charge at the nearest health facility also increased the confidence of the community in the health services and in this way also promoted self-reporting.

Over-enthusiasm on the part of the health workers and volunteers, especially when targets for detections are being set, and the poor training received during the campaigns may result in over-diagnosis and in some instances already cured individuals could be re-registered as new cases.

D) TREATING EVERY DETECTED CASE AND ENSURING CURE WITH MDT

All new cases (including defaulters who needed treatment) were provided with the first dose of MDT at the time of diagnosis. Depending on the system of delivering MDT in the area, patients continued their treatment either at the nearest general health centre or at the specialized leprosy clinics. The health workers ensure that all patients put on treatment are able to complete the prescribed course within the specified time period, and all efforts are made to support patients in getting treatment regularly. Community volunteers mobilized during the campaigns played an important role in helping patients who for various reasons were not able to collect their MDT drugs regularly.

However, the limited health infrastructure in some areas will not be able to cope with the increased caseload. The collaboration between the specialized leprosy programme and the general health services may be limited and this will contribute towards patients not getting MDT drugs regularly.

Outcome

So far LECs have been conducted in 24 countries, covering a population of more than one

billion.[3–5] Since the start of the campaigns in 1995, more than 500,000 cases were detected, of whom around 450,000 were detected in India alone. India carried out large-scale campaigns in 22 states during 1997–1998. Bangladesh and Nepal carried out similar large-scale campaigns during the early part of 1999.

The MB proportion of cases detected during the campaigns ranges from 32% in India to over 70% in Philippines and Sudan. The proportion of new cases with grade 2 disabilities ranges between 2% and 29% in Nigeria and Cambodia.

Apart from detecting cases, LECs carried out in Brazil, Madagascar, Nigeria, and Sudan were able to open new MDT clinics as part of their activities. These clinics are integrated into the existing primary health centres in the areas. Over 500,000 health workers and 300,000 volunteers participated in the campaigns. Because of the awareness generated by the campaigns a large number of defaulters were also brought back for treatment.

The LECs were able to generate a high degree of political commitment for elimination from authorities at various administrative levels. They also broadened the partnership for elimination by involving local NGOs and other community welfare organizations. Some of these local organizations contributed funds for posters and banners which were produced in local languages.

Conclusion

LECs were able to detect a large number of cases within a relatively short period of time and were able to treat them with MDT. The interest and support provided by the community as well as by the general health services were very high in all the campaigns. Because of the various mass media messages and information sessions conducted during the campaign, the public were made aware about the signs and symptoms and the availability of a cure free of charge for this disease which was at one time generally regarded as incurable.

Acknowledgment

Thanks are due to the national programme managers and to thousands of health workers and community volunteers for their various contributions. We are grateful to the Nippon Foundation for their generous contribution and the World Bank for their support in India and Bangladesh. Finally, we wish to thank the various local community organizations and our partners from the International Federation of Anti-Leprosy Associations (ILEP) for their help and support in making these campaigns successful.

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Guidelines for carrying out leprosy elimination campaigns 1996

Summary A Leprosy Elimination Campaign (LEC) is an initiative which aims to detect leprosy cases, particularly the more serious ones referred to as 'cases of consequence', that remain undetected in the community, and to treat them with MDT. This will subsequently reduce the delay in managing such cases in the community and ensure that the existing health services are able to treat them. It is a time-bound, one-time activity. Leprosy of consequence is defined as cases with more than five skin lesions and skin smear positive cases. Such cases are regarded as being of consequence because they act as a major source of infection in the community and are either already disabled or at high risk of becoming disabled.

LEC is a focused combination of activities which includes: orientation courses for local health workers and volunteers; community awareness creation activities; case-finding and treating every detected case immediately with MDT. These campaigns are to be carried out primarily in endemic regions where the prevalence and new case detections are high and where the gap between estimated and registered cases is large. It is a national activity, implemented by the national staff with technical cooperation from WHO and other agencies.

1. Introduction

Since the World Health Assembly in May 1991 adopted a resolution calling for the elimination of leprosy as a public health problem, the global prevalence of leprosy has been reduced tremendously and about 8 million cases had been cured with MDT by the end of 1996. As a result of the implementation of the global strategy and plan of action for the elimination of leprosy, the majority of endemic countries were able to significantly increase the coverage of leprosy services, resulting in an increased detection of previously undiagnosed cases. However, the availability of health services and their capacity to implement MDT services for leprosy vary widely from country to country.

The focus of the elimination strategy is to reduce the burden of the disease as quickly as possible, thereby reducing the prevalence to below 1 case per 10,000. In theory, if all cases were to be detected within the first year of onset of disease and were treated with MDT, the impact on transmission should be visible within a few years. In practice, the detection of leprosy globally has remained unchanged over the last ten years both in terms of absolute numbers and number of smear-positive cases. This is mainly attributable to the slow progression of MDT implementation and the presence of a large number of undetected (hidden) cases.

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These hidden cases are individuals who have not been diagnosed and treated by the health services even though they have had signs and symptoms of leprosy for some time. This could be because they do not know they have leprosy, or they suspect or know they have leprosy but, because of the stigma, do not want to be identified for treatment or, in some instances, do not know where to go for treatment. In some area, depending on the effectiveness of the elimination programme, this pool of hidden cases could be quite large. Thus, among the new cases reported yearly by the national programmes, only a small proportion of them are true incident cases. It is estimated that between 1996 and the year 2000, around 2 million additional cases are to be detected and treated in order to achieve the goal of elimination.

The WHO's Global Plan of Action for Elimination of Leprosy includes specific and flexible approaches to address these issues by strengthening technical support at the country level, leprosy elimination campaigns (LEC) and special action projects (SAPEL), organizing supplies of MDT drugs, leprosy elimination monitoring (LEM), simplified disability prevention and management, and the promotion and development of community action. LEC is an initiative which is a time-bound, one-time action, aimed at detecting and treating hidden cases, primarily in a specific high endemic area. It is an effort to provide additional external in-puts to improve control activities, with the involvement of local health staff and community members. It is a national activity, implemented by the national staff with technical cooperation from WHO and other agencies.

2. Objectives of the leprosy elimination campaign

The main objective of an elimination campaign is to detect and treat hidden leprosy cases, particularly cases of consequence, in a given area. This will subsequently reduce the delay in managing such cases in the community and will ensure that the existing health services are able to treat them.

Leprosy of consequence is defined as cases with more than five skin lesions and skin smear positive cases (where facilities for skin smears are available and reliable).

3. Elements of LEC

LEC is meant to complement routine leprosy elimination measures carried out at the community level. The LEC strategy is based on a combination of three elements, namely, capacity building measures for local health workers to improve MDT services; increasing community participation to strengthen elimination activities at the peripheral levels; and diagnosing and curing patients. The approach taken may vary from country to country, or even between regions within each country, depending on local situations and resources.

The activities carried out under LEC should ultimately lead to detecting and treating leprosy cases. The proposed activities to be carried out are:

- orientation workshops for local health workers and community volunteers;
- community awareness creation activities using various forms of mass media and information sessions;
- case-finding through passive methods; and
- treating every detected case immediately with MDT.

3.1. ORIENTATION WORKSHOPS FOR LOCAL HEALTH WORKERS AND COMMUNITY VOLUNTEERS

The aim is to enable every peripheral health centre to provide MDT services to leprosy patients living within their jurisdiction. This will improve the accessibility of patients to treatment. In addition, communities—by informing their leaders and health volunteers about leprosy—will improve awareness of the disease and promote greater community participation in the leprosy elimination process.

3.2. COMMUNITY AWARENESS CREATION

Before and during the time of the campaign, various forms of mass media are to be used to supplement the information meetings held at the village/community level by creating greater awareness about leprosy, especially in areas where a campaign is centred. This could be in the form of radio messages, TV spots, newspaper articles and flyers (pamphlets).

3.3. CASE-FINDING

Case-finding is to be done by increasing community awareness and by visits of campaign teams to each village/community to provide services for diagnosis and treatment in addition to the services present in that area.

The main aim is to diagnose leprosy of consequence. Skin smear positive cases and cases with more than five lesions are regarded to be of consequence because they are acting as a source of infection in the community and are likely to be suffering from disability/impairment or have a high potential to become disabled in the future. This does not in any way exclude diagnosing leprosy with fewer than five skin lesions, or paucibacillary cases. Treatment will be provided to every individual diagnosed as a case of leprosy. As the campaign is not to be organized as an active case-finding project in which the total population is screened, it is more likely that only individuals with obvious skin lesions will come forward and that the campaign will mostly be picking up only leprosy of consequence.

Some cases presenting themselves during the visit of the campaign team as new cases could either be defaulters or cases that were discharged after completing treatment. Such cases will be screened by eliciting their past treatment history and, if possible, by looking at past treatment records (should they be available) with the local health worker. Former leprosy patients who have completed treatment should not be re-registered for treatment.

Household contacts of new cases will be examined if possible by the campaign team at the time the patient is diagnosed. If it is not possible to screen all contacts, the patient should be advised to bring contacts along for examination to the nearest local health centre sometime during their subsequent visits.

3.4. TREATMENT WITH MDT

Patients diagnosed by the campaign teams are to be treated with WHO-MDT fixed-duration treatment regimen using blister packs. Should a patient be unable to collect the MDT drugs on a monthly basis, a flexible treatment schedule is to be used for the monthly dose of MDT by entrusting either family members or volunteers to supervise the treatment.

All new cases and defaulters (who need treatment) identified by the special teams will be provided with the first dose of appropriate MDT by the team, and case records should be handed over immediately to the local health worker who will be responsible in the village/community for ensuring further treatment.

Although the campaign will not directly address such issues as disability prevention and other skin diseases at individual patient level, these problems are to be handled by providing health education, by utilizing services currently provided by the local health worker or by referring cases to the nearest health centre.

4. Planning for leprosy elimination campaign

Activities spelt out in the LEC are to be implemented by national staff with technical cooperation from WHO and other agencies.

4.1. SELECTION OF AN AREA FOR A LEPROSY ELIMINATION CAMPAIGN (ANNEX 1)

The campaign approach will only be relevant in some countries, or in certain areas of large countries. The following criteria will be given priority consideration in identifying an area suitable for campaign activities. However, some adjustment may be made to accommodate local situations.

a) High prevalence and detection (absolute numbers and rates).
b) Large gap between estimated and registered cases.
c) High grade 2 disability proportion among new cases.
d) An area with around 500,000 population. For areas with a high population density the whole administrative area could be taken.
e) It should be an area where villages/communities are easily accessible.
f) MDT services are presently available in the area and there is a health infrastructure to ensure continuity of treatment (cases detected by the campaign must be able to complete the required course of chemotherapy).
g) There is community acceptance for LEC activities.

4.2. PROPOSAL DEVELOPMENT

A detailed proposal for conducting LEC will be developed by the national programme in consultation with the local health authorities and organizations who are going to be involved in the various campaign activities. If needed, on-site visits to the selected region by those who are developing the proposal should be encouraged so that a realistic proposal can be developed which takes into consideration the present local situation (manpower, transport and other logistics). This proposal is to be submitted to WHO by the national programme manager.

4.3. TIME FRAME AND TIMING OF LEC

The campaign is to last for a limited period (three to four months) and, because of its time-bound nature, it should be regarded as a special effort to boost elimination measures at the peripheral level. Since LEC is an intensive activity involving all health care facilities and

personnel in the area, conducting it for a longer period is likely to disturb the routine activities in the area and risk a loss of momentum.

The timing of the campaign should also be taken into consideration while developing the proposal. LEC should be conducted during the months or season when it is most likely that the majority of the community members will be in the village/community at the time of the campaign team's visits.

Certain activities initiated by the campaign are expected to be sustained by the local health workers and volunteers after the end of LEC. Normally some elements of LEC will become part of routine activities. However, if necessary another LEC may be implemented in the same area after 1–2 years.

4.4. PHASES OF LEC

LEC will have two phases. In the first phase, campaign teams are to visit health centres and conduct short orientation workshops for local health workers (Annex 2) and volunteers (Annex 3). These workshops will provide an opportunity to reinforce the National Leprosy Control Programme's commitment towards elimination efforts. They will also highlight leprosy as a priority disease to be addressed by the local health personnel, especially at the community level. In addition, the campaign teams will be providing on the job training (diagnosis, classification, treatment, management of reactions) to local health workers. Volunteers from nearby villages/communities will be mobilized to support leprosy control activities. The main aim of involving volunteers is to make them alert to possible cases in their community, to refer suspected cases to the nearest health centre and to help patients to obtain treatment regularly.

In the second phase, campaign teams will visit villages/communities on fixed dates to conduct information meetings for the general public and community leaders (including religious leaders) as well as to diagnose and treat new cases. Information meetings are to be held to inform the public about MDT and the signs of leprosy with the use of posters and pictures. A public address system may be used, where available, to send out messages about MDT, signs of leprosy, and opportunities for diagnosis and treatment, and to encourage individuals with suspicious lesions to come forward for examination.

4.5. ORGANIZATION OF A CAMPAIGN TEAM

The National Programme Manager (NPM) has overall responsibility for LEC. However, the programme manager is not expected to be actually involved in the day to day implementation of the campaign. A project manager (PM) is to be selected from among the mid-level managers with experience in public health management. This person is to be made responsible for the day to day running of the campaign as well as being financially accountable. This person should whenever possible be selected from the area where LEC is to be conducted.

Under the PM, campaign teams are to be formed headed by a health worker (Team Leader) experienced in leprosy control measures, and capable of conducting workshops for local health workers and volunteers. The Team Leaders (TL) will work for the LEC on a full-time basis for the period of the campaign (Annex 4). Each TL will be assisted by a field worker to support him/her in his/her travels from village to village and also in preparing and carrying out health information sessions. The local health worker responsible for the

villages/communities where the campaign team is going to operate should be included as the third member of the team for the period the campaign is being conducted in his/her jurisdiction. This health worker will join the special team for the days the team is operating in his/her area, and will receive allowances similar to other members of the team. In addition, one or more volunteers will be helping the campaign team during visits to villages/communities.

The number of teams to be formed will depend on the availability of health workers, the geography of the area, and the population and number of villages/communities to be covered. An average of 10 campaign teams are to be formed for each campaign and these teams will be mobile, moving from village to village and from one health centre to another.

4.6. RECRUITMENT OF VOLUNTEERS

Volunteers are to be selected by the community, taking into consideration the need to identify people motivated to do something for leprosy patients in their own community. Local community leaders could help in identifying such volunteers. A minimum of one volunteer per village/community should be recruited. In communities where it is difficult for male volunteers to treat females or vice-versa, both male and female volunteers may need to be recruited. Should there be voluntary health workers already identified and trained present in the community, these volunteers should be used in the campaign.

4.7. INTERNAL IN-PUTS

The major in-puts needed from the national programme are:

- identification of problem areas which could benefit by conducting LEC;
- information regarding the geography of the area, maps showing the location of health centres in relation to villages/communities;
- identification and assignment of a project manager;
- recruitment of TLs who will be heading campaign teams, to be undertaken by the programme manager in collaboration with the project manager;
- supply campaign teams with a public address system for holding health information sessions;
- selection of appropriate information materials for the mass media and/or production of posters and pamphlets in the local language;
- translation and production of guidelines for workshops for volunteers and local health workers; and
- arranging transport for use by campaign staff.

Since one of the criteria for selecting an area for LEC is good communications, new vehicles will not be provided and the campaign teams should be able to use existing local or public transport. The project manager will also use existing transport that is at his/her disposal for supervision and monitoring purposes. The actual cost for travel will be provided for campaign team members.

4.8. EXTERNAL IN-PUTS

The following external in-puts will be needed:

- external resources for travel and per diem of PM and campaign team members;
- funds for short workshops for local health workers;

- funds for orientation workshops for volunteers;
- template for LEC posters promoting MDT and early diagnosis of leprosy (to be adapted for local use);
- funds for producing LEC posters in local language;
- funds for producing guidelines for eliminating leprosy in local language;
- workshop guidelines for health workers and volunteers; and
- MDT drugs in blister packs.

4.9. DRUGS

The required number of MDT blister packs should be made available to the project manager of LEC by the National Leprosy Control Programme from existing stock. Should a large number of cases be detected by the campaign, additional drug needs must be taken into consideration when the next shipment of drugs is made by the medical stores department, or by WHO at the request of the national programme.

5. Supervision and monitoring

5.1. SUPERVISION AND MONITORING AT CAMPAIGN AREA LEVEL

Supervision and monitoring of the campaign is to be undertaken by the project manager. On-site visits and progress reports (Annex 5) from each team will be used to monitor the campaign. Scheduled activities, cost, cooperation of various parties, participation of community and personnel (staff carrying out their assigned duties) are factors to be monitored.

5.2. SUPERVISION AND MONITORING AT THE NATIONAL LEVEL

Supervision and monitoring of each campaign is to be carried out by analysing the progress reports and final report submitted by the project manager, in addition to making site visits to some of the villages/communities where LEC has been conducted, in order to validate the progress reports submitted by the teams. The supervision and monitoring at this level is to be undertaken by the National Programme Manager and consultants, or by someone delegated to do this task by the National Programme. Indicators to be used are:

- number of new cases detected during the campaign period (PB and MB);
- proportion of new cases with more than five skin patches;
- proportion of new cases with grade 2 disability;
- proportion of villages in the area covered by the campaign teams;
- population covered by the campaign;
- number of volunteers involved in the LEC activities; and
- number of health workers involved in the LEC activities.

5.3. EXTERNAL EVALUATION OF LEC

An over-all evaluation of the campaign (post-LEC evaluation) is to be conducted jointly by the national programme and WHO after one to three years to determine the impact of the LEC and to assess the cure rates of cases detected by the campaign teams.

6. Main activities for conducting LEC

The following are the main activities to be carried out for LEC.

6.1. PREPARATION STAGE (TWO TO THREE MONTHS)

a) Selection of an area for LEC.
b) Developing a proposal.
c) Submitting a proposal for LEC to WHO (Annex 6).
d) Approval of proposal by WHO.
e) Assignment of a project manager.
f) Advocacy meeting with local administrative officials, health authorities, health workers who will be involved in campaigns and village/community leaders, explaining the objectives and broad activities of the campaign.
g) Recruitment of staff for campaign teams or re-allocation and deployment of existing staff.
h) Recruitment of volunteers from villages/communities in the project area.
i) Production in local language of posters, pamphlets and guidelines.
j) Obtain MDT blister packs for use by campaign teams.
k) Make arrangements for a public address system for use in the information sessions.
l) Coordinate with local radio station, TV station and newspapers to obtain their support in creating awareness about leprosy, especially during the time of the campaign.
m) Mobilization of transport or arranging transport for campaign teams.
n) Start public awareness creation through the mass media at the national level, or, most importantly, in the campaign area.

6.2. IMPLEMENTATION STAGE (TWO TO THREE MONTHS)

a) Formation of campaign teams.
b) Briefing of TLs for LEC (Annex 4).
c) Briefing members of the LEC project, local health authorities and health workers to explain in detail the activities to be carried out.
d) Send information to various health centres regarding the visit of campaign teams to conduct workshops and the category of health workers required to attend the courses.
e) Send information to volunteers about where and when to report for training.
f) Campaign teams travel to health centres and conduct workshops for local health workers and volunteers.
g) Each team draws up a tour programme in consultation with local health staff and volunteers.
h) Campaign teams travel to villages/communities and arrange information sessions, case-finding (passive), treatment and on the job training for local health workers.
i) Each campaign team fills in a report (annex 5) for each village/community.
j) Supervision and monitoring of activities by the National Programme Manager and Project Manager.
k) Continue to create awareness about leprosy especially in the campaign areas through use of mass media (TV, and national or local radio and newspapers).
l) Preparation and submission of final report by the project manager.

6.3. FINAL REPORT SUBMISSION STAGE (IMMEDIATELY AFTER THE END OF LEC)

A final report (Annex 7) is to be submitted to WHO by the National Programme Manager, covering general information and the leprosy situation of the area, activities carried out, achievements, financial statement and overall comments.

7. Possible problems that could arise in conducting LEC

a) Conflicts between the local health workers and volunteers could arise when the campaign team leaves the area if proper links and each person's roles are not properly understood.
b) The general services might regard LEC as an outside activity and not take responsibility for the cases identified by the teams if they are not fully involved in all stages of the campaign.
c) The general health sector may not be able to provide services as expected by the patients and this could result in poor treatment compliance.
d) Failure to inform and involve local community leaders regarding the objectives and timing of the campaign could result in lack of participation on their part.
e) Volunteers from villages/communities may be difficult to recruit or they might not be well motivated for the task.
f) The campaign team could focus only on detection of early cases which could result in not meeting the objectives of the campaign.
g) Volunteers, if they are not properly briefed, may be over enthusiastic in suspecting cases, which could cause some problems with the community members.
h) The campaign teams may not be able to follow the time schedule which could mean having to extend the campaign period, resulting in an increase in cost.

Annex 1.

Criteria for selecting an area for leprosy elimination campaign (LEC)

Name of area (state/province/district) .....

CRITERIA	INFORMATION	SCORE
1. Registered prevalence (numbers)		
2. Population density		
3. New cases detected (numbers)		
4. New case MB proportion		
5. Estimated and Registered leprosy case ratio		
6. Proportion of disabled (WHO grade 2) among newly detected patients		
7. Accessibility (communications)		
8. Health infrastructure coverage of population		
9. Staff availability for LEC		
10. Technical manual available in local language		
11. Availability of a competent Project Manager to manage LEC		
TOTAL SCORE		

Definition and scoring of each criterion

1. REGISTERED PREVALENCE

Number of patients registered for chemotherapy in the region selected for LEC (using the most recent data available).

The regions tentatively selected for LEC are to be ranked according to the total registered prevalence. The top five regions are to be grouped in the category of **high** and given a score of 10. The lowest five regions are to be grouped under **low** and given a score of 1, while the remaining regions between these two groups are to be taken as belonging to the **moderate** group and given a score of 5.

2. POPULATION DENSITY

Number of population per square mile or square kilometer in the region selected for LEC. The regions tentatively selected for LEC are to be ranked according to the population density. The top five regions are to be grouped in the category of **high** and given a score of 5. The lowest five regions are to be grouped under low and given a score of 1 and the remaining regions between these two groups are to be taken as belonging to the **moderate** group and given a score of 3.

3. NEW CASES DETECTED

Number of new cases detected in the region selected for LEC during the year (using the most recent data available).

The regions tentatively selected for LEC are to be ranked according to the total number of new cases detected. The top five regions are to be grouped in the category of **high** and given a

score of 10. The lowest five regions are to be grouped under **low** and given a score of 1, and the remaining regions between these two groups are to be taken as belonging to the **moderate** group and given a score of 5.

4. NEW CASE MB PROPORTION

Proportion of MB cases among newly detected cases in the region selected for LEC during the year (using the most recent data available).

The regions tentatively selected for LEC are to be ranked according to the new case MB proportion. The top five regions are to be grouped in the category of **high** and given a score of 5. The lowest five regions are to be grouped under low and given a score of 1, and the remaining regions between these two groups are to be taken as belonging to the **moderate** group and given a score of 3.

5. ESTIMATED AND REGISTERED LEPROSY CASE RATIO

This is the ratio between the estimated total number of leprosy cases in the region selected for LEC and the registered prevalence in that same region.

Regions with a ratio of three and above are to be grouped as **high** and given a score of 10, a ratio of two (**moderate**) is to be given a score of 5 and a ratio of one (**low**) is to be given a score of 1.

6. PROPORTION OF DISABLED (WHO GRADE 2) AMONG NEWLY DETECTED PATIENTS

Proportion of new cases with disability grade 2 among all new cases of whom the disability grading is known in the region selected for LEC during the year.

The regions tentatively selected for LEC are to be ranked according to the proportion of disability among newly detected cases. The top five regions are to be grouped in the category of **high** and given a score of 5. The lowest five regions are to be grouped under **low** and given a score of 1, and the remaining regions between these two groups are to be taken as belonging to the **moderate** group and given a score of 3.

7. ACCESSIBILITY (COMMUNICATIONS)

Communications between villages/communities in the region selected for LEC. The number of villages/communities per square mile or square kilometer is to be used as a rough measure for accessibility.

The regions tentatively selected for LEC are to be ranked according to the villages/communities per square mile or square kilometer. The top five regions are to be grouped in the category of **high** and given a score of 5. The lowest five regions are to be grouped under **low** and given a score of 1, and the remaining regions between these two groups are to be taken as belonging to the **moderate** group and given a score of 3.

8. HEALTH INFRASTRUCTURE COVERAGE OF POPULATION

This is the population covered by the existing health infrastructure. It is calculated by dividing the population in the region by the number of health outlets available (including mobile centres) in the region selected for LEC.

The regions tentatively selected for LEC are to be ranked according to the health infrastructure coverage of population, starting with regions having the best coverage. The top five regions having the best coverage are to be grouped in the category of **high** and given a score of 5. The lowest five regions are to be grouped under **low** and given a score of 1, and the remaining regions between these two groups are to be taken as belonging to the **moderate** group and given a score of 3.

9. STAFF AVAILABILITY FOR LEC

This refers to the availability of experienced health workers to head the LEC teams which will be conducting training courses at health workers and information meetings in villages/ communities.

If the staff are readily available in the region selected for LEC, it should be grouped as **high** and given a score of 5. Should staff required for LEC be mobilized from neighbouring areas, it is to be grouped as **moderate** and given a score of 3. If there are no staff available, then it should be grouped as **low** and given a score of 1.

10. TECHNICAL MANUAL AVAILABLE IN LOCAL LANGUAGE

This refers to the availability of a technical manual on leprosy in the local language. If there is a manual available, a score of 5 is given and if there is nothing, a score of 1 is given.

11. AVAILABILITY OF A COMPETENT PROJECT MANAGER

A person with a public health management background who will be designated as the Project Manager should be identified from the area where LEC is to be conducted.

If this person can be identified from the LEC area, a score of 5 is given. If no one can be identified and someone from outside the area must be recruited, a score of 1 is to be given.

Annex 2.

Workshop on leprosy elimination campaigns for local health workers

Location:	Health centre (rural or urban).
Trainers:	Team Leader and the head of the rural/urban health centre.
Number of trainees:	10 to 20 local health workers.
Duration:	Will depend on the training already received and the current level of involvement in the National Leprosy Elimination Programme.
Number of courses:	As required.
Topics:	Please refer to 'Guidelines for Workshop on Leprosy Elimination Campaign for Local Health worker'.

Annex 3.

