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TB

TOWARDS A TB-FREE FUTURE

World Health Organization
Stop TB Partnership

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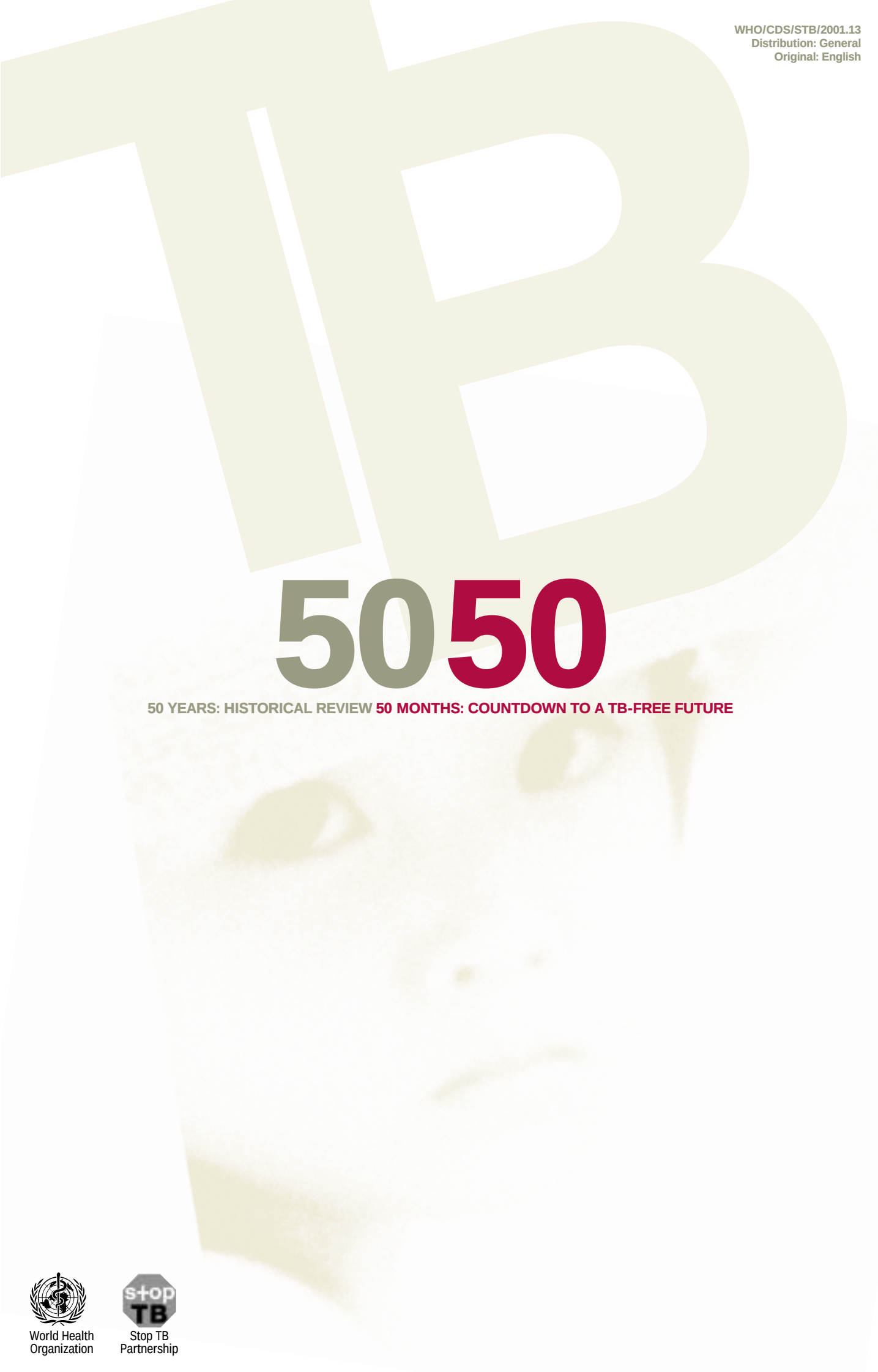
50 YEARS: HISTORICAL REVIEW 50 MONTHS: COUNTDOWN TO A TB-FREE FUTURE



World Health Organization
Stop TB Partnership

“Our vision is one of a TB-free world: The first children born this millennium

5050

50 YEARS: HISTORICAL REVIEW **50 MONTHS: COUNTDOWN TO A TB-FREE FUTURE**

will see TB eliminated in their lifetime.”

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A C R O N Y M S

ADB	Asian Development Bank
ALA	American Lung Association
ARVs	Antiretrovirals (drugs used to treat HIV/AIDS)
ATS	American Thoracic Society
AusAID	Australian Agency for International Development
BCG	Bacilli Calmette Guérin
BRAC	Bangladesh Rural Advancement Committee
CDC	Centers for Disease Control and Prevention, Atlanta, GA, USA
CDC/DTBE	CDC Department for Tuberculosis Elimination
CEE/CIS	Central and Eastern Europe/ Commonwealth of Independent States
CESAL	Spanish NGO
CIDA	Canadian International Development Agency
DANIDA	Danish International Development Agency
DFB	Damien Foundation Belgium
DFID	Department for International Development (UK)
EU	European Union
GATB	Global Alliance for TB Drug Development
GDEP	Global DOTS Expansion Plan
GDF	Global Drug Facility (TB)
GLC	Green Light Committee
GLRA	German Leprosy Relief Association
GMS	German Medical Service
GPSTB	Global Plan to Stop TB
GTZ	German Cooperation Agency for Development
HBC	High-burden countries (TB)
HIV	Human Immunodeficiency Virus
HSPH	Harvard School of Public Health
ICC	Interagency Coordinating Committee
ICD	Italian Cooperation for Development
IDA	International Dispensary Association
IFRC	International Federation of Red Cross and Red Crescent Societies
IUATLD	International Union Against Tuberculosis and Lung Disease
IVR	Initiative for Vaccine Research
JATA	Japan Anti-Tuberculosis Association
JFAP	Japan Foundation for AIDS Prevention
JICA	Japan International Cooperation Agency
KNCV	Royal Netherlands Tuberculosis Association
MCNV	Medical Committee Netherlands-Viet Nam
MDR-TB	Multidrug-resistant TB
MEDAIR	British NGO
MSF	Médecins Sans Frontières (Doctors Without Borders)
NGO	Nongovernmental Organization
NLR	Netherlands Leprosy Relief Association
NORAD	Norwegian Agency for Development Cooperation
NTBLCP	National Tuberculosis and Leprosy Control Program (Nigeria)
NTP	National TB Control Programme
OAU	Organization for African Unity
OECD	Organisation for Economic Co-operation and Development
OPAS	Organizacão Pan-American da Sadde (Brazil)
PAHO	Pan American Health Organization (WHO)
PHRI	Public Health Research Institute
PIH/SES	Partners in Health (Harvard Medical School)
PLWHA	People living with HIV and AIDS
ProTEST	Promote Voluntary HIV Testing Initiative
R&D	Research and development
RIT	Research Institute of TB (Japan)
RNTCP	REVISED National TB Control Programme (India)
STBGP	Stop TB Global Partnership
STIs	Sexually Transmitted Infections
TB	Tuberculosis
TB80	Group of countries that together account for 80% of global TB burden
TBCTA	TB Coalition for Technical Assistance
TBDI	TB Diagnostic Initiative
TBVI	TB Vaccine Initiative (WHO)
TBVIAC	TB Vaccine Initiative Advisory Committee (WHO)
TDR	Special Programme on Research and Training in Tropical Diseases
TLM	The Leprosy Mission International (UK)
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	UN Development Programme
UNGASS	UN General Assembly Special Session (HIV/AIDS)
USAID	United States Agency for International Development
VCT	Voluntary counselling and testing
WB	World Bank
WEF	World Economic Forum
WFP	World Food Programme
WHO	World Health Organization
WPRO	WHO Western Pacific Regional Office
WTBD	World TB Day (24 March)
WV	World Vision (NGO)

PREFACE

Tuberculosis—a disease that has taken perhaps more lives than any other in all of human history—continues to cause an immense burden of suffering and death around the world.

Yet there is a hope. Just 18 months after the **Amsterdam Declaration** to Stop TB, we can point to notable progress, especially at the global level and in certain high-burden countries. In this short time, innovative mechanisms and strategies, such as the **Global Drug Facility** and the **Global DOTS Expansion Plan**, have been developed to help countries mount their counteroffensive.

At the national level, progress has been remarkable in several countries, for example Peru and China. India, the country with the most TB cases in the world, is moving swiftly forward, treating close to half a million new patients each year and poised to double DOTS coverage to 800 million in the near future.

Still, much remains to be done. We must further accelerate our efforts to expand DOTS population coverage; to work hand-in-hand with a growing partnership, including NGOs and private sector health care providers; to raise awareness and provide community education on how to prevent and treat TB successfully; and to deal more effectively with new threats, such as TB among HIV-infected people and multidrug-resistant TB.

We are responding. Our target is as clear as our resolve: a 50% reduction in the global TB burden by 2010.

These goals are within our reach. With re-doubled energy and resources, we will attain them. Now is the time to act, together, as we count the 50 months remaining to achieve our 2005 targets.

Dr Gro Harlem Brundtland
Director-General
World Health Organization

Executive summary

On World TB Day—24 March 2000—ministers from twenty of the world's 22 countries that together account for 80% of the world's TB burden, adopted the landmark ***Amsterdam Declaration to Stop TB.*** "Recognizing the enormity of the task ahead and the huge amount of resources required...," the conference participants—ministers and high-level representatives of OECD governments, international development organizations, nongovernmental organizations (NGOs) and bilateral donors—made the following explicit commitments to meet the targets for global TB control by 2005:

- to develop and/or strengthen the TB component of national development plans;
- to ensure universal access to TB drugs through improved procurement and distribution;
- to accelerate R&D and delivery of new tools and incentives for the development of TB diagnostics, drugs and vaccines; and
- to establish a Global Fund for Tuberculosis.

Those commitments are being kept. The global Stop TB Partners' Forum, convened in Washington DC from 22 to 24 October 2001—just 18 months after Amsterdam—is intended to highlight the progress made in that brief time period. More importantly, it serves as a call to action and catalyst for progress still needed to meet the international TB targets for the year 2005; that is, detecting 70% of all new infectious TB cases and curing 85% of those patients. Achieving these targets will set the stage, making it feasible to reach the longer term 2010 target, which is to halve TB deaths and prevalence worldwide.

How far have we come in the **past 50 years**? *Very far* in the global historical context. This half-century has witnessed the first major breakthrough ever in the battle against the age-old scourge of TB. Today, thanks to science, there is a *cure* for this dreaded disease. We have discovered the tools and techniques to use TB drugs effectively. With the pioneering contributions of individual researchers and country collaborators around

the world, we have developed effective—and cost-effective—TB control strategies. We have moved decisively against a 1980s trend towards complacency that threatened to undermine progress so that, for the first time, TB is also squarely acknowledged as a socioeconomic and political issue. And, since the turn of the millennium, we have been building momentum and scaling up the global response to the threat of TB. The defining event was the Amsterdam Conference in March 2000.

What has been accomplished **since Amsterdam**? Global progress on an unprecedented scale: strengthening and coordination of the Global Partnership through a Global Plan to Stop TB; development of a Global DOTS Expansion Plan to identify the resource needs in high-burden countries; establishment of a Global Drug Facility to increase access to quality drugs; and the creation of working groups, bringing together partners and countries, to deal with two looming issues—HIV-related TB and the spectre of multidrug-resistant TB (MDR-TB).

In terms of **global initiatives**, there have been encouraging developments on three other fronts. The Global Alliance for TB Drug Development (GATB) was launched in October 2000 to catalyze efforts to develop new drugs to shorten the duration of TB treatment. The TB Diagnostics Initiative is rapidly increasing momentum, working to introduce new tools to diagnose TB earlier and more accurately. And the TB Vaccine Initiative is receiving increased support through the establishment of a new WHO/UNAIDS Initiative for Vaccine Research to work on long-range solutions to the TB problem.

Downstream results require upstream **investments**—to the tune of some US$ 1.7 billion per year. Commitments have risen more than ten-fold over the past decade and the recent launch of the Global Fund to Fight AIDS, Tuberculosis and Malaria provides yet another mechanism for high-level international support. This is fitting as now—more than ever before—it is recognized that health investments yield high returns, both financial and developmental. For the immediate future, an annual resource gap of about US$ 900 million must be brooked and these resources invested in a broader and better manner so that their public health returns accrue to all, especially the poor who need them most.

Have we come **far enough**? *Not yet*. Eliminating TB remains elusive. And DOTS is difficult to implement, even under optimal conditions. Despite remarkably swift progress at the global level and within particular countries, too many national efforts continue to be strapped by resource and infrastructure constraints. Still, noteworthy progress has been achieved in the group of 22 TB high-burden countries towards achieving targets and implementing the Declaration.

At the **national level**, countries must ensure that all people with TB have access to effective care. They must expand DOTS and address the urgent issues of HIV-related TB and MDR-TB. They must improve coordination of their activities within the health sector and beyond, across all sectors and national borders so that stopping TB becomes a seamlessly organized global concern. Some TB high-burden countries are already making great strides in these areas: Peru's singular success in graduating out of the high-burden category through a potent mix of strong political commitment, patient support, incentives and education; India's remarkably rapid and effective DOTS expansion; Uganda's model of community-based care; Kenya's involvement of the private sector; and Nigeria's work with NGOs.

Is there hope for a "brave new **TB-free world**" beyond 2005? *Control, yes; elimination, not yet*. The primary challenge for global TB control over the next 5 to 10 years will be to dramatically reduce TB deaths, shorten the duration of illness and decrease the incidence of this disease—in that order. For the longer term, we will need new drugs, better diagnostics and, eventually, a vaccine. Although still "a world away from elimination", we are committed to eliminating TB as a global public health problem within the next 50 years, an audacious—and achievable—goal.

To that end, the next **50 months**—between October 2001 and December 2005—are crucial. In comparison to the past 50 years (i.e. 600 months), these final 50 months bring us to the eleventh hour: high time for a "countdown call to action" to achieve global TB detection and cure targets. We know what must be done; and the Global Plan to Stop TB (2006–2010) outlines ways to do it **broader, better and bolder** than ever before. We must *broaden* DOTS coverage and access to include everyone. We must develop *better* diagnostic tools and shorter treatment regimens. We must develop *bolder* outreach initiatives that engage the entire societal spectrum: from the private sector to the mobilization of civil society.

As a global partnership, with a Global Plan to Stop TB and a number of global initiatives to back it up, we are on the right track. We have to **move forward faster—and together.** We must not forget how far we have come: today TB is fully curable and each cure means reduced transmission. At the same time, we must remember how far we have to go. But three things are clear: TB is a scourge that can be eliminated; we have the means to do it. We can relegate TB "to the dustbin of history". The time may be now—or never.

Adapting the famous quote from William Shakespeare, "To be, or not to be: that is the question", we can say, "TB or no TB; that is the question". The answer is ours.

TB or no TB: “To be or not to be: that is the question.”

