INTERNATIONAL JOURNAL OF LEPROSY
and Other Mycobacterial Diseases

OFFICIAL ORGAN OF THE INTERNATIONAL LEPROSY ASSOCIATION

EDITORIAL OFFICE
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VOLUME 67, NUMBER 1 MARCH 1999

EDITORIAL

Editorial opinions expressed are those of the writers.

Leprosy Elimination—

Urgent Action Required

In 1982, the World Health Organization (WHO) recommended the use of multidrug therapy (MDT) for leprosy.[1] The number of leprosy patients benefitting from this new method increased steadily, especially from 1987–1988. In 1991, the World Health Assembly approved a resolution on the elimination of leprosy as a public health problem, inviting endemic countries to identify and treat with MDT all leprosy patients so that the prevalence would be reduced to less than 1 per 10,000 population by the year 2000. Subsequently, as a result of collaborative efforts of governments, WHO, nongovernmental organizations (NGOs) and other contributing agencies, MDT coverage increased dramatically in all endemic countries and impressive numbers of patients were cured. Consequently, it was possible to believe that the objective of elimination (prevalence below 1 per 10,000) would be reached—with a few insignificant exceptions—by the target year of 2000. However, the discovery during the last 2 years of important rates of hidden prevalence makes it necessary to reassess the elimination plan, and crucial decisions need to be made urgently on the future of leprosy control.

This paper attempts to give an account, in broad terms, of the current problems faced by the elimination plan and of the decisions which should be made as soon as possible.

CURRENT SITUATION

In the absence of a vaccine, the MDT-based strategy for leprosy control (a secondary prevention strategy) appears to be the best available method for controlling leprosy since it is very effective, easy to use, prevents resistance of *Mycobacterium leprae* and is very "robust."

The objective of the MDT-based strategy for the elimination of leprosy as a public health problem (prevalence below 1 per 10,000) is to treat and to cure the maximum number of patients in a minimum amount of time. The elimination strategy has three main components: a) case identification based on community awareness and participation; b) treatment by MDT, available free of charge in as many public health fa-

[1] WHO Study Group. Chemotherapy of leprosy for control programmes. Geneva: World Health Organization, 1982. Tech. Rep. Ser. 675.

cilities as possible; and c) monitoring of epidmeiological and operational progress.

The elimination strategy also postulates that when prevalence has been reduced to a level below 1 per 10,000 this will automatically lead to the eradication of the disease. This postulate, although arbitrary, was based on "historical" evidence of the disappearance of the disease in some parts of the world (Norway) and on the fact that the prevalence of leprosy was always 10–20 times higher than the detection and probably much higher than the incidence. The validity of this postulate has not been demonstrated. However, there are a few documented examples of situations in which the implementation of the elimination strategy has been followed by a decrease in incidence of 10% per year, but this decrease could be the result of a combination of factors, such as BCG or a spontaneous lowering of *M. leprae* virulence, as well as MDT.

The vast majority of leprosy patients existing in the early 1980s and those identified in subsequent years have been treated and cured by MDT, reaching a cumulative total of more than 9 million.[2]

Over-diagnosis has been observed during leprosy elimination campaign (LEC) activities as a result of inadequate application of criteria for diagnosis. Also, in some areas where a LEC has taken place in India, or in some mass surveys when case-finding activities are intensive, many single lesion cases (90% or more) are brought to light and it is not yet clear if these all represent cases. These problems, although they are not minor ones, do not seem to affect the future of the elimination program.

Hidden prevalence does pose an important problem. In a number of national leprosy programs (NLPs), case detection remains considerably higher than incidence and the number of cases identified is increasing; thus, there is an important backlog of cases waiting to be identified. In most of the countries which have intensified their case-finding activities—mainly by organizing leprosy elimination campaigns (LECs)—significant numbers of previously undetected cases have been diagnosed in certain areas, often 3 to 6 times more than the number of cases registered for treatment before the campaigns.[2] Roughly speaking, it seems that hidden prevalence is lower in the areas where well-organized leprosy control programs have been running for a long period of time.