Orientation workshop on leprosy for volunteers

Location:	Health centre (rural) or nearby large village which is centrally located.
Trainers:	Team Leader and head of the local health centre.
Number of trainees:	About 40 persons.
Duration:	4 hours (one morning or evening).
Number of courses:	As required (estimated to be around 25 to 50 for an area with a population of 500,000).
Topics:	Please refer to 'Guidelines for Orientation Workshop on Leprosy Elimination Campaign for Volunteers'

Role of volunteers in leprosy elimination:

a) To suspect leprosy cases from skin lesions and refer them to a health facility for diagnosis.
b) To help in promoting community awareness about the signs and symptoms of leprosy, and encouraging self-reporting to health facilities.
c) To assist the health worker in the delivery of MDT to patients who are unable to attend clinics for reasons such as old age, severe disability and living in remote places.
d) Reminding patients about clinic days and helping defaulters to return for treatment.

Annex 4.

Guidelines for briefing of team leaders for leprosy elimination campaigns

Background of team leaders

These are senior workers experienced in leprosy who will be recruited either from within the area where the campaigns are to be conducted or from outside. They may be recruited from within the staff employed by the national programme or by NGOs.

Activities

1. Draw a detailed plan to conduct LEC.
2. Conduct a Workshop on LEC at the respective health centre for the local health workers on leprosy elimination activities.
3. Conduct a Orientation Workshop at the respective health centre or at a suitable place for volunteers on leprosy.
4. Hold information sessions about leprosy at the village/community levels for community leaders and members.
5. Screening of suspected leprosy cases, diagnosing and treating new cases with MDT (fixed duration treatment).
6. Filling in of reports and submitting reports regularly.

Prerequisite for training

Thorough knowledge of 'A Guide to Eliminating Leprosy, WHO 1995' and 'Training Manual for Volunteers'.

Operational plan for each special team

In a region selected for LEC, an average of 10 campaign teams are expected to be formed. Each team will be headed by a team leader (TL). The TLs are to be given a one day briefing so that they understand the objectives and activities to be carried out under LEC and know the Guide to Eliminating Leprosy. The trainers will be the National Programme Manager, the Project Manager and other experts.

After receiving the above mentioned briefing, the TLs will travel to the respective LEC region or to their assigned areas, depending on where the briefing is given. They will then conduct a Workshop on LEC for local health workers. These workshops are to be carried out at the health centre level. Local health workers who are currently involved in leprosy elimination activities are to attend this workshop.

Orientation Workshops for volunteers are also to be conducted at the health centre or at a place to which it will be convenient for the majority of the volunteers to travel.

After completing the workshops, the special team will travel to each village/community to conduct information sessions.

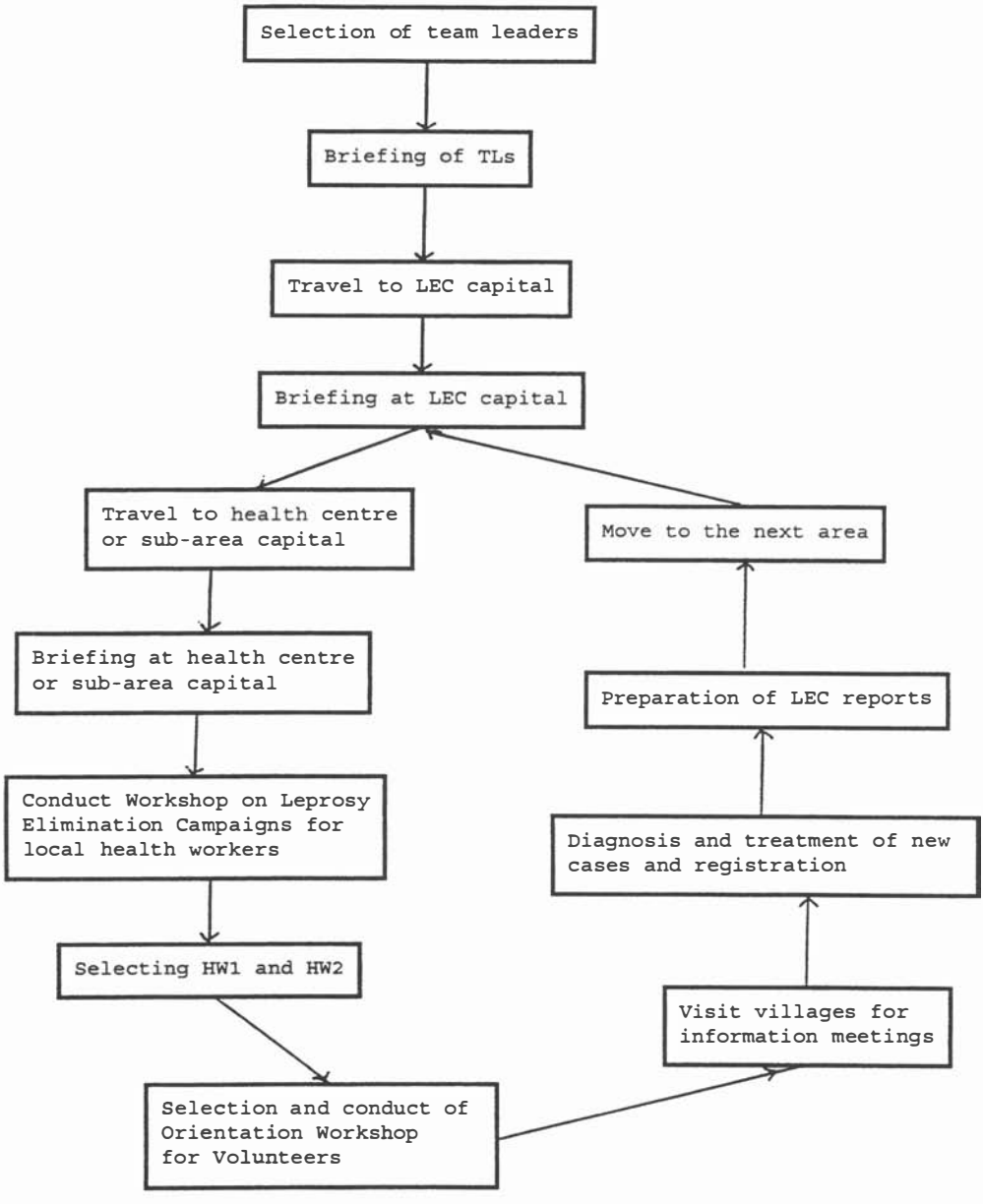
Each team will be composed of two fixed members and one rotating member. The fixed team members are the team leader and a health worker. This health worker will help the team leader in setting up information meetings and in travelling from one village/community to another. The rotating member will be the local health worker who is in charge of leprosy activities for the village/community which the campaign team is visiting to carry out information sessions. When the campaign team has finished work in this area, it will move to the next area and will be joined by another local health worker who is responsible for that area.

Team Leader: Selection, training and job description

ACTIVITY	WHO WILL DO?	WHERE?	HOW?	TIME
1. Selection of TLs	NPM and PM	Central or Regional level	Usual local channels	During the preparatory phase
2. Briefing of TLs	NPM, PM and experts	Central or Regional level	Using varous WHO guidelines*	1–2 days
3. Travel to LEC area	TLs	From centre to the capital of LEC area	Local transport	1 day
4. Briefing at LEC area, meeting with local health authorities, community leaders, listing villages, health workers, volunteers, preparing timetable, assign sub-areas to each TL	PM and local health officials	At LEC capital	Meeting, review of registers, maps, travel arrangements, list of contact persons in different sub-areas	1 day
5. Travel to health centre or sub-area capital	TL	–	Local transport	1 day
6. Briefing at health centre or sub-area capital	Local health personnel and TL	At health centre or sub-area capital town	Discussion with local health officials and community leaders	Half a day
7. Conduct workshop for local health workers	TL and local health officials	At health centre or sub-area capital town	Guidelines for Workshop on LEC for health workers, pictorial guide & posters	1 day or more depending on prior level of training of HW
8. Selecting HW1 and HW2 and volunteers	PM, TL, local health officer and community	At health centre or sub-area capital town	Discussion with local health officials	–
9. Conduct of Orientation Workshop for volunteers	TL	At health centre or appropriate place	Guidelines for Orientation Workshop for volunteers & pamphlets	Half a day
10. Visiting villages for information meetings	TL	Villages in the sub-area	Local transport	4–6 weeks
11. Diagnosis, treatment & registration of new cases	TL	Village level	Examination of suspects	At the time of village visits
12. Preparation of LEC reports for each village and submission of reports	TL	Village level	LEC forms	Continuous
13. Move to next area and start activity numbers 6, 7, 8, 9, 10, 11 & 12	TL	At health centre or sub-area capital town	Local transport	1–2 days

* LEC guidelines, Guide to Eliminating Leprosy, Workshop Guidelines for health workers & volunteers, Posters
NPM = National Programme Manager, PM = Project Manager, TL = Team Leader, HW = Health Worker

Activity flow diagram for Team Leaders of campaign teams



Annex 5.

Reporting forms for teams of leprosy elimination campaign

1. Name of village/community .....
2. District/Province .....
3. Date of visit .....
4. Village/community population .....
5. Cases registered for treatment before LEC in the village/community. PB ..... MB .....
6. New case information

Type	Number of new cases	New cases with patches		Number of new cases under 15 years	Number of new cases with grade 2 disability
		5 & <	>5		
PB					
MB					
Total					

Signature .....

Name .....

Date .....

Annex 6.

Outline for proposal of leprosy elimination campaigns

1. Name, designation and institution of the individual submitting the proposal.

2. Description of the area selected for LEC.

   - Geography, population, number of villages/communities to be covered and communications.
   - Map showing villages and health centres.
   - General information about leprosy elimination activities in this area, including categories of workers involved in providing MDT services.
   - Specific information on leprosy (registered prevalence, estimated prevalence, number of new cases detected, new case grade 2 disability during the previous years, and present MDT coverage and health service coverage).

3. Organization of LEC team.

   - Name, designation and institution of project manager.
   - How the TLs are to be recruited.
   - How the other members of the campaign teams will be identified and mobilized for campaign activities.

4. Activities planned under LEC.

5. Time frame of major activities and timing of campaign.

6. Detailed costing of proposed LEC activities.

7. Supervision and Monitoring of LEC.
   - How is it to be done and by whom?

8. Address to which funds are to be sent.

Annex 7.

Outline for final report of leprosy elimination campaign

1. General information about the area.

   - Geography, population and number of villages/community covered.
   - Map of campaign area.

2. Leprosy situation of the area (before LEC).

   - Information on how leprosy elimination activities are carried out in this area and on the MDT situation.
   - Registered prevalence.
   - Estimated prevalence.
   - New case detection (PB and MB) during the past three years.
   - New case grade 2 disability.
   - MDT coverage.
   - Health services coverage.

3. General information about LEC.

   - What activities have been carried out?
   - When were they done?
   - What posters, pamphlets or mass media education messages were used during the campaigns?
   - How many teams were deployed and manpower used?
   - Community acceptance of LEC?

4. Specific information about LEC.

   - Number of new cases detected during the campaign (PB and MB).
   - Number of new cases detected during the campaign with more than five skin patches.
   - Number of new cases with grade 2 disability detected during the campaign.
   - Number of local health workers trained in the workshops.
   - Number of local health workers actually involved in LEC activities.
   - Number of volunteers involved in LEC.
   - Number of villages/communities visited by the campaign teams.
   - MDT coverage.

5. Financial statement on LEC.

   - Travel and per diem allowances.
   - Production of posters, pamphlets and training materials.
   - Supply and equipment.
   - Others (please specify).

6. Overall comments (National Programme Manager and Project Manager).

Lepr Rev (1999) **70,** 428–429

Leprosy elimination – sprint or marathon?

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The widespread implementation of leprosy elimination campaigns (LECs) as a tool to reduce the pool of undetected leprosy cases in highly endemic countries is a very welcome and important development. Not only is the exercise proving successful in terms of new case detection, but it has brought the cause of leprosy elimination into sharp focus in those countries right from high government level down to grassroots health delivery systems and the general public. Leprosy is on the agenda in cultures where it has been difficult even to name. However, in the midst of all this it is worth reflecting on some of the weaknesses of the programme. Broadly, these relate to organizational issues, training quality and disability.

LECS have been implemented rather monolithically, with blanket coverage of all areas in the target country. However, there may be wide disparity in the quality of leprosy control services across the country. The campaigns will probably be most efficiently managed in those areas where leprosy control services are best developed, but arguably, these are also the areas that need them least. Conversely, areas with poorly organized leprosy control services are the areas least likely to run the campaigns well, but they may also be the areas where there is the greatest potential impact. It would be good to introduce more flexibility, enabling limited resources to be more focussed in areas where leprosy services have been poor.

Reaching the goal of eliminating leprosy from endemic countries will depend more on the long-term commitment of grassroots level health workers than short, sharp bursts of high-level publicity, although an LEC can inject a much needed shot in the arm for dispirited staff. It is easier to run a sprint than a marathon, but that should not blind us to the need to seek to continue to resource, train and motivate doctors and paramedical staff who are responsible for the day-to-day management of leprosy control services, whether in an integrated, horizontal programme or a dedicated vertical one. Frequently, when the glare of publicity has passed, the detection and treatment of leprosy patients falls to the bottom of the list of priorities. It is often the case that countries with a significant leprosy burden are also those struggling with other serious (and sometimes more immediate) health problems – tuberculosis, AIDS, malaria and overpopulation, for example.

The overall effectiveness of an LEC depends critically on the quality of training given to those who will administer it. In some cases, the emphasis in training may be simply on 'getting it over with', and with limited time (training courses' length varies from 1 day for

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health workers to 6 days for medical officers) and resources available, the outcome can be variable. Impressive-sounding statistics ('forty thousand health workers have been trained') simply relate to the number of bodies who have sat through training sessions. Audit of training quality has been very limited.

The bottom line for training is the correct diagnosis of leprosy and the correct administration of MDT. The question of overdiagnosis of leprosy cases is a thorny one. In many LEC situations skin smears are not routinely used to aid diagnosis, and supervision is very limited. In addition, there is pressure to come up with results. In such a situation, it would be surprising if overdiagnosis *did not* take place. Further, the addition of single-dose ROM/MDT to the therapeutic armamentarium is likely to compound the problem of overdiagnosis since it is so easy to give, and side-effects are negligible. Why not give it and be on the safe side? Since the question of overdiagnosis has not (to my knowledge) been satisfactorily assessed, it may be premature to make too much of the large numbers of new cases being reported.

Related to both organization and training is the matter of MDT completion. Since case detection and MDT administration does not necessarily equal MDT completion (except for single-dose ROM/MDT), it would be instructive to ascertain completion rates for cases detected and treated during an LEC. It is at this point that the 'rubber hits the road', since completion will depend very much on the internal motivation of health workers to finish the job, adequate and informed supervision, available resources, and the critical outcome of the contest between leprosy and other urgent and important health problems on the agenda.

LECs have been very focussed on case detection and treatment, with much justification, of course. There has, however, been much less emphasis on the management of nerve damage and secondary disability, although it is patients who experience these complications who will have really suffered the consequences of leprosy. On the whole, management of these problems remains the province of specialist programmes which tend to be more sparsely distributed.

Widespread LEC implementation, combined with shorter courses of MDT, will certainly bring the point prevalence of leprosy to below or near to the elimination goal of 1 case per 10,000 population by the dawn of the third millennium in most endemic countries. But what then? It is so important that leprosy control and the management of disability be continued well into the next century, and that knowledge and enthusiasm for leprosy work is maintained. One hundred-metre sprinters can finish the short course in a few seconds, but the real race is a marathon, which takes much longer to run.

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Progress towards elimination of leprosy as a public health problem in India and role of modified leprosy elimination campaign

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Summary India (population 943 million) has seen a highly significant decrease in the prevalence of leprosy since the introduction of multi-drug therapy (MDT) in 1981. From a prevalence rate of 57/10,000 of the population in March 1981, the figure has declined to 5·2/10,000 in March 1999. This was possible due to the creation of a completely vertical (specialized) infrastructure for leprosy control in the 218 endemic districts of the country and skeleton vertical staff in the remaining districts, coupled with the recruitment of additional staff on contract basis to provide MDT through vertical staff in endemic districts and mobile treatment units in the moderate and low endemic districts. Despite all efforts, however, new case detection has not shown a decline over the last 14 years due to the presence of hidden (and undiagnosed) cases. Therefore, in order to intensify and hasten progress towards elimination (less than 1 case per 10,000 of the population) in the whole country, it was decided to implement a massive leprosy elimination campaign (LEC) in all the States/Union Territories (UTs). The reports of 22 States/UTs indicate that 415 out of the total of 490 districts in the country were covered by modified LEC (MLEC), with 85% coverage of the population. The campaign used in India was modified from the pattern previously described by the World Health Organization. The detection of hidden or suspected cases took place within a short, intensive period of 6–7 days and relied heavily on house-to-house searches by General Health Care staff trained in leprosy detection and confirmation was made by appropriately trained staff. This MLEC received widespread Government and public support, resulting in the detection of 454,290 hidden cases of leprosy, whilst providing training to a large number of General Health Care staff and volunteers and creating widespread awareness about leprosy and the availability of treatment free of charge for all cases. This programme proved to be one of the most successful health care interventions undertaken in India in recent years, particularly in the states of Bihar and Orissa. Although a few states in India are unlikely to reach the current WHO goal of elimination before end of the year 2000, the results of the MLEC strongly support the possibility that elimination levels will be achieved in the majority of states by the end of the year 2000 and at national level by the end of the year 2002.

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Introduction

India, with a population of 943 million, has over 60% of the global total of leprosy patients.[1] After the implementation of the National Leprosy Eradication Programme (NLEP) in 1983, the district has been taken as the main operational unit by forming a District Leprosy Society and brought under coverage for free multi-drug therapy (MDT) services in a phased manner by building adequate vertical infrastructure. By 1995–1996, all districts of the country were covered with MDT, as a result of which there has been a sharp decline in the number of patients. The prevalence rate of leprosy in India has fallen from 57/10,000 of the population in 1981 to 5·2/10,000 in March 1999. A total of 8·84 million patients have been cured with MDT since the inception of the programme. Disability and ulcer care services, including reconstructive surgery facilities, have been strengthened and Special Action Projects for Elimination of Leprosy (SAPEL) introduced in difficult areas. The Leper's Act of 1898 has been repealed. Information-Education-Communication (IEC) material and learning material for health staff has been supplied to all the districts. The Modified Leprosy Elimination Campaign (MLEC) described below has already been launched in all the States/UTs.[2]

Despite a sharp reduction in disease prevalence, the annual new case detection rate has remained more or less the same in the last one and a half decades. However, it should be noted that over-diagnosis is increasing to some extent for several reasons, including higher community awareness. Considering i) the importance of community diagnosis of leprosy,[3] ii) the extent of the leprosy problem in this vast community, iii) the number of General Health Care (GHC) staff requiring training, iv) the level of required public awareness about leprosy and v) the existence of free treatment facilities provided by Government and Non-Government Organizations, it was decided to undertake package of three activities in all States/UTs within a defined period of time. This package consisted of orientation training of all health staff, building community awareness about leprosy and on availability of free MDT services followed by an intensive search in the entire population for a period of 6 days. The MLEC was then first implemented in the state of Tamil Nadu in February 1997 and this was implemented successfully in the state. The mid-term appraisal of this World Bank-supported NLEP project, undertaken in April 1997, recommended implementation of the same in other states.[4] The need for MLEC in all states was further discussed at a meeting of State Health Secretaries under the chairmanship of the Union Health Secretary in July–August 1997.[5] Based on the suggestions of the above meeting, the Government of India decided to implement MLEC in all States/UTs. The WHO recommendation for a reduction of duration of treatment for multibacillary (MB) patients from 24 to 12 months and the introduction of single-dose ROM therapy (rifampicin, ofloxacin, minocycline) for single skin lesion patients,[6] was also accepted for implementation from 1 November 1997 under the NLEP in India.[7,8] The approach adopted for the implementation of MLEC, its results, lessons learned and implications for the future are presented in this paper.

Reasons for MLEC implementation

Implementation of MLEC was considered important in view of the following factors: i) stigma associated with the disease in the community leading to misconception, a tendency to hide the disease and indifference; ii) lack of interest in leprosy shown by GHC workers in the past; iii) a small scale campaign achieves only limited participation by health staff,

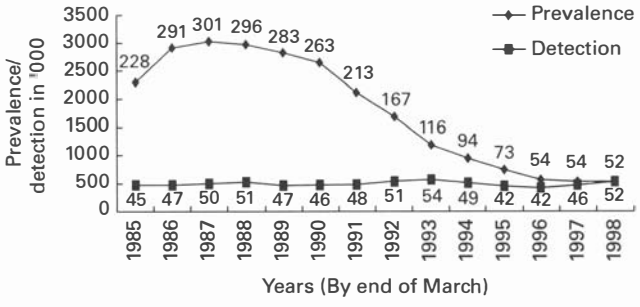

Figure 1. 1985–1998 trend.

community and other agencies; iv) the MLEC approach increases the outreach of the programme; v) annual new case detection in the last 14 years has remained the same (Figure 1), indicating hidden cases; and vi) effective MDT drugs are freely available from the WHO.

Objectives of MLEC

The basic objectives of MLEC are to i) create mass awareness about facts of leprosy and availability of free MDT treatment, ii) give orientation training on leprosy to all GHC staff, village level workers and volunteers and iii) make use of awareness and training for detecting hidden or suspected cases within a short and specified period of 6–7 days.

Consequently, it was anticipated that people would come forward for diagnosis voluntarily, the stigma against the disease would decrease and free MDT be made available from the nearest health facility.

Strategy adopted for MLEC

1. Supply of IEC material and orientation training to all Government Medical Officers, Health Supervisors and Health Workers 2–3 months in advance.
2. Mass Awareness Campaign in the States/UT 2–3 months in advance of search operation to cover the entire population. Extensive use of radio, TV, cinema, print media, posters, banners, hoardings, handbills, meetings, rallies etc. to be made, together with involvement of a large number of other field level staff, village workers, teachers, volunteers and scouts. Priority was given throughout to personal contact and coverage of rural populations.
3. Extensive house-to-house search operation for a short period of 6 days to detect suspected leprosy cases, who are to be medically examined for confirmation, simultaneously or within a short time after search, and to put them on MDT if confirmed as leprosy. Each search team comprised one male and one female worker and a local volunteer from the village.

Work plan

1. Extensive planning was initiated 6 months in advance.
2. Execution of MLEC was done through a 3-month period ending with 6 days search.
3. Confirmation of suspected cases and treatment with MDT.

Planning process at the national level

The planning process of MLEC at the national level included the following important steps:

1. Meeting of State Health Secretaries and development of detailed guidelines.
2. Submission of individual plan by the State/UT.
3. Further discussion of individual state plans.
4. Release of funds to districts.
5. Preparation of prototype IEC kit and distribution.
6. Ensuring availability of drugs for all States/UTs.

Methodology adopted for implementation of MLEC in the state/UTs

The MLEC implementation was carried out in the states in three phases namely, preparatory phase, implementation phase and reporting phase for the analysis of achievements, ensuring treatment of all detected cases and reporting achievements. Detailed activities undertaken in the preparatory phase and implementation phase were as follows:

PREPARATORY PHASE

1. Meeting with heads of related departments under the chairmanship of the Health Minister or Chief Secretary.
2. Development of a mechanism for co-ordination, monitoring and supervision.
3. Workshop for district level officers and representatives from other departments/ organizations.
4. Development of district micro plan by district leprosy officers based on guidelines, proforma and formats supplied by Central Government.
5. Training of trainers, medical officers and peripheral staff including searchers and volunteers.
6. Involvement of community participation at district, 'panchayat' and village level.
7. Intensifying community awareness activities through various media for 1 month before starting the actual search.

The details of public awareness activities included:

1. Audio-visual media: TV (film spots, messages), radio (messages, jingles), cinema slides, microphone announcements in street, villages and bazaars.
2. Print media: advertisements in newspapers, handbills, tinplates, banners, hoardings wall paintings, diagnostic cards, stickers, rickshaw plates, bus panels etc.
3. Folk media: street plays, cultural programmes in the village, folk announcements, drum beats etc.

4. Interpersonal communication: information through health workers, group discussions and talks on leprosy for various groups.
5. Other media: mobile van, rallies, exhibitions, public meetings with 'panchayat' and village leaders.

IMPLEMENTATION PHASE FOR DETECTION OF SUSPECTED PATIENTS

A team of two searchers (one male, one female), along with one local volunteer from the village conducted a rapid survey for identification of suspected cases. Each team on average covered 300–500 population per day (60–100 families or 1800–3000 population for 6 days).

Vertical staff was kept mobile for support and guidance of the searchers and for confirmation of cases. State level, divisional level and district officers supervised the search activities. A control room was established in each state and district headquarters during the search period. The senior state government officials supervised the campaign in all districts The officers of the NLEP from Leprosy Division, Directorate General of Health Services, NLEP Consultants, Regional Directors of Health and Family Welfare, officers of Central and Regional Leprosy Research and Training Institutes, (Chengalpattu, Gauripur, Raipur and Aska) also supervised the campaign in various states. Officers of WHO also visited the campaign activities in some states.

Results and discussion

The geographical coverage of MLEC in the 22 States/UTs that implemented MLEC is shown in the map. A total of 9·38 lakh doctors, health supervisors and health workers were given orientation on leprosy. The net outcome of search indicated that a total of 2·86 million suspected patients were identified and 454,289 cases were confirmed as leprosy. Of those confirmed, 55·8% were PB, 32·5% were MB and 11·7% had a single lesion.

The result of various community awareness activities undertaken was impressive, with excellent co-operation from the public during the search period. People expressed no inhibition in attending the special clinics opened for case confirmation and subsequently in attending leprosy clinics or outpatient departments. The public awareness and knowledge of leprosy improved and public participation during leprosy exhibitions was excellent. There was a massive improvement in voluntary reporting of suspected cases. The statewise breakup of new cases detected through search is shown in Table 1. This indicates an achievement of a total of 454,289 new cases, which is more or less the same as the total normally detected in the entire country in 1 year.

The average annual case detection in the last 4 years in comparison to the case detection by MLEC in states with very good MDT coverage and performance in the past is shown in Figure 2. It shows that there were significant numbers of hidden cases, even in states that have had good vertical programmes for the last 12 years, (ranging between 20 and 48% of annually recorded cases) as in Maharashtra, Andhra Pradesh, Tamil Nadu, Karnataka, Pondicherry and Gujarat.

