

Towards elimination of leprosy



Leprosy Control Programme
World Health Organization



Taking stock: an overview

In the history of leprosy control, 1991 marks a turning point between the past and the future: a turning point that calls for a pause to take stock of what has been achieved and what remains to be done.

At the end of 1990, for the first time since reasonably reliable records of known leprosy cases have been kept, world numbers of registered cases not only ceased to rise but, despite continued intensive case detection activities in many countries, showed a significant fall over previous years. For the first time, almost a decade after its introduction by the World Health Organization (WHO), multidrug therapy (MDT) was being administered to more than half the known patients in the world in over 90% of countries or areas with leprosy. For the first time, it became reasonable to speak of the eventual disappearance of the disease, at least as a public health problem: so much so, that at the beginning of 1991 the WHO Executive Board proposed the Organization's commitment to the widest possible use of multidrug therapy, in conjunction with continued case-finding activities, as a means to achieving this aim by the year 2000.

Much, however, has still to be done before this objective can be reached. However encouraging the global figures, the disease is still a presence to be reckoned with in over 90 countries or

areas of the world and a serious public health problem in 28 of these countries or areas. Moreover, despite its overall success and its ability to achieve a relatively rapid solution to a country's leprosy problem, MDT has yet to achieve universally high coverage rates (see *Some plusses and minuses of multidrug therapy* and *The African Picture*) globally, throughout the different regions of the world and within individual countries. Too many patients disabled by leprosy are still not receiving adequate care and attention. Too many patients with early leprosy are still escaping detection in too many countries. Too many countries still lack adequate basic health resources — and a few, the necessary political commitment — to mount an efficient MDT programme. More and better training programmes are also needed, especially if the movement towards integration of leprosy control within general health services is to continue smoothly and efficiently. Backup laboratory services must be created or improved in many areas. Monitoring and evaluation systems must be set up or reorganized to provide a solid basis for MDT campaigns.

Maintaining the momentum

If, at this turning point in the history of leprosy, the momentum achieved in recent years is to be maintained, these needs and deficiencies must be addressed now.

There is, however, growing evidence that the time is ripe for a renewed effort, for what may be a final

sput towards the finishing line. Examples:

- Commitment to leprosy control is growing in the WHO Regions affected by



leprosy, as reflected in consensus statements issued over the past decade by the Regional Committees for South-East Asia (in 1982), the Western Pacific (1984), Africa (1988 and 1989) and the Eastern Mediterranean (1990), and for the Americas by the Pan American Sanitary Conference (1990).

■ Commitment from nongovernmental and other agencies has also increased, as reflected in increased extra-budgetary funding available to WHO, now totalling US\$ 6.4 million for the 1990-91

biennium, and in an increase in public funds — currently US\$ 60 million — raised annually by the International Federation of Anti-Leprosy Associations through its 22 autonomous member associations.

■ WHO estimates that if the current rate of progress can be maintained, the prevalence of leprosy worldwide could fall over the next decade to a tenth of its 1985 level, bringing known cases to less than 500 000, compared with the 1990 figure of 3.7 million.

A race to the finish?

If elimination of leprosy as a public health problem in the world no longer seems a mirage and if the road towards it is being built at a surprisingly fast rate, there is still much rubble to be cleared before leprosy becomes, like smallpox, part of history. Yet, never before have the means of eliminating leprosy been so

readily available. Never before has there been such a global consensus over the possibility of using these means to achieve this aim. Now is surely not the time to slacken efforts but rather to prepare what could and should be the final chapter of the leprosy story.

Taking stock: leprosy in numbers

Today, there are 3.7 million known cases of leprosy in the world, with two to three times as many estimated cases.

Although nearly 70 of the 200 countries or areas of the world reporting to WHO have over 1000 registered cases of leprosy, over 83% of all registered cases in the world are accounted for by only five countries (India, Brazil, Nigeria, Myanmar and Indonesia, in descending order of magnitude) and nearly three quarters of the world's known leprosy patients are in South-East Asia. These figures are small compared with the estimated numbers of people suffering, in any one year, from infections like malaria (270 million), schistosomiasis (200 million) and lymphatic filariasis

(90 million). Yet despite its relatively low prevalence and low ranking as a cause of morbidity and direct mortality, leprosy is for many countries an intolerable relic from the past, one that takes a disproportionately heavy toll on the social, economic and psychological wellbeing of whole families and communities. It is in recognition of this "multiplier effect" of leprosy, of its insidious repercussions on a community's overall health and of the difficulty that many countries with leprosy face in allocating resources to intensive leprosy control activities, that the World Health Organization now

considers leprosy at a prevalence rate of at least 1 case per 10 000 population within a country or area to constitute a public health problem.