The main causes of hidden prevalence can be analyzed as follows: a) insufficient coverage of the network of leprosy services. For example, a high level of hidden prevalence was found in some districts of India which had previously been classified as low endemic and were consequently provided with a relatively light leprosy control infrastructure; b) inadequate information and education of patients and communities; and c) insufficient participation of community leaders. In LECs, use is being made of community leaders and volunteers for the undertaking of "community-based surveillance of leprosy," with some success.

In some programs, it will not be possible to meet the deadline of the year 2000 because of hidden prevalence being identified too late: "In 16 major endemic countries which represent 92% of the global leprosy problem, the reported prevalence rate is still 3.9 per 10,000. It is possible that some of these countries might need to continue and intensify activities beyond the year 2000 to reach elimination."[2]

Among the same 16 major endemic countries, there are five with levels of prevalence above 5 per 10,000 and 8 with levels of detection above 20 per 100,000. Also, out of 762,701 cases registered at the beginning of 1998, India alone has 518,163 (67.93% of the total), Brazil 105,744 (13.86%) and the other countries between 2000 and 29,000 each.

Solutions to the problem of hidden prevalence have been proposed by WHO and are being implemented. They are: a) Leprosy Elimination Campaigns (LECs), repeated if necessary; b) Special Action Projects for the Elimination of Leprosy (SAPELs) to reach under-served populations; c) community information and education; and d) supply of MDT drugs free of cost to patients and available in every health facility.

When the MDT-based elimination strategy was adopted, it was implicitly assumed this strategy would be *the* solution for the leprosy problem, and that assumption had

[2] WHO Weekly Epidemiological Record, No. 21, 1998.

the following consequences: a) Research: Over the last decade, the global progams of collaborative research (IMMLEP evolved into IMMYC and THELEP evolved into THEMYC) have gradually decreased their activities and, at present, most of the important research areas concerning leprosy are not being explored actively enough.[3] b) Political and financial support: No provision seems to have been made for an alternative line of action in case the Elimination Programme does not reach its objective of 1 per 10,000 prevalence in all endemic countries by the end of the year 2000. Thus, the possible need for political support and funding for a *continuing* Elimination Programme (from 2001 onward) has not been contemplated.

DISCUSSION

It is already clear that in some countries and large endemic areas, the global target of 1 per 10,000 leprosy prevalence will not be reached by the end of the year 2000. It follows immediately that a plan should be set up to resolve the continuing problems. Necessarily, decisions on future actions should be taken through close collaboration between all concerned, i.e., governments, WHO, NGOs and other contributing agencies.

It seems logical to accept that if we are supposed to do the maximum that can be done against leprosy with the available tools, and if the MDT-based elimination strategy is currently the optimal strategy for leprosy control, the elimination concept should continue to be applied. Thus, the crucial decision that ought to be made is to continue the Elimination Programme with a revised chronological schedule, which should take into account the epidemiological and operational pattern of each endemic country/area where a longer term problem is being faced.

Broadly speaking, future actions could be considered according to the following schemes:

Countries which have not yet reached the elimination stage at country level. In the 16 major endemic countries, the National Leprosy Elimination Programme (NLEP) should undertake an in-depth evaluation, in order to: a) estimate the additional time-span required to reach the prevalence rate of 1 per 10,000 at the country level and, accordingly, choose a new target year for reaching the elimination target countrywide; b) decide on additional procedures to be introduced or repeated (LEC, national LEC, SAPEL, etc.); and c) estimate the cost of the above.

Several countries/areas have already been identified as having a leprosy problem greater than was believed until recently. In other countries/areas, it may be difficult to find proof of a similar problem. Several more years of intensified activities (LEC-type, for example) may be required to evaluate the real magnitude of the leprosy problem. A positive aspect is that, in general, when an unexpected increase in the caseload appears, the cure of patients by MDT quickly resolves the problem.

Countries which have already reached the elimination stage at country level. These countries should ensure that elimination is sustained at the national level and should identify various administrative levels where the elimination target has not as yet been reached. Intensive and time-bound elimination activities could be carried out in such limited geographic areas.