The average annual new case detection in the last 4 years in comparison to case detection by MLEC in states with poor and satisfactory MDT programmes in previous years is shown in Figure 3, which indicates that the number of hidden cases is still much higher in the states with satisfactory MDT programmes for the last 4 years, for example Orissa, Uttar

Table 1. Statewise breakup of new cases detected by MLEP

SNO	Name of State/UT	Population in lakhs		No. of suspected cases	No. of confirmed cases	No. of single lesion
		Enumerated	Examined			
1	Andhra Pradesh	682·32	621·83	196,040	18,742	7432 (39·65%)
2	Assam	245·10	195·01	45,255	4054	212 (50·2%)
3	Bihar	927·09	749·26	617,362	206,495	9401 (4·6%)
4	Chandigarh	3·31	2·39	1,191	112	0
5	D & N Haveli	1·47	1·04	631	149	29 (19·46%)
6	Daman & Diu	1·30	1·11	596	79	13 (16·5%)
7	Goa	2·97	2·91	348	72	0
8	Gujarat	406·86	323·76	47,669	3648	889 (24·4%)
9	Haryana	38·53	32·54	5402	302	36 (11·9%)
10	a) Jammu Divn	38·59	25·43	2448	857	332 (38·74%)
	b) Srinagar Divn	40·07	23·80	4658	152	5 (3·2%)
11	Karnataka	463·60	366·45	72315	9881	4240 (42·9%)
12	Kerala	303·79	244·92	129,419	2151	NR
13	Madhya Pradesh	847·57	554·67	141,362	20,248	2268 (11·2%)
14	Maharashtra	871·81	741·86	303,404	20,858	8774 (42·1%)
15	Nagaland	14·55	13·02	441	26	3 (11·5%)
16	Orissa	338·58	289·61	416,604	62,844	12,098 (19·3%)
17	Pondicherry	9·14	6·83	3332	254	88 (35·6%)
18	Punjab	236·33	27·22	5622	629	66 (10·5%)
19	Sikkim	3·96	2·86	1052	61	8 (13·11%)
20	Tamil Nadu	528·44	378·70	248,660	12,797	NR
21	Uttar Pradesh	1470·83	1249·34	420,756	55,401	4926 (8·89%)
22	West Bengal	733·46	594·15	193,700	34,478*	2300 (6·67%)
	Total	8209·67	6448·71	2,858,267	454,290	53,120 (11.69%)

*4797 detected later out of 21,439 suspected cases not added.
NR, not reported separately.

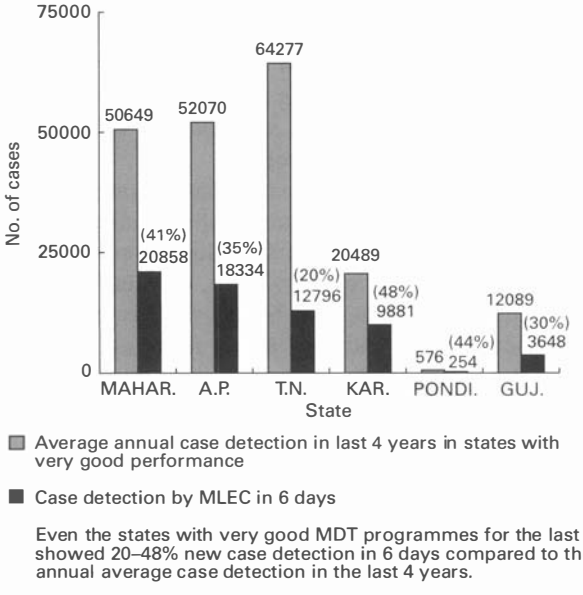

Figure 2. Comparison of case detection by MLEC and routine survey: states with very good MDT coverage.

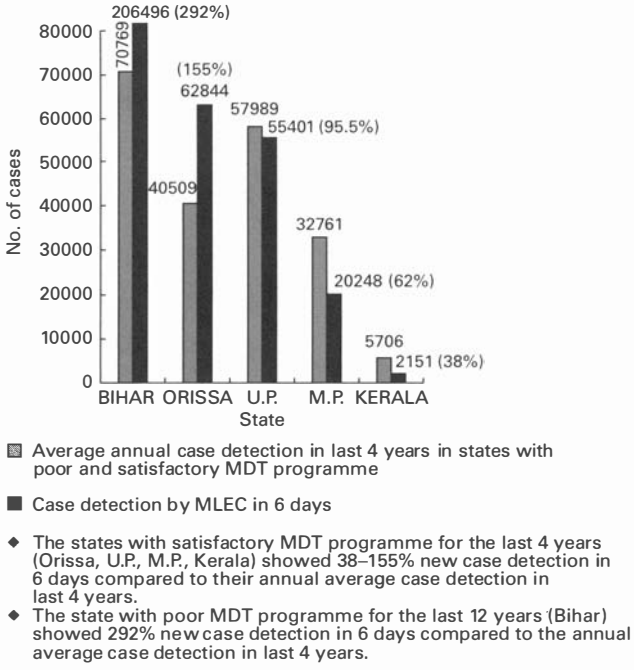

Figure 3. Comparison of case detection by MLEC and routine survey: states with poor and satisfactory MDT programmes.

Pradesh, Madhya Pradesh and Kerala, ranging between 38 and 155% of annually recorded cases. The number of hidden cases was found to be highest in the state with a poor MDT programme in the past, i.e. Bihar, where detection by MLEC was 292% of the annually recorded cases. Surprisingly, implementation of MLEC was highly successful in this state, where the public response was overwhelming and the participation of health staff excellent. The state governments of Bihar and Orissa reported that MLEC was the most successful intervention ever launched in the health sector.

The average new case detection in the last 4 years in low endemic states in comparison to case detection by MLEC is shown in Figure 4, which indicates that even in low endemic states on the MDT programme for over 4 years, the hidden cases were significant in number, e.g. 59% of annually recorded cases in Chandigarh, 65% in Punjab, 149% in Haryana and 225% in Assam. The higher percentage of hidden undetected cases of leprosy in Assam is attributed to the difficult terrain and civil unrest resulting in unsatisfactory detection of early cases.

LESSONS LEARNT FROM MLEC

1. In order to create public awareness about a disease like leprosy, which is associated with stigma, and for involvement of general health staff, a campaign approach with messages and instructions from state level to the districts and various departments is essential to ensure proper detection of patients and follow-up for treatment.

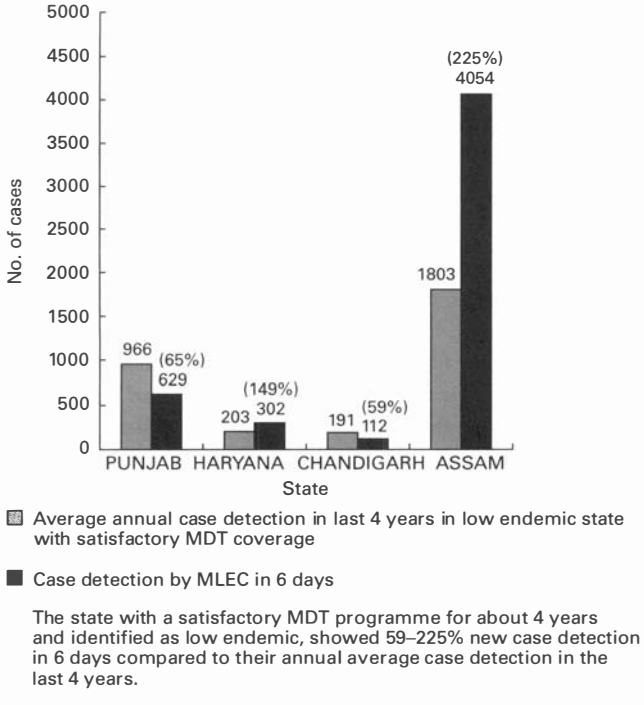

Figure 4. Comparison of case detection by MLEC and routine survey: low endemic states.

2. The orientation training of GHC staff in leprosy accomplished through the MLEC approach is well accepted, and can be taken up over a short period in the entire state.
3. The MLEC approach is much more effective and quicker in yielding results compared to the conventional approach of routine searches in smaller segments of the population at different intervals. General awareness created through the campaign approach leads to mass mobilization.
4. Proper planning, political and administrative support from state headquarters is essential to ensure success of the campaign.
5. Detection of large numbers of leprosy cases should not be confused with a leprosy epidemic in the country. Such detection in a short span of 6 days search was possible mainly because systematic attempts were made to detect the hidden cases and the people came forward as a result of massive awareness. Such cases had not previously been detected because of residence in remote or difficult areas, or not reported due to ignorance or stigma.

In Orissa, for example, the prevalence of leprosy in a regularly surveyed population is 20/10,000, as accomplished by vertical staff over a longer period of time. In the population covered by MLEC the PR is also 21/10,000, which is detected with involvement of volunteers and community in only 6 days. Therefore detection of this large number of cases should not be misunderstood as an epidemic of the disease.

Stigma against leprosy patients has been a serious hindrance in people coming forward for treatment openly. The picture has now changed significantly and this may be attributed to the massive awareness programme and free MDT services made available.

RESULTS IN RELATION TO FUNDS PROVIDED

The achievements for every 100,000 rupees (US $2439) released were: i) 735 new suspected cases identified, ii) 116 new patients confirmed and put on MDT, iii) 226 persons given orientation training (MO, supervisor, health worker and volunteer), iv) intensive awareness created in the community and v) learning material provided to different categories of staff.

CONCLUSION

If the strategic programme activities are implemented in a package form to be conducted in a definite time frame with commitment of the States/UTs, the output can be productive as witnessed under the MLEC in India. The figure of US $2439 would cover 116 patients detected and put on treatment (UK Sterling £13 per patient), and 226 persons given orientation training on leprosy. Seven hundred and thirty-five persons were identified as suspected leprosy cases by personal contact with them and their families and the overall effect of this campaign on public awareness and political commitment can be considered remarkable. It also bears emphasis that without this campaign, many of these cases would not have been detected and treated at a reasonably early stage of their disease, with the obvious risk of progression and long-term disability.

Acknowledgements

This massive campaign would not have been possible without support provided by Central and State Governments and assistance from the World Bank, WHO, the Director General of Health Services and officers of the Ministry of Health and Family Welfare. The authors are grateful to Dr Salim Habayeb, World Bank, Washington and Dr S. K. Noordeen, WHO, Geneva for their suggestions and guidance. The Government of Tamil Nadu played an important leading role by implementing MLEC first. The support provided by DANIDA and other international and national Voluntary Organizations including Doordarshan, AIR and PRESS was invaluable. The staff of the Leprosy Division, Directorate General of Health Services, administrative and finance divisions of Ministry of Health, all played a crucial role in planning, providing technical and administrative guidelines and ensuring the timely release of funds to District Leprosy Societies. The Health Secretaries, Directors of Health Services of the states involved, State Leprosy Officers, District Collectors, Chief Medical Officers, District Leprosy Officers and all other members of NLEP and General Health Care staff played a crucial role. The co-operation and active involvement of all State Government officials, the NLEP/WHO Coordinator in Bihar, NLEP Consultants, Regional Directors of Health and Family Welfare, officials of General Health Care, the officers of CLTRI, Chengalpattu and Regional Leprosy Training and Research Institutes, Raipur/Gauripur/ Aska, are gratefully acknowledged for their contribution to the success of this campaign.

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Modified leprosy elimination campaign (MLEC) in the State of Orissa, India

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Summary As part of a country-wide modified leprosy elimination campaign (MLEC) carried out in 21 selected States in India in 1998, the State of Orissa launched activities in early January of that year, during which 28·9 million people were examined, giving 85% coverage of the enumerated population. Using general health care staff and volunteers, 416,604 suspect cases were identified and 62,804 of these were confirmed as leprosy by experience observers. The period of intensive search activity lasted 1 week only, but this was preceded by several months of community mobilization and involvement, health education, training of government and voluntary staff, media messages and the involvement of all relevant health departments, officials and politicians. Both this and the intensive search period were characterized by a high level of interest and cooperation by all concerned. The total of new cases detected and put on treatment (multi-drug therapy; MDT) during the period of only 7 days was approximately equal to that which, on routine population survey by the leprosy services, would be recorded over a period of 2 years. The MLEC in Orissa is judged to have been not only an historic step forward in the control of leprosy in a State previously classified as highly endemic for leprosy, but also one of the most successful State health interventions ever mounted. In the 5 months after completion of the campaign, the voluntary reporting rate increased from 50 to 90%. As a direct result of the campaign, facilities for the diagnosis and treatment of leprosy are now available daily in an additional 1639 institutions, over and above those in existence before the campaign was launched. The achievements in terms of detecting hidden (and thus undiagnosed and untreated) cases exceeded the outset predictions, underlining the importance of continued vigilance and the need to maintain involvement of general health care staff. It is anticipated that the rise in prevalence due to the addition of 62,884 cases will be reduced by the implementation of MDT by 80% by about March 1999. Overall the results of the MLEC in Orissa strongly support the likelihood that an elimination level of less than 1 case per 10,000 of the population will be reached in this State by the year 2000.

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General profile of Orissa

The State of Orissa is one of the 32 states and Union Territories of the Republic of India. It is located on the east coast of India and bounded in the north by Bihar, in the west by Madhya Pradesh, in the south by Andhra Pradesh and in the north-west by West Bengal. It has the Bay of Bengal to the south-east, washing the entire coast line of 482 km. The State consists of 30 districts which include 58 sub-divisions, 314 community blocks, 5263 panchayats, 46,553 inhabited villages and 4334 uninhabited villages, with a total population (late 1997) of 33·8 million, which includes a tribal population of 22·2% (the second highest in India, after Madhya Pradesh) and an additional 16% belonging to scheduled castes. The literacy rate of the State is 48·5%. The percentage of urban population of the State is only 13·8%. Small villages with population not exceeding 500 persons account for over 66% of the total villages. Low population density, coupled with widely scattered small villages, poses various problems in providing services close to inhabitants. The economic status of the people of the State is quite low in comparison to the national average, and the overall disease burden, including leprosy, is high.

General health care services

The general health care services in the State are provided by the following: three medical colleges, 32 district status community hospitals, 21 sub-divisional hospitals, 127 area hospitals, 157 community health centres, 185 block level primary health care centres (PHCs), 1119 new PHCs, having one doctor only, at sector level for each 30,000 population, 5916 sub-centres, each covering 5000–6000 population staffed by multi-purpose health workers (MPHW) (male and female) at the most peripheral levels.

Leprosy services

At *State level* (Leprosy Cell), a Joint Director of Health Services (Leprosy and TB) Onissa, acts as State Leprosy Officer and an Assistant State Leprosy Officer (PKBP) acts as Technical Adviser to the State Leprosy Officer. One Sample Survey cum-Assessment Unit (SSAU) headed by an epidemiologist (Class I) and one medical officer (Class II) operates from the State level under the Leprosy Cell.

At *District level*, a District Leprosy Unit in each district functions under a District Leprosy Officer (DLO) or a District Medical Officer (responsible for public health, malaria, filariasis and leprosy) in the 30 districts of the State.

At the *Periphery*, 73 Leprosy Eradication Units (LEU) have been established in the State. Of these, 13 are run by non-government sectors and the rest are functioning under the government. One LEU covers 400,000–500,000 of the population.

Hospitals, include 13 temporary hospitalization wards (20 beds) and one 100-bed hospital established in the State for the treatment of leprosy cases with reactions and other complications.

A *Training Centre* is available for paramedical workers under State direction, and there is also a Regional Leprosy Training and Research Institute for the training of Medical Officers, Non-Medical Supervisors and Paramedical Workers, under Government of India direction.

A *Reconstructive Surgery Unit* is functioning at Olatpur (near the previous State capital of Cuttack), which was established using grants from the Government of India. Another Reconstructive Surgery Unit has been established by LEPRA India at Muniguda.

The leprosy control programme in Orissa is part of the National Leprosy Eradication (previously Control) Programme (NLEP) and receives financial support not only from the Government of India, but also from the World Bank, DANLEP (Danida-Assisted NLEP), Lepra India, The Leprosy Mission, German Leprosy Relief Association and about 13 local, non-governmental organizations.

Coverage of multi-drug therapy (MDT)

The Multi-Drug Therapy Project was started in the State in the year 1982–1983 from one district then extended in a phased manner to other districts, achieving full coverage of all districts in 1998. Due to vacancies at the base level posts, however, around 20% of the State remained only partially covered as far as case detection was concerned, although MDT treatment was available for all registered cases.

Pre-MDT status

Before implementation of the MDT programme in 1983, the entire State was highly endemic for leprosy, with a registered prevalence rate of 121·4 per 10,000 population. Seventy percent of the people were residing in areas where the disease endemicity was more than 100 per 10,000 population and the remainder in areas where disease prevalence was more than 50 per 10,000 population. The annual new case detection rate was 21 per 10,000 population, the multibacillary (MB) rate was 18·25%, the child rate 19·2% and the Disability Grade II rate 13·48%. The smear positivity rate was 3·06% amongst new cases with voluntary case detection only 29%. The contribution of dapsone monotherapy to the situation in Orissa has already been described.[1]

MDT achievements

During last 15 years of MDT implementation, the registered prevalence rate of leprosy came down to only 8·33 per 10,000 population by early 1998, more than a 90% reduction. The disability rate declined to only 2·81% and smear positivity rate was 1·77% amongst new cases, but the MB rate remained high at 25·65% as also the child rate at 17·9% amongst new cases. Voluntary reporting of new cases increased to 50%.

Reasons for launching MLEC

In spite of these impressive achievements, the annual new case detection rate remained almost constant at a high level, i.e. 90 per 10,000 population, with an even higher figure for the actively surveyed population of 21·0 per 10,000 population. Every year, around 40,000 new cases were detected over a period of 5–6 years. The annual fall in the registered

prevalence rate was only 24% during the last 3 years. The gap between the estimated and registered prevalence was highly significant in almost all districts, indicating that there were high foci of infection in the community. All these indicators suggested that the elimination goal could not be achieved in the State by the year 2000. So the State had already taken a decision early in 1997 to start implementation of a Leprosy Elimination Campaign (LEC) in selected areas as per WHO norms and specifications.[2] However, in July 1997 the Government of India decided to launch a modified leprosy elimination campaign (MLEC) in the entire country. Orissa accepted this challenge and was amongst the few States of the country that could launch MLEC early and expediently (31.1.98–05.02.98), since considerable discussion and planning had already taken place.

How the MLEC was launched in the State

First of all, a series of meetings were organized at the State, Zonal and District levels to brief the programme officers about MLEC and its objectives. Following these meetings, the clear-cut objectives and methodology of its operation were developed. This paper describes these aspects and summarizes the results and implications for the future of leprosy control in Orissa, expanding on information reported at the 1998 International Leprosy Congress in Beijing.[3]

Objectives of MLEC

- To generate community mobilization through intensive public awareness activities for elimination of leprosy.
- To detect all hidden cases of leprosy in the State and ensure regular treatment for all of them from the nearest facility.
- To involve the general health care system and participation in the leprosy elimination process.
- To achieve elimination of leprosy goal by the year 2000.

Methodology adopted

- Launch MLEC in the entire State from 30.0 1.98 to 05.02.98.
- Conduct intensive health education activities at different levels at least 1 month prior to search activity.
- Involve the entire health machinery and other Departments such as Women and Child Development, Information and Public Relations, Education, Urban Development, Revenue, Home Department, Transport and Communication, Rural and Panchayati Raj Departments, NSS, NYK, NGOs, Mahila Mandals and local community in public awareness and search activities.
- Distribute a specially designed information leaflet to all houses 1 day prior to search activity.
- Conduct search activity by visiting every house both in rural and urban areas by search teams. One sub-centre area in rural area, having 5000–6000 population was divided into five or six sub-units consisting of an average of 800–1000 population for each sub-unit. Two local volunteers (one male and one female) were selected to work in the sub-unit with

two MPHWs (male and female) of that sub-centre. Similarly in an urban area for 3000 population, four people were selected to conduct the search activity.
- Confirm all suspects by mobile confirmation team consisting of one medical officer and one leprosy worker and immediately deliver MDT to all confirmed cases of leprosy.
- Make both diagnosis and treatment facilities available at all general health institutions.
- Report and document all the activities of MLEC.

Development of 'microplans' in all districts and estimation of budget

Operational, detailed 'microplans' were developed in all districts, which included activity plans for each village and town, block, zonal and district levels for all the activities, including public awareness, search and confirmation activities.

Pre-search activities

- Participating personnel were identified.
- Training programmes for all the categories planned and conducted at different levels.
- Information, Education and Communication (IEC) materials were developed for different levels and were made widely available.
- Search forms were designed and printed and distributed to all teams.
- Diagnostic cards were designed, printed and made available to all search teams.
- Sensitizing meetings at different levels were organized.
- NGO coordination meetings were organized at different levels.
- Meetings with highest decision makers and politicians.
- Press conferences at different levels.
- Newspaper articles and advertisements in important newspapers published both at State and district levels.
- TV and radio programmes on leprosy and MLEC were broadcast daily from all television centres and All India Radio.
- Loudspeaker announcements, Swasthya Rath movement, audio-video shows, street plays, different village level meetings, school and college student rallies, human chains in different villages, pamphlet distribution, banners at all important places, inter-personnel communication in tribal areas, using local languages. All the above measures helped to produce a 'tidal wave' of leprosy awareness flowing around in the community and alerting people to the visit of the search team to their house.
- Just 1 day prior to the search activity, every house received an information leaflet from village volunteers.

Search activity

In every 800–1000 population area of a sub-centre, two local community members (volunteers) were selected who did the search activity in their respective areas, together with male and female health workers. The completed survey of the allotted population was completed in 1 day, as per planning. The male and female workers of respective

sub-centres or wards did the search activity on the next day in the neighbouring zone of 800–1000 population with separate groups of volunteers identified from the same locality. In this manner, more than 85% of the population of one sub-centre or ward was examined within 6–7 days. Thus, the entire population of the State was searched within 6–7 days.

Search team personnel

- Paramedical staff (workers/supervisors) 14,389
- Volunteers (community members + ICDS workers) 76,000
- Total 90,389

All suspects were given a referral slip. On the next day, the confirmation team visited the village and the volunteer of that village assisted them by handing over the search form and locating the houses of suspect cases. During MLEC 33,857,823 persons were enumerated and 28,961,085 (85%) examined.

Confirmation activity

- Total Medical Officers engaged for confirmation activity 1641
- Paramedical staff (leprosy) engaged for confirmation activity 1345

In all, 62,844 new cases were confirmed as suffering from leprosy out of 416,604 suspects by the confirmation teams during the MLEC and all of them were given their first dose of MDT on the spot, under supervision. 'ROM' treatments (rifampicin, ofloxacin, and minocycline)[4] was used for single skin lesion cases for the first time in this State. Paucibacillary (PB) cases were registered for 6 months treatment and multibacillary (MB) cases for the shorter period of 12 months treatment, as recently recommended by WHO.[5] All confirmed cases were given an identity card with instructions to collect next month's MDT drugs from the institution nearest to him. Paramedical workers immediately did the charting in the patient's card. Each confirmation team was provided with appropriate transport and if necessary vehicles were hired. The confirmation team filled up the second part of search/confirmation forms. One report was sent daily by the medical officer of the confirmation team to the PHC Medical Officer, who then compiled all information received and sent it to the district authority, who in turn sent information to the State Headquarters. Thus, information on all the districts was compiled and sent to the Government of India in New Delhi within 7 days.

Outcome of the MLEC

Outcome of public awareness activity

A strong community movement was generated which helped the carrying out of all activities well in time. In many areas the search teams recorded people who came out voluntarily for examination. There was a very good response particularly females and in most areas female examination coverage was higher than male examination coverage. Most of the people dutifully remained in the house on the search day, thus accounting for 85% coverage of the

population during MLEC. During the last 5 months, the statistics show 90% voluntary reporting of new cases, a figure never before recorded in any part of this State.

Outcome of search activity

In all, 28,961,085 (85%) out of 33,857,823 persons enumerated were examined during campaign period and 416,604 suspects were identified.

Outcome of the confirmation activity

A total of 416,604 suspects were re-examined and out of these, 62,844 cases were confirmed as suffering from leprosy.

Type of cases detected in MLEC

Multibacillary (MB)	15,337, i.e. 24.4%
Paucibacillary (PB)	35,409, i.e. 56.3%
Single	12,098, i.e. 19.3%
Total	62,844
Disability GII rate	1554, i.e. 2.4%

Capacity building

Technical inputs were given to the following personnel:

Category of Personnel	*Numbers*
Higher level health administrators	25
District level health Officers	320
Secondary & Primary Level Health Institutions (health personnel)	2982 (doctors)
Paramedical Staff	15,734
Volunteers	76,000
I.E.C. personnel	350
Total	95,411

It bears emphasis that all these personnel will be available for either suspecting or confirming a case and providing anti-leprosy drugs to centres nearest to patients. Furthermore, facilities for the diagnosis and treatment of leprosy cases are now available daily in 1639 additional health institutions apart from those that were available before MLEC.

Impact analysis and conclusions

Out of a total of cases detected, 12,098 (19%) were single lesion cases, 35,409 (57%) were PB cases and 15,337 (24%) were MB cases. A total of 1554 cases (2·47%) were found having disability Grade II. Every 10,000 of the population in the State yielded 21·7 new leprosy cases, which shows the disease incidence is quite high. The incidence of the disease in MLEC is also the same as the incidence in the regular surveys by NLEP staff. Furthermore, the MB,

PB, single lesion cases and deformity ratios are the same as with the regular surveys, strongly supporting the accuracy of diagnosis during the MLEC and indicating that the campaign approach is the best approach and far more effective in detection of all cases from the community in the shortest time span. It also proved that brief but well conducted orientation of all concerned persons involved in the campaign activity can yield excellent results. The prevalence of the disease in the State has gone up from 8·62 to 26·02 per 10,000 population due to the addition of 62,844 new cases to the existing 31,112 cases. No doubt this prevalence will come down by 65% within the next 6 months and by 80% by March 1999. The new case detection pattern and number in the last 5 months show that 90% of cases are now voluntarily detected and most of them are detected at general health care levels, with a 50% fall in the number of new cases detected in the same month in the previous year. These results strongly support the likelihood that an elimination level of less than 1 case per 10,000 of the population will be achieved in this State by the year 2000.