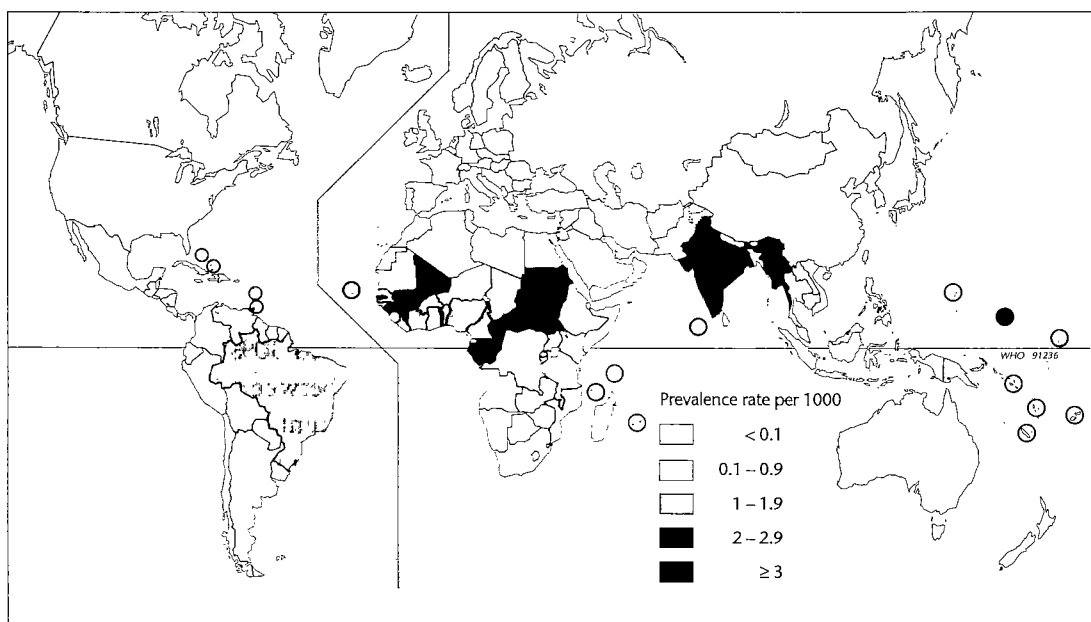
By this definition, even the figures for *known* cases of leprosy offer a disquieting picture, despite the concentration of the majority of cases within a few countries: in 93 (60%) of the 153 countries or areas of the world reporting leprosy the disease is still a public health problem. These countries account for nearly 40% (2 billion) of the world's population. And in some WHO regions the proportion is even higher — 98% (1234 million people) in South-East Asia, 84% (410 million) in Africa, and just over 50% (184 million) in the Eastern Mediterranean. Altogether 28 countries or areas (18% of those reporting leprosy) have prevalence rates above 1 per 1000 and together they make up a fifth of the world's total population: 18 of these high-prevalence countries or areas are in Africa and account for over half of the

region's population; four are in South-East Asia and account for 70% of the region's population.

Nevertheless over the past three decades there has been a dramatic change in the global picture of leprosy. In 1966, for example, when reporting of leprosy cases had become reasonably efficient in many, if not most, countries, there was a total of 2.8 million known cases. Twenty years later, the total had risen to 5.4 million. This increase — of 89% — was probably due partly to intensified detection of new cases, particularly in South-East Asia, where a 373% increase in reported cases was registered between 1966 and 1985. A significant proportion of the increase, particularly in the 1970s and early 1980s, however, can be attributed to failure of leprosy control programmes, many of them unable to cope with rising rates of resistance to dapsone.

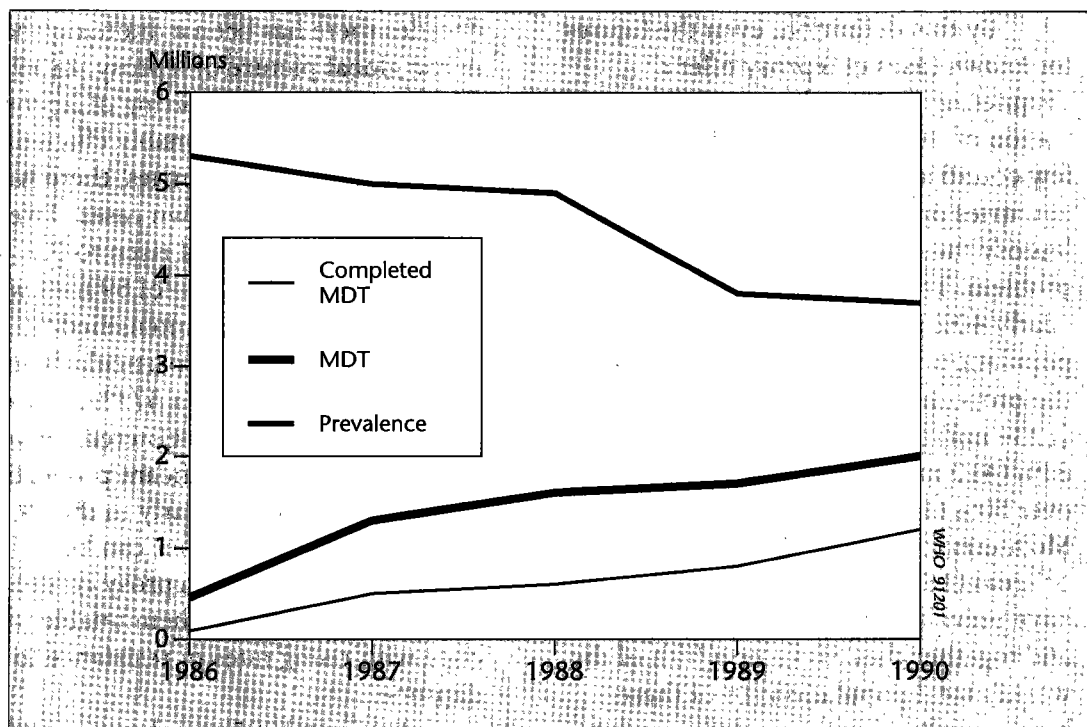
Between 1985 and the end of 1990 the number of registered patients in the