In addition (even at any stage), if a level of reported prevalence of less than 1 per 10,000 is suspected of being fallacious, all efforts should be made to arrive at the true figure. One may even consider, in some exceptional instances, whether it might be justified to search systematically for areas having falsely claimed to have reached the elimination stage. However, it should be recognized that "certification" or validation of elimination would be of little value, and is probably not cost-effective in the absence of reliable tools to measure the transmission (or the absence of transmission) of infection.

At regional and global levels. Discussion should continue between all parties concerned (governments, WHO, NGOs and other contributing agencies). Based on a review of the current situation of elimination programs worldwide, general agreement could be reached on the broad framework of a continuing elimination strategy in harmony with available and committed finan-

[3] Roche, P., Dockrell, H. and Brennan, P. Progress in research towards a world without leprosy. Report of a WHO meeting in Ethiopia, February 1998. Lepr. Rev. **69** (1998) 151–159.

cial resources. WHO is developing a strategy aiming at the elimination of leprosy at the district level, and this strategy should be discussed during 1999.

At the global level, there is clearly a need to make decisions on the leprosy control strategy to be used beyond the year 2000, even if the elimination concept continues to be applied at that time. These decisions should be made as soon as possible because time is running out, and it is very important to avoid any interruption in program delivery. Thus, the discussions leading to those decisions should start (if they have not yet been initiated) as soon as possible.

Decisions are required in two main areas: a) Technical plan: a plan should be prepared outlining the rationale of the strategy, activities, operational steps, timetable and financial aspects. b) Political and financial support: the same plan could be discussed at the World Health Assembly in May 1999 to seek approval from governments and, subsequently, with individual governments, NGOs and other contributing agencies in order to obtain the respective financial contributions required.

It is clear that in some endemic countries, few in number but sometimes with very large populations and numbers of patients (e.g., Brazil and India), the elimination strategy will not reach its immediate objective of a prevalence below 1 per 10,000 nationwide by the year 2000. In those countries, the period of time required to reach the elimination prevalence may not be easy to estimate, particularly in areas with high transmission rates. In addition, the length of time necessary to reach the ultimate objective of leprosy elimination at the country level (i.e., the interruption of the chain of transmission of *M. leprae* according to the basic postulate of the elimination theory) seems very difficult to assess in most, if not all, endemic countries because we do not know to what extent this postulate is valid. We cannot even exclude the possibility that in some foci (with the highest transmission rates) it will be especially difficult to reduce the leprosy prevalence. In view of these uncertainties and possible difficulties, and taking into account that our arsenal against leprosy includes very few elements, it appears fully justified to revitalize leprosy research activities, particularly as coordinated efforts at the global level, in order to develop new diagnostic, prophylactic and even therapeutic tools.

CONCLUSIONS

The MDT-based elimination strategy has resulted in the identification and cure of more than 9 million leprosy patients in about one decade; it has thus demonstrated a remarkable efficacy. During the last 2 years, the discovery in some major endemic countries of high levels of hidden prevalence raises difficulties, especially because we are close to the target date of the year 2000.

In view of the above, I am making the following proposals: a) The MDT-based elimination strategy, currently being the optimal strategy for leprosy control, should continue to be applied. However, an in-depth evaluation of the epidemiological and operational status should be conducted at all levels. The main objective should be to identify the areas (especially those with high leprosy incidence) which will require strengthened program activities beyond the year 2000. b) It is not certain that the technology presently available (i.e., MDT) will alone allow leprosy to be "eliminated." particularly in areas with high incidence. Thus, it appears necessary to reactivate research activities, in order to develop new diagnostic, prophylactic and therapeutic tools. c) Only if the program receives the required support, especially of a political and financial nature, during the time required, i.e., well beyond the year 2000, will it be possible to carry out the above two kinds of activities. To that end, urgent decisions are required.

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Acknowledgment. I am deeply indebted to Dr. Denis Daumerie, WHO, Geneva, who provided me with important information used in this paper and discussed its content. I also wish to thank Mr. John Bland, WHO, Geneva, who edited the text.