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Leprosy elimination campaign in a metropolitan leprosy project, Bombay, India

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Introduction

The global strategy for eliminating leprosy as a public health problem by the end of this century is primarily dependent on detection of untreated hidden leprosy patients, especially those with leprosy of consequence, and curing them with MDT.[1] To unearth such cases rapidly, WHO recommended a leprosy elimination campaign (LEC) through community involvement.[1] The National Leprosy Eradication Programme (NLEP) India initiated a country-wide LEC during 1998 after the initial experience in Tamil Nadu in 1997. Bombay Leprosy Project (BLP) undertook LEC in its entire project area as a part of the statewide campaign in Maharashtra State between 30 January and 5 February 1998 to identify hidden cases and to locate endemic pockets.

Materials and methods

Bombay Leprosy Project, a field research project, initiated leprosy control activities in 1976 in a well defined area with a population of 1·8 million, 50% of which is reported to be living in small and large slums. Though the whole population was brought under the LEC, more emphasis was placed on slum areas, as slum dwellers are easily accessible for physical examination and also the endemicity of leprosy is higher compared to a non-slum population. We had to follow the guidelines issued by the NLEP India through the District Leprosy Officer of Bombay to recruit volunteers (searchers), and to carry out public education, training, recording of family survey data and reporting. Two volunteers were expected to screen approximately 500 people per day. On that basis, 748 volunteers from both urban primary health care units (health posts) and the community, including college students who

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Table 1. Screening by community volunteers (%)

Enumerated population	1,330,372 (69)
Examined population	923,004
Suspected cases	2285
Confirmed leprosy cases	97 (4)
Skin smear positive MB cases	9 (9)
Detection rate/100,000	10.5
Smear positive case rate/100,000	0.97
Proportion of disabled cases	4 (4)

volunteered, were selected. They were paid 40 rupees 40 (approximately 1$ US) per day for one day of training and 7 days fieldwork.

All the searchers were subjected to a 1-day orientation in identifying leprosy by looking for any pale skin patch, shiny, red skin of face and ears, hand deformities and plantar ulcers. More emphasis was placed on suspecting lepromatous leprosy. This was done by using a colour diagnostic card and demonstrating leprosy patients. They were given a list of questions on signs and symptoms of leprosy to be asked while going from house to house. They were oriented in filling in family survey forms. However, they were told to suspect all skin disease patients whose appearance suggested leprosy without performing sensory testing and neurological examination, as the objective was not to develop the diagnostic skills of the volunteers. All these volunteers worked under the supervision of trained paramedical workers. After the training, the searchers went round the slums from house to house showing the colour picture card and asking the slum dwellers questions on signs and symptoms of leprosy for 7 days (Table 1). The trained and experienced doctors of the project later confirmed the suspected cases.

Before the actual case detection, intensive community awareness programmes were carried out not only by the project staff but also by the State Health authorities through radio, TV and the press, as well as through the display of posters and banners.

Results and discussion

Of the 1·8 million control area population of BLP, the searchers were able to enlist 1,330,372 (74%) individuals. Of this enlisted population, 923,004 (69%) residents were screened for leprosy within 7 days. The field staff of the project confirmed 97 (4·2%) new patients out of the 2285 suspected individuals. As these volunteers were not trained either to test sensory impairment in the skin lesions, or to palpate the nerves and do the skin smears for acid fast bacilli, a large number of suspected cases turned out not to be leprosy, as the sensitivity and specificity was low in this campaign. The most important outcome of this campaign was the identification of 14 (14%) MB leprosy cases of consequence, of whom nine were smear positive patients who would have remained undetected and untreated for a long time to come but for this leprosy elimination campaign. Fifty-three (53%) were single skin lesion (SSL) PB type and 30 (31%) were of two to five lesions PB type, while four patients had disability. The new case detection rate was 10·5 per 100,000 population. It is expected that the case detection rate will show a declining trend after the LEC in a given area provided such campaigns are

Table 2. Impact of LEC on new case detection (March to December)

	1998 (post-LEC)			
Type of leprosy	Number	%	Number	%
MB smear positive	43	25	19	15
MB smear negative	13	7	22	17
2–5 lesions PB	64	37	49	38
SSL-PB	55	31	40	30
Total	175	100	130	100

implemented vigorously. An attempt was made to compare detection rates before and after the LEC (Table 2).

The detection rate before the campaign was 13 per 100,000, whereas the rate was 7/100,000 after the campaign. There was an appreciable decline in new case detection including skin smear positive cases after the LEC period.

One of the drawbacks of this campaign was that the non-slum population, especially elite groups, could not be covered satisfactorily, as these people do not allow any physical examination by health workers, either during regular case detection by the trained leprosy workers or during such campaigns, as they prefer to seek private medical consultation. Such elite groups in metropolitan cities may need special approaches, such as involving private physicians and dermatologists to identify possible cases. Though only 70% of the population could be covered, the striking outcome of this exercise was the detection of nine smear positive cases. The campaign also helped to identify endemic pockets within the project area. Similarly, the whole of Greater Bombay detected 1275 new cases, out of whom 47 (6%) were skin smear positive MB type.[2]

A large number of migrants from North Indian states like Utter Pradesh, Bihar and Madhya Pradesh enter Bombay slums. Retrospective data analysis of skin smear positive cases recorded in the project area of BLP between 1996 and 1999 showed that 106 (84%) out of 126 were from outside Bombay. They were mainly from Uttar Pradesh, Madhya Pradesh and Bihar. Thirty (24%) patients had BI of >4+ and 17 (13%) patients BI 3+. LECs of smaller scale at regular intervals in selected endemic pockets in urban slum areas will be useful in identifying these imported hidden cases as early as possible and help us in bringing them under MDT.

As the traditional methods of active case finding are not cost effective during the low endemic phase, this cheaper workforce of community volunteers (CV) with appropriate task oriented training can be used to identify leprosy and augment the existing case-finding activities managed by trained manpower, either in the vertical or integrated system. Such campaigns using community volunteers do not replace the existing trained manpower or ongoing leprosy control activities. The deployment of such searchers under the supervision of trained manpower will enable us to reach realistic levels of leprosy elimination in metropolitan areas. All these data show the utility of such massive campaigns in identifying such a large number of cases within a short time and bringing them under treatment to reduce the pool of infection in the community. This should hasten the process of leprosy elimination and to usher in the dawn of a world without leprosy.

The outcome of LECs in such urban conditions should not be assessed using the strict parameters of other programme assessments. Such campaigns have disadvantages such as over-diagnosis, under-diagnosis (missed cases) and under-coverage of the population, especially of elite groups and working class individuals who are either at their workplaces or on shift duties. However, we have taken all possible precautions to minimize the shortcomings of our LEC as carried out in the population adopted for this study.

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Pace of leprosy elimination and support teams in Bihar State, India

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Summary Despite the extensive implementation of multiple drug therapy (MDT) in most leprosy-endemic countries world-wide since 1982, bringing about a remarkable reduction in prevalence, there are still regions at the sub-national level where the implementation of MDT remains difficult. The state of Bihar (population 86.3 million) in India is a good example of such a region. Previously rated as one of the most highly endemic states, it still contributes about 21% of the total caseload in India and about 12% of the global caseload. For various reasons, case-finding and drug treatment have lagged behind the progress made in most other states in the country and in 1996, the Damien Foundation India Trust (DFIT) volunteered technical support to increase the pace of elimination. Sixteen out of the 39 districts in the state were allocated, with a population of 41.8 million. Support teams, including a Medical Advisor and a Non-Medical Supervisor, both with over 10 years experience of leprosy work and control programmes, were provided to assist and work alongside government staff in case detection, treatment delivery, case-holding and discharge in their respective areas of operation. New case detection by intensive survey increased by 394% and total new case detection by 226% during the year 1996-1997, with similar trends in the following year. Striking improvements were also observed in MDT coverage, treatment regularity, monitoring and discharge of patients and in the training of local staff. This collaboration between a non-government agency (DFIT) and the staff of the National Leprosy Eradication Programme in 16 out of 39 districts in the State of Bihar has clearly been extremely successful. Similar approaches in the remaining districts of Bihar, and in other parts of India, where the infrastructure is available but inadequate, may contribute significantly to achieving the elimination goal at national and sub-national levels.

Introduction

With the introduction of multiple drug therapy (MDT) in the 1980s, the prevalence of leprosy (active caseload) has been significantly reduced in many parts of the world. There is a possibility of reducing prevalence to the elimination level of less than 1 case per 10,000 of the

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population, as defined by the World Health Organisation (WHO), but a number of countries still have several leprosy-endemic pockets with inadequate MDT coverage for various reasons, calling for urgent attention.

India is endemic for leprosy. Although MDT programmes have been introduced in the majority of leprosy endemic regions in the country since 1983, India still contributed about 70% of the global leprosy caseload during 1996. The trend continued even in 1998.[1,2] Many of the leprosy endemic countries showed a decline in new case detection rates following implementation of an intensive MDT programme, but there has been no such decline observed in India.[3]

There are a few leprosy-endemic regions where an intensive MDT programme could not be carried out, and Bihar State in India is one such region, MDT having been implemented only recently. We present a description of a strategy adopted in this region for the successful implementation of an MDT programme during 1996–1998, based on the provision of support teams of experienced workers by the Damien Foundation India Trust (DFIT).

Materials and methods

BACKGROUND INFORMATION

Bihar State is situated in northern India, bordering Nepal. This state is rich in mineral deposits and water resources for agriculture. Bihar State, with a population of 86.3 million (Table 1), has been one of the major contributors to the leprosy caseload in India and world-wide. It was observed that Bihar contributed about 21% of the caseload in India and 12% of the global caseload (1996). There were 127,000 leprosy patients on record in 1996. There was patchy coverage with MDT and the annual new case detection fluctuated widely (Table 2) from 1991 to 1996, indicating spurts of leprosy control activities.

The Government of India provided support to the state governments for implementation of National Leprosy Eradication Programme (NLEP), but Bihar had a range of problems that delayed implementation until 1993. Backlog case records were screened and removed in a procedure called 'cleaning of records'. This procedure was carried out twice (1993 and 1996), but in spite of all these efforts, only 50% of the patients on record were on MDT even during early 1996.

Some of the problems are listed here.

- Staffing for the NLEP was inadequate, though there was provision for recruitment of staff.
- Supervision of field staff and technical support was grossly deficient.
- There was persistent mismatch between the work culture and programme expectation.

Table 1. Profile of Bihar state

Population	86·3 million
Number of revenue districts	39
Population density per km^2	497 (257)*
Population below poverty line	40% (29%)*
Literacy rate	30% (52%)*

*National average.

Table 2. Leprosy profile—trend in Bihar

Item	1991	1992	19993	1994	1995
Leprosy patients on record	451,357	352,193	202,582	180,582	149,572
% of leprosy patients on MDT	9·8	7·3	22·1	34·0	49·8
New leprosy patients detected	31,481	34,376	86,281	62,992	48,004
Prevalence of leprosy per 10,000	52·2	40·8	23·5	20·9	17·3

- Most of the leprosy staff were not trained or had been trained 20 years ago.
- Supply of MDT drugs was erratic and inadequate.
- Mobility of the existing staff was poor. There was a lack of vehicles and the existing vehicles were being used for other purposes. Public transport in this region was rudimentary. Road communications were very poor.
- The region is prone to natural disasters, especially floods, and bandits are common. Hence about 30–40% of the villages become inaccessible for about 4–6 months.
- Extreme weather conditions are common. The temperature sores to 45°C during summer and drops to 4–6°C during winter.

The Damien Foundation India Trust (DFIT) came forward to assist in implementation of NLEP in Bihar in 1995. Out of 39 districts in the state, 16 were allotted for assistance from DFIT in February 1996. These 16 districts had a population of 41·8 million (43·9% of the population in the state). The leprosy caseload in these districts (52,388) was 50% of the total caseload in the state. Each of the districts was provided with a support team consisting of one District Leprosy Advisor (DLA), one Non-Medical Supervisor (NMS) and a driver with a jeep. In some of the larger districts, two or three NMS were placed under the District Leprosy Advisor. The DLA and NMS had more than 10 years experience in implementation of MDT. They were mostly from other states in India where an MDT programme had already been successfully implemented. The support team was expected to assist programme managers at the district and peripheral leprosy units to plan, implement and monitor the MDT programme.

Job responsibilities of support team

- To consolidate baseline data.
- To assist in planning and implement case detection and treatment delivery.
- To ensure regular treatment delivery.
- To ensure timely case discharge (release from treatment—RFT).
- To train programme personnel (leprosy and primary health care).
- To guide in preparation of report.
- To guide programme manager to monitor the programme activities.

They also liaised between state level programme managers and district level managers. This was achieved through monthly meetings of support teams with the State Leprosy Officer. They offered guidance in the utilization of MDT funds as per the NLEP guidelines. The support teams were co-ordinated by two senior level Medical Advisors from DFIT who were stationed in Bihar State.

Results

- All the supported districts prepared the plan and implemented treatment delivery.
- When the programme staff were inadequate, the available staff were redistributed to cover the population.
- New case detection activities were planned and implemented.
- Work output was monitored through periodic review meetings, reports and during field visits.
- Technical support was given in training of staff (Table 3), screening of population, organising special screening programmes,[4,5] management of complications and drug management.

The performance of NLEP in Bihar during previous years (1991–1996) is shown in Table 2. The performance during April 1995 to March 1996 is taken as the baseline for comparison. In the 16 DFIT-assisted districts:

- New case detection by survey increased by 394% and total new case detection was 226% more during the year 1996–1997 (Figure 1). A similar trend was also observed during the next year.
- Treatment completion rate would have been a more accurate indicator, but it was difficult to obtain. Hence, we used the proportion of leprosy patients removed from the registers by completion of treatment, i.e. RFT, which was an indirect indicator of treatment completion. During previous years, about 50% of leprosy patients were discharged by modes other than treatment completion, e.g. migration, not traceable, died, indicating that treatment completion was inadequate. With technical assistance from the support team, the case discharge increased by 160% and discharge by treatment completion by 230% (Figure 2) during subsequent years.
- MDT coverage of cases on record improved to 100% and treatment regularity improved from 49% to 82% (Figure 3).

Table 3. Personnel trained by DFIT in Bihar (1996–1998)

Category of personnel	*Number trained
1. PMW & NMS	2655
2. Medical Officer—NLEP	51
3. Medical Officer—PHC	643
4. PHC workers	270
5. Medical Practitioners	269
6. Others	740
Total	4628

*Includes personnel from DFIT assisted and other districts of Bihar.

DFIT = Damien Foundation India Trust

PMW = Paramedical Worker (leprosy)

NMS = Non-Medical Supervisor

NLEP = National Leprosy Eradication Programme

PHC = Primary Health Centre

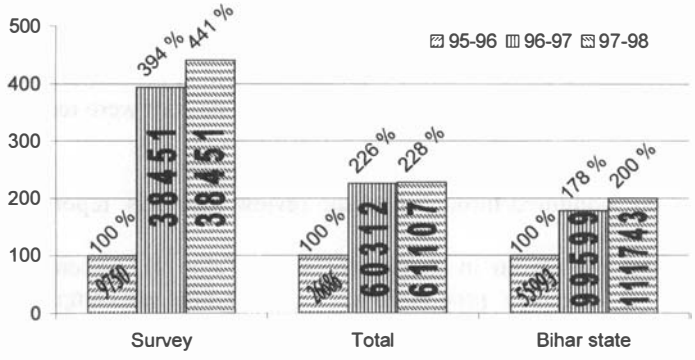


Figure 1. New case detection 1995–1998. Improvement (%) in DFIT-assisted districts and whole of Bihar State.

- The treatment delivery programme had become fairly regular. Areas that were likely to become inaccessible were identified. Leprosy patients in these areas were provided with 2–3 months supply of MDT just prior to the start of the rainy season, to ensure uninterrupted treatment.
- Alternate arrangements were made for treatment delivery during difficult situations.
- Large numbers of staff were trained not only from DFIT-assisted districts but from other districts too.
- The District Leprosy Society (DLS) was activated and co-operation was obtained from the district level health authority and administrative authority. The DLS started releasing MDT funds to implement various programme activities.
- Vehicles were released for programme activities. New vehicles were obtained from the MDT funds wherever needed.
- An adequate stock of MDT drugs was obtained from Government of India and the same was made available to the peripheral leprosy units.

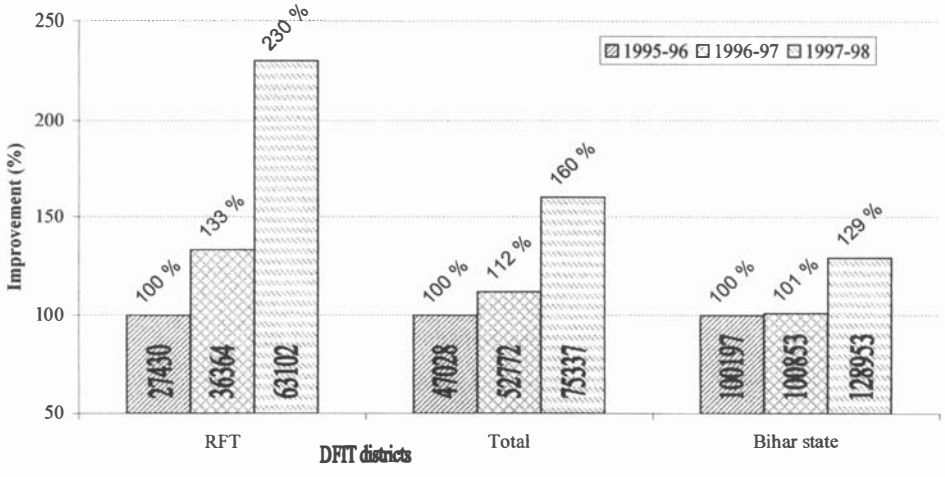
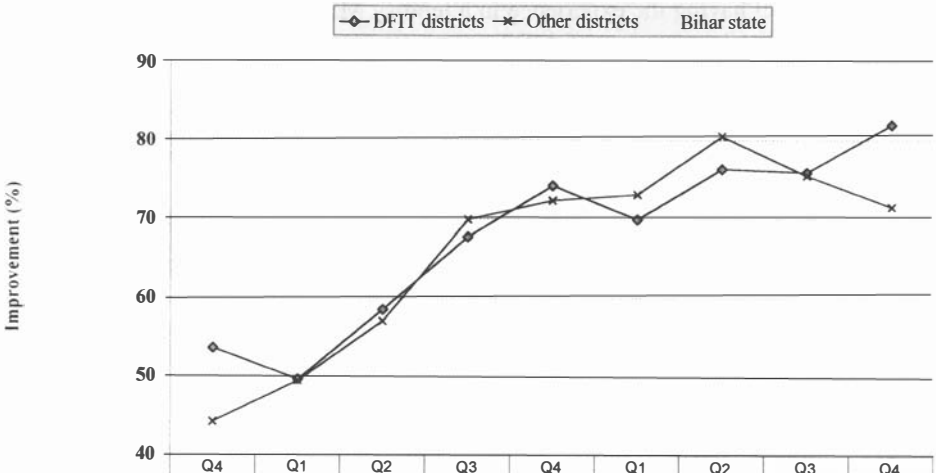


Figure 2. Case discharge. Improvement (%) in DFIT-assisted districts and Bihar State.



	Q4 1995-96	Q1	Q2 1996-97	Q3	Q4	Q1	Q2 1997-98	Q3	Q4
DFIT districts	53.6	49.6	58.5	67.7	74.2	69.9	76.3	75.9	82
Other districts	44.2	49.4	57	69.9	72.3	73.1	80.5	75.5	71.6
Bihar state	48.4	49.5	58.6	68.8	73.4	71.4	78.1	75.8	76.6

Figure 3. Recorded leprosy patients actually treated. Improvement (%) in DFIT-assisted districts, others and Bihar State.

Though there was an improvement in the other 23 districts of Bihar State without DFIT support teams, it was marginal.

Discussion

The Leprosy Elimination Advisory Group (LEAG) (4th meeting 1998) recommended that 'The global strategy for the elimination of leprosy as a public health problem, based on implementation of MDT together with case finding activities, is continuing to prove very successful and should be pursued in all countries with increased vigour.'

'The challenge now, through an accelerated plan of action, is to bring this effective technology to all remaining hidden cases and to those living in underserved populations who have little or no access to MDT. While the progress made so far in eliminating leprosy is highly impressive, these remaining problems call for further intensification of our efforts using focused yet flexible approaches'.[1]

Bihar presented a situation where infrastructure was inadequate and staff untrained. Financial resources were available but not effectively utilized. A crude estimate of prevalent leprosy cases was about 300,000 in the state, against 127,000 active leprosy cases actually on record in 1996. Intensive screening programmes in two districts (1 week in Bhojpur district and 3 months in Singhbhum district) resulted in new case detection equivalent to the whole year's case detection. It was not possible to implement MDT programme activities (case detection, treatment delivery) as fast as in some of the other regions in India. Bihar needed technical guidance at the peripheral level to plan, implement and monitor MDT programme activities.

DFIT personnel having the experience in a leprosy MDT programme were able to offer guidance on the implementation of MDT in an efficient manner, with concentration of technical expertise at the peripheral level, where it was mainly needed. The support teams worked with the field staff in carrying out the routine programme activities (on the job training), thus improving the morale of the leprosy workers so that they became more confident.

In any leprosy-endemic region when MDT is implemented extensively, the new case detection and cases on record are expected to increase steeply during the first 2–3 years. Decline is expected 3–5 years after implementation of the MDT programme. The DFIT support teams in 16 districts in this state were clearly able to bring about a positive change in the leprosy scenario, as shown by the remarkable improvement in new case detection, case discharge and treatment coverage. After some initial hesitation, the co-operation of programme staff was excellent, with sustained enthusiasm throughout. The experience suggests that co-operation between government and non-government staff is feasible and effective, with the potential to proceed to an elimination level.

Acknowledgement

We thank the Government of India, the State Leprosy Officer, Bihar and administrative authorities at the state level and district level for their encouragement and support. We are grateful to Dr N. B. B. Reddy for the guidance and the programme staff for their co-operation. The support teams deserve special appreciation for their patience and concerted effort. We thank the Damien Foundation India Trust for financial support.

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Modified leprosy elimination campaign in Mumbai (Bombay), India—a report

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Summary With appropriate planning and preparation, a modified leprosy elimination campaign (MLEC) was undertaken in Brihan Mumbai (Bombay), which has a population of around 11 million. For the campaign, 4879 non-leprosy paramedical and non-medical personnel were trained and utilized as searchers. The MLEC revealed 1410 new leprosy cases, with a new case detection rate of 1·83/10,000. Over 80% of all cases detected were either single-lesion or paucibacillary (PB), and thus of limited significance with regard to transmission. Further efforts are required to detect and treat cases of consequence (those with more than five lesions and those with positive skin smears) and to identify reservoirs of infection.

Introduction

A Government of India sponsored modified leprosy elimination campaign (MLEC) was undertaken in Maharashtra State during Anti-Leprosy Week (30 January to 5 February 1998). The MLEC was organized with the objectives of:

- mobilizing and training non-leprosy paramedical staff so as to enable them to carry out rapid surveys to detect leprosy.
- screening the entire population in a period of 1 week to detect as many new cases as possible and treat them.
- improving awareness about leprosy in the community to encourage voluntary reporting of new cases.

The MLEC was also organized in Brihan Mumbai (Bombay), a megacity in the State of Maharashtra with a population of over 11 million. This report covers the various tasks undertaken during the preparatory phase and the results of MLEC carried out in Brihan Mumbai during 1998.

For the MLEC, different municipal wards of the city were allocated to seven NGOs, four State Government Units and the Municipal Corporation as Project Areas (Figure 1). The giant

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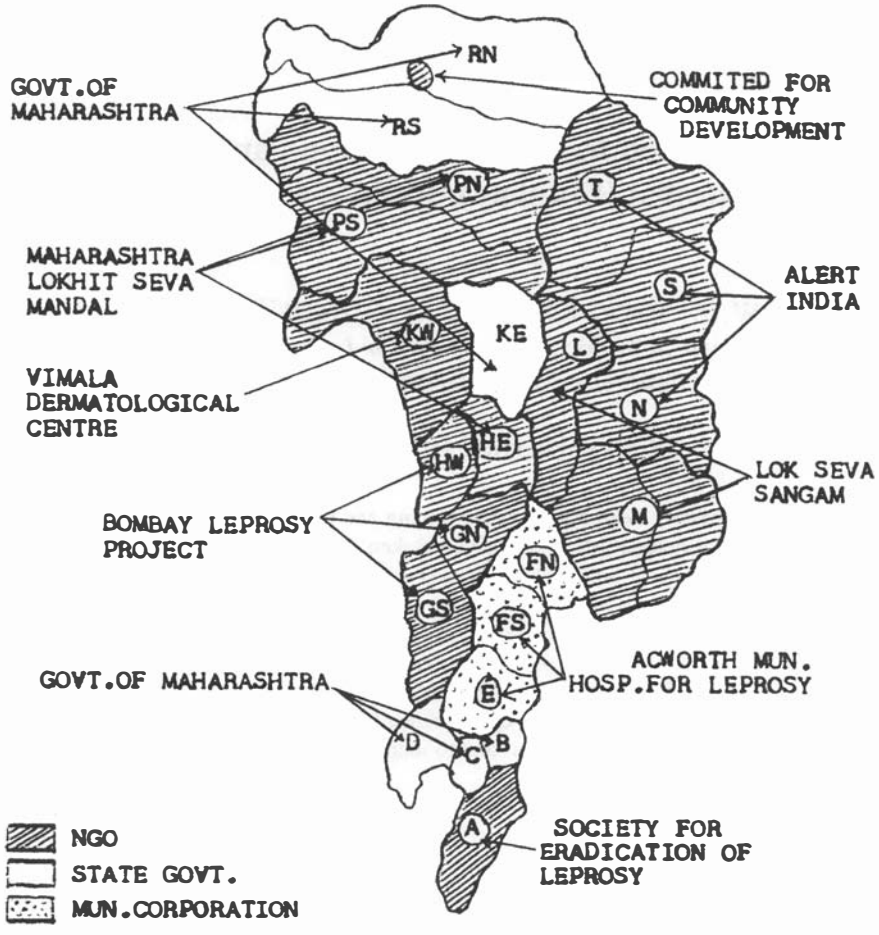

Figure 1. Map of Brihan Mumbai; division of municipal wards among non-government organizations (NGOs), State Government and Municipal Corporation.

task of organizing and implementing MLEC in this vase city was completed successfully through joint, co-ordinated efforts by the 12 anti-leprosy agencies working in the city.