Fig. 1.
A world view of leprosy, 1990



153 countries or territories report leprosy cases. 93 countries are endemic for the disease (i.e. with at least 1 case per 10 000 inhabitants).

Fig 2.
Global leprosy prevalence, multidrug therapy (MDT) coverage and number of patients completing MDT, 1986-1990



world declined — for the first time — from 5.3 million to 3.7 million, a fall of over 30%. By the end of 1990 MDT was being administered to 2 million (56%) patients in 140 countries or areas (92% of all countries or areas with leprosy) and had released 1.2 million patients from treatment — equivalent to an average of 4000 patients a month, suggesting that MDT is responsible for much of the decline in registered cases in the world. In some districts, reductions of 80-90% in leprosy prevalence have been achieved thanks to MDT.

Implementation of MDT tends to produce a gaussian or bell-shaped curve of leprosy statistics. Since organized case detection is an integral part of any well-run MDT programme and since the short duration and low toxicity of MDT tend to encourage self-reporting, the institution of an MDT programme is generally followed by a rise in numbers of registered cases.

Indeed, much of the increase in numbers of registered cases worldwide in the 1980s can be reasonably attributed to the advent of multidrug therapy. And indeed, by the end of 1986 nearly half-a-million patients were on MDT and nearly 100 000 had completed their treatment.

After a few years of MDT implementation, discharge of patients completing therapy tends to produce a dramatic decline in numbers of registered cases. This trend is more clearly seen in district or country leprosy figures, but the unprecedented 30% fall in global leprosy prevalence between 1985 and 1990 may to a large extent be attributed to successful MDT campaigns, particularly in countries, like India, with large numbers of patients. Fig. 2 graphically illustrates the almost parallel decline in global leprosy prevalence rates (from 12 to 7 per 10 000) and rising MDT coverage (from 9 to 56%).

Some plusses and minuses of multidrug therapy (MDT)

On the positive side:

■ Multidrug therapy is extremely effective for individual treatment. Early lesions usually resolve within a few months of starting or a year or two after stopping treatment and infectivity is generally lost within a few days of starting treatment. Most paucibacillary patients can be discharged within six to nine months and most multibacillary patients within two to three years of starting treatment. Relapse rates have been extremely low, averaging, globally, 0.1% a year for paucibacillary leprosy and 0.06% for multibacillary leprosy (vs. 1-2% a year for dapsone monotherapy).

■ Because it is effective, finite, of short duration and associated with fewer type 2 (erythema nodosum leprosum) reactions than any other treatment regimens, MDT, despite the skin discoloration linked to its clofazimine component, enjoys a high degree of patient acceptability: compliance rates average between 80 and 90% in most areas, vs. a maximum of 50% for dapsone monotherapy. As a result, MDT offers a rapid solution to a country's leprosy problem and thus a rapid return on capital invested in an MDT campaign. Backed by strong national commitment and the provision of adequate resources, a well-run MDT programme can reduce a

