

# WHO response to resurgence of tuberculosis: the DOTS strategy for effective control

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## Introduction

Recognizing that Tuberculosis (Tb) is one of the most neglected health crises and that the Tb epidemic is out of control in many parts of the world, Tb was declared by WHO to be a global emergency in April 1993. Worldwide, Tb is the leading cause of death due to a single infectious agent. No country can afford to ignore the threat of the current Tb epidemic to the health of its population and to its economy and development efforts. Nearly 90 million new cases of Tb will emerge during the next decade, the majority amongst the age group 20–49, which represents men and women in their most productive years. Out of them, over 30 million people will die in the next decade unless the response to the global Tb problem is improved radically. The high mortality and morbidity due to Tb is often the result of inadequate control measures and neglect of the disease.

In the Western Pacific Region the number of newly notified Tb cases has doubled between 1983 and 1996 (see Figure 1) and in the Pacific countries and areas the number of Tb cases is not declining. These 20 countries and areas include: American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Northern Mariana Islands, Marshall Islands, Federated States of Micronesia, Nauru, New Caledonia, Niue, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu and Wallis and Futuna.

Re-emergence of Tb started in 1991 (see Figure 2) and the main reasons its resurgence are:

- the neglect of the disease by governments has allowed Tb control systems to deteriorate or even disappear in many parts of the world;
- poorly managed and incorrectly conceptualized Tb control programmes have contributed to an increase in the burden of the disease as well as to the emergence of

multidrug resistant Tb. Even in industrialized countries, treatment of multidrug resistant Tb cases is difficult and expensive and often fails;

- population growth has contributed to an increase in the number of Tb cases. Children born in the last few decades in regions with high population growth rates are now reaching the ages where morbidity and mortality from Tb is high;
- the link between Tb and HIV co-infection has led to an explosion of Tb cases in HIV endemic areas; HIV activates Tb in individuals who are Tb infected, accelerating the breakdown from infection to disease.

The resurgence of Tb led the WHO Tb Programme to reassess the Tb control strategy in the early 1990s and to develop a new framework for Tb control. This document is a concise presentation of the new Tb control strategy and policies. It explains the new concept of effective Tb control, including key operations for effective programmes and indicators to measure the effectiveness of interventions.

## The overall objective of Tb control

The overall objective of Tb control is to reduce mortality, morbidity and transmission of the disease until it no longer poses a threat to public health.

## The targets for global Tb control

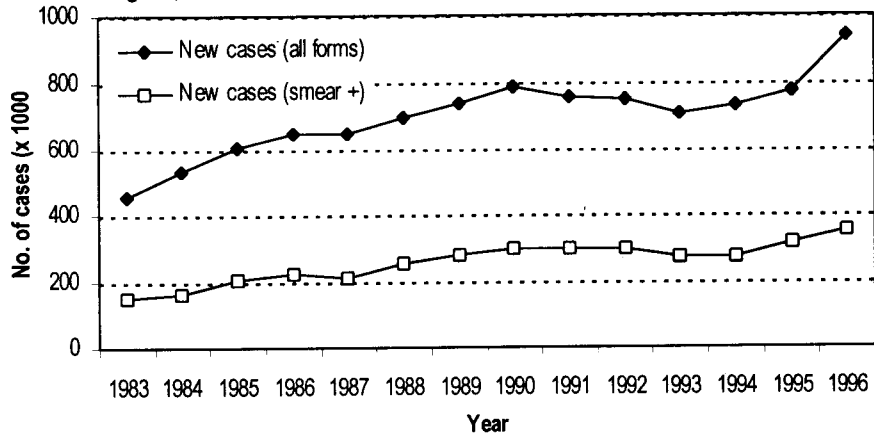
The World Health Assembly has endorsed the targets for global Tb control, which are:

- to cure 85% of the detected new smear positive Tb cases and to detect 70% of existing cases by the year 2000.
- Achieving a high cure rate is the highest priority because Tb programmes, which achieve a high cure rate, should be able to attract (due to the high quality of treatment services they provide) a majority of the existing cases in their catchment area. By fully utilizing existing health services systems for high quality Tb control the majority of countries is expected to detect 70% of the existing cases.
- Giving priority to case finding before achieving high cure rates in treatment programmes will contribute to the Tb problem by producing chronic cases and multidrug resistant Tb.