Materials and methods

PILOT PROJECT

To explore the feasibility of mobilizing, training and utilizing non-leprosy paramedical staff for MLEC, a pilot project, carrying out surveys for 3 days at 10 different areas of around 10,000 population each, was undertaken in the city in October 1997. The results can be summarized as follows:

- Community Health Volunteers (CHVs), trained and used — 60 pairs
- Population enumerated — 104,694
- Population examined — 72,962 (69·7%)

- Cases suspected 415
- Cases confirmed 95 (PB, 78; MB, 17)
- New case detection rate 13/10,000

Encouraged by these results, it was considered feasible to undertake the campaign throughout the city.

MANPOWER MOBILIZATION

Considering the vast population to be covered in only 1 week, the following were utilized with the consent of higher authorities:

	Doctors	*PMWs/NMS*	*Volunteers*
NLEP staff (Govt, Corporation and NGOs)	24	158	–
Corporation (ward and zonal level)	48	–	3500 (CHVs)
Local community	–	–	1370

The planning and supervision of the campaign was done by the NLEP staff. Corporation doctors supervised during the survey. The actual door-to-door survey was carried out by volunteers, consisting of CHVs, college students and local youths.

HEALTH POSTS

Under the India Population Project V, 176 Health Posts are established in the city to cater for preventive health services to 60,000–80,000 population each. In order to cover the entire population of the city systematically, a Health Post was considered as a Unit. The NLEP field staff were posted at each Health Post to plan and implement MLEC according to population size. Moreover Health Posts also served as nodal sites for training programmes, for health education and for daily reporting and assignment of duties.

TRAINING

The training of NLEP staff, Corporation doctors and searchers was conducted separately in batches.

The training of NLEP doctors and field staff mainly concerned planning and implementation of the campaign at the Health Post level.

Ward and zonal level Corporation doctors were instructed about clinical leprosy and the purpose of the campaign and their role therein.

Two hours of task-orientated training was given to searchers (volunteers) in batches at the Health Post by the respective Medical Officer/NMS in which they were instructed regarding common clinical features of leprosy and the use of 'flash cards', with the main objective of identifying possible leprosy cases. They were also trained regarding the filling in of survey forms and the preparation of a daily report in a fixed format.

INFORMATION, EDUCATION AND COMMUNICATION (IEC)

At the national and state level, publicity for the MLEC was accomplished through mass media, including television and radio.

Each NGO and other organization took up intensive IEC activities in their project areas by putting up banners and posters, distribution of pamphlets and handbills, holding exhibitions, etc. Wide publicity in local newspapers was given by holding press conferences 2 days prior to the start of the campaign.

SURVEY

The actual door-to-door survey was carried out by the searchers, who worked in pairs (male and female volunteers) from about 8 a.m. to 12 noon, so as to cover about 500–600 people each day. During the survey, in every house, the flash cards were shown to ask if anyone had lesions similar to those shown in the pictures. Only the exposed parts were examined.

Day-to-day surveys were planned and supervised by the doctor or senior health staff in their respective Health Post areas. The survey forms, referral slips and reporting formats, supplied by the Government, were used uniformly throughout the city.

The daily reports on the population enumerated and examined and the list of suspected cases were collected from searchers and compiled at each Health Post, further consolidated at the ward level and communicated telephonically to the Control Room, so that the daily report of the MLEC in the city could be ready by 6 p.m. every day.

CONFIRMATION OF CASES

The cases suspected by the searchers were examined in detail by the doctors and senior health staff to see whether they had leprosy. The cases thus confirmed were immediately brought under MDT. The task of confirmation of cases started during the survey and was completed by the end of February. About 10% of the cases confirmed by the NLEP staff were further cross-checked by state level senior doctors.

Results

Details of the population covered and cases detected during the MLEC in 1998 in Brihan Mumbai are summarized in Table 1.

Of the estimated 11,139,577 population of the city, 10,581,703 (95%) were covered during the campaign, of which 7,698,517 (72·7%) could be contacted for examination. The searchers reported 23,249 cases with suspected leprosy lesions, of which only 1410 (6%) could be confirmed as new leprosy cases, thus giving a new case detection rate (NCDR) of 1·83 per 10,000 population.

An analysis of the new cases reveals that 84% had PB leprosy (single lesion 51%, two to five lesions 33%). This exercise also detected 70 (5%) new smear positive cases and 36 (2·5%) cases with grade II deformity.

The new cases detected in the campaign showed unequal distribution, with the NCDR in different municipal wards of the city ranging from 0·6 to 3·3 per 10,000 population.

Discussion

This campaign clearly showed that a vast population could be covered in a period of 1 week by mobilizing adequate staff. The exercise also showed the unique situation in which State

Table 1. Results of modified leprosy elimination campaign (1998) in Mumbai

Name of institute	Population		Cases detected				
			PB		MB		
	Enumerated	Examined	Single lesion	Two to five lesions	Positive	Negative	Total
1. Alert India	1,380,301	955,827	91	33	4	30	158
2. Bombay Leprosy Project	1,798,979	1,440,976	41	44	19	–	104s
3. Maharashtra Lokhit Seva Mandal	1,249,552	883,371	65	70	15	24	174
4. Lok Seva Sangam	1,644,197	1,273,799	222	112	5	23	362
5. Society for Eradication of Leprosy	176,322	146,111	17	8	3	9	37
6. Vimala Dermatological Centre	403,408	290,241	23	9	5	14	51
7. Committed for Community Development	41,929	33,989	14	19	–	6	39
8. Acworth Municipal Hospital for Leprosy	1,200,732	832,091	80	39	7	14	140
9. Supervisory urban leprosy units (I, II, II, IV)—Government	2,686,283	1,840,112	170	130	12	33	345
Total	10,581,703	7,698,517 (72·7%)	723 (51%)	464 (33%)	70 (5%)	153 (11%)	1410

Government and Municipal Corporation staff and NGOs could effectively work together to complete the task in a stipulated period of time, using planned guidelines.

Although only 6% of the suspected cases could ultimately be confirmed as leprosy cases, the campaign has been beneficial in not only detecting 1410 new cases but also in training 4870 volunteers and improving leprosy awareness among millions of people.

It is worth noting that despite many routine surveys having been previously carried out in the city, a significant number of new cases could be detected by the MLEC, indicating that the routine survey activities of the National Leprosy Eradication Programme (NLEP) are probably inadequate for this purpose.

Analysis of the new cases detected again highlights the fact that the present survey methods predominantly detect cases of limited significance with regard to transmission. The reservoirs of infection responsible for disease transmission are still not being dealt with effectively.

The results of the pilot project referred to above in terms of NCDR were found to be higher than those of subsequent MLEC in the city. This is understandable, as only 'hot spots' were selected by each organization in its project area for the pilot project.

The impact of MLEC on subsequent new case reporting in the city and its comparison with the pre-MLEC period will be reported separately.

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Leprosy elimination campaigns: the Nigerian experience

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Introduction

Leprosy is a major public health problem in Nigeria. The National Tuberculosis and Leprosy Control Programme (NTBLCP) was established in 1989 and formally launched in 1991 when we commenced nationwide implementation of MDT. The LEC programme in Nigeria is shown in Figure 1.

In 1989, Nigeria had about 200,000 registered leprosy cases.[1] Since then, the leprosy situation in Nigeria has improved significantly. The programme enjoys financial and technical support from members of the International Federation of Anti-Leprosy Associations and the World Health Organization (WHO).

LEPROSY SITUATION IN NIGERIA – 1998

Registered prevalence	7534
Prevalence rate	0·6 per 10,000 population
Detection rate	5·9 per 100,000 population
Disability grade 2 among new cases	14%
Proportion of MB cases	74%
MDT coverage	100%
Cumulative no. cured on MDT	64,419

Although Nigeria has achieved the elimination target of under 1 case per 10,000 population at the national level, there are endemic pockets within the country. Ten out of the 36 States and the capital have prevalence rates between 1 and 2 per 10,000 population. Furthermore, leprosy control has been predominantly organized as a vertical programme with a network of MDT clinics all over the country. Only recently have MDT services been integrated within the general health services.

In view of the high disability rate (14%) and high MB proportion (74%) among new cases indicating late detection of cases, we felt that we may have yet undetected and untreated cases in some areas of the country.[2]

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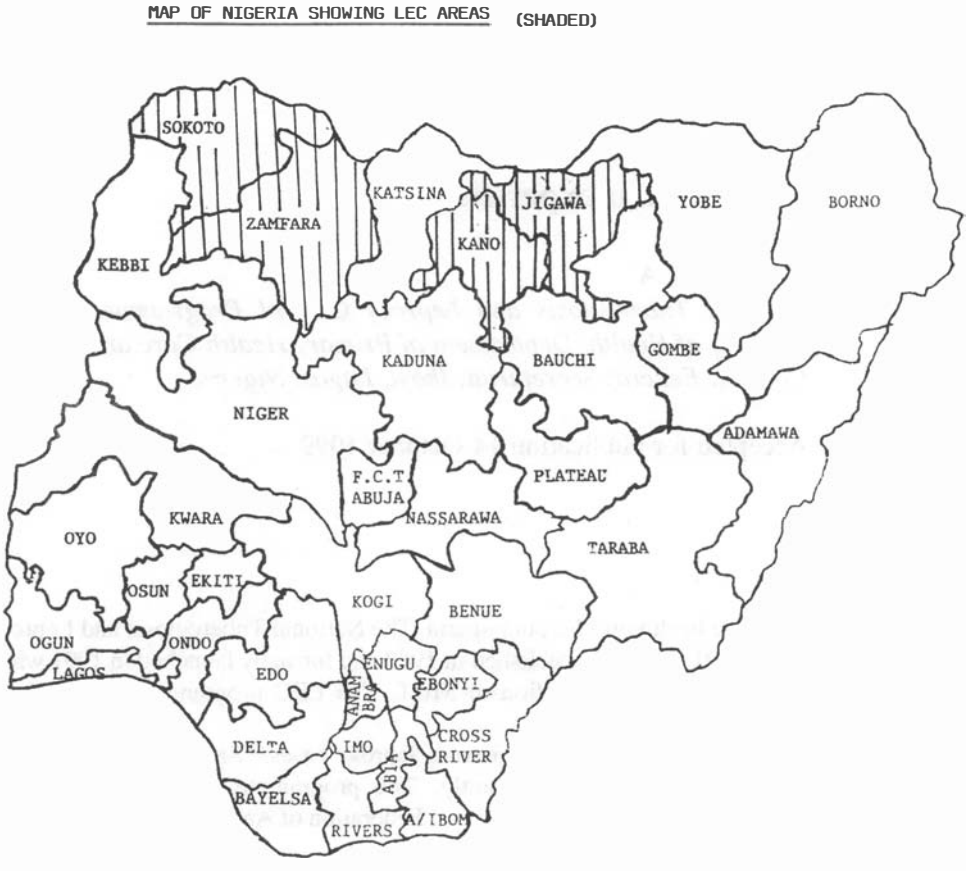

Figure 1. Map of Nigeria, showing LEDC areas (shaded).

In 1996, Nigeria embarked on the WHO initiated Leprosy Elimination Campaign (LEC) in order to address the issue of hidden leprosy cases and with the aim of achieving the elimination target by the year 2000, not only at the national level but also at the sub-national level. LEC is a one-time action support to strengthen existing leprosy services and can be repeated if necessary.

OBJECTIVES OF LEPROSY ELIMINATION IN NIGERIA

1. To detect by passive case-finding and treat hidden leprosy cases, especially the multi-bacillary cases in the communities selected.
2. To increase community awareness through mass public enlightenment in order to increase the number of patients self-reporting.
3. To open new clinics in the selected areas with a view to expanding geographical coverage and facilitating integration of leprosy services within general health services.

In order for LECs to have an impact on leprosy elimination and also be cost-effective,

they need to cover large populations and must be able to detect and cure most of the hidden cases within a relatively short period of time.[3]

To achieve this, the last four LECs in Nigeria were carried out to cover four endemic States of the country namely Sokoto, Zamfara, Kano and Jigawa.

The criteria for selection of LEC area according to WHO guidelines include easy accessibility of villages/communities, availability of health infrastructure and health staff to ensure continuity. Other factors are high prevalence compared with other areas and the majority of new patients should be MB cases with more than 10% with grade 2 disability at presentation.[4]

Leprosy situation in project area before campaign

In Sokoto, Zamfara, Kano and Jigawa States, all registered cases have been out on MDT.[5] The proportion of MB cases among new cases in high (75–85%) and the disability grade 2 is high (11–31%).

Leprosy activity is mainly vertical. The number of MDT clinics in the areas varies between 15 and 30% of health facilities available in these areas. Table 1 shows a summary of leprosy situation in the areas before LEC.

Main activities carried out during LEC

Advocacy visits were carried out by the state leprosy control officer and the central unit staff to State Ministries of Health, Local Government Authorities, Heads of Village Committees and Community Heads. The objective of the meeting was to secure political and administrative support for LEC.

Radio jingles produced in local languages, stressing the signs, symptoms and curability of leprosy and informing community members that special teams would be in their areas to put proven cases on treatment, were aired over a 10-week period (before and during case-finding). This coincided with prime periods of broadcasting to ensure extensive coverage of the populace. Posters and flyers were also distributed. Mobile vehicles with loud speakers were used during market days as well as town criers to pass on information to the villagers about the team's arrival including date and venue.

Table 1. Leprosy situation of the areas before LEC

	Sokoto/Zamfara	Kano	Jigawa
Commencement of statewide leprosy control activities	1993	1991	1991
MDT coverage (%)	100	100	100
Registered prevalence 1997	778	1530	1657
New cases 1997	471	475	532
Proportion of MB cases among new cases (%)	75	85	80
Disability grade 2 among new cases (%)	31	10·9	24
No. of MDT clinics	170	80	61
No. of health facilities	581	551	304

Training workshops for the implementers of LEC were organized. A 1-day workshop for trainers (TOT), targeted at members of the special teams, was conducted by the Programme Manager and WHO Consultant. Members of the Supervisory and Monitoring teams also attended the workshop. The participants were briefed on the disease and control measures. WHO guidelines to train general health workers and volunteers were highlighted.[6]

The TOT workshop was followed by a 1-day training workshop (in the morning) for identified general health workers in all the health centres in the areas, as well as the volunteers (in the evening of the same day). The workshops were carried out in zones and facilitated by State Leprosy Control Officer and some participants at the TOT workshop.

Primarily, the workshops were aimed at equipping the participants with the basic knowledge and the signs and symptoms of leprosy, participants were also informed on proper dissemination of information to the rural populace for adequate mobilization.

Case-finding activities were carried out over a period of 2–3 months. The special teams travelled from village to village according to the itineraries. Their arrival at the villages was preceded by announcement by village town criers and mobilization by volunteers. Upon arrival of the special team, the chief or town crier helped to summon the villagers to the venue where they were given health education on leprosy. All persons, especially those with skin lesions, were encouraged to be examined either in makeshift huts, school buildings or at the health facilities. Proven leprosy cases were started on treatment with MDT and documented. The special teams comprised trained leprosy control supervisors, general health staff and sometimes a voluntary village worker.

The supervisory teams monitored progress of the campaign, re-examined skin lesions that posed problem for the special teams and solved logistic problems. However, the use of trained leprosy supervisors for case-finding minimized wrong-diagnosis.

Achievements

The results are shown in Table 2. Most (85–90%) of communities in the project areas were visited. The number of villagers examined represented about 2–9% of the population of the areas. However, a much higher proportion of the population was health educated, both

Table 2. Results of LEC in Sokoto, Zamfara, Kano and Jigawa states

	Sokoto	Zamfara	Kano	Jigawa
Population	2,764,442	2,115,595	6,700,000	3,472,000
No. of suspects	56,117	104,000	346,387	347,039
No. of villages screened	383	302	1000	747
No. of new cases	227	126	476	927
On MDT				
PB	87	31	93	148
MB (%)	140 (61)	95 (75)	383 (80)	774 (84)
Proportion of children (%)	3·3	9·6	7·9	31·3
Proportion of disability grade 2 (%)	16·3	27	13·8	6·5
No. of local health workers trained	293	229	304	567
No. of volunteers trained	191	117	368	550
No. of new MDT clinics opened	45	11	243	487

through the mass media and the health talks given to the villagers from village to village. The total number of new cases found during LEC in the project areas was 1731. The proportion with grade 2 disability varied between 6·5 and 27%. The MB proportion was high (61–84%), which is similar to what obtains in our routine leprosy services. The case detection rose from 5·9 to 12/100,000.

A total of 1915 general health workers and 1226 volunteers were trained, thus improving MDT services expertise in those areas. A total of 786 new clinics were opened, which improved accessibility of MDT services to patients. In Sokoto and Zamfara States, only new clinics with patients were opened while in Kano and Jigawa, all the PHC facilities are being utilized for MDT services. The latter is in line with WHO recommendation.

Problems encountered and solutions

1. Frequent breakdown of some of the motorcycles used during the project because of the large expanse of area covered. The NGOs provided financial support to effect repairs quickly.
2. Some villages could not be visited because of tribal clashes. It is hoped that such villages will be visited later.
3. The half-day allocated to training of general health workers according to LEC guidelines was not adequate to cover more aspects of leprosy control in view of integration currently being pursued in the programme and the tasks allocated to general health workers. To improve the situation, NGOs are willing to pay for accommodation for 1 day to extend the training period to $1\frac{1}{2}$ days.
4. In some municipalities (cities), individuals were reluctant to come forward to be examined in the venues ear marked for that purpose. However, those with skin lesions who had been sensitized through radio jingles and posters later reported to the leprosy Referral Hospital in the locality.

Sustaining activities

The following activities will be carried out to sustain the gains of LEC:

- Routine and regular supervision to be undertaken by State Leprosy Control Officer and TBL Supervisors to support field staff.
- Adequate provisions of MDT drugs will be made available in the treatment centres.
- Periodic (re) orientation training of general health workers to encourage integration of leprosy services within general health services.
- Screening of contacts.
- Continue close working relationship with donors for both financial and logistics support.
- Maintain political commitment at all levels of government.

Impact of LEC on the national programme

Low detection due to poor awareness about leprosy and unavailability of MDI services in some areas of the States of the country was a major problem in the national programme.

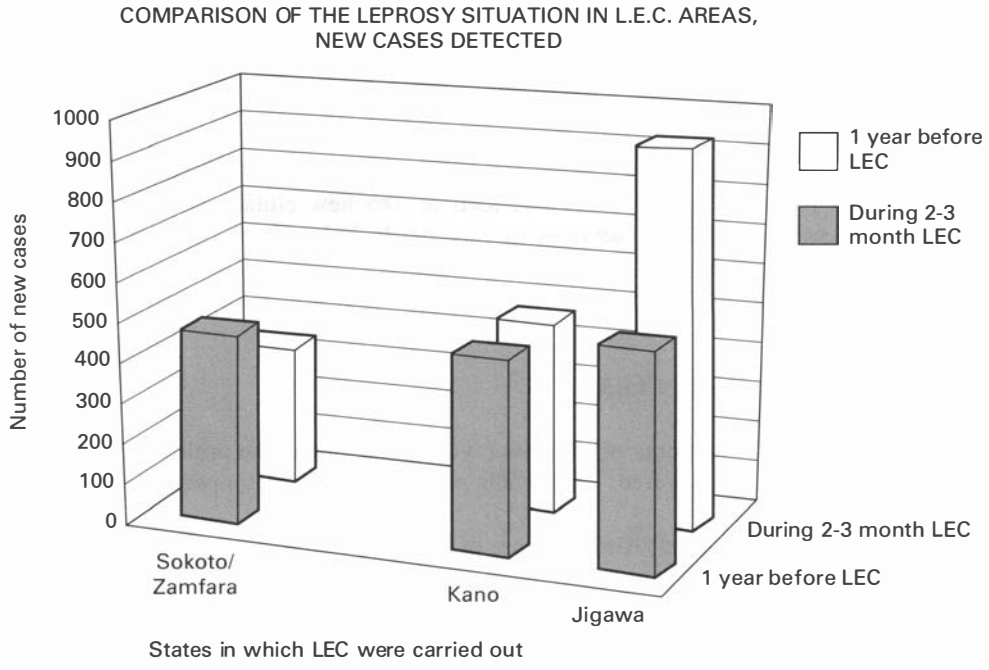

Figure 2. Comparison of the leprosy situation in LEC areas: new cases detected.

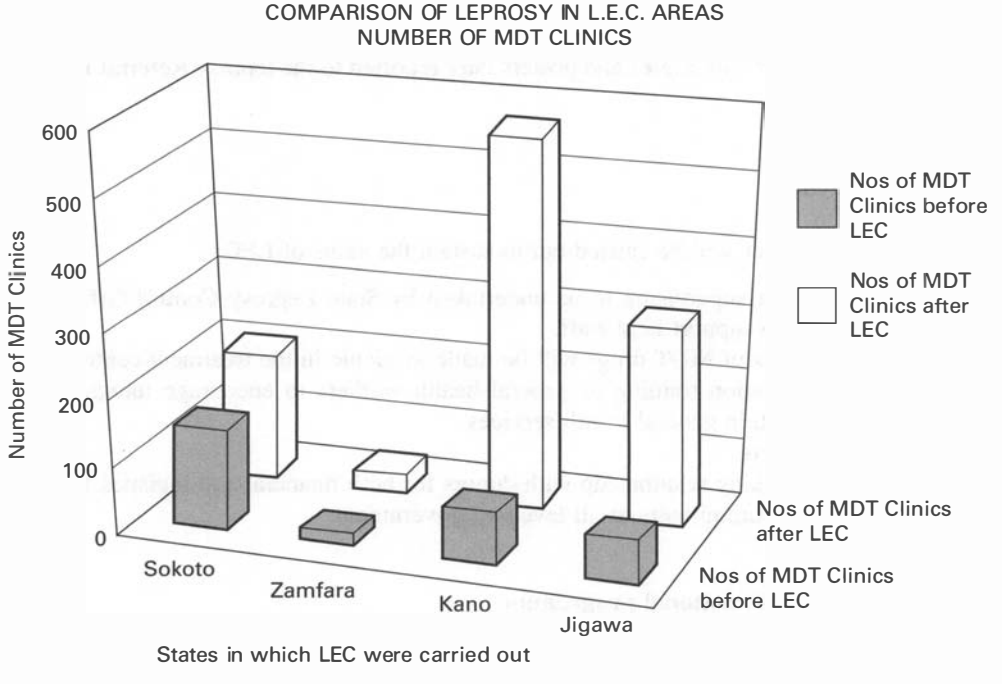

Figure 3. Comparison of leprosy situation in LEC areas: number of MDT clinics.

Through LEC, a significant proportion of hidden cases was detected in the project areas, thus improving case detection in the national programme. It is expected that following LEC, detection will stabilize and then reduce. Figure 2 shows a chart of cases detected 1 year before LEC and those detected within the short period (2–3 months) of LEC.

LEC has also made MDI services more accessible to patients in these areas. The number of MDT clinics increased from 311 to 1097 after LEC. Figure 3 shows a comparison of number of MDI clinics in the project areas before and after LEC. It is expected that through the availability of trained and motivated health workers during LEC most of the health facilities in the areas will be capable of providing MDT services.

Conclusion

In Nigeria, LEC has been found to be a useful intervention to improve case detection and to facilitate the integration of leprosy services within the general health services. LEC has indeed strengthened our routine leprosy services and enables us to involve new partners – general health workers and volunteers in the fight against leprosy.

Therefore, their continuation in other selected areas of the country is most justified to complete and sustain leprosy elimination activities at the sub-national level.

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Report of the national leprosy elimination campaign (NLEC) of Bangladesh, 1999

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Summary A national leprosy elimination campaign (NLEC) was implemented country-wide in all the 64 districts of Bangladesh for 6 days from 7 to 12 February 1999. The campaign was jointly funded by the Government of Bangladesh (GOB)/ World Bank (US$250,000) and the remaining US$381,000 was provided by other international non-governmental organizations (NGOs). A total of 44,400 health workers and community volunteers were directly involved in the campaign. In all, 60,878 suspected leprosy cases were identified during the campaign, of whom 31,433 were examined and 2435 were confirmed as leprosy cases. The remaining suspects are expected to be examined within the next 2 months. Details of the new cases detected are given in Table 8. The impact of NLEC has been significant, the number of cases detected during NLEC being 20% of the annual case detection in 1998. About 52% of the total population were directly contacted through a rapid house-to-house survey and over 90% of the population was targeted through extensive use of electronic/print media and various information, education and communication (IEC) activities.

Main objectives

The overall objective was to support the achievement of the goal of elimination of leprosy as a public health problem by the year 2000. The main objectives were:

1. To create nationwide awareness of leprosy.
2. To detect as many of the remaining hidden cases in the country (estimated to be 30,000 at the end of 1998).
3. To provide MDT to all detected cases and cure them.
4. To increase the capacity at local level to promote case detection and support MDT services.

This study was carried out with the assistance of Dr Shaikh A. Shahed Hossain and Dr Kazi Belayet Ali.

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Activities

PRE-CAMPAIGN

1. Advocacy meeting at central/division/district and thana (health complex) level.
2. Capacity building: orientation of health workers, NGO workers and volunteers.
3. Media workshop: 2-day workshop at Dhaka.
4. IEC activities.

CAMPAIGN DAYS

1. Publicity by public address systems.
2. Contact with religious leaders.
3. Group meetings at villages and schools.
4. Rapid photo survey from house to house.
5. Discourse in mosques/churches/temples.

POST-CAMPAIGN

1. Collection and compilation of reports.
2. Assessment of short-term impact of NLEC through sample survey.
3. Continuation of IEC activities.