Fig 3.
Distribution of leprosy cases by WHO regions, 1990

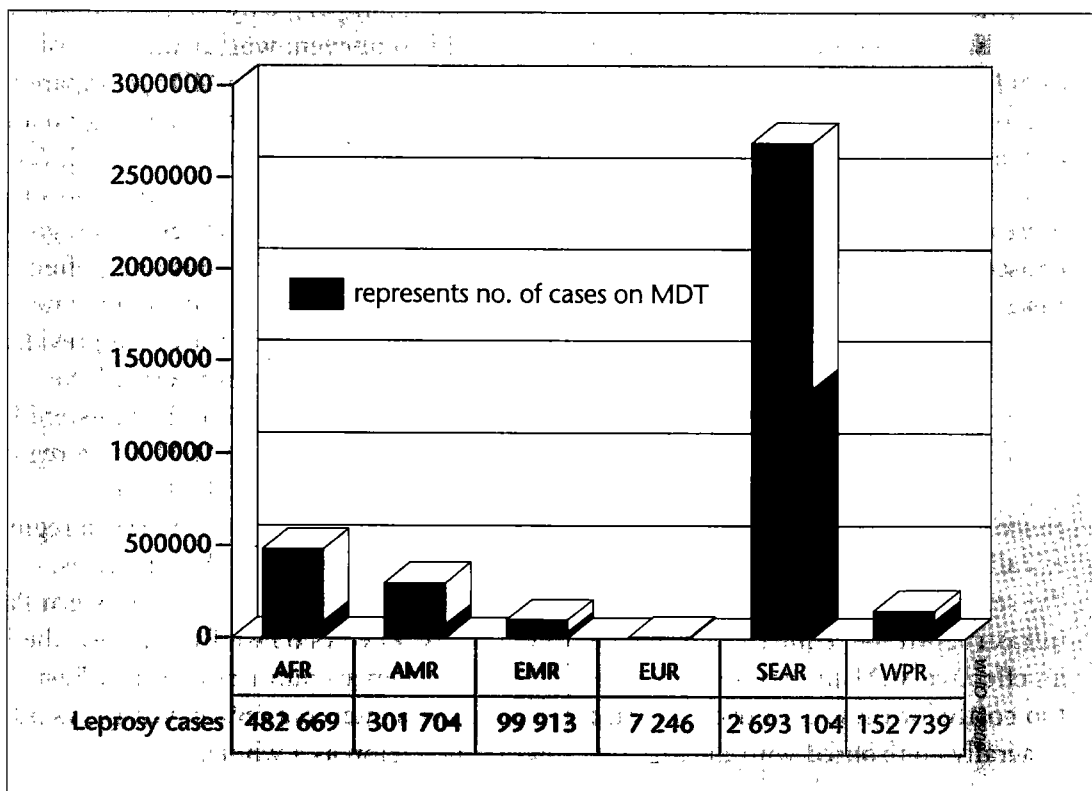
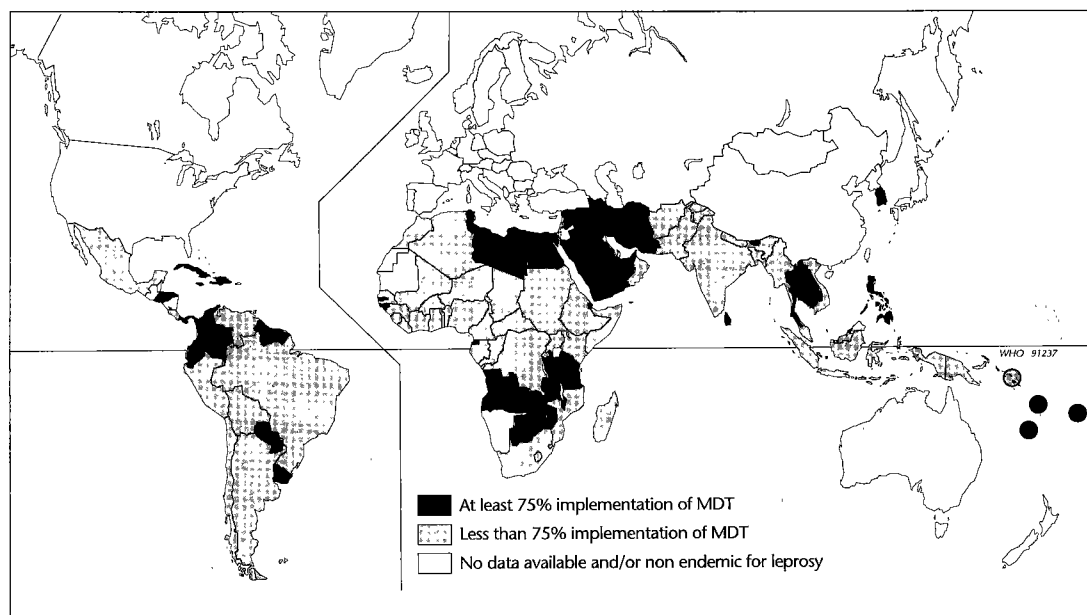


Fig. 4.
A world view of multidrug therapy



By mid-1990 over three million of the approximately five million registered leprosy patients in the 153 countries or territories reporting leprosy had been put on MDT and of these nearly a third had completed their treatment and were no longer considered to have active leprosy.

national leprosy case-load by 70-80% within 5-10 years, thereby releasing funds for other, possibly longer-term, needs.

