

Tuberculosis control: how the world has changed since 1990

Philip C. Hopewell¹

In 1990 the Commission on Health Research for Development stated that "The magnitude of the tuberculosis problem is matched only by its relative neglect by the international community." (1) A decade later, in March 2000, ministers of health and finance from the 20 countries that have 80% of the world's tuberculosis cases met in Amsterdam and issued the Amsterdam Declaration. This stated that the global situation was "both alarming and unacceptable", and that "We commit ourselves to accelerate action against tuberculosis through expansion of coverage of populations with the WHO-recommended strategy to combat tuberculosis (DOTS), providing for at least 70% detection of infectious cases by the year 2005."

Clearly, tuberculosis was no longer a neglected disease. Four main factors played an important part in bringing about this change. The first was the development and validation of the DOTS strategy. The diagnostic and treatment components of DOTS were built on the results of a series of clinical investigations: evaluation of the sensitivity of sputum smear microscopy; calculation of the epidemiological impact of smear-positive patients; demonstration of the success of outpatient chemotherapy and intermittent treatment regimens; and clinical trials defining the roles of rifampicin and pyrazinamide in shortening the duration of therapy. This sequence of seemingly unrelated studies is an extraordinary example of the value of carefully done clinical and operational research. Nunn et al. (see pp. 471–476 in this issue of the *Bulletin*) explain how WHO is now focusing its research efforts on the expansion of DOTS.

The scientific foundations of DOTS related to diagnosis (sputum smear microscopy for symptomatic patients) and treatment (direct observation of at least the initial phase in which rifampicin was given) were then combined with administrative elements worked out by Karel Styblo and validated in a pilot project in the United Republic of Tanzania, and subsequently in other countries as well (2, 3).

The second factor that has brought TB to centre stage is the quantification of its economic impact and the cost-effectiveness of treating it. This was demonstrated in the United Republic of Tanzania (3, 4). A consequence was that treatment for tuberculosis was included in the group of essential clinical services recommended by the World Bank in its world development report for 1993 (5).

Third was WHO's packaging of the components of the DOTS strategy and marketing it. It resulted in DOTS being seen as a kind of "vaccine equivalent", a viable intervention around which support for tuberculosis control could be rallied. In addition, and, perhaps, more important, DOTS is a manageable programme with measurable outcomes.

Successful implementation of the DOTS strategy is demonstrated most dramatically in Peru where nearly 100% of the population is covered by DOTS, the case detection rate is over 95% and the cure rate is 92% (6). After a decade of DOTS the case rate is decreasing at 6% annually, which is similar to the rate of decrease in industrialized countries. The current challenge in Peru is to maintain the high level of programme performance, and accelerate the decline.

In this issue of the *Bulletin* there are reports of dramatic DOTS successes in India (pp. 457–463) and China (pp. 430–436), showing the effectiveness of DOTS even in large and complex countries. Both articles also show that DOTS implementation is not easy, and careful planning, infrastructure, continual training, ongoing analysis, supervision and evaluation are essential for its success.

The fourth factor that has put the spotlight on tuberculosis is the resurgence of the disease in many industrialized countries in the late 1980s and early 1990s. A reason proposed by the Commission on Health Research for Development for the neglect of tuberculosis was the rapid decline in cases in rich countries (1). In the USA the response to the resurgence of TB was slow, but when funding was at last increased to realistic levels the effect was striking. Cases have decreased by

more than 40% since the peak in 1992 (7). However, the domestic resurgence made it easier for advocates of funding for international tuberculosis control to make their point to members of Congress. A result has been that targeted money for tuberculosis in the United States Agency for International Development has grown from zero in 1997 to about US\$ 75 million currently. Other countries are increasing their support as well.

Global tuberculosis control is by no means a success story, though it has the potential to become one. As explained by Dye et al. in this issue (pp. 437–444), only 19% of the world's tuberculosis cases are known to have been treated successfully in DOTS programmes. The main task remaining is to increase the number of patients with accurate diagnoses who are treated effectively by expanding DOTS. Several high-incidence countries are close to or above the goal of an 85% rate of cure. However, there are none with a high cure rate that are near to the goal of 70% case detection rate. Making this highly effective intervention available to more TB patients will require considerable imagination, ingenuity and effort. ■

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¹ Associate Dean, University of California, San Francisco, San Francisco General Hospital, Room 2A21, San Francisco, CA 94110, USA (email: phopewel@sfgkdean.ucsf.edu). Ref. No. 02-0212