Pre-campaign activities

1. Donor's meeting on 5 February 1998. The preparatory phase commenced with the meeting of officials from government, WHO and international NGOs. At this meeting, the preliminary draft of the NLEC plan of action and a provisional budget was approved.
2. Preparatory activities:
   - Preparation of funding allocation for different levels of activity.
   - Development and printing of IEC materials.
   - Development, printing and distribution of guidelines in Bangla on NLEC implementation to district/thana managers and health workers/volunteers.
   - Selection and 1-day orientation of government health workers, NGO workers, community volunteers and city corporation and urban volunteers.
3. One-day orientation on NLEC of health managers at central, division and district levels.
4. Advocacy meetings at central, division, district and thana level. At least one meeting was held in each area. The participants were heads of government offices/teachers/media representatives/medical professionals/NGO members/religious leaders/representatives from women's organizations and other community leaders (Tables 1 and 2). Country-wide total participants were about 28,900 at all levels.
5. Media workshop: a 2-day workshop was held in Dhaka with the participation of 46 journalists from different newspapers, local and foreign, representatives from TV and radio and government officials. The workshop was jointly sponsored by GOB, WHO, International Leprosy Union (ILU), Damien Foundation and Lepra UK. A team of resource personnel, including four from abroad, facilitated the various sessions. The Honourable Minister for Health and Family Welfare and the Honourable State Minister for

Table 1. Capacity building at local level

Categories of worker	Type of training	Resource personnel	Place of training	Duration
GOB Health Assistants (HA)	Orientation on cause, early signs, curability, availability of free treatment and on referral services. Also on preparation of reports	Local Health Managers/Medical Officer in Charge	Thana Health Complex (THC)	1 day
GOB Family Welfare Workers (FWA)	Same as above	Same as above	Same as above	1 day
NGO workers	Same as above	Same as above + NGO Supervisors	In THCs and NGO-run MDT centres	1 day
Community Volunteers	Same as above	Same as above	Same as above	1 day
City Corporation Workers	Same as above	Same as above	City Corporation	1 day
Urban Health Workers	Same as above	Same as above	City Corporation + NGO centres	1 day

Table 2. Breakdown of workers who participated in NLEC

SI no.	Categories of workers	Number	Gender
1	GOB Health Assistants	13,398	95% male
2	GOB Family Welfare Workers	13,425	All female
3	NGO workers	3143	90% male
4	Community volunteers	13,398	60% male/ 40% female
5	City Corporation Workers	677	Male/female
6	Urban Health Workers	359	Male/female
Total		44,400	

Information were chief guests in two sessions, respectively. This workshop had a great impact on NLEC and ensured wide media coverage before, during and after the campaign days.

6. Other IEC activities included pasting of posters, distribution of leaflets, stickers on vehicles and other important public places, banners for road decoration and broadcasting radio jingles and TV spots on, during and before NLEC days (Table 3).

Campaign activities

The daily campaign activities were as follows (Table 4):

Day 1: (a) *Publicity* through microphone, in all the 135,000 wards of the country, covering all villages within the ward. (Thanas are subdivided into unions and each union has three wards.)
(b) *Imams* of local mosques and priests from local churches and temples were contacted and motivated to participate and support the NLEC.

Day 2: Group meetings in at least two villages and two schools per team of worker/ volunteer.

Day 3: Group meetings in at least two additional villages and two additional schools per team of worker/volunteer.

Table 3. IEC materials used during NLEC

SI no.	Categories/items	Types	Number/duration
1	Posters	5	11,100*
2	Leaflets	4	2,147,500
3	Stickers	1	20,000
4	Banners	3	100 (4 City Corporations)
5	Radio jingles	2	1 month
6	TV spots	2	1 month

*The number of posters printed was small because previous experience during LEC in 20 districts conducted in 1997–1998 indicated that posters have very little impact in Bangladesh.

Table 4. Summary of coverage during campaign days

SI no.	Activities	Total in country	NLEC coverage	Remarks
1	Rapid photo survey: population contacted	122 million	63 million (about 52%)	Direct contact during house-to-house rapid survey
2	Group meetings at villages	About 70,000	60,924 (87%)	At least two meetings in each village
3	Group meetings in schools	NA	About 44,216	One meeting in each school
4	Imams involved	NA	About 33,542	Excluding priests and preachers

Day 4: Rapid photo survey covering all households in at least two villages per team of worker/volunteer.
Day 5: Rapid photo survey covering all households in an additional two villages per team of worker/volunteer.
Day 6: Friday—discourse on leprosy in about 50,000 mosques in the country.
Saturday and Sunday—discourse on leprosy in local temples and churches.

Several teams of supervisors (Table 5) participated in monitoring and supervision of NLEC activities during campaign days.

Post-NLEC activities

Post-NLEC activities included collection and summarization of results, survey to assess the short-term impact of NLEC and continuation of IEC activities through print and electronic media in order to keep up the intensity of leprosy elimination activities.

A survey was undertaken by the National Programme with the participation of representatives from WHO consultants, NGOs and government personnel in 18 districts (34 thanas) on a random sample basis. The participating teams interviewed health workers and volunteers who were involved in NLEC, re-examined and validated the cases diagnosed during NLEC (25%), spoke to community workers and health managers and assessed the activities performed. The population and area covered during survey are given in Table 6.

Supplements on leprosy were published in 15 newspapers (10 Bangla and five English) and radio jingles and TV spots were broadcast continuously throughout the month of February 1999.

Table 5. Categories of supervisor at different levels

SI no.	Level	Number	Organization
1	Thana	3547	GOB + NGO
2	District	330	GOB + NGO
3	Central	70	GOB + NGO and international organizations (WHO HQ, Geneva/TLMI-UK, etc.)
4	Total	3947	

Table 6. NLEC and survey coverage

SI no.	Unit	Total in country	NLEC coverage	Survey coverage
1	District	64	64	18 (28%)
2	City Corporations	4	4	4 (100%)
3	Thanas	460	460	34 (7·3%)
4	Population	122 million	90%	10%

Main difficulties

1. NLEC activities were partially hampered in some urban areas due to a call for a general strike by a political party for 3 days, from 9 to 11 February 1999. In such areas, the activities were continued on subsequent days.
2. In the absence of national consultants at the central and divisional level (their recruitment was delayed due to administrative reasons), there were some gaps in monitoring and supervision of various activities.
3. Co-ordination and communication difficulties in certain areas.
4. National Immunization Day mop-up operation at the same time in 21 thanas affected NLEC implementation in these thanas to some extent.
5. Delay in the release of funds (GOB/Sasakawa Memorial Health Foundation).

What has been achieved?

The results of the NLEC are shown in Tables 7–10.

Plans for maintaining in the project/programme areas

1. The health workers in the field, NGO workers involved and trained volunteers will:
   - continue to refer suspected cases and patients.
   - continue IEC activities (providing simple messages of curability, availability of leprosy treatment free of cost, etc., through field work, print and electronic media.
   - contact survey of index cases.
   - mass survey in the selected areas whenever necessary.
   - other MDT activities (ensuring drug compliance, defaulter tracing, motivation of community leaders and others).
2. Routine MDT services available in all thanas (sub-districts) and other MDT centres throughout the country will be intensified under the new Health and Population Sector

Table 7. Suspected leprosy cases detected and cases confirmed

Suspected	Cases examined	Confirmed	PB including SLPB	MB
60,878	31,433	2435	1198	1237

Table 8. Leprosy situation in Bangladesh before NLEC and in 1999 (first quarter)

Year	Population	P/R 10,000	New case detection	MB%	DGRII%	Child%	Self-reporting%	D/R 100,000
1996	115,123,899	1·16	11,226	34	11·28	15·80	35	9·75
1997	115,123,899	1·15	11,320	35	11·73	15·00	37	9·83
1998	122,114,456	0·86	12,364	35	8·99	18·3	30	10·12
1999	122,114,456	0·94	4310	45	11·11	13·50	31	3·61

Programmes (HPSP) adopted during the Fifth Five Years Financial Plan. Now the MDT services may even be extended up to the Community Clinics (one clinic for 6000 population planned.

3. Under line management of HPSP, all the above activities will be ensured, and regular monitoring and supervision will be strengthened.
4. Along with the regular orientation of Scout leaders and private practitioners, other IEC components of the activities will be strengthened, notably under the unified BCC (Behaviour Change Communication) component of HPSP.
5. Another short duration (2 weeks) LEC is proposed during 1999–2000 in selected areas of the country.
6. Another evaluation of the programme at the end of 1999 or beginning of 2000 by the programme management is actively under consideration.

Plans for disseminating/publishing results

1. The results of NLEC will be presented at the consultative meeting on Leprosy Elimination Campaigns to be held in Geneva on 14–15 July 1999.
2. Final results will be disseminated through line management to all Health and Family Planning components of HPSP and to all NGOs working in the leprosy field.
3. It is proposed to publish the experience of the nationwide campaign and subsequent survey to different national and international journals.

Conclusions

1. The number of new cases detected in the first quarter of 1999 is 42% higher compared with the first quarter of 1998. This increase can be largely attributed to NLEC.

Table 9. Details of new cases detected during NLEC

Categories/organization	SLPB	PB	MB (%)	Total	Gr II	Child (%)
GOB	63	528	867 (59·5)	1458	291 (20·0)	143 (10·0)
NGO	106	501	370 (37·8)	977	109 (11·1)	139 (14·2)
Total	169	1029	1237 (50·8)	2435	400 (16·6)	282 (11·7)

Table 10. Comparative new case detection in first quarter of 1998 and 1999-10-21

Period	SLPB	PB	MB	Total	Gr II	Child
1st quarter 1998	78	1943	999	3020	309	574
1st quarter 1999	222	2160	1928	4310	479	582

2. There is an increase of 17% in the PB cases detected and an increase in 93% in MB cases detected in the first quarter of 1999. This indicates that a substantial number of cases of consequence (MB) have been detected during NLEC.
3. The total number of cases and MB case percentage detected during NLEC were 53% and 59%, respectively, of the total cases and MB cases detected during the first quarter of 1999.
4. The post-NLEC sample survey in 34 thanas indicated that 75% of the respondents were aware of NLEC activities. The major sources of information were television (43%), microphones (31%), radio (23%), newspapers (8%) and imams (5%).

The 6-day NLEC was successfully implemented country-wide in Bangladesh from 7 to 12 February 1999. As expected, a large number of new cases of consequence were detected and put on MDT. An extensive nationwide media campaign and IEC activities is expected to have a long-term impact. Thus, NLEC has contributed substantially towards achieving the leprosy elimination goal in Bangladesh.

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Leprosy elimination campaign (LEC) in Myanmar, 1997 to May 1999

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Introduction

The Myanmar leprosy elimination programme (LEC) has made remarkable progress to elimination. Leprosy programme activities were integrated into the country's General Health Programme Services in 1978 and intensified with the MDT programme in 1991. The programme was covered with MDT 100% by 1995.

Forty-eight million people live in 52 districts and 326 townships in the seven divisions and seven states. According to the 1998 statistics, the health centre to population ratio is 1:32,903, that for health assistants to population is 1:35,546 and that for midwives to population is 1:5300. The midwives are the implementers of the LEC. They diagnose the cases and prescribe drug treatment. Thirty percent of the total population (around 14 million) live in urban areas.

The registered prevalence rate (PR) has declined significantly from 54/10,000 population in 1987 to 2·5/10,000 in 1998. However, the new case detection rate did not vary markedly between 1991 and 1997, and is highest in 1998 due to the introduction of LECs. The proportion of MB cases was more or less unchanged at 48% in 1994 and 51·5% in 1998. Children constituted 11·1% of cases in 1990 and 9·3% in 1998, while disability grade 2 cases increased from 8% in 1994 to 13·4% in 1998.

The proportion of new cases under 14 years old was about 10% and the proportion of MB 40%, showing unchanged epidemiology.

With experience gained from 21 LEC teams in phase 1 and 20 LEC teams in phase 2, it was clear that there might be many hidden cases. In all, 7457 cases from 55 townships in phase 1 and 6412 cases from 51 out of 63 townships in phase 2 were revealed with intensive case finding activities. The NCDR after LEC was 2–3 times higher than the NCDR before.

The registered prevalence rates of 44% of all townships in Myanmar were already less than 1/10,000, but this reflects the operational rather than the epidemiological situation.

Except for 23 townships, all the other townships have leprosy and still have to reach the elimination level. Up to now, the programme can provide cover with LEC only in 118 townships out of 326, and this has taken almost 2 years (Table 1).

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Table 1. Information about LECs in Myanmar

No.	Information	Phase 1	Phase 2 (up to May 1999)
1	Planned teams	19	20
2	Achieved teams	21 (20 + 1)	20
3	No. of townships planned	51	63
4	No. of townships achieved	55	51 (5/99)
5	Township coverage %	17·2	15·9 (5/99)
6	Population coverage	9,650,593	9,419,384
	% of whole country	20·7	19·8
7	Visiting villages %	41·4	52
8	Duration	June 97–June 98	Nov 98–June 99
9	Revealed hidden cases	7457	6412
10	NCDR/100,000 population	77·3	68·1
11	< 14 year NC % average	8·9	8·2
12	Grade II disability NC %	18	20·5
13	MB NC %	40·7	43·4
14	> 5 patches NC %	38·2	37·0

Specific activities of LEC phase 1

As the country has planned to accelerate progress to attain the goal of elimination of leprosy within the set time-frame, LECs were undertaken in 55 townships between June 1997 and June 1998 as LEC phase 1, with the support and guidance of the WHO.

Apart from the activities guided by the WHO, there were some innovative and additional approaches, e.g. conducting advocacy meetings at different levels, the use of various kinds of mass media for LEC, the involvement of village authorities and the use of volunteers to search for suspected cases and organize them for screening. The contacts of patients and patients affected by leprosy (PALs) were also examined during the visits. The team visited suspect cases if they failed to come.

Due to time and manpower limitations, the teams could not visit all villages in the area, so there was a need to select the villages to visit and the other villages were designated as 'drainage' villages. Contact tracing was implemented to explore more cases.

Health Service Research (HSR) was carried out with the Department of Health and Preventive and Social Medicine Department, Institute of Medicine, in Bago, to study the effectiveness of LEC.

Specific activities of LEC phase 2

Another 63 townships identified to be vulnerable for a large hidden caseload were subjected to LECs between November 1998 and June 1999 as LEC phase 2. American Leprosy Missions (ALM) provided financial support, and LECs were completed in 51 townships by the end of May 1999.

To detect most of the untreated leprosy cases from top townships of the entire country before December 1999, a quick method of estimating untreated leprosy cases was used. Sixty-three townships, estimated to have at least 100 cases per township, have been selected for LEC phase 2.

A comprehensive manual was developed after conducting a workshop for the project managers and members to implement the planned activities systematically. In the manual, the outlines are highlighted for (i) the preliminary data collection for qualified planning, such as standardized forms, health centre area map, listing the contacts, etc., (ii) guidelines for advocacy meetings, as these are crucial for the success of the LEC, (iii) development of guidelines for the information session to improve community awareness and participation and (iv) conduct of basic health service (BHS) training at the health centre instead of townships, to increase cover and effectiveness.

Instructions on the formation of the training teams with efficient trainers were given and the criteria to select the eligible trainees suggested.

To improve the village cover, LEC teams of two types were formed. One was headed by Leprosy Inspectors and the other by Field Supervisors (Health Assistants or Lady Health Visitors). Supervision was also carried out by the township medical officer. The reporting formats for the purpose of supervision, compilation, implementation, monitoring and evaluation were standardized.

Achievements

AREA AND POPULATION COVERAGE

- Within the 2 years, 118 townships had been covered by LECs.
- Up to May 1999, 40% of the total population had already been covered.

VILLAGES VISITED

- During LEC 1, only 41% of the villages had been visited by search teams; however, this rose to 52% in LEC 2.

NEW CASES DETECTED

- Up to May 1999, 13,869 new cases were discovered.
- The NCDR was 77/100,000 in LEC 1 and 68/100,000 in LEC 2.
- The other indicators, such as percentages of under-14 new cases, MB new cases and new cases with disability grade 2 was three times higher than in previous years, in both phases 1 and 2 (Table 2).
- Ninety-five percent of new cases were voluntary reporters in LEC 2, compared to 90% in LEC 1.

NEW CASES IN LEC VILLAGES

- Forty-six percent of visited villages and 15% of the 'drainage villages' had new cases, but the new cases and registered cases were not different, as in LEC 1.

CAPACITY BUILDING

- Screening of the suspected cases, diagnosis, classification, charting and prescription of treatment were carried out by the general health staff, especially midwives.

Table 2. Prevalence rate (PR) and new case detection rate (NCDR) by division before and after LEC phase 2

			Previous year		LEC	
No.	Division	Total townships	PR	NCDR	PR	NCDR
1	Yangon	7	0·9	9·5	7·3	43·0
2	Bago	10	3·4	39·2	13·1	93·5
3	Magway	7	2·9	23·5	13·2	101·9
4	Sagaing	8	3·0	23·9	8·9	66·0
5	Mandalay	8	1·8	19.10.99	7·2	48·4
6	Ayeyarwaddy	11	1·6	16·9	9·2	69·1
	Total	51	2·3	22·3	10·0	72·0

- Technical staff provided only technical assistance, thus making GHS more skilful and confident.
- The area of added knowledge on leprosy and control programmes, and the knowledge concerning the ways to reveal hidden leprosy cases were improved.
- In some areas, the NCDR was increased up to 10-fold, thus revealing the leprosy situation more clearly and increasing the motivation of health staff.

COMMUNITY AWARENESS

- After conducting LEC, the community was more aware about leprosy and its control.

PREVALENCE RATE CHANGES AFTER LEC

- One year after the conduction of LEC, the PR has gone down to its lowest recorded level.

EVALUATION

- By standardization and development of data collection and reporting formats, we are ready to provide data and information to identify the problem areas for further action.

Problems encountered and solutions

LEC TOWNSHIP COVERAGE

At least 177 townships in Myanmar are leprosy hyper-endemic, and the others also have leprosy as a public health problem.

LEC phase 2, already reported from 51 townships, shows that both low and high PR before LEC are increased after LEC significantly above the elimination level. Thus, although the situation of registered prevalence (1996–1998) in the townships showed a declining PR in most, the activities to reveal hidden cases were still needed. However, the time left to cover the whole country is very short. Conventional LEC took 2 years to cover 118 townships.

NEW CASES AFTER LEC

In Shwe-daung township, about 40% of the total new cases detected within a 3-year period resulted from LEC 1 in 1997. Forty-four cases (15%) were detected by routine case finding methods in between the two LECs and the other 73 cases (24%) were explored by a repeat LEC exercise carried out in 1999.

Sixty-six percent of the new cases after LEC were from the villages, where we had already detected new leprosy cases during LEC 1.

Only 23% of the new cases were single-lesion and about 40% of the new cases had a history of less than 2 years. It is likely that many hidden cases are still to be detected. The reasons for this may be:

1. Area coverage – the search teams could not village every village.
2. Methodology and implementation – weakness in the completeness of the instructions and guidelines.
3. Behaviours of the hidden cases (ignorance, fear, stigma, etc.).

The second and third reasons are more important.

POPULATION COVERAGE

Thirty percent of the total population live in urban areas, especially the larger cities, where conduction of LEC is not feasible.

A considerable number of the population are special groups who are not easily reached with elimination activities, e.g. armed forces and industry.

EFFECTIVENESS OF LEC

In some areas, the effectiveness of LEC in terms of the detection of hidden cases in in question. Comparison of new case detection rates before and after LEC suggests that more hidden cases are to be found in some areas.

The problems encountered are listed below:

1. A considerable number of townships are still left to conduct LEC.
2. New cases detected after LEC are still quite numerous, thus contributing to prevalence figures and making it more difficult to attain the elimination goal in time.
3. For special areas and groups, especially in greater cities, the hidden cases were not yet detected and treated.

SOLUTION

1. A nationwide LEC has been planned for late October 1999, to detect the remaining cases and to cover all townships in time.
2. HSR will be conducted, to explore the reasons why all the cases cannot be detected during LEC. Behavioural research will be included.
3. To develop an action-orientated surveillance system and 'mopping up' activities.
4. To improve the activities and area coverage by developing a partnership approach.
5. Appropriate utilization of communication media for the different areas and population.

6. Repetition of LEC whenever necessary.
7. Strengthening of monitoring and supervision in LEC.

Sustaining activities

Waw is one of the eight townships in Bago district. By way of example, it maintained its highest NCDR throughout the year from 1991 to 1996 by routine case finding activities. It started to decrease in 1998, 1 year before LEC. During LEC in 1999, the NCDR was almost the same as before, i.e. 37/100,000, the lowest in 8 years. A similar pattern can be seen in Daik-U township also.

To reduce the NCDR by routine case finding activities in Myanmar took about 3–7 years. However, LEC can reduce the NCDR by more than can routine activities.

LEC methodology is therefore an essential activity to accelerate the elimination of leprosy. LEC was affective in all its three tiers, i.e. better case finding and effective treatment, capacity building and enhancing community participation. However, it should be emphasized that LEC activities need sustained effort by the GHS as well as by the community.

The active involvement of the medical and general health staffs is also crucial. To ensure their sustained involvement, annual review meetings and workshops should be organized.

To integrate the LEC methodology into GHS, with essential support and management, as a routine activity is likely to be a vital and sustaining activity.

Various methods of communication should be utilized for the specific groups and areas. The role of media, especially the private sector, should be increased to accelerate and sustain the programme.

To achieve and sustain elimination of leprosy, the involvement of local and international participating bodies is of great importance. This is the time for everyone to participate in leprosy elimination.

Short- and long-term impact

In the areas which have recently conducted LEC, the NCDRs and PRs are markedly increased. However, after 1 year, they go down to the lowest level recorded.

There is therefore no doubt that LEC can reveal a large number of hidden cases within a short period, but based, for example, on our experience in Shwe-daung, one round of LEC will not be sufficient to produce long-term impact in terms of revealing hidden cases as well as creating community awareness.

Conclusions and recommendations

There is no doubt that LEC is one of the core activities to accelerate elimination and to help the achievement of that goal. However, to make it more effective in sustaining the control programme, the following steps are to be recommended:

1. A nationwide LEC in Myanmar should be conducted in 1999. Every village in every

township in the country should be visited during the campaign, either by the search team or teams of trained volunteers and local NGOs.
2. Strengthening of monitoring and supervision is necessary to make LEC more effective.
3. HSR studies should be supported a) to reveal almost all the hidden cases with minimum frequency and b) to ensure sustainability.
4. A Health Management Information System (HMIS) should be built in to the LEC.
5. Management of the health system should be expanded from integration to participation.
6. To enhance leprosy awareness in the community and promote voluntary reporting of new cases, not only by improved coverage and LEC activities, with the active involvement of medical services and GHS, but also by the utilization of appropriate media, especially from public sectors.
7. LEC should be repeated either in conventional or integrated settings, if the epidemiological data indicate that it is needed.

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Leprosy elimination campaign (LEC) in the Philippines

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Introduction

A leprosy elimination campaign (LEC) was implemented in the Philippines as a means to intensify case-finding activities, in view of the perceived large gap between estimated and actual new cases detected. The objective was to find all 'hidden cases' of leprosy, particularly cases of consequence, and treat them with multi-drug therapy (MDT).

LEC projects in the Philippines were first introduced in 1996 in two provinces, namely Ilocos Norte and Cebu. Thereafter, 13 others were implemented, four in 1997 (Ilocos Sur, Maguindanao, Cagayan, Cebu City) and nine in 1998, of which seven were completed in 1998 (Pangasinan, La Union, Rizal, Antique, Zamboanga Norte, Misamis Oriental, Sarangani) and two in 1999 (Davao Sur, Biliran).

The results of LEC projects are very encouraging. Thus, the projects narrowed the perceived gap, particularly in areas where the number of suspected backlog cases was high.

Materials and methods

The standard protocol of activities undertaken in the implementation of LEC projects in the Philippines include the following:

CO-ORDINATION WITH LOCAL GOVERNMENT EXECUTIVES (LGE)

Local Government Executives (LGEs) are informed about the purpose and expected outcome of the project. Commitments from LGEs is obtained through a Memorandum of Agreement between the LGEs, provincial and regional health office, and National Leprosy Control Programme, specifying duties and responsibilities of each in the implementation of the project.

FORMATION OF LEC TEAMS

At least three LEC teams are organized per province. Each LEC team is headed by a doctor,

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nurse, or a nursing attendant who has been trained to diagnose leprosy. The members of the LEC team are representatives from the Regional and Provincial Health Office, Sanitarium, Skin Clinic, and Rural Health Unit The LEC teams conduct skin consultation (based on a masterlist of persons with skin diseases) in a designated area in every barangay in a municipality on a scheduled date.

CAPABILITY BUILDING

LEC team leaders are oriented on the LEC project and its implementation. A 1-day refresher training course on leprosy is also provided to enhance ability to diagnose and appropriately manage leprosy and its complications. Schedule of LEC team visit per municipality is drawn during this orientation training.

The Municipal Health Officers, who are also the LEC team leaders in their respective municipality, are then tasked to orient their staff community volunteer health workers (CVHW) and village leaders on the project. The date of LEC team visit per barangay is scheduled during this half-day orientation.

PROCUREMENT OF TOPICAL OINTMENTS

Procurement of topical ointments (antibiotic, anti-fungal and anti-scabies) is based on the expected number of skin consultations. These ointments, prepared by the sanitarium, serve as an incentive for individuals with skin lesions to consult with the LEC team.

COMMUNITY PREPARATION

One to 2 weeks before the scheduled LEC team visit, CVHW prepare the community by informing every household that a team of skin experts (LEC team) will visit the barangay on a scheduled date, time, and place. CVHW list persons with skin lesions in a master list and encourage them to seek skin consultation with the LEC team for management of skin lesions.

Community assemblies are also done to inform the community of the importance of skin consciousness and provide correct information that leprosy is curable with multi-drug therapy (MDT).

LAUNCHING OF LEC

The start of LEC activities is usually ushered in by a motorcade in the provincial capital or municipality with the highest leprosy prevalence. Before and during the launch, intensive information dissemination campaign using various forms of media (TV/radio interviews, press releases, display of leprosy posters, and distribution of leaflets) is undertaken to increase the level of public awareness on leprosy. This serves to remind individuals with skin lesions to consult with the visiting LEC team.

CASE FINDING AND TREATMENT

Each LEC team is expected to cover at least two barangays per day. All masterlisted individuals are screened out for leprosy and given appropriate treatment. Individuals who failed to come for consultation are followed up by the CVHW or rural health unit staff.

ENDORSEMENT OF DIAGNOSED LEPROSY CASES TO RHU

The patient's record form is filled up for every new diagnosed leprosy case and endorsed to the respective Rural Health Unit (RHU) for follow-up and further management. Names of new cases are added into the existing Central Registry and Drug Collection Chart.

Results

Fifteen LEC projects have been implemented in the Philippines from 1996 to April 1999, covering 12,412,063 (17%) of the total population or 29% of the target population, that is, from provinces with a PR of >1/10,000 population in 1997. These projects detected a total of 1408 new cases. Fifty-nine percent (825) of these new cases were of multibacillary (MB) leprosy, 9% (121) were grade 2 deformity and 13% (179) were less than 15 years old (Table 1).

Discussion

Eleven (Ilocos Norte, Cebu, Cagayan, Maguindanao, Ilocos Sur, Pangasinan, Rizal, Zamboanga Norte, Antique, Biliran, Davao Sur) of the 15 LEC provinces had a 4–218% increase in new cases detected compared to routine case finding activities (Figure 1). Ilocos Sur showed the highest increase, with 207 new cases detected in the 1997 LEC compared to only 65 new cases for the whole year of 1996. LEC in Cebu Province in 1996 found 154 new cases, only a 4% increase from its 148 new cases in 1995.