■ Because an MDT programme calls for well-organized case detection and because the high patient acceptability of the treatment tends to encourage self-reporting, MDT is usually associated with increased early detection rates and a consequent fall in the frequency of new cases presenting with deformity.

On the negative side:

■ Leprosy tends to be most deeply ensconced in the socially and economically most deprived countries. Thus, the resources — in finance and infrastructure — required to implement an effective MDT programme are often too costly for these countries, which are generally confronted with health

problems they perceive to be more pressing than leprosy. This could explain, at least in part, why coverage of MDT is still so uneven: worldwide, 56% of patients are now on MDT, compared with only 18% in WHO's Africa Region and 24% in the Americas (see Fig 3.). As might be expected, coverage also varies within regions: countries with high leprosy prevalence rates tend, often, to have the lowest MDT coverage rates: e.g., in the African countries with prevalence rates above 1 case per 1000 of the population only 9% of the registered cases have access to MDT (vs. a regional average of 18%); in the Eastern Mediterranean, only 12% (vs. a regional average of 39%); in the Americas, only 13% (vs 24%); and in the Western Pacific, only 33% (vs 63%). By contrast, the high-prevalence countries of South-East Asia have achieved a 68% coverage, vs 50% for the region as a whole.

The African picture

To the oft-cited gloominess of Africa's development status, leprosy adds little comfort: compared with other WHO regions, Africa has the greatest proportion of countries or areas with leprosy (46 of 49, or 94%), the greatest proportion (18 or 37%) with highly prevalent leprosy (over 1 case per 1000) and the lowest proportion of patients (18% vs a world average of 56%) receiving multidrug therapy (MDT).

It is second only to South-East Asia in prevalence of leprosy (currently around 10 per 10 000 of the population, vs. a world average of 7 per 10 000), in total numbers of known cases (482 000) and in the world share of registered cases (13%, vs 72% for South-East Asia). Nigeria, with 194 000 cases, accounts for 40% of the region's case-load, although the Congo ranks first in prevalence (32.2 per 10 000), followed by the Central African Republic (24.4), Mali (23.6), Guinea (23.0) and Gabon (21.3).

On the other hand, compared with other WHO regions, only Africa registered a decline in numbers of known cases between 1966 and 1985 (by 41% vs. a 90% increase worldwide). Since 1985, figures for Africa have fallen by a further 51% (vs. a 30% drop worldwide), bringing the total decline for the region between 1966 and 1990 to 71%, vs. a worldwide increase of 32%. These figures suggest that declining prevalence rates for Africa between 1966 and 1990 — from just under 20 to around 10 per 10 000, vs. from 12 to 7 per 10 000 globally — have been little affected by the overall population increase in the region.

Several explanations have been offered for the exceptional downward trend in numbers of registered cases, including, on the negative side, a deterioration in case-finding and reporting against a background of perennial under-reporting and, on the positive side, the success of several

dapsone-based control programmes. The reported leprosy figures for 1985-90 do not support a role for MDT in the rapid fall in prevalence: unlike other regions, particularly South-East Asia and the Western Pacific, where a falling leprosy prevalence rate shows a fairly close inverse correlation with rising MDT coverage, in Africa the sluggish upward trend in MDT implementation bears little relation to the steep fall in prevalence over the past five years. Certainly, compared with other countries MDT coverage figures are not encouraging: only 18% coverage for the region (vs 66% for South-East Asia) and less than 30% coverage in half of the 38 African countries where leprosy is a public health problem.

Despite the gloomy figures for MDT coverage, the mood at the interregional conference on leprosy control in Africa held in November 1989 at Brazzaville, Congo, was far from pessimistic: overall, governments expressed increased commitment to implementation of MDT as a key element of leprosy control programmes and increased commitment to finding solutions — through health systems research, integration of leprosy control within general health services, training at all levels, particularly for management tasks and health education campaigns — to the operational and other obstacles that stand in the way of wider accessibility of MDT in Africa.

The Indian experience

With 2.4 million registered cases in 1990 (vs. an estimated 4 million cases), India is home to nearly two-thirds of the world's known leprosy patients.

Total registered cases rose steadily from 1951 (1.4 million) up to 1981 (3.9 million) and began falling to the present figure towards the end of the last decade. Eight of India's 26 states, with a total of 2.3 million patients, account for over 60% of the world total and 98% of the country's total case load (see Fig 5). India is also the source of 470 000 of the nearly 600 000 new cases currently detected annually throughout the world. And of the countries or areas of the world with over 1000 registered cases, India, with 30 cases per 10 000 population, has the second highest prevalence rate (after

Myanmar). About 15% of India's leprosy patients are children and about 20% have leprosy-related deformities.