“TO BE…”: THE HIGH COSTS OF TB

IN TERMS OF LIVES

- TB is perhaps the greatest infectious killer of all time. Over the centuries, it has taken over one billion lives.
- Every year TB infects up to 100 million people, 8 million of whom develop active TB. If not treated, each sufferer infects an average of 10–15 people per year on average.
- Every year TB takes 2 million lives—that means one life every 15 seconds—many of them adults who should be in their most active and productive years.
- In 2001, TB will kill more people than any previous year in history; TB is gaining ground. Globally, there is a 3% increase in new TB cases each year. In Africa, the increase is 10% per year, largely due to coinfection with HIV. Without greater effort, the annual incidence will increase by 41% between 1998–2020 to 10.6 million cases per year.
- Three-quarters of all TB sufferers are young adults. TB is also a leading cause of death among HIV-positive people, accounting for 15% of all AIDS deaths worldwide.
- TB threatens to spin out of control, both in terms of deaths and costs, if multidrug resistance increases. No one—not even the most prosperous people in the most developed countries—will be immune.

IN TERMS OF ECONOMICS

- TB is a disease of poverty that traps the world’s poorest, most marginalized and most vulnerable in a vicious cycle of disease and impoverishment.
- Its impact on the family is profound, especially if the sufferer is the principal wage-earner.

IN TERMS OF HEALTH AND SOCIAL DEVELOPMENT

- TB is a “social disease”. It disrupts the social fabric of society through the stigmatization of sufferers, as well as through years of education and productivity lost.

The answer is ours.

"… NOT TO BE": THE BENEFITS OF TB CONTROL

IN TERMS OF LIVES

- Achievement of the global targets of 70% detection and 85% cure by 2005 will reduce TB incidence by 11% and deaths by 12% per year. Even reaching these targets by the year 2010 will avert 48 million new TB cases by 2020.
- A fully operational and effective Global Drug Facility will be able to treat 45 million TB sufferers by 2010 and avert 50 million TB deaths by 2020.
- In India, the country with the world's highest burden of TB, meeting the 2005 targets will prevent more than 15 million new TB cases and nearly 6 million TB deaths and cure over 25 million TB cases through 2020.
- In China, more than 1.5 million TB patients have been cured and the number of deaths halved since implementation of a World Bank-assisted project in 1992.

IN TERMS OF ECONOMICS

- DOTS is an effective and affordable TB control strategy. The World Bank has called DOTS "one of the most cost-effective of all health interventions".
- The drugs for a full 6–month course of DOTS treatment can cost under US$ 10 in developing countries while the total cost of treatment ranges between US$ 50 and US$ 2 000, depending on the setting.
- In India, meeting the 2005 targets will provide economic savings of over US$ 27 billion to the country through 2020.

IN TERMS OF HEALTH AND SOCIAL DEVELOPMENT

- DOTS, a control strategy based on diagnosing and curing people with infectious TB, will contribute to the development of stronger public health services with better management and community outreach capabilities.

chapter 1

50 years:

Historical review of TB control

1.1 Assessing the problem: the big picture

Egyptian mummies tell the story. Even though they cannot speak, deformities in their skeletons suggest that TB has existed since antiquity, spread as an infectious disease through the air we breathe. After the plague or "Black Death" hit Europe in the Middle Ages, TB became known as its counterpart, the "White Plague". It struck fear into every heart.

No one was immune. TB was called the "King's disease" and, indeed, recent research reveals that 15-year old King Edward VI, the son of King Henry VIII, who later served as the model for Mark Twain's prince in *"The Prince and the Pauper"*, died in 1553 after a bout of measles apparently activated by a smoldering case of "consumption".

The impact of TB on the West was massive. Even as recently as the first half of the 20th century, having active TB was the equivalent of a death sentence. But today—in fact, since 50 years ago—there is a cure. So how is it possible that TB still heaps such harm, suffering and death upon millions of people throughout the world?

TB: No respecter of fame and fortune

From politicians to philosophers, from kings to courtesans, from painters to priests, from physicians to musicians, the following is a selection of famous people in the history of the Western world who have suffered, and in many cases, died from TB.

Women: Simonetta Vespucci (1521), Model for Botticelli's Venus – Mme de Pompadour (1764) Jane Austen (1817) – Marie Duplessis, "La Dame aux Camélias" (1847) – All five Bronte sisters: Maria, Elizabeth, Charlotte (1855), Emily (1848) & Anne – Elisabeth Barrett-Browning (1861) St. Bernadette (1879) – Florence Nightingale (1910) – Katherine Mansfield (1923) – Sarah Bernhardt (1925) Simone Weil (1943) – Vivien Leigh (1967), star of "Gone with the Wind"

Men: King Edward VI (1553) – John Calvin (1564) – Richelieu (1642) – King Louis XIII of France (1643) – Molière (1673) – Henri Purcell (1695) – Friedrich von Schiller (1805) – John Keats (1821) Percy Bysshe Shelley (1822) – Napoléon II, Duke of Reichstadt (1832) – Lord Byron (1824) – Nicolo Paganiini (1840) – Frederic Chopin (1848) – Dostoyevsky (1881) – Ralph-Waldo Emerson (1882) Henry David Thoreau (1862) – Robert Louis Stevenson (1894) – Paul Gauguin (1903) - Franz Kafka (1924) – George Orwell (1950) – Alexander Graham Bell (1922) – Thomas Mann (1955) – Albert Camus (1960) – Igor Stravinsky (1971)

Sources: Tuberculosis: the illustrated history of a disease, 1998; Tuberculosis: the greatest story never told, 1992.

1.2 Discovering the tools

The culprit behind this age-old scourge was long shrouded in mystery. The existence of TB even in prehistoric times is strongly suggested by bone lesions similar to TB in mummified skeletons like that of a priest of Ammon from 1000 B.C.

Later, in the (otherwise) Golden Age of Greece, Hippocrates used the term *phthisis*, meaning consumption, to describe the gradual wasting associated with TB. The much more recent term, *tuberculosis*, comes from the French word “tubercules”, the small, round lesions scattered over affected areas of the body; it was used to describe the clinical disease before its infectiousness was recognized.

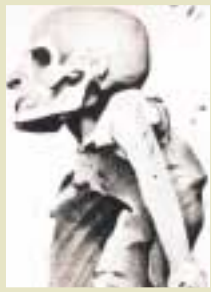
The mystery of TB’s origins—and its contagious nature—was not solved until 1882 when the TB bacillus, *Mycobacterium tuberculosis*, was identified under the microscope by the German pathologist Dr Robert Koch. This event marked a major breakthrough in combating the disease.

Dr Robert Koch

Reproduction

Still, it took another 25 years before the development of the first vaccine, called “BCG” after the names of the scientists who developed the bacillus, Calmette and Guerin, and administered to infants during their first year of life. Nevertheless, since this vaccine did not prevent the most common pulmonary form of TB, until most recently the “white plague” remained the most dreaded enemy of the human race, whether measured in terms of prevalence, economic cost, social consequences or sheer misery.

50 years: For the first time in history, the advent of anti-TB chemotherapy in the 1940–1950s gave hope that tuberculosis could be cured.



Deformities, presumed to be TB-induced, in the mummified skeleton of a priest of Ammon, 1000 B.C.

Source –Tuberculosis: the illustrated history of a disease, Vol. 1

Using TB drugs effectively

The first real medical breakthrough—chemotherapy using the single antibiotic drug streptomycin to treat active TB—was introduced in 1944, setting the stage for multiple drug chemotherapy in the 1950s. Viewed against the backdrop of TB's 10 000-year dominion, this first treatment success was truly historic. It proved that the much-feared bacillus was not invincible.

Nobel Prizes for Medicine to pioneers in the battle against TB

"awarded to those who …have conferred the greatest benefit on mankind in the field of medicine".

1905	Dr Robert Koch	Discovery of the TB bacillus
1908	Dr Paul Ehrlich	Use of drugs to combat infection
1939*	Dr Gerhard Domagk	Discovery of first anti-TB drug Prontosil
1952	Dr Selman Waksman	Development of streptomycin as a drug cure for TB

** Prize awarded only in 1947 as the German National Socialist Government prevented Dr Domagk from accepting this prestigious award in 1939.*

Source: The greatest story never told, Frank Ryan.

The discovery of a drug cure for TB changed the course of human history. The list of luminaries in this long and arduous battle begins with Dr Robert Koch and includes others, such as the German scientist Dr Paul Ehrlich, who, along with Sir Alexander Fleming, first hit upon the idea of treating infections with drugs; Dr Gerhard Domagk, discoverer of the first weak anti-TB drug Prontosil; Dr Selman Waksman, a Russian emigrant researcher who coined the phrase "antibiotic drugs"; and Dr George Merck, the owner and director of Merck & Co., who supported Waksman's antibiotic research and first produced the TB treatment drug streptomycin.

"Man must want more than he is able to achieve… If we do not reach for the impossible, we shall never reach far enough to discover the possible. Our wishes must be boundless."

Dr Gerhard Domagk
Recipient of the 1947 Nobel Prize in Medicine

Still, discovering and producing drugs means nothing unless they are available, accessible, affordable—and used effectively to treat the people who need them most. Since over 90% of the world's TB cases are found in the developing world, this means providing drugs to the world's poorest countries and people. That is where public health comes in.

The World Health Organization (WHO) came into being in 1948, acting as a beacon to guide progress in public health, especially in developing countries where infectious diseases like TB were running rampant. WHO recognized the vital importance of a comprehensive approach to TB control, including treatment consistency and monitoring.

In 1952—just 50 years ago—the Nobel Prize was awarded to Selman Waksman for his work on the development of new anti-TB "wonder drugs", reflecting the importance of these ground-breaking discoveries. The introduction of chemotherapy

radically changed many of the long-entrenched concepts of treatment and prognosis for TB. But even early on, it became clear that combined chemotherapy using more than one substance would be needed to prevent drug resistance.

Indeed, using TB drugs effectively has proved no simple matter. True to Darwinian "survival of the fittest", the age-old TB bacillus has continued to adapt through mutation, producing multidrug-resistant strains. Medical science must keep ahead of the game, adapting the strategy to meet new challenges.

1.3 Developing the TB control strategy

Historically speaking, over the past 50 years, the choice of strategy for optimal TB control has swung back and forth like a pendulum between "vertical" and "horizontal" approaches. The vertical approach also promoted by WHO from its founding in 1948 to 1963, which worked well in developed countries, was inadequate in resource-poor settings, largely due to lack of access to resources and drugs. From 1964 to 1988, the pendulum swung towards horizontal integration—first in service delivery and later in management. But "mainstreaming" approaches in the 1980s meant that TB became a neglected, all-but-invisible public health concern. The result was a return to specialized management from 1989 to 1998.

WHO introduced a new strategy in 1991 that was incorporated in 1994 into a more comprehensive framework for effective TB control. This five-pronged strategy was officially named "DOTS" in 1995. After this point, TB began to move back into the public health and political limelight. And, most recently, with the 1998 launch of the **Stop TB Global Partnership,** a truly multisectoral approach—incorporating advocacy and social mobilization, community and private sector involvement—has emerged as the best way towards a TB-free future.

Today's thinking is that the future of TB control should be based on:

- a pragmatic approach combining specialized, well-defined management systems with fully integrated service delivery; and
- a multisectoral approach building on global and national partnerships.

But first, a look at some historical milestones and pioneers who paved the way.

1.3.1 India research: setting the stage

Some 50 years ago, India was at the forefront of the global battle against TB. In fact, several of the principles of DOTS were piloted in India in the 1950s and 1960s through pioneering studies conducted at its research centres.

"DOTS has been one of India's best exports. It has been sent out into the world, tested, proven, and now it has come back to us, better than ever."

Dr C.V. Ramakrishna, former Deputy Director
Tuberculosis Research Centre, Chennai

India's Tuberculosis Research Centre in Chennai (formerly Madras) demonstrated the safety and efficacy of TB treatment with "home as the first hospital", the effectiveness of intermittent chemotherapy, and the feasiblility and necessity of directly observed treatment. In the 1960s, India's National Tuberculosis Institute in Bangalore documented the importance of TB detection through sputum microscopy in primary health centres. These basic principles for TB control, spearheaded in India, are the same ones DOTS utilizes to this day.

1.3.2 Five TB pioneers

Among the many pioneers in the battle against TB, a few stand out. Especially since the 1940s and the modern age of TB control through chemotherapy, pioneers like **Wallace Fox** and **Denis Mitchison**, working through the British Medical Research Council, broke new ground. Through decades of clinical trials and collaboration with local counterparts in far flung corners of the world—Africa (Algeria, Kenya, the former Rhodesia [now Zimbabwe], the former Transkei [now part of South Africa], Uganda, the United Republic of Tanzania and Zambia), India (Madras), Asia (Hong Kong [now a Special Administrative Region of China], the Republic of Korea, Singapore) and Europe [the former Czechoslovakia now the Czech Republic]—they developed the concept of short-course chemotherapy that was later adapted as DOTS.

Dublin-born **Sir John Crofton**, who was knighted in 1977 for his contributions to TB control, is another pioneer who is also still active in 2001 at age 89. With his revolutionary assertion in the 1950s, it was he who first insisted that "a 100% cure for pulmonary TB is both a reasonable and achievable target" in new cases through a strict regimen of scrupulously implemented triple chemotherapy. He then proceeded to demonstrate the validity of this assertion, bringing TB under control in Edinburgh, Scotland—where it was the leading cause of death in young people—in only six years, one-third of the time predicted. His no-nonsense "Edinburgh method" was subsequently instituted in 23 European countries.

Another European TB researcher and leader whose passion for truth and integrity, and personal sense of caring set him apart, **Karel Styblo** was, by all accounts, an extraordinary person. Born in 1921 in the former Czechoslovakia, he spent his early years there in a Europe gravely concerned about "galloping consumption" and convinced of the efficacy of fresh air and sanatoria to prevent and cure the spectre of TB.

"La Course de la Mort" (1926)
"Mieux vaut prévenir..." (1935)

Source: Vintage posters Joël Montague's collection

It was the Second World War—especially Styblo's grim years as a prisoner in the Mauthausen concentration camp where he contracted a severe form of tuberculosis—that inspired him to become a doctor. He studied in the 1950s with John Crofton in Edinburgh, where he was dubbed a "Croftonion" for his conviction that TB could be completely eradicated and his single-minded pursuit of disease control. By the 1960s, Styblo had become internationally renowned through his work in The Hague and later with the IUATLD.

Dr Karel Styblo, whose research on the epidemiology of TB laid the scientific foundation for modern TB control

Courtesy of IUATLD/KNCV

The principles of DOTS, which were formally adopted at WHO's Ninth Expert Committee of TB meeting in December 1973, were the very principles put so effectively into practice by Styblo in the United Republic of Tanzania, beginning in 1978. During the 1970s and 1980s, Styblo's research on the epidemiology of TB was instrumental in laying the scientific foundation for modern TB control.

Styblo introduced short-course chemotherapy—the precursor to DOTS—in Benin, Malawi, Mozambique, Nicaragua and the United Republic of Tanzania in the 1980s, demonstrating that even developing countries with fragile or nascent health infrastructures and limited resources could cure and control TB.