LEC for Cebu City detected only 46 new cases in 1997 compared to 80 new cases from routine case finding activities in 1996. This could be attributed to:

Table 1. Profile of new leprosy cases in 15 LEC areas, Philippines, 1996–1999

Province	Population	New cases detected	MB cases	With grade 2 deformity	<15 years old
Ilocos Norte	501,872	97	53	23	11
Cebu	1,416,301	154	108	19	35
Cagayan	915,154	105	52	15	15
Maguindanao	674,420	210	89	22	36
Ilocos Sur	601,421	207	65	5	20
Cebu City	691,623	46	30	3	12
La Union	626,766	41	25	4	3
Pangasinan	2,269,244	130	107	8	12
Rizal	1,549,081	58	34	2	3
Zamboanga Norte	825,726	112	78	1	14
Sarangani	424,358	25	23	1	1
Antique	446,647	86	62	7	6
Misamis Oriental	622,951	32	19	3	1
Biliran	140,921	28	19	2	4
Davao Sur	705,578	77	61	6	6
Total	12,412,063	1,408	825 (59%)	121 (9%)	179 (13%)

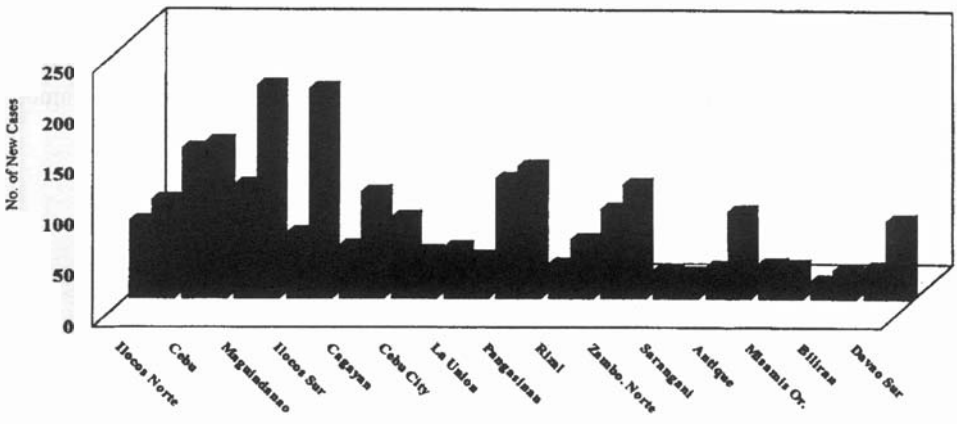

Figure 1. Case detection: routine (first bar in each pair) versus LEC (second bar in each pair).

1. Few new cases truly resident in Cebu City. Some cases detected during routine case finding are actually from surrounding municipalities because of fear of being ostracized in their municipalities and/or belief that city's leprosy services are of better quality.
2. The target population work on weekdays or are too busy attending to personal matters. Thus, it is also advisable to carry out LEC activity on weekends.

La Union detected only 41 new cases during its 1998 LEC, compared to 50 new cases the previous year. This is due to mini-LECs (municipal wide) done prior to the implementation of the LEC (province wide). The provinces of Sarangani and Misamis Oriental had satisfactory LEC activity even though the number of new cases detected was almost the same as its routine case finding because of the shorter detection time frame, 3 months compared to 1 year.

LEC MB cases accounts for 62% of all MB cases detected in the LEC areas during the same year when LEC was done. The proportion of MB cases among new cases reached 59%

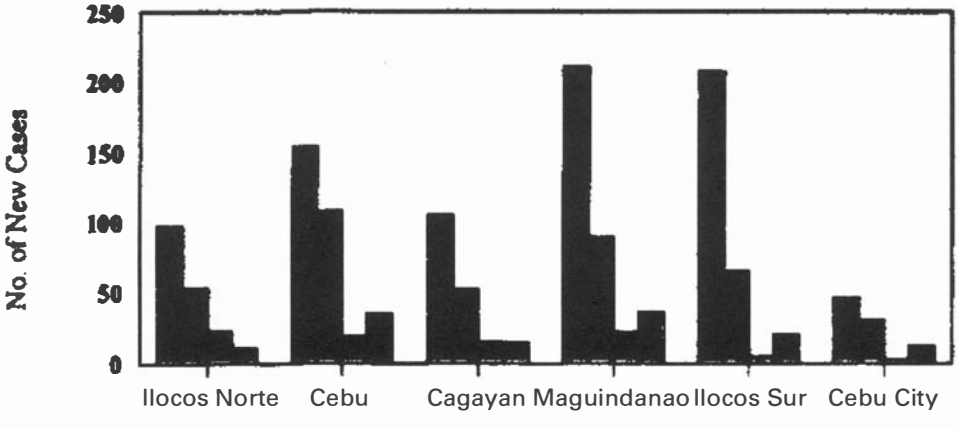

Figure 2. 1996 and 1997 LEC accomplishments. First bar in each group represents new cases, second bar represents MB cases, third bar represents number with grade 2 disability and fourth bar represents those under 15 years of age.

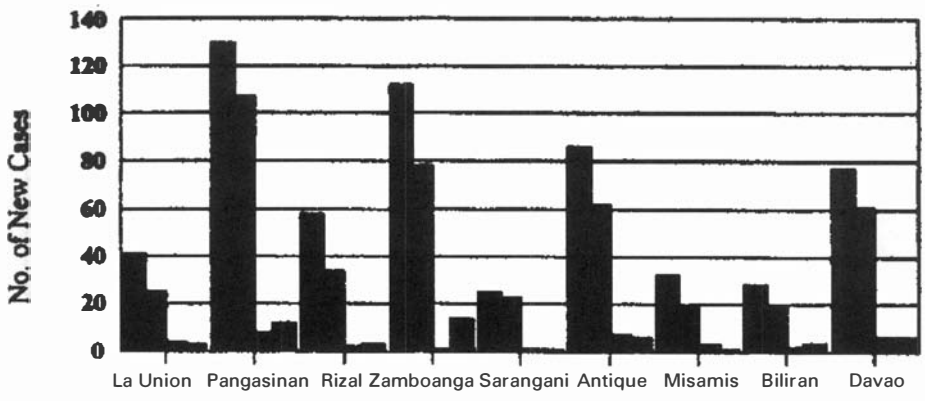

Figure 3. 1998 and 1999 LEC accomplishments. First bar in each group represents new cases, second bar represents MB cases, third bar represents number with grade 2 disability and fourth bar represents those under 15 years of age.

during LEC, in contrast to 80% with routine case finding. Further, the proportion of new cases with grade 2 deformity significantly increased to 9% in LEC areas, compared to the annual average of 5%. Eighty-nine percent of the new cases with grade 2 deformity were found through LEC in LEC provinces. The MB cases, particularly those with grade 2 deformity, represent backlog cases. Figures 2 and 3 show the LEC accomplishments for respective LEC provinces.

A declining trend in the number of new cases is seen in the 1996 and 1997 LEC areas (Figure 4). However, the proportion of MB cases among new cases 1–2 years after LEC has not changed from 79% to 89% (Figure 5). Further, the proportion of new cases with grade 2 deformity has not gone down except in Cebu Province, from 6% (1 year after LEC) to 4% (2 years after LEC) (Figure 6). The proportion of new cases <15 years old has decreased in LEC areas, as shown in Figure 7, which could reflect a probable reduction in the transmission of the disease in the community.

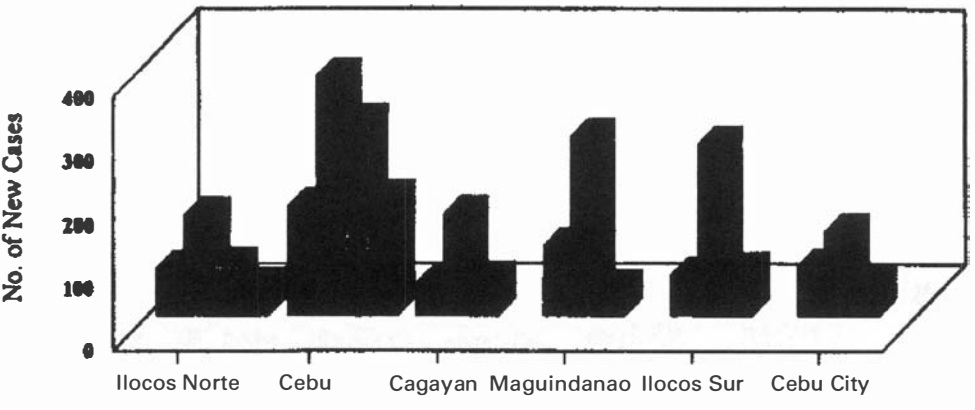

Figure 4. New cases detected 1995–1998, 1996 and 1997 LEC areas, Philippines. First bar in each group represents year before LEC, second bar represents LEC, third and fourth bars represent 1 and 2 years after LEC, respectively.

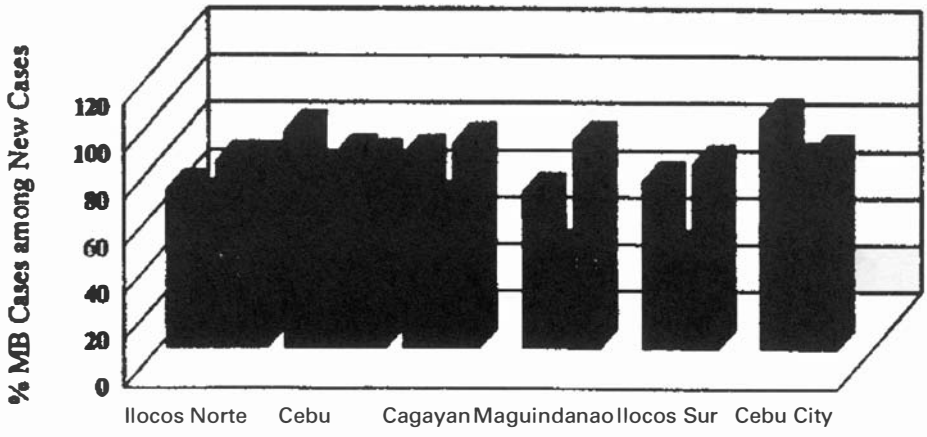

Figure 5. Percentage MB cases among new cases, 1996 and 1997 LEC areas, Philippines. First bar in each group represents year before LEC, second bar represents LEC, third and fourth bars represent 1 and 2 years after LEC, respectively.

A total of $112,862 was spent for the 15 LEC projects, giving an average cost of $80·16 per new leprosy case detected.

It is worth noting that there are LEC provinces with poor and good accomplishments. The contributory factors that have brought about failure or success of LEC activities in the Philippines are as follows:

FACTORS CONTRIBUTING TO POOR LEC OUTPUT

1. Poor LGE support in some municipalities:
   - No available transport.
   - Late arrival of LEC team.

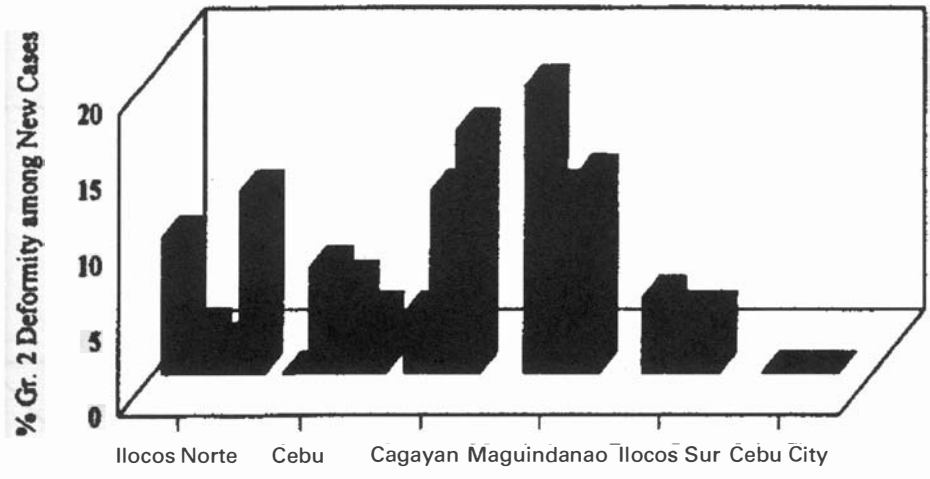

Figure 6. Percentage grade 2 deformity among new cases, 1996 and 1997 LEC areas, Philippines. First bar in each group represents year before LEC, second bar represents LEC, third and fourth bars represent 1 and 2 years after LEC, respectively.

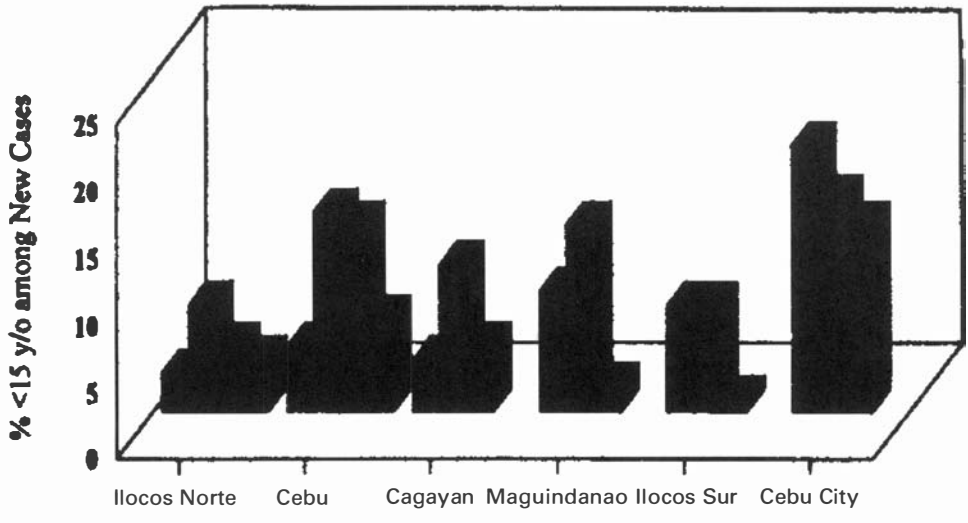

Figure 7. Percentage under 15 years old among new cases, 1996 and 1997 LEC areas, Philippines. First bar in each group represents year before LEC, second bar represents LEC, third and fourth bars represent 1 and 2 years after LEC, respectively.

2. Poor co-ordination of project activities.
3. Wrong timing of implementation:
   - Coincided with:
     election campaign.
     other priority DOH activities.
   - Rainy season.
4. Inaccessibility of some barangays.

FACTORS CONTRIBUTING TO GOOD LEC OUTPUT

1. Health oriented LGEs.
2. Committed coordinators.

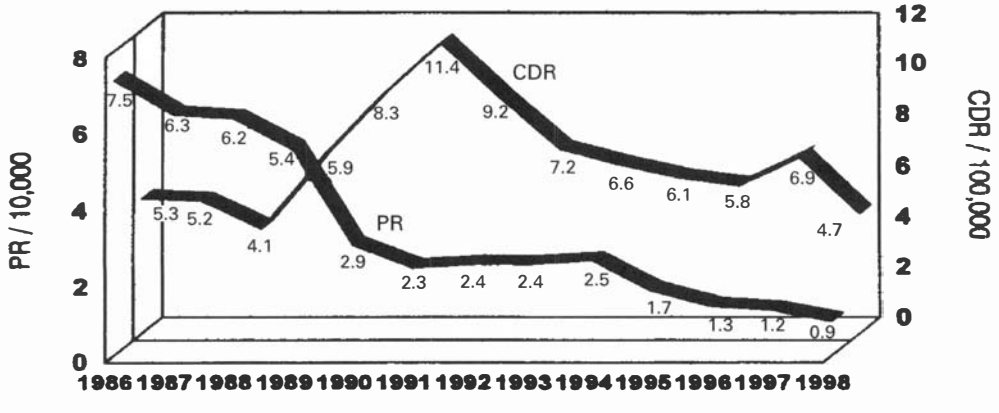

Figure 8. Prevalence and case detection rate, 1986–1998, Philippines.

3. Dedicated field health workers.
4. Availability of logistic support.

To sustain LEC activities initiated in LEC areas, the following have to be undertaken:

1. Ensure continuance of LGE support.
2. Undertake regular monitoring and supervision of coordinators.
3. Conduct local programme assessment by NLCP staff.
4. Hold consultative meetings with coordinators.
5. Provide logistic support for Kilatis Kutis Campaign which is highlighted during Annual Leprosy Control Week.

The implementation of LEC in the Philippines increased the case detection rate (CDR) from 5·8/100,000 population (4051 new cases) in 1996 to 6·9/100,000 population (4942 new cases) in 1997 or a 22% increase in the number of new cases. However, the prevalence rate (PR) continued to decrease from 1·3/10,000 population in 1996 to 1·2/10,000 population in 1997. Despite the implementation of more LEC projects in 1998, the PR and CDR still went down to 0·9/10,000 population and 4·7/100,000 population, respectively. The steady decline in PR is attributed to the implementation of the shorter treatment course and updating of records. It is projected that the PR and the CDR will continue to decline even if special case finding projects are implemented (Figure 8).

In conclusion, LEC, when properly co-ordinated, yields best results. Indeed, LEC is a very effective means of detecting backlog cases, thus reducing the gap between estimated and actual new cases detected. However, activities initiated by LEC should be sustained, to make the project more cost effective and cost efficient.

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Letter to the Editor

THE DHARAVI STORY—SAGA OF LECs OVER 2 DECADES

Massively proliferating urban slums have posted tremendous challenges in planning ideal health delivery systems. Leprosy in mega-cities like Bombay is a classical example, the elimination of which calls for special campaigns since conventional mass surveys using trained para medical workers, repeated at intervals, are time consuming and are not cost-effective. Bombay Leprosy Project has since 1979 taken up the onerous responsibility of leprosy control in the heart of the city which has the dubious distinction of housing about 500,000 citizens living in squalor in a single large slum called Dharavi (Figure 1), believed to be the largest in Asia (Map). Considering the magnitude of the population, poor living conditions and the limitations of trained manpower in Bombay Leprosy Project, routine surveys could be planned only occasionally and sporadically in Dharavi slum. This expensive strategy employed at random over the years was responsible for case detection only to a limited extent. In anticipation of an abnormal load of leprosy cases in this slum 2 decades ago, a strategy based on repeated campaigns was thought of long before the strategy of special case detection through LEC (leprosy elimination campaign) was recommended in 1995 by WHO to be adopted in endemic countries.[1] In fact, we coined the term 'LED' (leprosy eradication drive) for such campaigns. In this brief communication, we report the results of several crusades of activity, which are depicted in Figure 2. This figure shows peaks of new cases detected following every such campaign in this unmanageable slum.

We can infer that even in settlements with abnormal population density, through series of campaigns using a variety of rapid and quickly rewarding unconventional techniques, new case detection can be enhanced without resorting to expensive 'house-to-house' surveys employing staff trained at heavy cost. In the slum under investigation, it can be seen that after recurrent bursts of campaign activity over the years, the yield of new cases is gradually declining. The proposed next LEC in October 1999 will indicate whether the downward trend of new case detection rate will be sustained. However, factors such

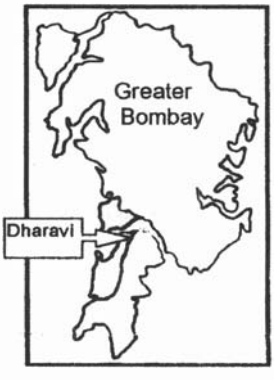

Figure 1. Location of Dharavi slum.

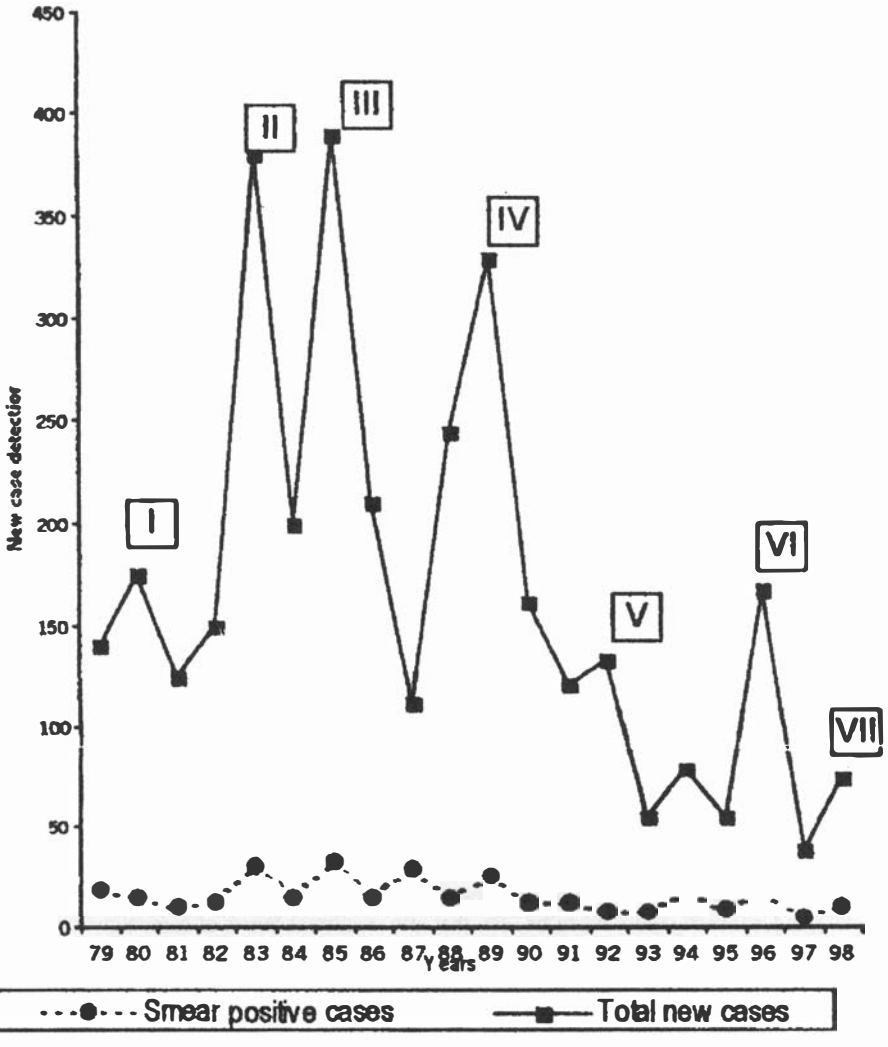

Figure 2.
I) The first 'LED' (leprosy eradication drive), taking advantage of the visit of important city dignitaries to the school in the centre of Dharavi, yielded a moderate number of new cases.
II) For the first time in the city, 2100 medical students, nurses and laboratory technicians after a brief training screened about 225,000 subjects over 6 days. In all, 236 new leprosy cases were confirmed during this LED in 1963 along with voluntarily reported cases soon thereafter, making a total of 370 cases.
III) The leprosy message was innovatively disseminated to the slum dwellers using a highly popular 10-day religious festival celebrated with great enthusiasm. MDT was introduced with a flourish, making deft use of folklore involving God Ganapati and other mythological characters. This unique effort resulted in a spate of nearly 400 self-reported cases.
IV, V & VI) Represent spurts of intensive short-term case finding activities employing multiple teams and volunteers undertaken during 1989, 1992 and 1996. The massive drive, coupled with LEC activities, unearthed several new cases.
VII) During 1998, a massive case detection drive was undertaken in this slum as part of the 'modified leprosy elimination campaign' (MLEC) financially supported by the Government. This campaign yielded 70 new cases, including some who reported voluntarily.

as migration, which is an ongoing phenomenon in a big city like Bombay, and the sporadic occurrence of new skin smear positive cases (see graph) are problems causing deep concern. A permanent strategy in a difficult urban situation defies solution.

Bombay Leprosy Project
Vidnyan Bhavan
11 VN Purav Marg
Sion-Chunabhatti
Bombay 400 022, India

R. GANAPATI, C. R. REVANKAR
H. O. BULCHAND & S. KINGSLEY

Reference

[1] World Health Organisation. *Weekly Epidemiological Record*, 1998; **73**: 177–184.

Lepr Rev (1999) **70,** 498–505

Future scope and expectations: why, when, and how LECs should continue

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Summary There is a strong case to continue to use LEC approaches, as they are a comprehensive and cost effective means of delivering the key elements of leprosy control. LECs should be conducted when there is evidence of large numbers of hidden cases. Probably a minimum of two LECs is required but where large number of new cases continue to be detected they could be run on an annual basis. The methodology of LECs needs to be improved through experience, evaluation and from LECs conducted elsewhere; feedback from the community is also important. There is room to improve all aspects of LECs: planning, training, education, diagnosis and treatment completion.

Introduction

Leprosy Elimination Campaigns (LEC) were introduced with three basis elements: capacity building for local health workers, to increase community participation, and to diagnose and treat leprosy. In practice, LECs have had many additional effects such as promoting community awareness, reduction in stigma, and improved accessibility of MDT. Initially the LECs were implemented in populations of around 0.5 million, but these have now ranged in population coverage up to country level campaigns.

This discussion paper attempts to address some fundamental questions about the future of LECs and their role in leprosy programmes. The first question is why should they continue or whether they should continue at all. If they are to continue, we need to consider when and where they should be implemented. Finally, on the basis of experiences with the LECs to date, we need to address questions about how they should be conducted.

Why should LECs continue?

ECONOMIC APPRAISAL

This is the most fundamental and challenging question and needs to be asked. This can be addressed from an economic point of view in terms of a cost–benefit analysis. What are the

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costs of a LEC and are the benefits worth the cost? In considering the costs, we should include patient costs and programme costs, as well as opportunity costs. If we did not use our resources to conduct LECs, we could use them in other ways, either in leprosy programmes or even in other health programmes. There is an opportunity cost for local health workers in terms of what they forgo in order to spend time in LEC activities. Similarly, in considering the benefits, we can look wider than the achievements of the three principal objectives and look at added value to the health care system, other programmes which can benefit from the activities and the sustainability and long-term effects of the intervention.

This economic approach involves value judgements about the costs and benefits of LECs. However it also leads us to review the potential within LECs of minimizing costs and maximizing benefits. This perhaps is more about the 'how' than the 'why' of LECs, but does suggest that we can tip the balance as to whether to continue with LECs or not, by minimizing costs (through combinations with other programmes, joint training and media opportunities) and by maximizing the benefits (by being sustainable, contributing to epidemiological monitoring, and strengthening health care infrastructure).