On the brighter side, with 1.6 million (69%) of its 2.4 million cases receiving MDT, India has the world's largest MDT programme. Thanks to this programme, more patients — about 500 000 currently — are now being discharged from treatment every year than new cases being detected (see Fig. 6) and some 4.5 million have been taken off the leprosy registers over the past decade. MDT is the mainstay of the country's US\$32 million a year (about 600 million

Fig. 5.
Prevalence of registered leprosy cases in India, June 1990
(Rate per 1000)

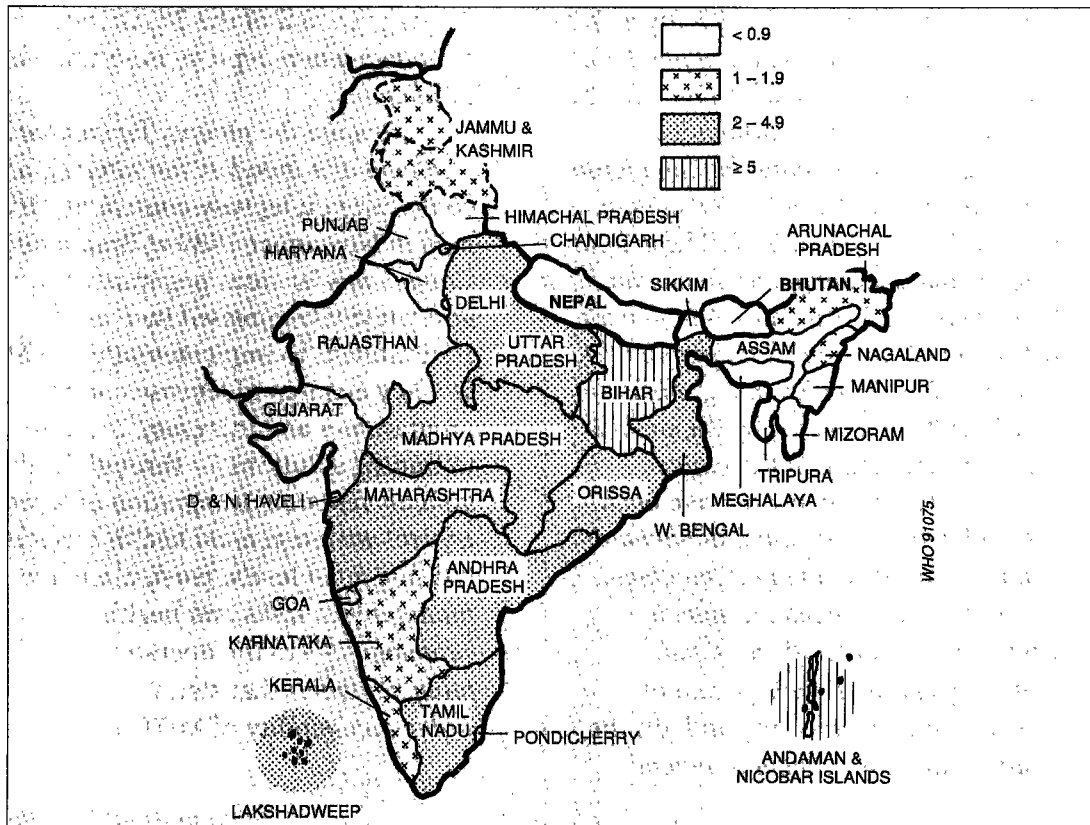
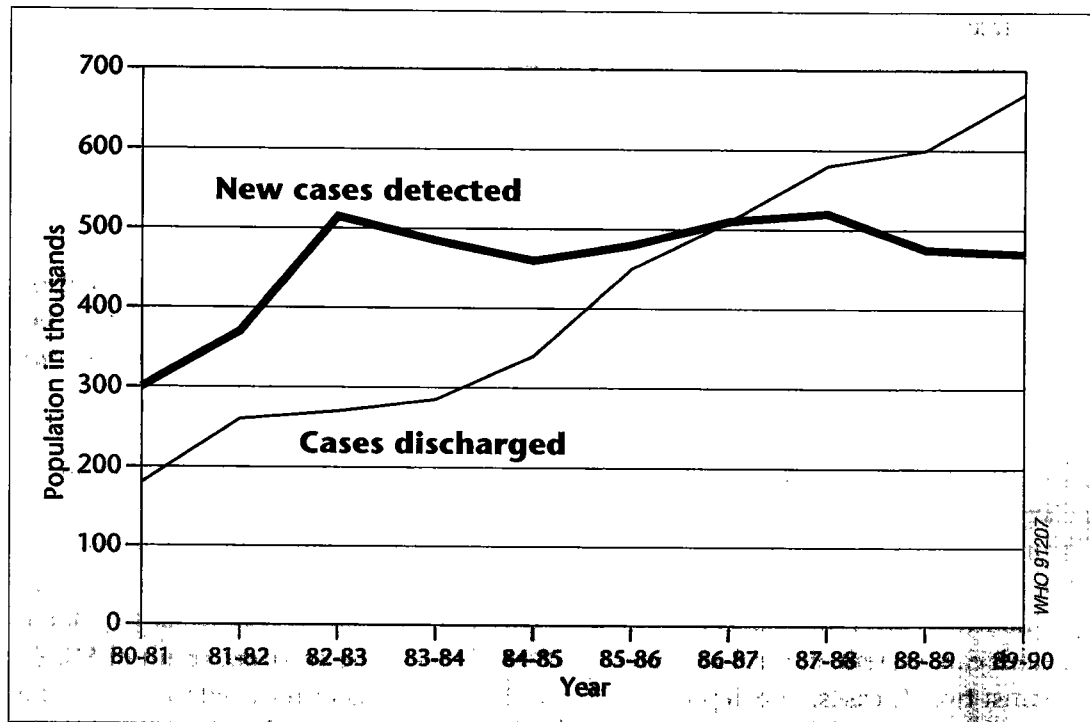