Styblo combined a unique scientific genius with practical operational skills and empathy with his patients. He also appreciated the plight of TB fieldworkers in developing countries and inspired dozens of young professionals. One of them was **Dr Annik Rouillon**, who later became Director of the IUATLD, and in this key position provided crucial support for Styblo's work. Still active at age 76, Karel Styblo died suddenly on 13 March 1998, leaving a legacy for action.

1.4 Overcoming complacency

The legacy for action remains. But so does a legacy of complacency, which must be overcome. For centuries the world was resigned to having TB as the "grim reaper" in its midst. When an antibiotic cure was found at last, people were lulled into euphoria, assuming that the problem was solved—at least in developed countries. This kind of complacency proved costly.

Public health spending on TB in highly developed countries like the United States of America dwindled to a mere trickle. It took the 1991 epidemic outbreak of multidrug-resistant TB in—of all improbable places— New York City to get TB onto the front pages of *The New York Times*. That jolted the industrialized world and its previously unconcerned leadership into the realization that TB was not a thing of the past but, in fact, still posed a very real threat to them as well.

The White Plague is not born in us. It is forced upon us by foul breath, foul living conditions, foul hygiene, foul water, and foul administrative neglect.

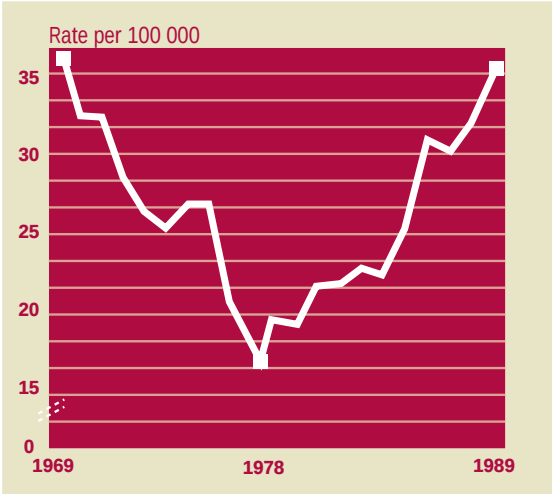
John Le Carré
The Constant Gardener

The "U-shaped curve of concern"

An epidemiological study of the New York City outbreak revealed what came to be known as the "U-shaped curve of concern", which vividly reflected the impact of neglect in terms of support and funding on TB rates between 1969 and 1989. The curve reflected the precipitous drop in public funding from US$ 40 million a year between 1968 and 1973 to only US$ 283 000 in 1980, the year the curve hit bottom, setting the stage for an unprecedented epidemic in the late 1980s and early 1990s.

TB outbreak in New York City: the "U-shaped curve of concern"

Source: Dr L. Reichman, American Review of Respiratory Disease, October 1991



"TB is back with a vengeance", a 1991 editorial in the *American Review of Respiratory Disease* declared, calling this a "paradox because TB is relatively easily diagnosed, treated, controlled, and prevented". The stark reality that this outbreak was not just due to poverty or homelessness—but was actually precipitated by the "total failure of a public health system", even in the midst of affluence and sophistication—drove the message home. It was high time to scale up.

The TB upsurge in New York also had another cause: the emergence of HIV/AIDS. *The Lancet* called this sinister congruence between HIV/AIDS and TB "the greatest public health disaster since the bubonic plague". Complacency vanished in the face of fear.

1.5 Building momentum

During the final decade of the 20th century, this risk-driven awareness produced a swift succession of responses from the international community. The following timeline shows the highlights.

Scaling up the response to the global threat of TB: a timeline

1991	WHO passes milestone resolution setting TB control targets for the year 2000
1993	WHO declares TB a "Global Emergency" and creates a framework for effective TB control
1994	The strategy is packaged and branded as "DOTS" in 1995
1998	(March): Senior public health experts identify key challenge to DOTS expansion in the form of a global TB epidemic
1998	(November): "Stop TB Initiative for Global Action" campaign is launched
2000	Milestone Amsterdam Conference and Declaration
2000	WHO resolution WHA53.1 calls for international support for the Global Partnership to Stop TB
2001	(March): Launch of Global Drug Facility
2001	(May): Launch of the Global DOTS Expansion Plan
2001	(October): Launch of the Global Plan to Stop TB

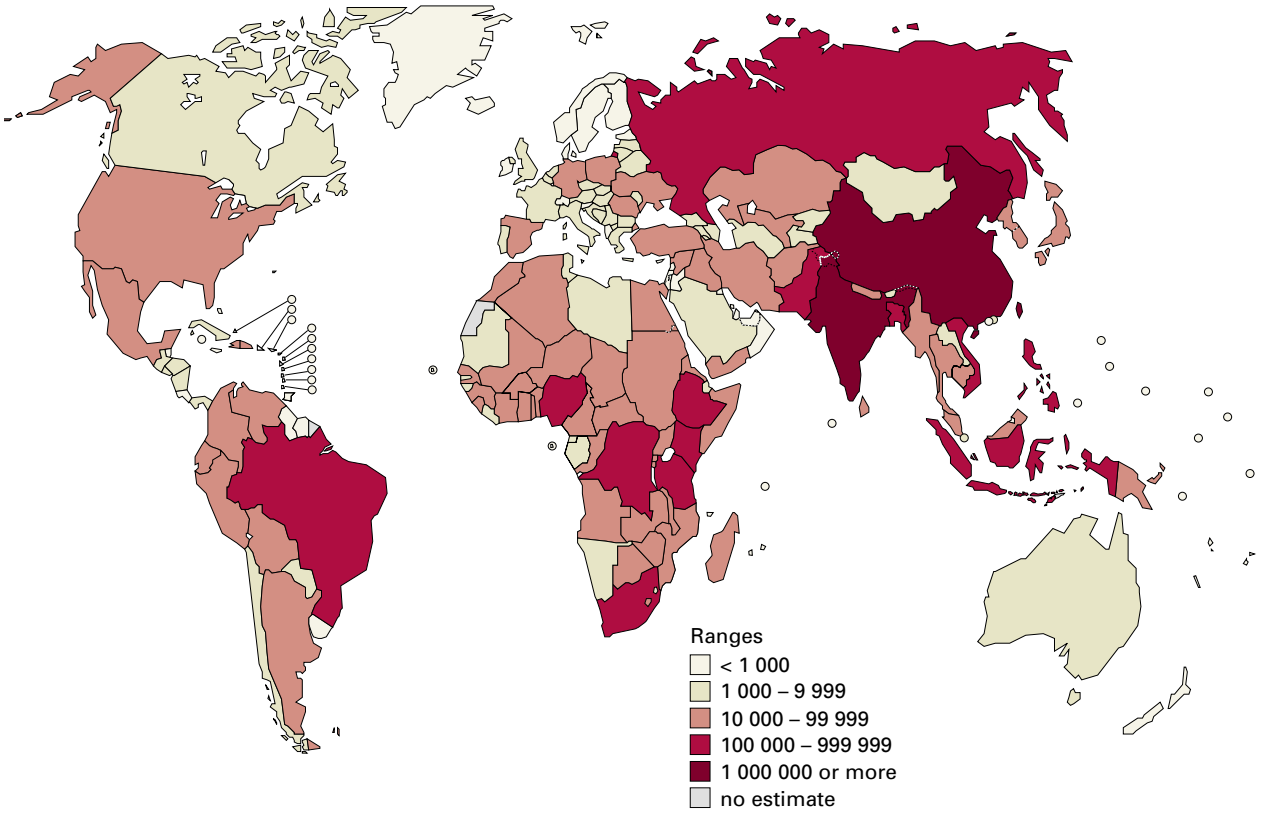
Amsterdam Conference, March 2000

The new millennium also supplied new impetus to the Stop TB movement, starting with an historic conference on *Tuberculosis and Sustainable Development* convened in Amsterdam on 22–24 March, and coinciding with World TB Day on 24 March. Together with high-level representatives of UN system agencies, technical agencies and donor countries, the Ministers of Health, Finance and Development Planning from 20 of the 22 countries that together account for 80% of the world's TB burden met in Amsterdam and set time-bound targets to stop TB.

The March 2000 Amsterdam Conference and Declaration made a strong commitment to rapid and effective results. The following sections of this report monitor the remarkable momentum achieved since then in terms of both global and national progress towards targets set for 2005.

"We have the potential to consign TB to the dustbin of history. Let's just do it."

The Honourable Clare Short
Secretary of State for International Development
United Kingdom



Estimated numbers of TB cases by country in 2000

Source: WHO, 2001

"With the development of new TB drugs and improved living conditions, TB disappeared from the lives and minds of many… But today we are faced with a global epidemic that is killing more people than at any point in its history. This week...will bring light to the gravity of this persisting epidemic."

Dr Gro Harlem Brundtland
Director-General, World Health Organization
at the Amsterdam Conference, March 2000

With only 50 months to go, this report closes with the countdown to the 2005 targets and what must be done to achieve them.

chapter 2

Global progress since Amsterdam

2.1 Promises to keep

The ***Amsterdam Declaration to Stop TB***, adopted on World TB Day, was the immediate result of this historic conference in March 2000. It marked a turning point, a scaling up and acceleration of efforts in the battle against TB. In the Declaration, ministers from 20 of the 22 TB high-burden countries attending the conference, together with their technical and donor partners, issued an urgent call for assistance in developing their national TB plans, a new initiative to increase access to drugs, research to develop new drugs and diagnostics, and the establishment of a Global Fund for Tuberculosis. Partnerships among countries, agencies, foundations and NGOs were recognized as a prime vehicle for achieving these goals.

The Amsterdam Declaration at a glance: *"Going global" in the fight against TB*

Commitment:	**Expand coverage, ensure resources, promote partnerships**
The call	*The response*
Stronger national TB plans	Global DOTS Expansion Plan that incorporates health development and TB control as essential components.
Increased access to TB drugs	Global Drug Facility to procure and distribute quality TB drugs; tackling TB and HIV/AIDS in tandem; DOTS-Plus against MDR-TB.
Accelerated TB research	Global Alliance for TB Drug Development, along with the TB Diagnostics and Vaccine Initiatives, to enhance R&D on drugs, diagnostics and vaccines through better incentives.
Global-scale funding	The Global AIDS and Health Fund to mobilize and invest new resources in HIV/AIDS, TB and malaria control.

Signatories to the *Amsterdam Declaration* committed themselves to accelerated action against TB, both globally and nationally, by:

- expanding DOTS to at least 70% *detection* of infectious cases by the year 2005,
- ensuring sufficient and sustainable *resources* to stop TB,
- ensuring adequate *capacity* to absorb and utilize resources effectively,
- implementing, monitoring and *evaluating* national TB programmes,
- improving *drug delivery* to ensure quality, access, transparency and timely supply,
- incorporating TB *indicators* in overall health sector performance measurement,
- promoting partnerships with all societal *stakeholders* to stop TB,
- participating actively in the *global partnership* to Stop TB.

2.2 Global partnerships and plans

2.2.1 The Stop TB Initiative

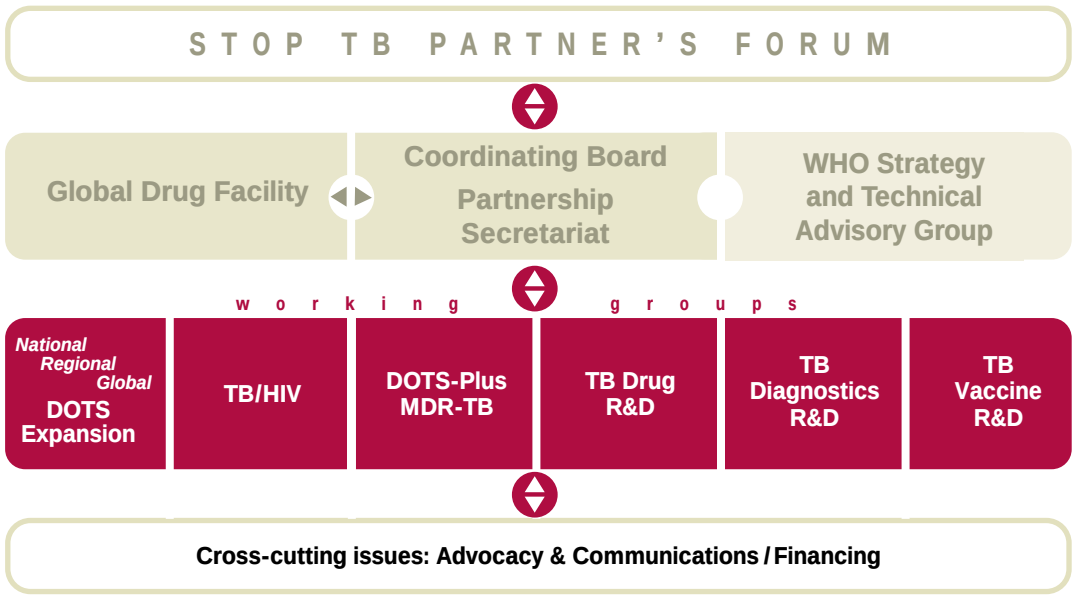
WHO launched the Stop TB Initiative in November 1998. A clarion call in the fight against TB, its purpose is to support partners in fulfilment of the vision and mission of the global movement.

Mission of the Stop TB Initiative

- To ensure that every TB patient has access to effective diagnosis, treatment and cure.
- To stop the transmission of TB.
- To reduce the inequitable social and economic toll of TB.
- To develop and implement new preventive, diagnostic, and therapeutic tools and strategies to stop TB.

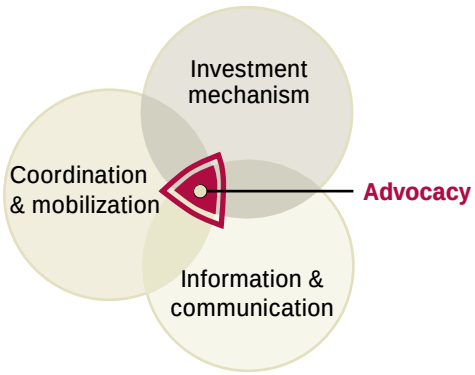
Impetus for this "force for action" came from the realization that progress against TB had been too slow. Even though the DOTS strategy had been widely accepted in principle, WHO's 1991 goal to attain 70% detection and 85% cure rates by the year 2000 was not reached. In fact, almost a decade into DOTS, the percentage of infectious cases found and treated had climbed to only 23%. At this rate, the 70% detection target will not be attained before 2013. Thus the **Stop TB Initiative** was created to increase momentum.

Stop TB's mandate is five-fold: to expand awareness, accelerate action, improve TB control strategies, develop investment mechanisms and create new partnerships. Its six working groups concentrate on expanding DOTS coverage, tackling MDR-TB, addressing the epidemic of TB among HIV-infected people, and developing new tools (e.g. diagnostics, drugs, vaccines) for the anti-TB arsenal.



Stop TB Partnership Framework

In three areas, partnerships clearly accomplish more than would be possible by organizations working alone. In each, specific short-term targets have been set for the year 2001:



- **Coordination and mobilization:** Expand the global partnership to at least 150 organizations.
- **Investment mechanisms:** Establish a Global Drug Facility and promote the Global Plan to Stop TB.
- **Information and communication:** Establish a gateway for TB information and resources; advocate the links between TB and human rights.