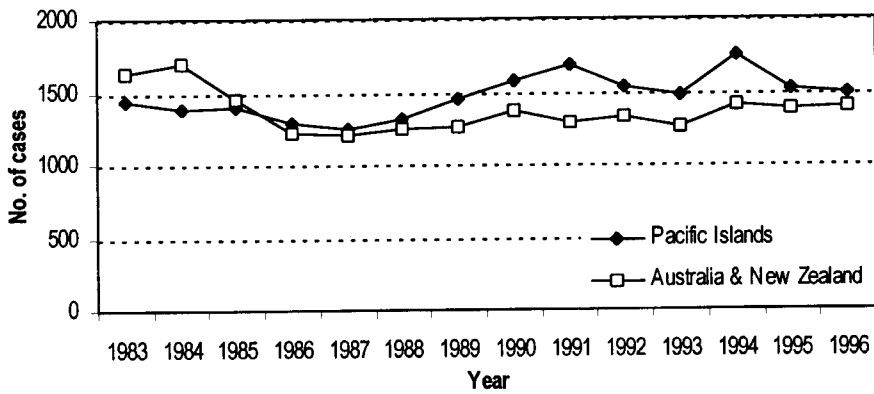
Since BCG vaccination plays an important role in preventing serious, but rarely contagious, forms of Tb in children, WHO highly recommends BCG vaccination of all infants for

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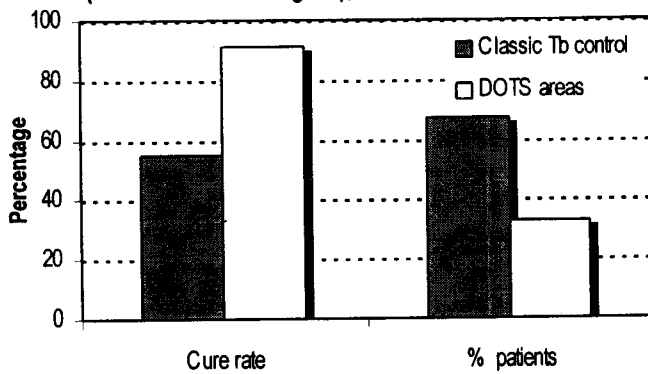
**Figure 1. Trends of notified cases of Tb in WHO Western Pacific Region, 1983 - 1996**



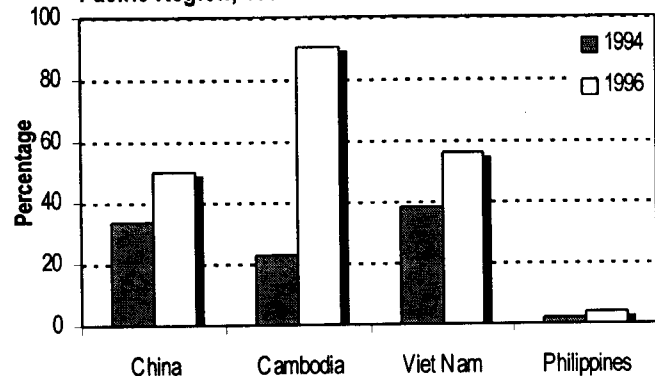
**Figure 2. Trend of the number of newly notified cases of Tb in 20 Pacific countries and areas and in Australia and New Zealand, 1983 - 1996**



**Figure 3. Cure rate in DOTS and non-DOTS areas and percent of Tb patients in each of the areas (Western Pacific Region), 1996**



**Figure 4. Percentage of the population having access to DOTS in four countries in the Western Pacific Region, 1994 & 1996**



Tb high prevalence countries, usually within the Expanded Programmes on Immunization.