OPTIONS APPRAISAL

LECs have an opportunity costs, but what are the opportunities which we forgo by utilizing our resources, both funding and time, on LECs? What options should we be considering to achieve the same goals?

The first objective is in capacity building for local health workers to improve MDT services. These could be improved by ensuring that leprosy was included in training and re-training curricula, or by running specialized training courses. The second objective is in increasing community participation that could be tackled in other ways as part of community development programmes. Actual detection and treatment could be improved by further strengthening of the health care infrastructure.

The objectives of LECs can be achieved in other ways. However, LECs combine activities into one activity in a cost-effective way with important interactions.

EPIDEMIOLOGICAL AND CONTROL OBJECTIVES

It could be argued that the information provided by the LECs assists in the assessment and monitoring of the leprosy situation. However, the information derived in this way needs to treated with caution. LECs would, on their own, provide epidemiological information if they were conducted at regular intervals using identical methods, but this is never likely to be the case as the methods are tailored to the evolving circumstances. LECs can provide useful information but this needs to be interpreted with information from other sources.

LECs may be considered as achieving the aims of elimination but elimination, that is prevalence reduction, is only part of the achievements of LECs. LECs contribute to potential eradication as well as community education and sustainable capacity building.

When should LECs be undertaken?

LECs should be undertaken when there are significant numbers of undetected cases in a population—hidden cases. This requires information about the disease and the health-care

infrastructure. The situations suitable are ones where there is a gap between the registered and estimated cases. The methods for estimating cases are relevant to this task. The classification pattern and disability rates in new cases can provide some clues to the completeness of case detection and the likely burden of undetected cases.

The basis that there is a requirement for expecting large numbers of hidden cases requires high prevalence rates, large populations or both together. The level at which LECs are conducted will depend on disease distribution, political boundaries, population size, languages and the administrative organization of the health service.

The other factor in timing is to consider the frequency of implementing LECs. A LEC which results in few new cases detected could be due to either poorly conducted LECs or that the estimate of hidden cases was wrong. There is a case for conducting LECs more than once to resolve this question, reviewing the methods of implementing the LEC. This could be on annual basis or every 2 years. In the past, surveys were often conducted every *5* years, so that a 2-year gap could be acceptable.

The case for an annual LEC can be made in that a routine is established, regular budgets can be committed and political commitment sustained. LEC methods can be improved from the experience of previous LECs. LECs that repeatedly produce few new cases can be stopped as indicating that there are unlikely to be significant numbers of hidden cases.

How should LECs be conducted in the future?

There is room for improvement in all aspects of LECs from planning through to evaluation.

Planning is a key part to the process and the experience of successive LECs should improve this process which includes preparation of media materials, drug distribution and trainers.

LECs must involve the general health services at all levels; this is crucial for sustainability and treatment completion.

Quality of diagnosis must be kept high, limiting both over-diagnosis and under-diagnosis. Both are inevitable, but the size should be contained. A degree of over-diagnosis is more acceptable than under-diagnosis and missing of cases. However, repeated LECs can pick up missed cases.

Treatment completion rates need not be 100%, but it is important that these are monitored and acceptable levels achieved.

The recent LEAG meeting made recommendations about the core elements of lepros control activities that listed eight points. All eight of the core points are areas that are addressed within LECs (accessibility, drug supply, monitoring, commitment, education, special populations, integration and prevention of disabilities. In this sense, LECs deliver the core elements of leprosy control programmes). It is important that these core elements are maintained with in future LECs.

Appendix: results of Western Pacific Region WHO leprosy elimination programme

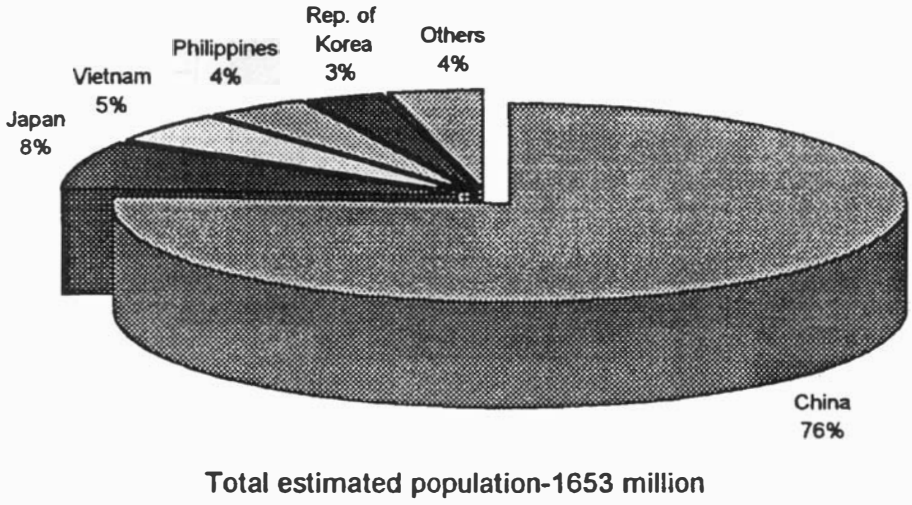

Diagram 1. Population distribution by major countries, 1998.

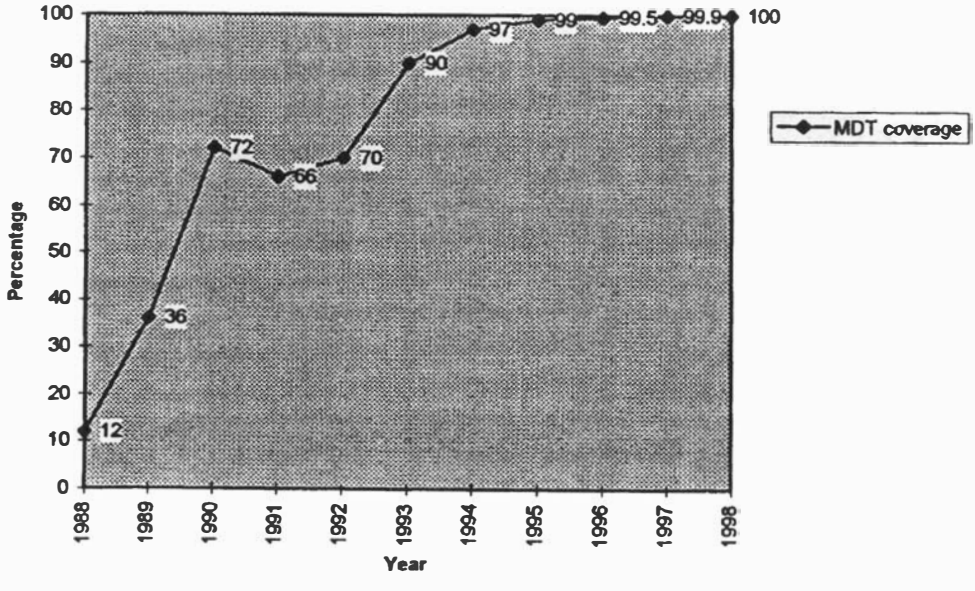

Diagram 2. MDT coverage, 1988–1998.

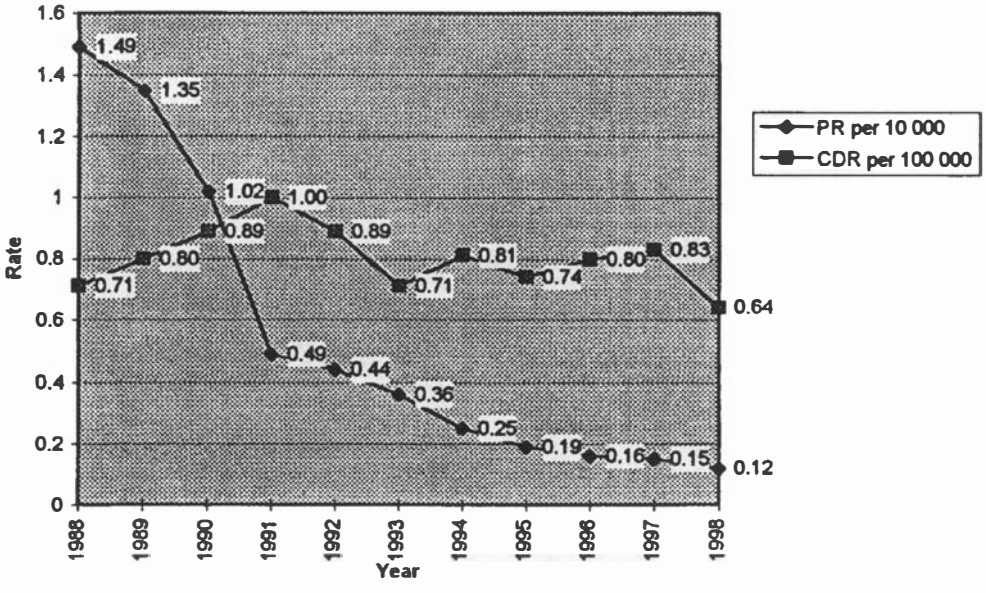

Diagram 3. Prevalence and case detection rates, 1988–1998.

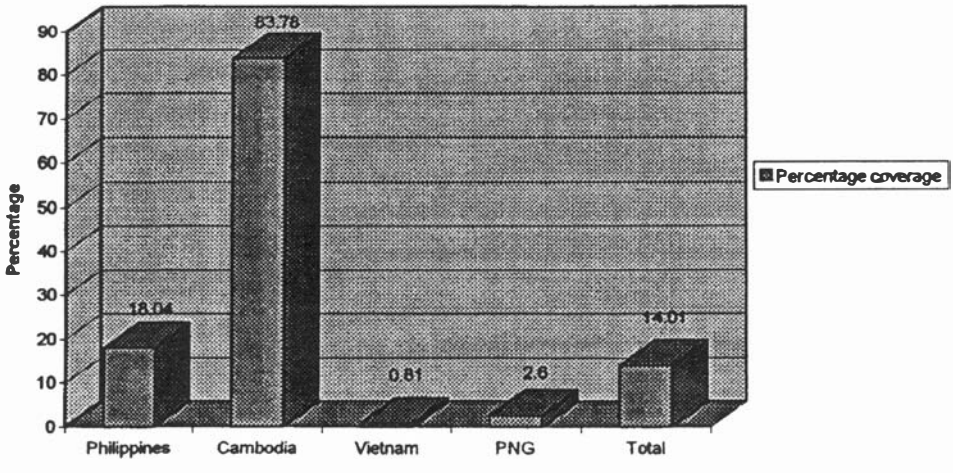

Diagram 4. Proportion of LEC project population to country population, 1996–1998.

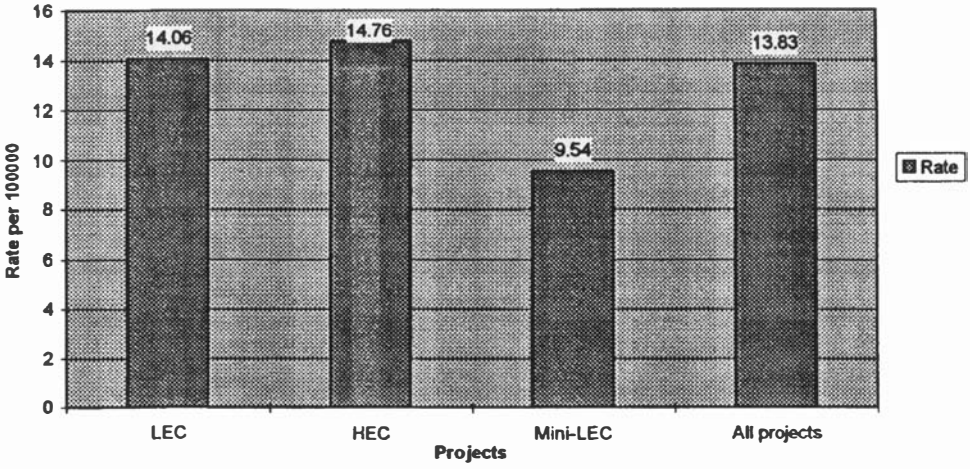

Diagram 5. Case detection rate by type of project, 1996–1998.

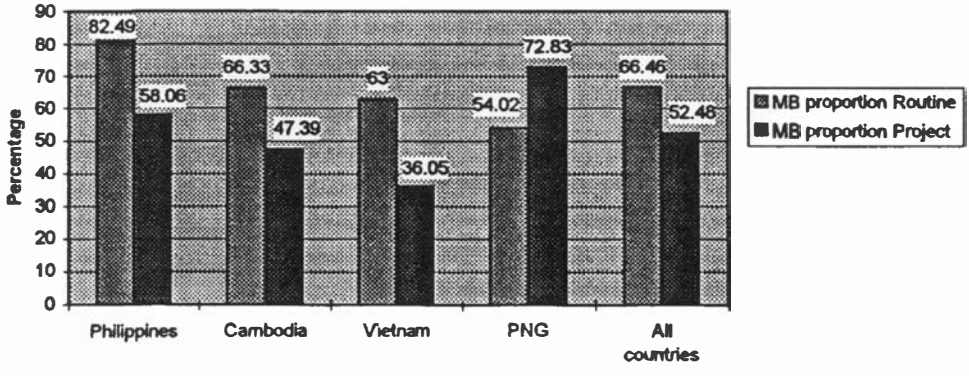

Diagram 6. Average proportion of MB among new cases during project period and project years by country, 1996–1998

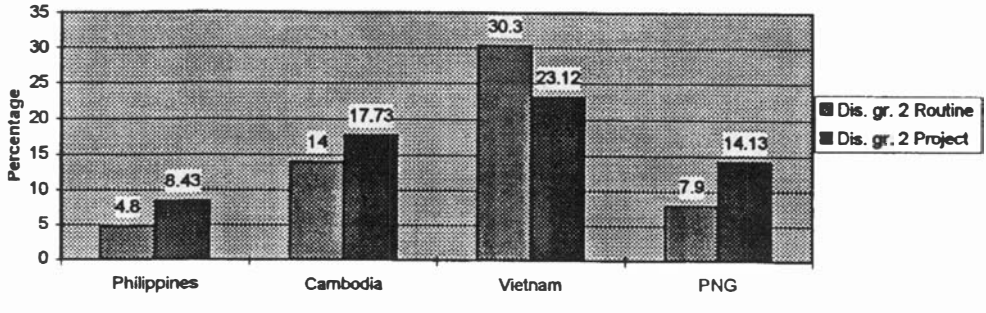

Diagram 7. Average proportion of disability grade 2 among new cases during project period and project years, 1996–1998.

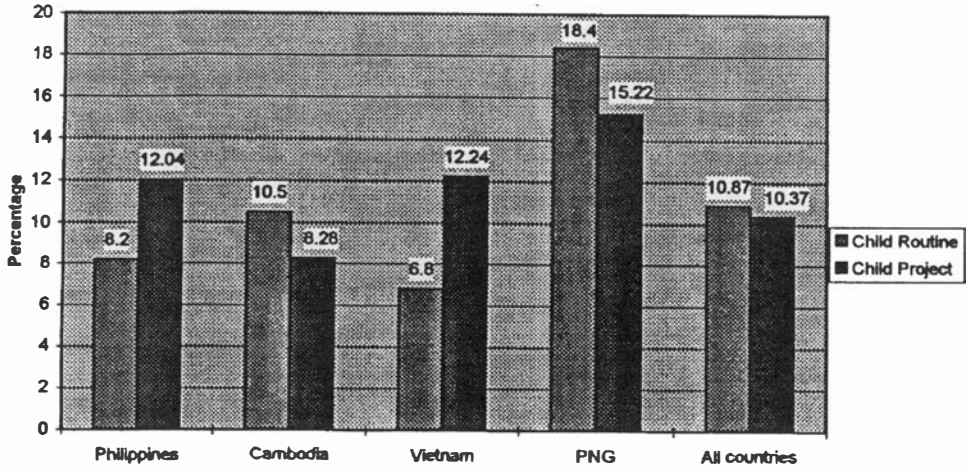

Diagram 8. Average proportion of child cases among new during project period and project years, 1996–1998.

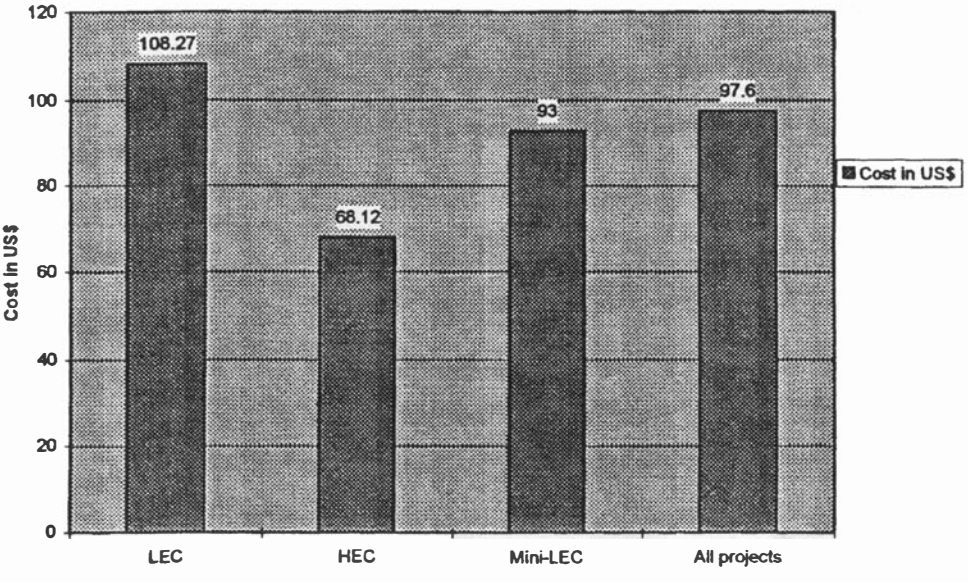

Diagram 9. Average cost per case detected in US$ by project, 1996–1998.

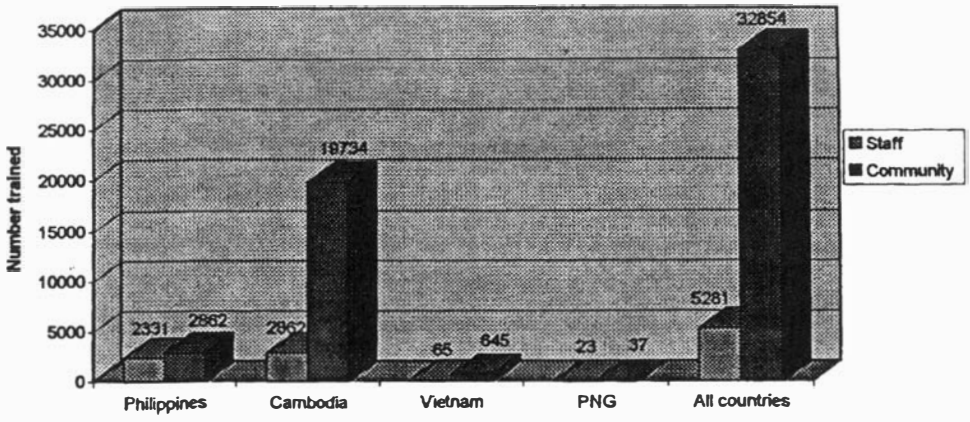

Diagram 10. Number of staff and community trained by countries, 1996–1998.

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St Lazarus Garnham Fellowship

The St Lazarus Garnham Fellowship is given in memory of the late Professor Percy Garnham FRS, who was a member of the Military and Hospitaller Order of Saint Lazarus of Jerusalem and who retained an interest in leprosy patients in Africa throughout a long and distinguished career. The regulations governing the award of this Fellowship are given below.

REGULATIONS GOVERNING THE AWARD OF THE ST LAZARUS GARNHAN FELLOWSHIPS INSTITUTED BY THE GRAND PRIORY OF ENGLAND AND WALES OF THE MILITARY AND HOSPITALLER ORDER OF ST LAZARUS OF JERUSALEM

1. A Research Fellowship of £2000 per annum is instituted in memory of our late distinguished confrere, Professor Chevalier Percy Garnham GIG KU FRS MD DSc FInst Biol for studies of leprosy dealing with its epidemiology, the prevention of disability, or rehabilitation of sufferers.
2. The Fellowship will be supported by the general funds of the Priory, initially for 3 years with the intention of establishing it in perpetuity.
3. The awards will be granted by the Grand Priory on the recommendation of the Medical Advisory Board of Lepra (MAB) and their expert referees. The funds may be used for equipment and/or research in hospital and/or field.
4. An award may be made for 1–3 years to the same individual or group but it may not be extended beyond 3 years.
5. The Fellowship should be advertised in the appropriate Journals.
6. The Fellowship is open to medically or scientifically qualified applicants of either sex and of any nationality and seniority.
7. The applicants will be expected to supply all the documentation and the names of referees as required by the Medical Advisory Board.
8. Copies of the shortlisted applications for this Fellowship will be sent to the Hospitaller(s) of the Grand Priory of England and Wales and the Hospitaller(s) or a representative will be invited to attend the meeting of the Medical Advisory Board for the item at which the award is made.
9. Copies of the written reports of the work done and copies of any resultant publications should be sent to the Hospitaller(s) of the Grand Priory as well as to the Medical Advisory Board of Lepra. The usual acknowledgments of all assistance received would be required.

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Scholarship Guidelines for the Dick Rees Memorial Fund

Announcement

In honour of the late Dick Rees, LEPRA has decided to set up a training fund for those working in the field of leprosy. This fund will incorporate monies donated in his memory. Dick Rees was a leading researcher in the field of leprosy over a period of 25 years. He began his medical research career working on TB at the National Institute for Medical Research at Mill Hill, London, but gradually switched from research into leprosy. One of his major contributions to the effective treatment and cure of leprosy was his demonstration of primary and secondary drug resistance to existing drug treatments. This lead to the development of multi-drug therapy by WHO in the early 1980s. He was made chairperson of LEPRA's (The British Leprosy Relief Association) Medical Advisory Board in 1963 and was appointed Head of the Medical Research Council's Laboratory for Leprosy Research in 1969. Here he developed a source of live *Mycobacterium leprae* bacteria by setting up a colony of infected armadillo. It is from this source that the latest research on the genome sequencing of the leprosy bacillus has been derived. Dick Rees died last October at the age of 81. His scientific abilities and commitment to the cause of leprosy will be missed by all in the field of leprosy, particularly those working at LEPRA and WHO. Even after his retirement in 1982 he continued to work for both organizations, influencing and inspiring many to bring about a world without leprosy.

Circulation of guidelines

This set of guidelines will be made available to all ILEP members and Leprosy Training Institutions. It will be advertised in *Leprosy Review*, *The International Journal of Leprosy*, *The Indian Journal of Leprosy*, CBR Journals and on the Internet. The target group for the scholarship are leprosy workers in the field who have had limited training opportunities.

Application process

1. AMOUNT AVAILABLE

£20,000 will be available each year. This may be split between a number of candidates. Selection will be based on the merit of the applications; making the best use of this limited amount of funding. Each award will be sufficient to cover the costs of the training selected, the travel and living costs for the duration of the training and where justified, additional costs to facilitate access.

2. SCHOLARSHIP CRITERIA

- Candidates should be citizens of countries where leprosy is a problem.
- The training selected should enhance their ability to contribute to the field of leprosy.

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- Candidates should have a commitment from their employer that they will release them for the duration of the training and keep their job open for them on their return.
- Candidates agree to any bond arrangements stipulated by their employer.
- The course selected normally should be no longer than 6 months.
- The training selected normally should be at the closest venue that offers the level of qualification and recognition sought by the candidate.
- The selected candidates will produce a report at the end of the training to indicate its value in relation to their expectations as outlined in their application.

3. EQUAL OPPORTUNITIES

Consideration will be given to those who have justified additional costs which would facilitate their participation in their preferred training (for example child care costs).

4. APPLICATION DETAILS

Applications should include the CV of the candidate and details of the training or course selected:

- For *training*, the candidate should provide a description of the training and its objectives, i.e. knowledge and practical skills to be gained by end of training.
- For *courses*, the candidate should provide the course name and course content.

For both, the following should be provided:

- Venue.
- Pre-requisite training or qualifications.
- Cost of training.
- Estimated cost of travel/accommodation and living expenses and where necessary, justified additional costs to facilitate access.
- Duration of course or training.
- Covering letter from candidate indicating their career goals and how the training selected will enhance their ability to contribute to the field of leprosy, and also why they should be considered for the award.
- A letter of recommendation from their current employer, indicating their willingness to release the candidate if they are selected for the award and agree to keep the job open for the candidate and stipulate any bond arrangements they would like to make.
- A reference from another employer or tutor.
- A letter of invitation or acceptance from the host of the training or course.

Prospective candidates for the award should apply in writing to:

Doug Soutar
LEPRA
Fairfax House
Causton Road
Colchester CO1 1PU, UK
e-mail: Doug_Soutar@lepra.org.uk Fax: 01206 762151

5. Timing

Applications with all the above attachments should be sent to LEPRA at least 9 months prior to the commencement of their selected course. Candidates will be notified whether they have been selected for the award at least 6 months in advance.

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Instructions to Authors

Article submission. Articles submitted for publication in Leprosy Review should be sent to the Editor at the following address: Diana Lockwood, LEPRA, Fairfax House, Causton Road, Colchester CO1 1PU, England. The name(s) of the author(s) and the place where the work was done should be indicated clearly below the title of the article. Degrees and diplomas are not to be included.

It is understood that the article is offered to Leprosy Review alone, that it will be subject to editorial revision, and that its copyright becomes the property of LEPRA.

Format. Articles must be submitted *double spaced*, on one side of A4 (297 x 210 mm) paper, with wide margins (4 cm all round) in triplicate. On a separate sheet give the title, short title, name and postal address of the author, together with the name of the institution where the work was done. Abbreviations of titles of journals should follow the list of journals indexed in Index Medicus. References to books should include the editor(s), publisher and place of publication.

Electronic submission. Articles produced using a word-processor should also be supplied in electronic format (preferably Word or Wordperfect 5.1) if possible. Please submit a disk with the final revised version of the article. The electronic file should correspond exactly to the hard copy.

Illustrations and Tables. Contributors must send the original artwork and two copies on separate sheets. In addition electronic versions may be submitted in the form of compressed tiffs, eps, jpegs or bitmaps. The recommended resolution is 600 dpi or above.

Units and Abbreviations. The journal recognizes the adoption of the Systeme International d'Unites (SI Units) proposed in Units, Symbols and Abbreviations (1972) published by the Royal Society of Medicine, 1 Wimpole Street, London W1M 8AE. Abbreviations should only be used for unwieldy names, and only when they occur frequently.

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