As the driving force in a dynamic global movement to accelerate social and political action to bring TB under control, Stop TB's work with a wide array of public and private organizations—research institutions, industry, donors—at all levels of society will be crucial to reach the Partnership's longer-term targets.

Targets to Stop TB

2005: Diagnose 70% of people with infectious TB and cure 85% of those detected;

2010: Reduce the global TB burden (deaths and prevalence) by 50% compared with levels in the year 2000.

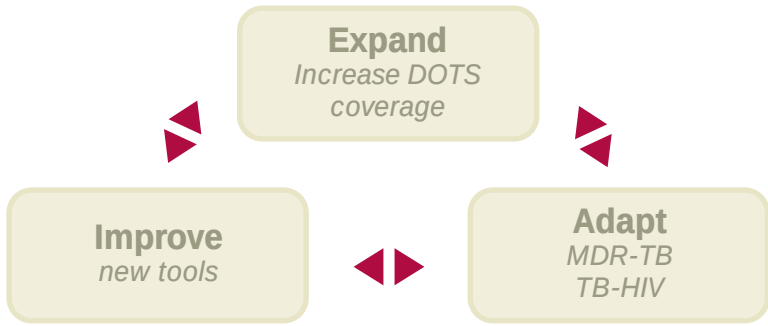
"It is shameful that less than a quarter of TB patients have access to effective TB treatment (DOTS)."

Dr Gro Harlem Brundtland
Director-General, World Health Organization
at the Amsterdam Conference, March 2000

2.2.2 The Global Plan to Stop TB

At its February 2001 meeting in Bellagio, Italy, the Stop TB Coordinating Board called for development of a strategic plan for the Stop TB Partnership. In addition to identifying partners' respective roles, mechanisms for coordinated action and resource mobilization, the new **Global Plan to Stop TB** describes the initiatives and resources needed to galvanize TB control action in three specific areas:

- **Expanding** DOTS to reach the global targets by 2005.
- **Adapting** DOTS to meet the challenges of HIV-related TB and MDR-TB.
- **Improving** DOTS by developing new diagnostics, drugs and vaccines.



How will the Global Plan to Stop TB benefit the world?

1. It will demonstrate to the world that we have **an effective response** to the global challenge of TB, a response that will have a profound impact on health in developing countries.
2. It will serve as **an effective coordination tool**. Partners will benefit from the transparency that allows them to see who is doing what and where. It will facilitate keeping abreast of opportunities for coordination and contributions. And it will mobilize new partners for action by identifying current gaps and partners that can fill them.
3. It will be **a resource mobilization tool**, showing how and where additional funds can be used.

The Global Plan to Stop TB is being launched at the Stop TB Partners' Forum in October 2001.

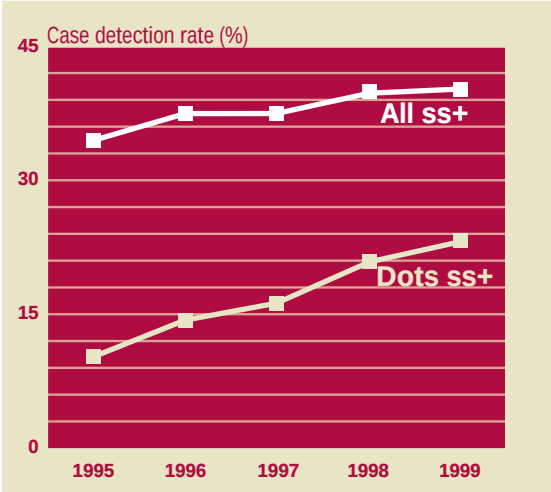
2.2.3 The call: Stronger national TB plans
The response: Global DOTS Expansion Plan

Conceived after Amsterdam as a concrete response to the call for increased DOTS coverage, the aim of the **Global DOTS Expansion Plan** (GDEP) is to speed up the slow progress of the past decade in increasing DOTS coverage, especially in the 22 TB high-burden countries. The GDEP has two pillars:

- Development of long-term DOTS expansion plans at the national level.
- Cultivation of national partnerships to stop TB.

Global TB case detection 1995–1999

Source: WHO, 2001



The GDEP provides a template to mobilize the human and financial resources required to achieve the global TB control targets, working through strengthened national health systems. Pragmatic in approach, it identifies country needs and resource gaps and actively encourages collaboration among partners: endemic country governments, international development agencies, NGOs, foundations, the private sector and civil society. This approach has worked well to reinforce national commitments and mobilize additional resources.

Progress is picking up. At the first Global DOTS Expansion Plan meeting in Cairo in November 2000, only 9 countries had comprehensive plans while 3 others were under preparation. Today, just one year later, 20 of the 22 countries have developed national plans, with the last 2 to be finalized in January 2002.

The first GDEP includes an initial assessment of the status of TB control financing and estimates of the resources necessary to expand DOTS coverage in the 22 TB high-burden countries (HBC). This is important since, before the GDEP, there was no consistent, in-depth needs assessment for TB control.

As a priority, the GDEP has calculated the magnitude of resources needed. Initial estimates for the 22 HBCs show that the basic investment required lies in the range US$ 700–900 million per year, bringing the resource gap in these hard-hit countries to between US$ 100–300 million per year. Globally, annual resource requirements are on a magnitude of US$ 1.1 billion with a resource gap of US$ 150–400 million per year.

2.2.4 The call: Increased access to TB drugs
The response: Global Drug Facility

The **Global Drug Facility** (GDF) is a novel new weapon in the anti-TB arsenal that has been developed since the 2000 Amsterdam Conference. DOTS expansion depends on an uninterrupted supply of quality TB drugs but this is difficult to ensure in many of the neediest countries due to lack of resources, escalating epidemics, limited procurement or storage capacity and problems with drug quality.

The GDF focuses on guaranteeing uninterrupted global supplies of quality drugs, catalyzing rapid treatment expansion, stimulating political and popular support in countries throughout the world for public funding of appropriate drug supplies, and securing sustainable disease control.

With a start-up donation of US$ 10 million from the Canadian Government in 2001, the GDF aims to reach over 10 million TB patients in its first five years. But it will need an investment of US$ 250 million to catalyze national DOTS expansion and keep it on track to reach the 2005 targets. The return on this investment will come in the form of fewer TB patients, lower health care costs and a “public health dividend” of social and economic benefits.

The Global Drug Facility will make it possible to:

- Treat an additional 10 million patients with DOTS by 2005 and 45 million by 2010.
- Avert 25 million TB deaths and 50 million TB cases by 2020.
- Facilitate DOTS expansion in countries.
- Prevent the emergence of TB drug resistance.
- Rationalize procurement mechanisms.
- Improve the cost-effectiveness of drug purchasing.
- Improve the quality of TB drugs worldwide.
- Create a successful model of commitment and cooperation to confront global epidemics.

Some 26 countries have applied for support as of October 2001. Of the 12 applicants approved for support, 5 countries—Kenya, Myanmar, the Republic of Moldova, Somalia and Tajikistan—have already received their drug supplies.

This initiative is paying off in other unexpected ways. For example, between the GDF launch in March and June of 2001, the price of TB drugs fell by more than one-third due to the competitive bidding and bulk purchasing procedures introduced. WHO staunchly supports the use of generic drugs as long as their quality is ensured and their use violates no patent laws.

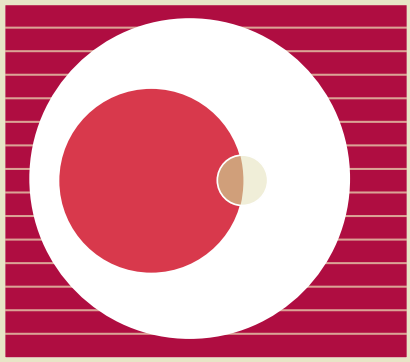
Effective TB control will yield a sizeable public health dividend.

2.2.5 The call: Increased access to drugs
The response: Tackling TB and HIV/AIDS in tandem

TB and HIV infection

Source: IUATLD

World population: 6 billion
TB infection: 2 billion
HIV infection: 30 million
TB+HIV infection: 15 million



The emergence of HIV/AIDS in the 1980s has had grave consequences for TB—and vice versa. Epidemiologically linked, these two diseases must be tackled in tandem. At the global technical level, this is beginning to happen, as evidenced by the creation of a Global Working Group on TB among HIV-Infected People in 2001. In the political context, the Abuja Declaration by African Heads of State and Government in April 2001 called for dealing with TB, HIV/AIDS and other infectious diseases as an integral part of the agenda to reduce poverty and foster sustainable development. In May 200l, a World Health Assembly resolution on scaling up the response to HIV/AIDS included measures for TB control.

WHO and UNAIDS are now developing a groundbreaking new technical framework to guide national strategies for effective TB control in HIV hot spots. Beyond DOTS, it recognizes that interventions that prevent and treat HIV—such as condoms, treatment of sexually transmitted infections (STIs) and anti-retroviral (ARV) treatment—will also reduce the risk of progression of TB infection to disease. This approach frames the response to TB as part of the overall response to HIV/AIDS.

Stop TB in high-risk HIV settings: Use condoms, prevent TB!

The ProTEST Initiative: In 1999, WHO launched the ProTEST Initiative which **Pro**motes voluntary HIV **TEST**ing as an entry point for TB control in high HIV prevalence settings. The rationale is that the vast majority (90% or more) of the 25 million people living with HIV/AIDS in Africa are unaware of their status. In the absence of effective countermeasures, many prefer not to find out. By linking access to TB detection and prevention with voluntary counselling and testing for HIV, more people may decide to find out their HIV status. he potential benefits are successful counselling, safe sex and decreased HIV transmission, and a decreased burden of TB due to increased case-finding and treatment, and increased provision of preventive TB treatment.

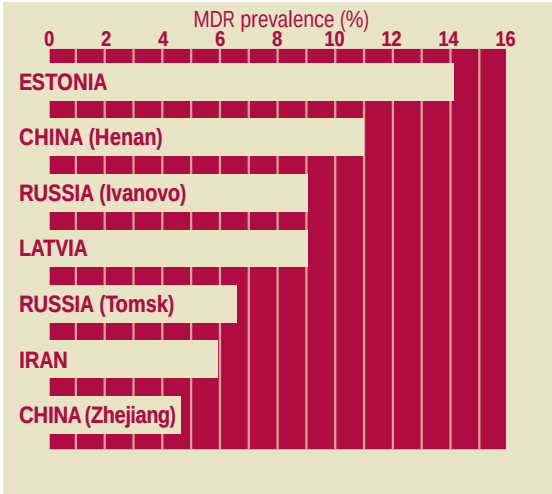
ProTEST currently focuses primarily on Africa where pilot projects are under way in Malawi, South Africa, Uganda and Zambia. (See section 4 for the ProTEST pilot project in Malawi.) Mobilization of further resources will enable implementation of more ProTEST and similar projects in other countries.

2.2.6 The call: New, improved TB drugs
The response: DOTS-Plus against MDR-TB

Although TB is curable, before the introduction of DOTS-Plus in 1999, the spectre of drug resistance threatened to make a new form of the disease—multidrug-resistant TB (MDR-TB)—extremely difficult to treat. Already an estimated 3.2% of TB cases worldwide are multidrug-resistant.

MDR-TB high prevalence countries

Source: WHO/STB



Curing TB depends on detection and compliance with the strict DOTS regimen. Conversely, a poorly run programme can create MDR-TB faster than it can be prevented. Once there, MDR-TB is both prohibitively expensive to treat and extremely easy to export far and wide on the wings of globalization. Developed countries are not immune. In this era of globalization, any country is a potential target for MDR-TB. The borough of Newham in London's East End is "the current TB capital of the affluent Western world" with double the number of cases recorded during New York City's 1990s MDR-TB epidemic outbreak. And in Italy there has been a recent MDR-TB outbreak among HIV-positive persons, which killed some 400 of them.

> ***We are all connected by the air we breathe.***
> ***That means that, in today's world, diseases are global.***
> ***No country, city or neighbourhood is an island.***

Mobility drives the problem: from frequent flyers, who contract "airborne TB" and bring it back home, to TB-infected refugees fleeing from conflict zones or migrants from MDR-TB hot spots in the former Soviet Union or the Caribbean. But confinement can also increase contagion rates. For example, in some prisons of the Russian Federation, up to 24% of affected inmates suffer from MDR-TB.

Other factors that cause MDR-TB include irrational use of antibiotics, inadequate public health systems, poor quality "counterfeit" drugs and defaulting (i.e. interrupting or ceasing treatment before completion). These in

turn are facilitated by other factors, such as the HIV/AIDS epidemic, war and conflict, famine, increasing poverty and inequality. All these MDR-TB facilitators make a rapid response imperative. Now there is one.

In 1999, WHO and its partners started to pilot a new management strategy—**DOTS-Plus**—which builds on expansion of the basic DOTS foundations. Currently under development and targeted at low and middle-income countries, the DOTS-Plus approach combines private sector means with public sector ends. It aims to increase access and decrease costs for more expensive, less readily available second-line TB drugs as an incentive to countries that comply strictly with the DOTS rules.

Access to drugs is fostered by the "Green Light Committee" (GLC), hosted by WHO and composed of six members: WHO, the Centers for Disease Control and Prevention (CDC), the Royal Netherlands Tuberculosis Association (KNCV), Médecins Sans Frontières (MSF), Harvard Medical School and the National TB Control Programme (NTP) of Peru. The GLC does more than just lower the prices: it offers incentives and ultimately strengthens DOTS and overall health systems.

Progress in pricing reductions. In July 2001 it was announced that, thanks to international efforts led by WHO, MSF and Harvard Medical School, people suffering from deadly strains of MDR-TB will gain access to high-quality second-line drugs at vastly reduced prices facilitated by the GLC. Some countries will be able to save up to 94% of current spending on MDR-TB drugs, which can cost up to US$ 19 000 per patient. Although increased donor support will still be needed to help countries use these expensive, sophisticated drugs properly and safely, this breakthrough represents a vital step in the right direction.

> ***DOTS-Plus against MDR-TB:***
> ***Get the drugs to the people who need them—fast. Use them broadly and better. Increase the access, decrease the cost.***

MDR-TB "hot spots"

Source: WHO/STB

2.3 Global Initiatives

The call: Accelerated TB research

2.3.1 *The response:* Global Alliance for TB Drug Development

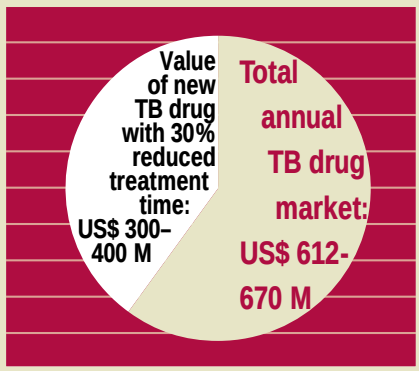
Not a single new class of TB drug has been developed in over 30 years! That means that today's TB patients, rich and poor alike, are still treated with drugs discovered 40 years ago. Research and Development (R&D) for new TB drugs languishes under a perceived lack of need and insufficient profit incentives for the pharmaceutical industry. Thus, despite the promise of science, the private sector has dedicated only limited resources to researching new classes of compounds to fight the growing TB epidemic.