Fig. 6.
Annual new case detection and case discharge performance
(1980-1990)



rupees) highly organized National Leprosy Eradication Programme, which was launched in 1983 in the climate of optimism created by the advent of MDT. With the help of over 250 voluntary organizations, the programme intends by 1992 to extend MDT to all of the country's 196 districts with leprosy accounting for about 90% of India's patients.

Some idea of the epidemiological impact of an MDT programme is given by data from 12 districts. Within five years of the introduction of MDT, the leprosy prevalence rate had dropped by 65% (from 9.8 to 3.4 per 1000), the new case detection rate by 42% (from 3.1 to 1.8 per 1000) and the proportion of children among new cases by 13%.

Reports from "MDT districts" in India also suggest that MDT is well accepted by patients, who experience minimal side-effects; that reactive episodes

are "markedly reduced" in comparison with dapsone monotherapy; and that the advent of MDT has generally made for more positive attitudes among patients, health workers and communities with leprosy patients.

WHO provides technical support to the National Leprosy Eradication Programme through consultants, regional and national meetings, evaluation and monitoring activities, training and fellowships, and the supply of material resources.

Among the problems being encountered by the Indian programme:

- the difficulty of classifying patients as multi- or paucibacillary;
- persistence of lesions in some paucibacillary patients;
- facilities for management of complications (notably reactive episodes and ulcers);

■ inadequate efforts to prevent disability;
■ distinguishing between reversal reactions and relapses, especially in paucibacillary patients;

■ the difficulty of obtaining reliable epidemiological assessment of the disease;
■ inadequacies of post-MDT surveillance.

The Zambian experience.

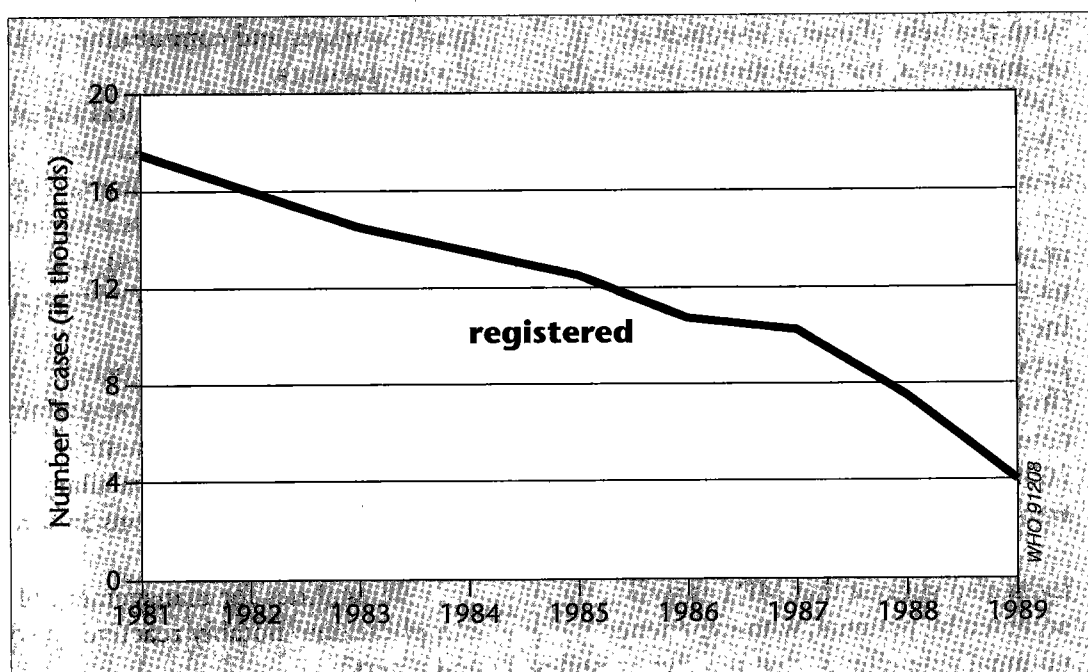
“Multidrug therapy has given leprosy a new face. The old stigmas about the incurability of leprosy are disappearing... High cure rates, combined with the relatively short duration of treatment, have improved compliance tremendously.”