## Controlling Tb: the WHO DOTS strategy

The WHO Tb control strategy is Directly Observed Treatment Short-course (DOTS). This policy package remains unaltered, even in the presence of HIV infection, and includes the following five elements:

1. **Funding and sound policies.** Government commitment to a Tb programme aiming at nation-wide coverage, as a permanent health system activity, integrated into the existing health structure with technical leadership from a central unit. Effective leadership requires a permanent team qualified in the management of Tb control. A well-supported national Tb programme will have a programme manual, a training programme in place, a plan of supervision, and a development plan.
2. **Microscopes.** Needed to confirm Tb. Case detection through predominantly passive case finding, i.e. detection of Tb cases among persons presenting themselves to a health-worker with symptoms indicative of Tb. Given the limitation of existing diagnostic tools and incomplete knowledge on high Tb risk groups, in most countries active case finding is not cost effective. Resources should first be directed toward identifying sputum smear positive cases for treatment, as these people are the source of infection. Until high cure rates are achieved, programmes should not actively search for other people in the community who might have Tb, as this diverts scarce resources from curing the worse-affected cases who are spreading the disease.
3. **Observation of the treatment.** Administration of standardized short-course chemotherapy to (at least) all confirmed sputum smear positive cases of Tb under proper case management conditions. Proper case management ensures that an observer watch the patient swallow the medicines every day or three times a week during the first two or three months of treatment when the patient may be seriously ill, at risk of acquiring drug resistance, and an infectious threat to others. Patients that fail to make their appointments with the health worker must be immediately contacted and helped to resume treatment. After this period the patient has become sputum smear negative, but health workers have to make sure that the patient undergoes a full course of treatment (total 6-8 months) to avoid relapse. (The recommended treatment regimens are presented in *Treatment of Tuberculosis, Guidelines for National Programmes: WHO second edition 1997.*)
4. **Medicines.** Establishment of a system of regular drug supply of all essential anti-Tb drugs (isoniazid, rifampicin, pyrazinamide and streptomycin). These drugs provide a knockout punch to kill the Tb bacilli. The establishment of

a dependable, high-quality supply of anti-Tb drugs throughout the health system is an essential part of the DOTS strategy to ensure that the treatment of Tb patients is never interrupted or curtailed with one or more drugs.

5. **Monitoring the treatment's progress.** There are two means of ensuring successful treatment.

First, in the case of contagious patients, sputum must be examined under a microscope after two months and again at the end of treatment to ensure that a patient is free of the Tb bacilli.

Second, a recording and reporting system is needed to rigorously monitor and evaluate the progress made in treating and curing each Tb patient. Through analysis of each group of patients, this system makes it possible for health services to quickly identify districts and communities that are not achieving 85% cure rates, and then to intervene with additional support and training. (Definition of case categories, classification of disease and treatment outcome are presented in *Treatment of Tuberculosis, Guidelines for National Programmes: WHO second edition 1997.* )

## Conclusion: use DOTS more widely

The DOTS areas achieve high cure rate but were serving only one third of the notified cases in the Region at the end of 1996.

The DOTS strategy proved to be very effective in curing the patients, thus reducing the pool of infectious cases. Among others, three large countries have successfully implemented the DOTS strategy. The Philippines has started later. Implementation of DOTS is expending with the aim at covering 80% of the country in five years times.

## References

1. *WHO Tuberculosis Programme: Framework for Effective Tb Control.* WHO/Tb/94.179.
2. *Epidemiological Review of Tuberculosis in the Western Pacific Region: 1995 and 1997 update.*
3. *WHO Report on the Tuberculosis Epidemic: 1997.*
4. *Global Tuberculosis Control: WHO Report 1997.*
5. *Treatment of Tuberculosis, Guidelines for National Programmes.* WHO/Tb/97.220. □