This constraint must be overcome if TB is to be brought under control. We urgently need new drugs that shorten the duration of treatment to less than three months, prevent the progression from latent infection to active disease, and deal more effectively—and less expensively—with MDR-TB and the lethal impact of the HIV/AIDS epidemic on high-risk TB populations.

Preliminary market research suggests that a new anti-TB drug that could reduce the treatment period to only two months could capture between US$ 300–400 million, equivalent to between 50%–60% of the total annual global market for TB drugs, which is estimated to reach approximately US$ 612–670 million by 2010.

Potential market for powerful new anti-TB drug

Source: Global Alliance for TB Drug Development, based on 2010 market projections



Launched in October 2000 under the motto *"New vision, new partners, new TB drugs for all"*, the Global Alliance for TB Drug Development (GATB) is taking on the challenge of developing new TB drugs and ensuring equitable access to them. One of a new breed of public-private partnerships that brings together leaders in health, science, philanthropy and private industry, its goal is to devise new approaches to this old but intractable disease.

Global in scope, with offices in New York, Brussels and Cape Town, GATB aims to ensure that new medications are available and affordable in high TB burden countries. Harnessing new scientific developments by building on public and private knowledge, best practices and available resources, the Global Alliance represents a bold step forward towards equitable access to new TB medications for those who need them most—the poorest of the poor.

"The Global Alliance for TB Drug Development is a shining example of public and private sector partnerships to bridge the gap between market opportunities and people's needs."

Dr Gro Harlem Brundtland
Director-General, World Heath Organization

The call: Accelerated TB research

2.3.2 *The response:* TB Diagnostics Initiative

"Great strides have been made in developing curative regimens and increasing patient access to good medicines, but diagnosis remains a stumbling block. With six or more months of therapy required for cure, there is little room for error."

Dr Carlos Morel, Director, Special Programme for Research and Development in Tropical Diseases, WHO/UNDP/World Bank

TB accounts for 5% of all deaths worldwide. One reason why its fatality rates are so high is the lack of diagnosis and treatment. Approximately 50% of untreated TB sufferers die of the disease, probably having infected others along the way. Because DOTS depends on detection, it will be hard to achieve the 70% detection target without new, improved diagnostic tools.

New TB diagnostics such as low-cost, high-sensitivity tests that can be used in the field are needed. Specificity is equally important in high-endemic countries. Faster, simpler diagnostics will make TB control efforts far more effective, especially where patients have difficulty accessing health care (e.g. urban slums and isolated rural areas).

Recent technical advances have catalyzed a revolution in infectious disease diagnostics in which, to some degree, TB has been included. Harvesting this technical progress to create new TB diagnostic tools appropriate for low-income settings is the original mandate of the TB Diagnostic Initiative (TBDI).

TBDI works to promote and facilitate the development, evaluation and appropriate use of improved TB diagnostics to improve disease control in endemic settings. The objectives are to make the diagnostic process for people with TB symptoms more patient-friendly and, through early detection, to decrease transmission and deaths.

TBDI received a real boost on the eve of World TB Day 2001 when the Bill and Melinda Gates Foundation awarded a US$ 10 million grant to the Special Programme for Research and Development in Tropical Diseases (TDR) to facilitate the development of new TB diagnostics. The five-year grant will be used by TBDI to gear up efforts and design new methods to detect TB among patients with symptoms, such as a persistent cough, so that they can access curative treatment.

New resources to tackle an old problem

We are 100 years behind in TB diagnostics. The only test available to most people in parts of the world where TB is a major health problem is essentially the same as the one that was available to Robert Koch, who discovered the TB bacteria in 1884. Now, with these additional resources, it has become feasible to bring improved techniques to the field where they are most needed within the coming five years.

The call: Accelerated TB research

2.3.3 *The response:* TB Vaccine Initiative

Ultimately, if TB is to be eliminated as a public health problem, a vaccine will be indispensable. One vaccine (BCG) already exists—but its efficacy in same populations is limited. Beyond DOTS, therefore, which focuses on expanding treatment and cure for those already infected with TB, effective vaccines to prevent adult TB will clearly also be needed.

WHO's **TB Vaccine Initiative** (TBVI) is working with international partners to develop vaccines that will prevent disease, both in people who are not yet infected and in the 33% of the world's population that already harbours latent TB. Now, thanks to recent scientific advances in the fields of genomics, molecular biology, immunology and TB vaccinology, we have reached a critical threshold with a number of promising new vaccine candidates preparing to enter Phase I clinical trials. Modelling studies suggest that, even if only 50% effective, the development of an improved TB vaccine within the next 15 years would avert 36 million TB cases and 9 million TB deaths by the year 2030.

- **TB vaccine R&D will require a significant investment.** The "Blueprint for TB Vaccine Development" estimated that US$ 600–900 million will be required over the next 20 years to have a vaccine by 2020. Recalling that even a low-incidence country like the US spends about US$ 700 million on TB control every year, and over US$ 300 million is currently spent each year on HIV/AIDS vaccine development, this investment seems well worth it.

- **The potential gains make it worthwhile.** In both human and economic terms, TB prevention is preferable to treatment. Developed countries like the US justify investment in an effective vaccine strategy by citing projected risk reductions for TB "imported" by global travellers, treatment costs, patient care costs and programme costs. A US study estimated the return in health benefits from a TB vaccine that is 80% effective in terms of 135 million TB cases and 40 million TB deaths averted over the next 50 years.

One of the goals of the newly established WHO/UNAIDS Initiative for Vaccine Research (IVR) is the development of safe, effective and affordable TB vaccines for developing countries. The TBVI Advisory Committee will provide IVR, as well as the Global Partnership to Stop TB, with recommendations to accelerate vaccine development for endemic countries.

TBVI's target is to have at least one new, effective TB vaccine for high-burden countries within 20 years. Estimated resources needed over the next two decades range from US$ 600–900 million all told.

2.4 TB and global funding

2.4.1 Scaling up the financial response to diseases of poverty

For the first time in history, the international community has the political will, the financial means, and the technical tools to take a united stand against… diseases that kill millions and cause tremendous economic loss.

The challenge. The new millennium has brought a sense of urgency to the alleviation of diseases of poverty that, in this increasingly globalized world, affect us all either directly or indirectly. With this awareness has come a renewed commitment to create a TB-free world.

ESTIMATED* COSTS 2001/2005 (US$ millions)

	Total cost	Current funding	Funding gap
DOTS Expansion	6 225	4 659	1 566
Develop and scale up strategies for TB-HIV, MDR-TB	1 728	290	1 438
Research to develop new tools	1 098	390	708
Partnership	75	10	65
Total	**9 126**	**5 349**	**3 777**

Additional funding needs: ~US$ 900 million per year

** Based on estimates from Global DOTS Expansion Plan and provisional estimates from the Global TB Investment Plan, WHO, 2001*

The cost. We know what it will cost—an estimated US$ 9.1 billion over the next five years, or about US$ 1.8 billion per year, US$ 1.2 billion of which would be invested in DOTS expansion and the strengthening of health systems upon which DOTS is based. Making the necessary investment in DOTS right from the start should be seen as an investment in society's future.

A growing realization of the overwhelming long-term benefits of TB control, as compared to its relatively modest costs, has gained momentum over the past year, resulting in a virtual "epidemic of initiatives" aimed at scaling up the global response. Below are just a few highlights.

- **July 2000.** G8 Heads of State meeting in Okinawa set a number of new health-related International Development Targets to be reached by the year 2010. TB's global goal was to halve deaths and suffering by the end of the decade. The G77 group of non-aligned developing countries also pledged their support to achieving this goal.
- **October 2000.** A Massive Effort Advocacy Forum held in Winterthur, Switzerland brought together advocates from around the world to work on ways to raise awareness, mobilize societies, attract media coverage, build political support, expand partnerships and networks, communicate within countries, and upgrade branding and marketing of TB control efforts. Partially as a result of the Massive Effort Advocacy Campaign, over 100 private sector organizations pledged to work together to mobilize resources for this purpose.
- Since then, extensive political support has built up for accelerating efforts to control key diseases like TB, HIV/AIDS and malaria. There has been

unprecedented progress in reducing drug prices and stepping up research to develop better tools for prevention, diagnosis and treatment. Efforts are also being scaled up to extend health services and increase healthy behaviour among those most vulnerable to these diseases.

- **February 2001.** One of the events at the World Economic Forum (WEF) in Davos was a high-profile panel discussion on "Diseases that Cause Poverty". WHO Director-General Dr Gro Harlem Brundtland stressed the urgent need for a "massive increase in finance and human resources" to combat the major diseases of poverty, including TB, over the next decade. Harvard economist Jeffrey Sachs pointed out that providing effective treatment for the major killer diseases in poor countries would be a "tiny, tiny cost" for the US$ 25 trillion economies of the developed world.
- **March 2001.** The Global Drug Facility was launched in Washington, D.C. and, within a single year, succeeded in achieving unprecedented price reductions in TB first- and second-line drug prices (see *Global Initiatives*).
- **April 2001.** At the OAU meeting in Abuja, Nigeria, African Heads of State and Government declared war on HIV/AIDS, TB and malaria. Calling for a "war chest" of US$ 7–10 billion annually, UN Secretary-General Kofi Annan used this occasion to propose the creation of a new Global Fund for AIDS and Health. Its purpose would be to mobilize, manage and channel additional health-earmarked resources to the hardest-hit developing countries.
- **June 2001.** The UN General Assembly convened an historic Special Session in New York to address the growing global threat of HIV/AIDS. Although—surprisingly—the issue of TB among HIV-infected people was not addressed, other relevant issues, such as the symbiotic relationship between poverty and disease; the availability, access and affordability of treatment drugs; the moral imperative of putting lives before profits; and the close links between prevention, treatment and care, were major topics of discussion.
- **July 2001.** Meeting in Genoa, Italy, G8 leaders of the world's most affluent industrialized countries followed their promises of the previous year with additional financial pledges of between US$ 1–2 billion for a Global Fund for AIDS and Health.

2.4.2 Summary of global external TB funding, 1990–2000

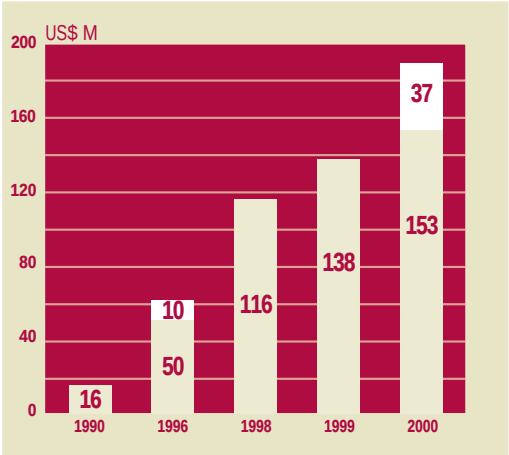
Against the backdrop of an estimated resource shortfall in the order of magnitude of almost US$ 1 billion a year for country needs and research, a World Bank donor survey on external aid for TB control, commissioned by the Stop TB Initiative Secretariat in 1999, provides an idea of the current external resources on hand.

About 12 bilateral agencies, 1 multilateral agency and 31 nongovernmental or technical agencies responded to the survey. The findings were consistent with data collected by WHO for the top 22 TB high-burden countries. The results demonstrate that external assistance flows are growing at a global aggregate level, but with some important disparities in regional trends. Commitments as reflected in the graph below, have risen more than ten-fold, from US$ 16 million in 1990 to an estimated total of US$ 190 million for the year 2000.

In 2000, 45% of all confirmed external commitments were in the form of multi-year World Bank/IDA credits or loans. The largest bilateral contributors were the US Agency for International Development (USAID), the Canadian International Development Agency (CIDA), and the UK Department for International Development (DFID) with US$ 15 million, US$ 10 million and US$ 9 million

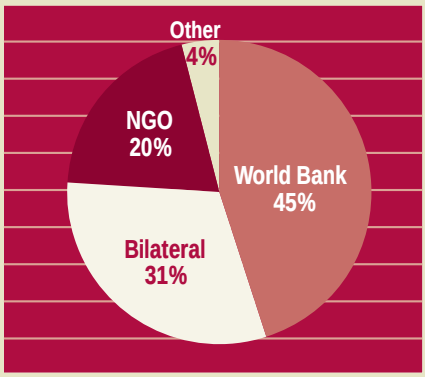
External commitments TB control in low and middle-income countries

Source: The World Bank, August 2001



Relative share of year 2000 external commitments by source of finance (Total = US$ 190 million)

Source: The World Bank, August 2001



respectively in confirmed commitments earmarked for TB control in developing countries in the year 2000. The Governments of Germany, Japan, the Netherlands, Norway and Sweden each committed between US$ 2–4 million in TB control support.

Nongovernmental organizations were also major contributors with US$ 37 million in commitments in 1999 and US$ 33 million in 2000, although much of these amounts represents funds channelled from bilateral donors. Major NGOs include the Belgian-based Damien Foundation, the French-based IUATLD, the Royal Netherlands TB Association (KNCV) and the German Leprosy Relief Association (GLRA).

Analyzed by region, South Asia led investments with US$ 31 million in 2001. The relative importance of commitments in Europe and Central Asia grew dramatically in 2000, from 13% to 22% of the total, likely reflecting the response to rapid increases in TB and MDR-TB in these regions, as well as increasing foreign assistance. Disturbingly, dedicated TB commitments fell for sub-Saharan African countries from US$ 41 million in 1999 to US$ 33 million in 2000. It is not clear whether this was compensated by comparable increases in TB financing through health-targeted sector-wide approaches.

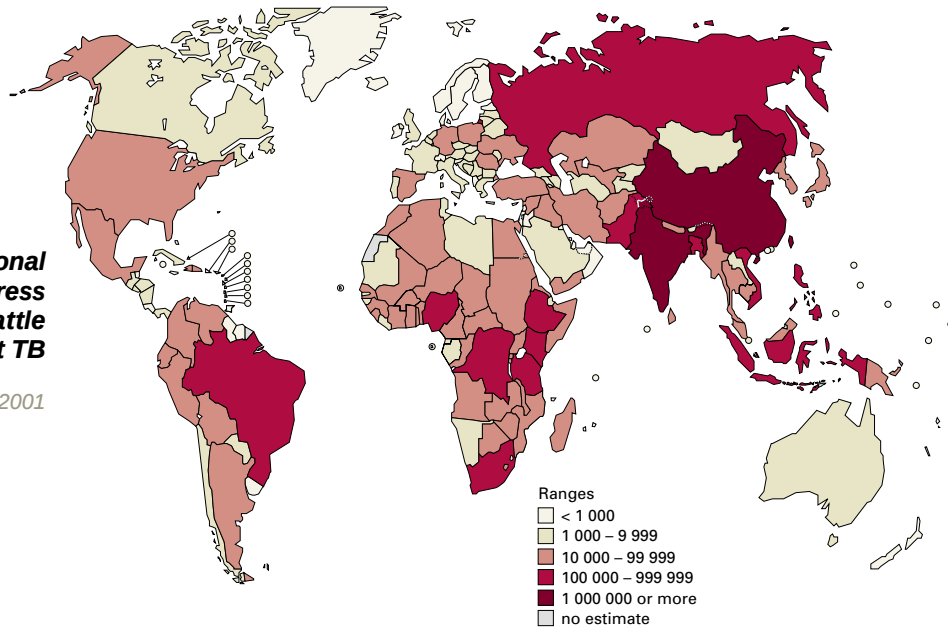
Nationally, the 22 TB high-burden countries which account for 80% of the global TB disease burden received US$ 92 million—only 60% of the total reported external commitments—in the year 2000. Total commitments were greatest for India, with US$ 39 million in that year from both grant funds and a World Bank loan. Overall, it is clear that there is a serious shortfall in funding and that significant new resource commitments must be forthcoming if the **Stop TB Partnership** is to meet its global goals.

chapter 3

National progress since Amsterdam

3.1 Success stories

The Amsterdam Conference and Declaration were milestone events for the Stop TB Initiative. And despite the fact that conferences are notorious for producing more words than actions, this conference is keeping its promises—and quickly, too. The map below shows the state of the epidemic in the year 2000.