So reads a recent report from Zambia’s Leprosy Tuberculosis Control Unit, which is part of the Ministry of Health and, as its name suggests, combines, within the country’s primary health care system, control activities against two diseases: one, leprosy, is dwindling in importance, the other, tuberculosis, ranks fifth (equal with

AIDS) as a cause of mortality and morbidity.

Numbers of known leprosy cases have shown a steep downward trend (see Fig. 7) from 16 000 in 1981 to 3663 in 1989—the apparent result of MDT, which was introduced in 1983 and now covers 70% of all patients in 93% of districts. In four of the country’s nine

Fig. 7.
Leprosy caseload



provinces, accounting for 52% of the total population, MDT coverage ranges from 75 to 100%. A steady fall in the numbers of new cases detected annually — from a peak of 1440 in 1983 to 1020 for 1990 — despite constant, intense case detection activities, suggests a real fall in the transmission of leprosy infection: data, however, are lacking from which to determine age-adjusted case detection rates from which an assessment might be made of the frequency of new leprosy infections.

Zambia's National Leprosy Control Programme, which has for long enjoyed support from the Sasakawa Memorial Health Foundation of Japan and the Netherlands Leprosy Relief Association, has several features that illustrate how a country, albeit relatively small (population 8 million), can be freed to a large extent from a long-standing leprosy burden. These features include a vigorous

MDT programme offering efficient case detection, treatment and follow-up services throughout most of the country; integration of this programme within the country's primary health care system; use of the resources mobilized by the programme for the control of highly prevalent infection (tuberculosis); a strong management training component; well-run laboratory services for bacteriological assessment of all newly diagnosed cases, including periodic review of skin smears by a national reference laboratory; and a simple data reporting system readily implemented at the primary health care level. One hitherto neglected aspect of Zambia's leprosy control activities — the prevention and management of disability — is being addressed by the creation, with the help of the United Kingdom's Leprosy Mission International, of a specialized rehabilitation programme.

WHO in action

WHO's contribution to its newly proclaimed target of elimination of the disease as a public health problem by the year 2000 is mainly one of coordinating and supporting the many institutions — research, training, academic, governmental or other —, agencies and organizations that have joined in the effort to achieve this aim.

WHO receives invaluable support from many participants in this effort, including the Japan Shipbuilding Industry Foundation, the International Leprosy Association and the International Federation of Anti-Leprosy Associations.

In recognition of the critical stage that the world leprosy situation has reached as a result of the steady progress made over the past five years in control activities, WHO has set up a working group of leprosy experts to oversee world efforts to increase the momentum created

by recent progress. This leprosy control working group will meet periodically, starting in 1991, to advise on ways of stimulating countries to intensify their leprosy control efforts and of ensuring greater support from and coordination of the different agencies working in leprosy control. It will also seek ways of improving control strategies and will set priorities related to changing epidemiological and socioeconomic conditions. Part of the working group's mandate will also be to evaluate scientific

progress and assess the applicability of research findings to leprosy control. Overall, the working group should provide a stimulus and direction to the "race" towards leprosy elimination by the year 2000.

More specifically, WHO's activities fall into two major categories: programme development and research.

Examples of WHO's programme development functions:

- helping regions and individual countries to plan and implement leprosy control activities, particularly through general health service facilities;

- helping countries to organize the technical backup needed for efficient leprosy control activities, including epidemiological evaluation and treatment monitoring;

- providing, at all levels of leprosy control, updated technical guidelines on diagnosis, treatment and prevention of leprosy, based on the latest research findings;

- setting leprosy control policy on all major aspects of leprosy control, including classification, diagnostic criteria, treatment, follow-up, and disability prevention and management;

- training of health personnel at all levels and for all aspects of leprosy control, including referral services for clinical and laboratory diagnosis, treatment of complications and

community-based rehabilitation services; in particular, WHO is organizing national training courses in leprosy control for managers.

Under its research promotion activities, WHO:

- organizes, supports and coordinates the field-testing of leprosy vaccines for prevention and immunotherapy;

- supports field tests of shorter, more effective and operationally more readily implemented multidrug regimens and new antileprosy drugs;

- supports the search for better technology with which to monitor the impact of treatment on leprosy transmission and coordinates projects to assess the epidemiological impact of treatment on transmission;

- supports and coordinates health systems research on (a) the most cost-effective leprosy control policies, especially those that provide for the integration of leprosy control with the general health services with programmes set up for the control of other diseases; (b) the organization of rehabilitation services and their integration within existing rehabilitation programmes; (c) improving case detection and management; (d) social and economic factors, including educational activities, related to community involvement in leprosy work.