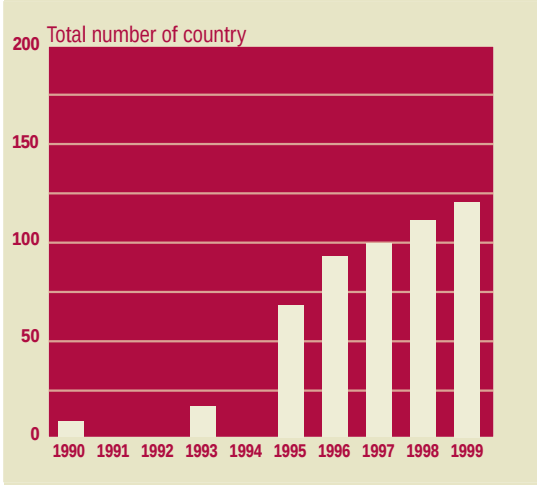
National progress in the battle against TB

Source: WHO, 2001

For example, checking a few of the world's 22 TB high-burden countries just one year after Amsterdam shows that:

- **China and India**—the world's two most populous countries with about one-third of the world's total population between them—have both put TB control high on their political agendas and have plans for full DOTS coverage with the next few years.
- **Peru** has become the first resounding "success story", exceeding the global TB targets, halving the number of TB cases in just 10 years and exiting the "group of 22" high-burden countries in 2001.
- **Viet Nam** has proven an exemplary success as well, achieving the detection and treatment targets despite its low-income status.

The number of countries using DOTS has increased significantly over the first decade of its existence. Even more importantly, by 1999 the number of people living in these countries comprised 82% of the world's population.



Number of countries implementing DOTS, 1990–1999

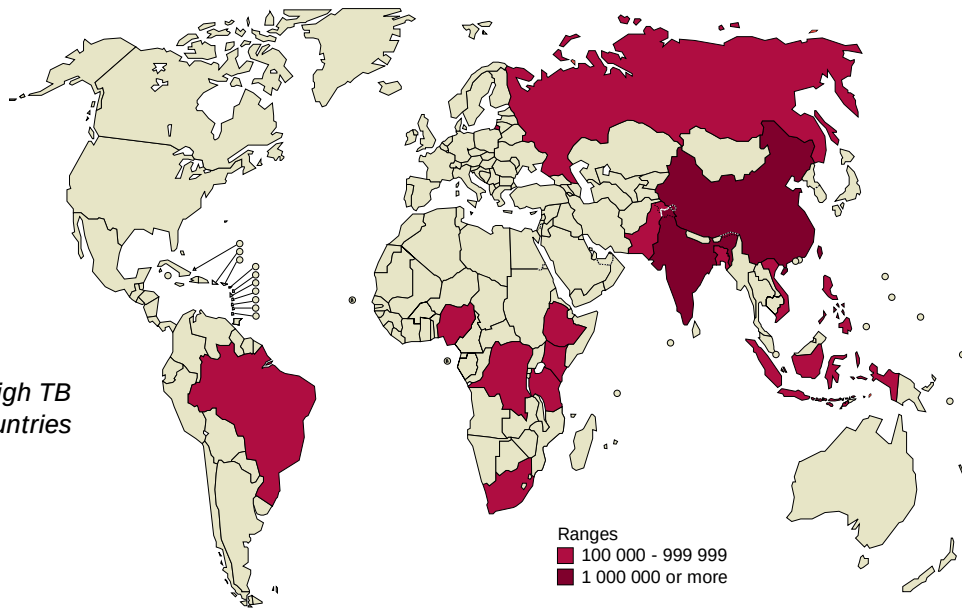
Source: WHO, 2001

Still, an enormous amount of work remains to be done. Many populous, TB-endemic countries such as Brazil, Indonesia, Nigeria, Pakistan and the Russian Federation—which comprise almost one billion people—are still caught in an uphill battle against TB. This problem is largely attributable to inadequate resources for health systems and services and, at times, flagging political commitment. However, Amsterdam raised awareness—and that is the first prerequisite to effective action.

Amsterdam raised awareness—and that is the first prerequisite to effective action.

3.2 Progress towards targets

3.2.1 Where we stand: TB's 22 high-burden countries at the turn of the millennium



The 22 high TB burden countries

TB's 22 high-burden countries in March 2000 listed in descending order of incidence: India, China, Indonesia, Bangladesh, Pakistan, Nigeria, Philippines, South Africa, Russian Federation, Ethiopia, Viet Nam, Democratic Republic of the Congo, Brazil, United Republic of Tanzania, Kenya, Thailand, Myanmar, Afghanistan, Uganda, Peru, Zimbabwe and Cambodia.

DOTS coverage, detection and treatment in the 22 TB high-burden countries

The dynamics of "TB80"—Some 80% of the global TB burden is localized in only about 10% of the world's countries. Although 22 specific TB high-burden countries were designated in Amsterdam in March 2000, the dynamic changes as they progress—or not—towards a TB-free future. In fact, Peru had left the list while Côte d'Ivoire. Mozambique and Sudan had joined it by August 2001, but the total disease burden remains at 80%.

Despite increasing awareness of the problem and a growing commitment to solve it, DOTS coverage is still not expanding fast enough. Trends reflected in the numbers over the past few years reveal that, with some notable exceptions, progress in TB control has been too slow to reach the targets set initially for the year 2000 and then pushed forward to 2005.

The bad news:

- **The number of TB cases is increasing.** There were about 8.4 million new TB cases in 1999, up from 8.0 million in 1997. The increase is primarily in Africa, where it is largely HIV/AIDS-driven, and in the CEE/CIS. Although unlikely, if present trends were to continue, there would be 10.2 million new TB cases by 2005.
- **TB coverage rates are stagnating**. Less than a quarter (23%) of estimated new active TB cases were reported to DOTS programmes in 1999, compared to 22% in 1998.
- **Reaching the 2005 TB control targets is jeopardized by insufficient progress.** If current slow progress trends continue, the target of 70% case detection under DOTS will not be reached until 2013. At least 300,000 additional active TB cases will have to be identified each year to reach the 70% case detection target by 2005. The means significantly expanding DOTS.

The good news:

- **DOTS is available to more people than ever before**. The percentage of the world's population that has access, in principle, to DOTS increased from zero in 1990 to 43% in 1998 to 45% in 1999, the latter being equivalent to some 2.7 billion people.
- **DOTS has been expanded to reach well over half the world's countries**. Of the world's 212 countries and territories, the number of them using DOTS increased from 119 in 1998 to 127 in 1999. Another slight increase is expected for the year 2000.
- **Treatment success rates remain high**. DOTS treatment success of new patients with active TB infections remained high, exceeding 80% in most places.
- **Two high-burden countries surpassed the TB control targets**. In 1999, Peru and Viet Nam distinguished themselves as the only high-burden countries to surpass both WHO targets of 70% case detection and 85% treatment success. Other TB80 countries, including Cambodia, Kenya, South Africa and the United Republic of Tanzania, are closing in.

- **Peru "graduated" out of the TB high-burden class**. Following a decade of successful TB control that halved TB incidence, in 2000 Peru was eliminated from the group of countries that comprise 80% of the world's TB burden.
- **China has made substantial progress**. In 2000, China announced results of a nationwide survey indicating a significant reduction in TB prevalence in the 13 provinces that have participated in the World Bank-assisted TB control project since 1990.
- **Five countries have greatly expanded DOTS coverage**. Over 90% of all DOTS expansion progress was made in just five countries—India, Indonesia, the Philippines, South Africa and Thailand—with 65% of the new cases found in two countries, India and South Africa.
- **Some smaller countries are also performing well**. Although not TB high-burden countries, a number of countries/territories in Latin America, Europe, Middle East and South-East Asia have demonstrated the effectiveness of good TB control in bringing down TB rates. Examples include Chile, Cuba, Lebanon, the Maldives, Nicaragua, Oman, Poland, Puerto Rico, Slovakia, Slovenia and Uruguay.

The upshot is that progress in global TB control has been steady but slow—too slow at the current rate to meet the 2005 targets and, subsequently, the longer-term 2010 target of halving the global TB burden of deaths and suffering. To meet these targets, DOTS expansion needs to more than double, with the number of DOTS-enrolled patients increasing annually by a factor of 2.5. This is feasible only if both commitment and resources increase significantly (see *Appendix 1*).

The call: Stronger national TB plans

3.2.2 *The response:* DOTS Expansion

- **India: rapid increase in coverage**

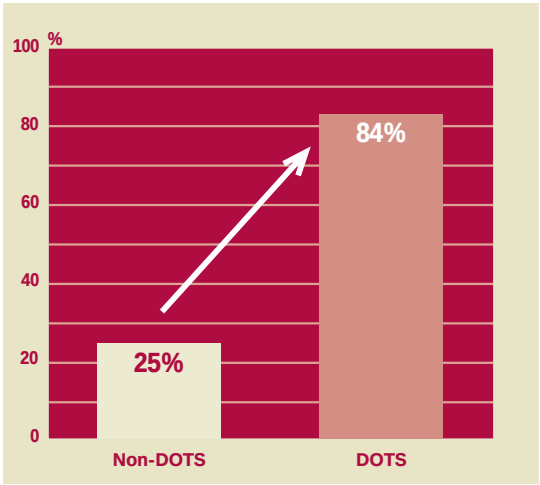
As highlighted earlier (Chapter 1), much of the scientific basis for DOTS was established in India during the 1950s and 1960s. Unfortunately, while most of the world then proceeded to reap the fruits of its research labours, until recently, India itself lagged behind.

Today one in every three infectious TB patients lives in India, which has the highest absolute number of TB cases in the world—nearly 2 million new cases a year. This number accounts for 66% of the total for the South-East Asia Region and is half a million more than in China whose population is significantly larger. TB kills close to half a million people a year in India, more than HIV/AIDS, STIs, malaria, leprosy and tropical diseases combined. In addition, India, a country where rates of MDR-TB may be high in some states, also has the highest absolute number of persons— approximately 2 million—who are infected with both HIV and TB.

To address the grave threat that TB poses to India's one billion inhabitants, a massive DOTS expansion campaign—the largest in the world—has been launched. Progress has been swift and the numbers overwhelming: DOTS is now expanding dramatically—from 2% of the population in mid-1998 to 42% by mid-2001. Expansion on this scale has necessitated the training of more than 20 000 doctors, 6 000 lab technicians and 100 000 allied health workers, and the purchase of some 7 000 microscopes and of nearly half a billion anti-TB pills.

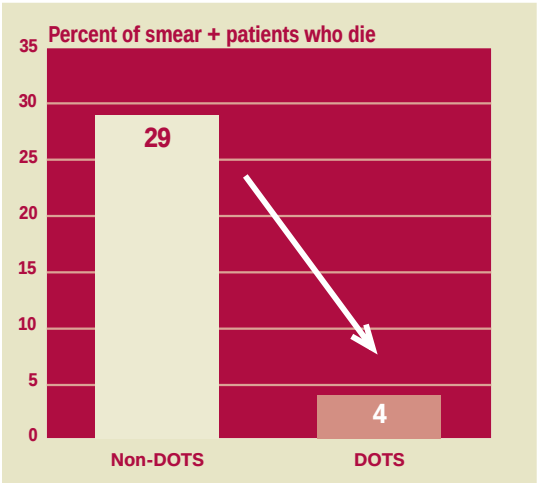
The year 2001 marks a milestone: India is currently treating more than 1 300 patients with DOTS every day and has treated more than 750 000 all told. In 2001, it will treat more patients than any other country in the world. This means that more than 100 000 people have been spared a tragic and preventable death.

Despite this remarkable increase in volume, the quality of treatment remains high and more than 80% of all patients are reliably cured. Two States of India—Rajasthan, with a population of 56 million, and the mountainous Himachal Pradesh, with a population of 6 million, are poised to reach the global targets for their populations in 2001.



DOTS UP

DOTS triples treatment success in India



DEATHS DOWN

DOTS cuts TB-deaths 7-fold in India

DOTS has expanded over twenty-fold in less than three years, from 18 million in July 1998 to 410 million people by May 2001. This conscientious application of DOTS in India has succeeded in cutting TB deaths seven-fold.

The aim of the Government of India is to extend coverage to more than 80% of the country by 2001 while maintaining high quality treatment standards. If this pace is maintained, India should be able to meets its 2005 TB detection and treatment targets.

The potential benefits of this achievement in terms of human life and health will translate into unprecedented success over the coming 20 years:

- **Prevention** of more than 15 million new TB cases and of nearly 6 million TB deaths.
- **Cure** of over 25 million TB cases.
- **Economic savings** of over US$ 27 billion.

There are a number of reasons for India's recent success. The primary one may be its increased commitment to TB control, which is now clearly seen as a public good. A sound and robust technical package, including comprehensive policy and modular training materials, a rigorous system of district appraisal prior to service delivery start-up, and intensive supervision and monitoring have all played a key role, as has the programme's organizational and managerial flexibility.

In addition to interventions by the Government at the national and state levels, international development agencies have also actively supported India's battle against TB. Technical cooperation from WHO and a US$ 142 million "soft" credit from the World Bank have played an important role. Bilateral donors have funded specific initiatives such as DOTS in Andhra Pradesh (DFID), DOTS in Orissa (DANIDA), logistical support (CIDA) and model DOTS (USAID).

● Viet Nam: Achieving global targets

The site of Asia's first DOTS programme, Viet Nam has nevertheless had to prevail against great odds—like its large population (78.7 million) and low per capita GNP (US$ 310)—in its battle against TB. Despite these handicaps, Viet Nam is one of only two TB80 countries, along with Peru, to have met—and in fact far surpassed—WHO's global DOTS targets.

Viet Nam surpasses global targets

Global DOTS targets	70% case detection	85% treatment cure
Viet Nam's performance	83% case detection in 1998 with 99.8% population coverage	93% cure rate in 1998

This model programme's excellent performance record can be attributed to a combination of the right "vital ingredients for success":

- high and sustained levels of national political commitment,
- relatively centralized administrative infrastructure,
- effective partnerships (e.g. WHO, MCNV, KNCV, IUALTD, CDC, the World Bank),
- outstanding international technical and financial cooperation,
- professionalism and commitment to the highest technical standards,
- high levels of social organization and active community mobilization.

The benefits come in terms of lives saved and TB prevented or cured. It is estimated that, since the DOTS-type approach was first introduced in 1985, more than 500 000 infectious TB cases have been cured and some eight million new infections prevented. Today Viet Nam ranks twelfth amongst the 22 TB high-burden countries but it has already dropped two notches in the past year. To sustain this progress towards a TB-free future, the country will need resources on the order of US$ 6 million a year, US$ 5 million of which are available, in part through a World Bank loan.

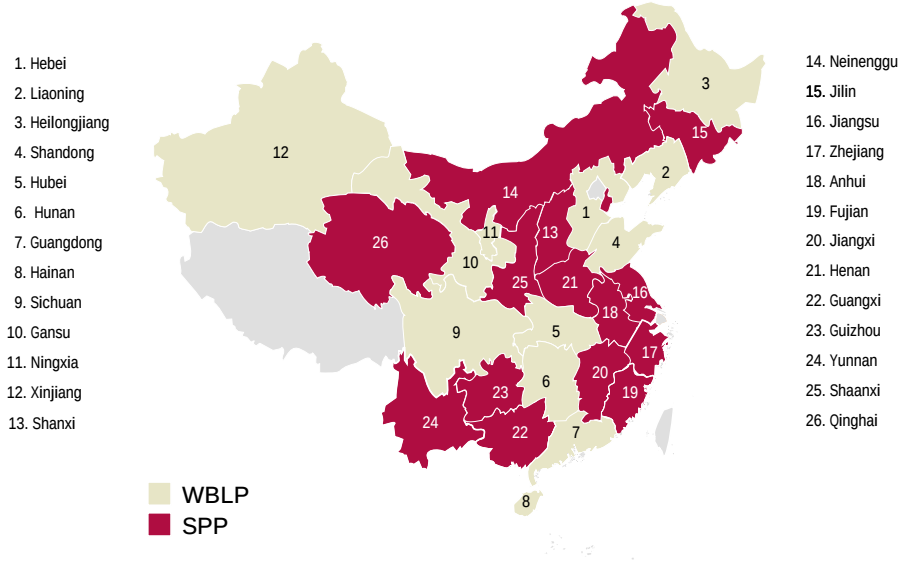
3.2.3 *The response:* GDEP in action

- **China: reducing the TB burden**

In 1992, China began implementing what has become the world's largest single TB control project to date using the DOTS strategy. It covers half of China's population—nearly 600 million persons or 10% of the world's population—spread over 13 of China's 31 provinces (see map).

TB control in China

Map of China's provinces with and without World Bank-assisted TB projects



This World Bank-assisted project expanded rapidly and, by its fourth year, was covering more than 95% of the target population. More importantly, the reported cure rate exceeded the 85% WHO target and the relapse rate was low. Since the start of the project, more than 1.5 million TB patients have been cured and the number of TB deaths reduced by half according to one estimate.

There is no question that this World Bank-partnered project has been successful in finding and curing infectious cases, thereby limiting TB deaths, the emergence of drug-resistant TB, and the spread of this pathogen in the community. What is less certain, however, is whether the project can reduce the overall TB burden in China with only a 40%–50% level of case detection, which is substantially lower than the 70% target set by WHO.

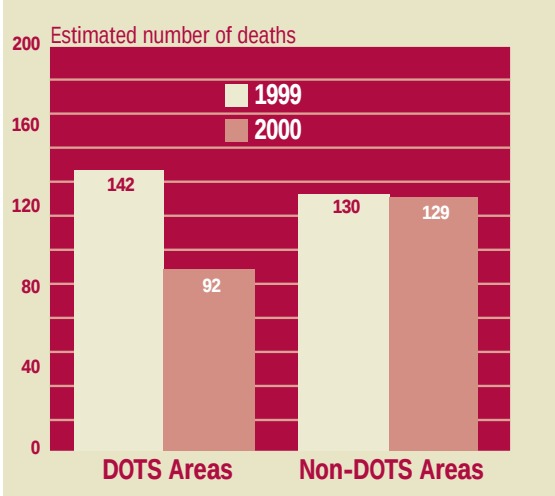
In 2000, the Ministry of Health of China conducted the Fourth National TB Prevalence Survey. The results show that when all elements of the strategy are in place, DOTS is effective in reducing the TB prevalence.

In the graphic, the World Bank-assisted project provinces have been labelled as "DOTS areas" and the non-project provinces as "non-DOTS areas". Over the ten-year period, the prevalence of infectious TB declined by 35% in "DOTS areas" while, in contrast, it declined by only 1% in "non-DOTS areas"—that means that, without DOTS, there is scarcely any progress.

The well-documented TB prevalence reduction in the World Bank-assisted project provinces provides perhaps the best example to date of the effectiveness of the DOTS strategy. The experience in China has shown that DOTS can reduce the burden of TB. This result is even more impressive when one considers that, within the project area, the population coverage only reached 95% in 1995 and the case detection rate has not exceeded 50%.

TB prevalence trends in China with and without World Bank–assisted DOTS projects

Prevalence of active pulmonary TB infections in 1990 and 2000 in World Bank-assisted project provinces (DOTS areas) and non-project provinces (non-DOTS areas). Preliminary results provided by the Ministry of Health, China.



The reduction in TB prevalence in the World Bank-assisted China project provinces provides the best example to date of the effectiveness of the DOTS strategy.

If the project provinces had achieved the global target in case detection, the reduction in TB prevalence would have been even more striking.

The Government of China has made noteworthy progress. Hard work by countless officials and TB control workers at all levels of government has clearly paid off. Project support provided by the World Bank, WHO and other agencies has provided an excellent example of international collaboration.

Ultimately, it is China's poor—many more of whom now have access to free diagnosis and treatment—who have benefited most from this highly effective programme. Still, much more must be done to increase case detection in and expand this highly effective DOTS strategy to non-project provinces. Only then will China reap the full benefit of DOTS.

3.3 Progress in implementing the *Amsterdam Declaration*

3.3.1 Pakistan: developing national partnerships

Although Pakistan first established a National TB Programme in 1965, the country's pre-Amsterdam performance suffered from inadequate leadership and funding and was aggravated by its ongoing political and socioeconomic transition. This situation was particularly disturbing since TB constitutes a very high disease burden and inflicts serious economic harm on this developing country.

Fortunately, the new millennium has witnessed quite dramatic progress against TB in Pakistan. Under dynamic new leadership, funding has been substantially increased; a team of TB experts has been engaged to work throughout the country; and a consistent supply of anti-TB drugs has been secured. As a result, all four of Pakistan's provinces are now implementing the DOTS strategy and coverage increased from 8% to 14% in just one year.

On World TB Day 24 March 2001, Pakistan adopted its own Islamabad Declaration, along the lines of the *Amsterdam Declaration*, which identified TB as a national emergency, thus catalyzing greater awareness, along with Government commitment and partner support.

Pakistan also used this occasion to launch an inter-agency donor committee including the World Bank, DFID, JICA, the European Union, and the German and Italian Governments. Financial estimates for national DOTS expansion through 2003 have also been developed and include US$ 6 million in funding and additional funds for drug procurement. That still leaves a US$ 5 million shortfall, the majority for drugs, diagnostics and case management.

Two tangible outcomes have already resulted. First, JICA has pledged substantive support for a project in one of the four provinces, as well as grant aid for drugs. Second, Italy has re-channelled US$ 600 000–700 000 of previously donated funds into TB-specific project areas. It looks as if Pakistan has finally succeeded in launching a credible national TB control programme. Success may, however, be affected by recent political events.

3.3.2 The Philippines: augmenting national resources

The Philippines is ranked seventh among TB's 22 high-burden countries. DOTS was first piloted there in 1996 and has now been scaled up to the level of 80% availability to the country's 75 million population.

One major reason for the successful expansion exercise that is progressing according to plan is the strong political support behind it. This political backing is concretely exemplified by budgetary resources that the national and local governments provide to the NTP. The budget for TB control is explicitly provided in the General Appropriations Act passed by the Philippines legislative body each year. This enables the NTP to buy anti-TB drugs and laboratory supplies and fund other related activities such as training, monitoring, advocacy and policy development, as well as granting assistance to national NGOs working on TB.

The annual NTP budget of about US$ 3 million includes drug regimens for about 150,000 TB patients notified yearly. For the year 2001, the budget was increased by 25% over the previous year. Part of this amount will be used to manage children with TB, a segment of the population that was not included in the past.

There is also a World Bank loan, part of which has been used to buy anti-TB drugs that enabled big urban areas to build a buffer stock of anti-TB drugs and laboratory supplies. The Philippine Government is also studying the possibility of using the social health insurance to finance TB services.

In the Health Sector Reform Agenda prepared in 1999 by the Philippine Department of Health, NTP is included as a priority for multi-year budgeting, a proposal which will be submitted to Congress.

World TB Day 2001 in the Western Pacific

Source: WHO/WPRO, 2001

3.3.3 Cambodia: mobilizing international resources

Cambodia adopted DOTS in 1994 and has cultivated collaboration with international development organizations ever since. Operational costs are primarily covered by the national budget with support from the World Bank. The Japan International Cooperation Agency (JICA) projects also provides funding to cover financial gaps when national budget disbursements are delayed.

Stop TB in Phnom Penh was initiated in February 2001, followed by the official launching of Cambodia's National Interagency Coordinating Committee (ICC) in April 2001. The Government of Japan and WHO are playing a significant role in supporting the NTP to strengthen the ICC partnership.

Japan is expanding its support to the NTP in coordination with Stop TB WPRO/WHO. JICA's five-year Technical Assistance Project provides increased financial and technical assistance for the development of DOTS model areas, TB-HIV control and research and surveillance activities. The Japanese Research Institute of TB (RIT) and the Japan Anti-Tuberculosis Association (JATA) are supporting the JICA project.

A new National TB Centre was approved by the Government of Japan and inaugurated in March 2001. The Japanese Embassy has rehabilitated TB units and laboratories in provinces. Two new TB unit complexes were inaugurated in July 2001. In response to a government request, the Government of Japan has agreed to donate TB drugs for three years (2003–2005) with technical assistance in logistical management and proper use. JICA has supported NGOs for DOTS expansion and TB-HIV activities through the NTP. KHANA and SHARE are the primary NGOs that have received funds in 2001. Several other NGOs have shown interest in participating in the DOTS expansion plan and TB-HIV activities and in joining the national ICC. Primary donor support has come from USAID and JICA.

The World Food Programme, which began operations in conjunction with TB control in 1994, has extended its contract of food support to TB patients until 2003. A formal evaluation of the project has not been completed. The World Bank loan project has provided essential operational funding for the national budget since 1997, and a new loan is anticipated to begin in 2003.

Japan, the Asian Development Bank, WHO, IUATLD, NGOs and other agencies have increased scholarships for international training and study.

chapter 4

50 months:

Countdown and call to action

4.1 TB in the year 2000

According to the most current data, this is what the global TB burden looks like in the year 2000:

TB in the year 2000: the global picture

• New TB cases in this year:	8.7 million (up from 1999)
• New infectious TB cases:	3.8 million
• TB cases attributed to HIV-positive status:	0.64 million (11%)
• TB-HIV coinfections	13.0 million (13%)
• MDR-TB:	0.27 million
• All TB deaths in this year:	1.9 million
• Deaths attributed to HIV coinfection:	0.34 million

By all rights, such numbers should evoke shock waves of unacceptability—especially since the technical means to cure, and thus prevent the spread of, TB have been available for 50 years. For the last decade, we have also had DOTS to do it more effectively.

And yet, it has been observed that, "while DOTS has won a few battles, it is losing the overall war against TB". Many contend that the reasons for this unacceptably slow progress have been political, economic and managerial rather than technical and medical. Now we must move forward rapidly—we have only 50 months to reach the 2005 targets:

- Detecting 70% of all TB cases.
- Curing 85% of those detected (i.e. 60% overall).

The TB time bomb

Today we are in a race against time—and TB is the time bomb. As we have seen, conventional wisdom has long portrayed TB as something to be taken for granted and tolerated—as long as it keeps its distance. And as the most pervasive disease of poverty, TB has also constituted a kind of social "skeleton in the closet", a denied and thus neglected disease.

One in every three people in the world infected? True but hard to believe since most infections are latent or long invisible and thus not detected. *Another death every 10–15 seconds?* But those are far away, often concealed behind a veil of secrecy and stigma. And so it goes, just another humdrum TB drama day. Such complacency means that TB is neglected—by public health officials, politicians, the media and, by extension, the public at large.

4.2 DOTS Expansion is too slow

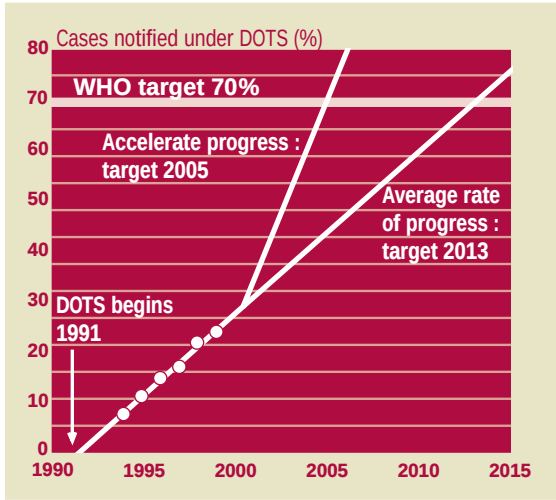
> **"Do what you've always done, and you'll get what you always got."**
>
> *Dr Dixie Snider, former Director*
> *Division of TB Elimination, Centers for Disease Control and Prevention*

Progress over the past decade has been significant. By 1999, 127 countries that are home to 82% of the world's population had adopted DOTS strategy for TB control endorsed by WHO while 23% of all estimated global TB cases were being treated under DOTS. Although significant, this progress is not enough.

Based on current rates of DOTS expansion, it is clear that the global targets will not be achieved by 2005. If expansion continues in a linear fashion, and at the current rate, targets will not be achieved before the year 2013. This is the rather bleak prognosis if we continue "doing what we've always done" for the past decade.

Progress towards 70% TB detection

Source: WHO, 2001



Improvements are urgently needed in several key areas:

- **Enhancing** the ability of national public health services to sustain and expand DOTS.
- **Emphasizing** community involvement and patient-centred approaches to TB care.
- **Encouraging** collaboration and synergy among partners in the public, private and voluntary sectors.
- **Improving** the DOTS-based response to HIV-related TB and MDR-TB.
- **Integrating** DOTS into primary health care within health sectors worldwide.

Therefore, the initial DOTS strategy framework is currently being transformed into a truly comprehensive support strategy, providing local-to-global level support to all providers, patients, and people to tackle the problem of TB. The new strategy presented puts equal emphasis on different dimensions of DOTS, from the techno-managerial to the sociopolitical.

Finally, the new TB control offensive embraces "the big picture", which views access to TB care as a human right and recognizes TB control as a global public good with great potential benefits, both to individuals and societies. It underscores the contribution TB control makes to poverty alleviation by reducing the socioeconomic burden this disease inflicts upon the poor.

The Tuberculosis Coalition for Technical Assistance (TBCTA). In order to help countries build their national TB control capacity, with the support and sponsorship of USAID, six international organizations involved in the battle against TB formed an independent partnership in the year 2000. The six partners are: WHO, the International Union Against Tuberculosis and Lung Disease (IUATLD), The American Lung Association (ALA), the American Thoracic Society (ATS), the Centers for Disease Control and Prevention (CDC) and KNCV. Sponsored by USAID under a five-year funded programme, the TBCTA's aim is to expand the capacity of USAID to respond to the global TB epidemic and to contribute to accelerating DOTS expansion in keeping with the Amsterdam Declaration.

Countering the threat of HIV/AIDS

The HIV/AIDS epidemic has dramatically fuelled TB's resurgence: 11% of the 8.7 million global TB cases are now attributable to HIV infection. This

> **HIV is to TB what matches are to kindling.**

percentage is constantly growing. Conversely, TB is a leading cause of illness among people living with HIV/AIDS, as well as the single leading cause of death, responsible for 15% of all HIV-associated deaths.

This battle is being waged in countries around the world—from Cambodia to India and from China to Haiti—but sub-Saharan Africa is the crucible with two-thirds of all people coinfected with HIV and TB. As HIV weakens immunity, TB infection is more likely to progress to disease.

It has been said that "HIV is to TB what matches are to kindling—and Africa could be just the start of the wildfire". This spreading coinfection "wildfire" threatens to fill hospitals to overflowing, inundating the struggling health services of high-burden countries. And, as HIV extends into China and India, where TB is endemic and already drug resistant in some hot spots, the prognosis is that death rates will rise dramatically. But there are countermeasures.

ProTEST Pilot Project in Malawi

Launched in August 1999, the goal of this pilot project is to reduce the burden of TB among HIV-infected people in the Lilongwe district. The three-year project is being carried out by the Malawian Ministry of Health with funding from the Norwegian Agency for Development Cooperation (NORAD). The strategy is to foster greater collaboration between TB and HIV service providers to improve access to a package of care, prevention and support services for people living with HIV/AIDS.

It is working. Since 1999, there has been a four-fold increase in client utilization of voluntary counselling and testing services (VCT), from 200–300 to 1 200–1 400 clients per month in 2000. In terms of impact, it is expected that increased counselling will result in changed sexual behaviour that will, in turn, result in averted HIV infections. The current US$ 100,000 annual project budget includes funding for essential drugs at government medical facilities, provision of resources for people living with HIV/AIDS support groups and funds to train more counsellors to meet the rising demand for VCT services.

4.3 Expanding DOTS coverage is not enough

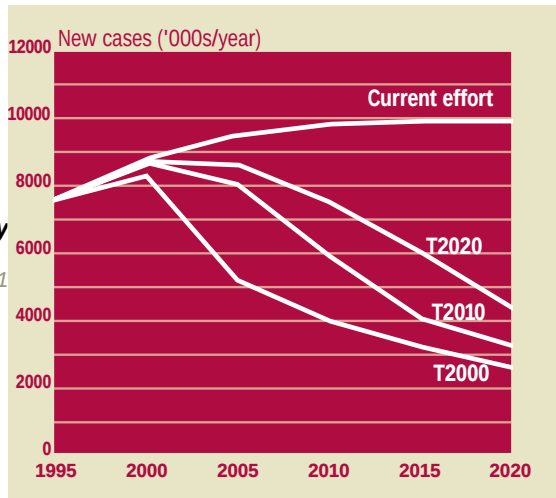
Looking back over the past 25 years, we can trace the progress already made. The framework for the future DOTS strategy was already in place in the 1970s and the DOTS strategy itself was launched in 1991. Within less than a decade, the number of countries formally using it had gone from zero in 1991 to 127 in 1999 and there was the heartening success of “star performers” such as Cambodia, certain provinces of China, Peru and Viet Nam.

4.3.1 Coverage does not equal use

Would achieving 100% DOTS coverage worldwide then solve the TB problem? No. Because coverage does not guarantee detection and detection does not always lead to effective treatment. On the contrary: even though DOTS programmes now cover nearly 50% of the global population, only 23% of people with infectious TB are diagnosed and treated with DOTS. Simply making services available does not guarantee that people will use them. Additional efforts are urgently needed to increase case detection; for example, expanding access to health care services, providing incentives to patients, introducing DOTS into private health care services, and educating the community on the availability of TB diagnosis and treatment services.

4.3.2 Increasing the impact of DOTS

If the challenge is to keep TB under control, then further expanding DOTS is crucial but, alone, will not do the job. We must move from DOTS implementation to DOTS impact. To reduce the number of deaths, we must focus on finding more of the people who are actively infected with TB—and finding them earlier on. One way is a more active case-finding that specifically targets high-risk groups such as hospital in/out-patients, prison inmates, the homeless, drug users, prostitutes and the urban poor.



DOTS' impact in the 21st century

Source: WHO, 2001

Another way is improving diagnostics. Both theory and data “tantalizingly suggest”—in the words of one expert—that TB incidence and death rates could be brought down swiftly if the average duration of illness could be decreased through inexpensive, practical methods to shorten diagnostic and treatment delays.

Yet another is the development of new and better drugs to overcome anti-microbial resistance. Because, given the stealthy rise in MDR-TB, even if every single TB sufferer were identified, new drugs would still be imperative to treat them successfully. A new TB drug would strengthen global TB control and the efficacy of DOTS by:

- reducing defaulting—that is, the interruption of the 6–8 month course of chemotherapy,
- improving case detection,
- curing MDR-TB,
- reducing the number of TB deaths in HIV-positive patients,
- treating latent TB infection before it has a chance to become active.

4.3.3 Bangladesh: high coverage, low detection

In its battle against TB, Bangladesh is triply threatened. First, the country has a rapidly growing population which currently numbers over 127 million people, 26% of whom have no access to health services. Second, there is pervasive poverty with 28.5% of the population living on the equivalent of less than US$ 1 a day. Third, the spectre of HIV/AIDS is increasing among certain high-risk groups.

TB centre in Bangladesh

Source: WHO/STB/S. England

Against this challenging backdrop, Bangladesh introduced DOTS in 1993 and, through dynamic partnerships with international development agencies like

WHO, the World Bank, bilaterals like USAID, international NGOs like Belgium's Damien Foundation, and local grassroots NGOs like the Bangladesh Rural Advancement Committee (BRAC), the country has been able to achieve a 90% DOTS population coverage rate.

Nevertheless, case detection remains low, hovering at less than 25% of total estimated cases. The reason for the gap between high DOTS coverage and low actual case detection is that many patients continue to seek treatment from non-DOTS facilities, including private practitioners. Compared with DOTS treatment success rates (74% in 1998), non-DOTS levels have been notably lower (57%), with 28% of patients defaulting.

Now Bangladesh needs to extend its effective system of partnerships to include the private sector. It must also increase its TB budget and improve services in its teeming urban centres. Recent health sector reforms promise to improve management and logistics, as well as monitoring, reporting and training. It remains to be seen whether Bangladesh can meet the challenge.

4.4 Increasing case detection and cure

> **"We demand a TB treatment that is free, adequate and uninterrupted, accessible and administered by trained health workers."**
>
> *His Grace Archbishop Desmond Tutu*
> *(former TB patient) TB Cure for All Campaign (South Africa)*

Improving case detection and cure rates results in an accelerated decline in the incidence of TB and consequently a measurable reduction in the number of TB deaths. The following country case studies in Peru, Uganda, Kenya and Nigeria highlight different approaches to achieving a common goal.

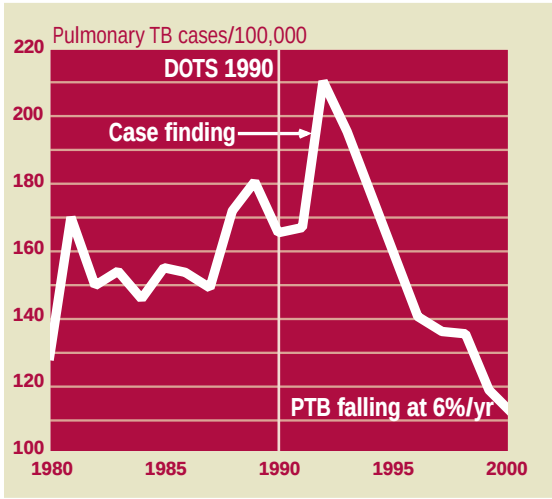
4.4.1 Peru's success story: patient support, incentives, education

Peru is truly a pioneer. Its highly successful DOTS programme—implemented in 1990—provides overwhelming evidence that this strategy works to stop the spread of TB. This is the prize to be gained through good chemotherapy.

After an increase in case reports between 1990–1992, Peru has seen a decline of TB incidence in every department of the country since 1993, with an overall rate of decline of 6% per year. This reduction suggests that 27% of cases (158,000) and 70% of deaths (91,000) among infectious patients were averted between 1991–2000.

Dynamics of pulmonary TB in Peru 1980–2000
TB rates falling at 6% per year: this is the prize to be gained through good chemotherapy

Source: WHO, 2001



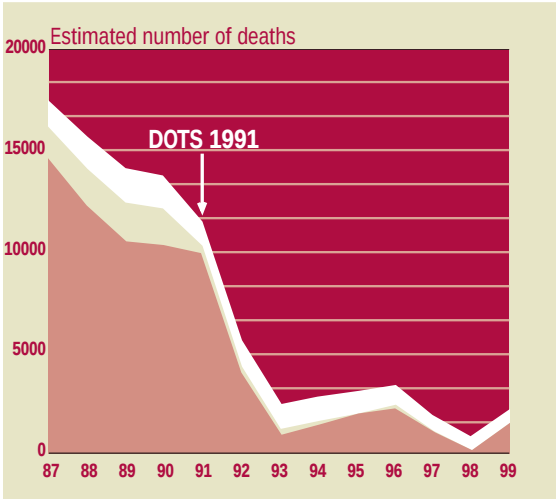
Just a decade ago, the prognosis was not at all rosy. In the early 1990s, the government looked the problem squarely in the eye and saw that, with only 3% of the population of the Americas, Peru accounted for 15% of the region's TB burden. It was one of the world's 22 TB high-burden countries. Not only health, but also national productivity and prosperity were being undermined.

It took high-level political commitment, coupled with scaled up and wisely invested resources, to turn Peru's battle with TB into a victory. The Government did it by making TB control a top priority: it increased the TB control budget over eight-fold—from US$ 600 000 to US$ 5 000 000. It also increased the number of health centres participating in TB control over six-fold, from 977 in 1991 to 6 539 by 1999.

Diagnosis and treatment were provided free of charge and food packages were given as an added incentive to encourage low-income families to comply with DOTS treatment regimens. Not only that, Peru became the first of the 22 TB high-burden countries to systematically address the problem of MDR-TB, covering the far higher treatment costs as a visionary investment in a TB-free future. It has worked.

Reducing TB deaths: the impact of improved TB control in Peru

Source: WHO, 2001



Peru's dynamic leadership succeeded in increasing DOTS coverage from its 1990 level of only 50% to virtually 100% by 1997—with a 90% cure rate. Today, Peru is the first country to be taken off TB's "blacklist"—a singular achievement—but one that could be replicated by other countries with the same resolve and resources.

4.4.2 Uganda: community-based care

Uganda has dealt admirably with the seemingly insurmountable problems posed by the HIV/AIDS epidemic which trailed a devastating TB epidemic in wake. With strong political leadership, focused funding and extensive awareness-raising campaigns, the Government achieved 100% national TB control coverage for its 22 million population as early as 1995.

Uganda is a pioneer in community-based TB control within the larger context of the National TB Programme using DOTS. The Kiboga District serves as an outstanding model. There, patients can choose the treatment options most convenient for them, whether at the nearest health facility or at home. Community volunteers, supported by health workers and various community groups, serve as DOTS monitors. The responsibility for overall coordination and supervision is shared by the district medical office and the village health committees.

The results have been remarkable. By bringing treatment closer to the people, Uganda's model DOTS programme has doubled cure rates, achieving WHO's 85% cure rate target. Between January 1998 and December 1999, the Government of Uganda, together with WHO, initiated far-reaching action research to measure the feasibility, effectiveness and acceptability of community-based TB care, in addition to cost analyses.

Crucial to the success of the Ugandan model has been the partnerships cultivated between health services and the communities served. Even with

the government working in tandem with an international resource mobilization effort, in the end it is the individual patients living within their respective communities who must be aware, prepared and willing to act on their own behalves.

The bottom line is that, not only TB, but all infectious disease control in low-income countries demands community-directed health initiatives. Just as the community carries the health burden and economic losses due to disease, it is also the community that stands to benefit most from the potential gains of turning the tide against diseases like TB. Uganda has now set a 2003 target to achieve 100% community coverage.

4.4.3 Kenya: involving the private sector

The most pressing challenge for Kenya in these trying times is how to ensure effective and sustainable TB control in the face of a spiralling TB burden, attributable primarily to increases in HIV/AIDS, and the overall plummeting socioeconomic status and health indicators.

For 1999, the country reported 100% DOTS coverage, with a notification rate of 58.7% and a 77% treatment success rate. Kenya's TB programme has managed to respond effectively to 500% increase in reported TB cases since 1990. It is thought that, for the time being, Kenya will be able to achieve the 85% cure target, despite high HIV infection rates. However, the danger over time is that the increasing number of TB-HIV coinfections—which stood at 40% in 1999—in addition to the rising threat of MDR-TB, will cause demand for health services to outstrip supply.

For its population of some 30 million, Kenya needs an estimated US$ 5.4 million a year in TB control funding; the annual resource gap currently stands at almost US$ 2.5 million. In order to fill this gap, and especially since bilateral funding from the Government of the Netherlands ended in 2000, Kenya will now assume a greater share of the costs; one way to do it may be to encourage greater private sector involvement.

4.4.4 Nigeria: involving NGOs

Although the effectiveness of DOTS is being demonstrated through pilot projects in 20 of the country's 36 semi-autonomous states, overall DOTS coverage has remained stable at 45% for the past two years, with only 12% notification rates and 73% cure rates in 1999. Expanding DOTS to the remaining 16 states poses the most significant challenge in the immediate future.

Since Amsterdam, the Nigerian Government has been striving to increase budget allocations, which currently average US$ 8.3 million a year for TB control, in addition to guaranteed funding from a consortium of donors and the World Bank for TB drug acquisitions.

The role of partners—particularly NGOs at the grassroots level—is most crucial. Where DOTS is being implemented, it is by and large donors and NGOs who are doing it and there is a large and active presence. WHO's overall technical collaboration is complemented by three international NGOs: the GLRA in 14 states, the Netherlands Leprosy Relief Association (NLR) in three states, and the Damien Foundation Belgium (DFB) in two states.

German Leprosy Relief Association (GLRA). Since its 1991 launch, the GRLA has supported Nigeria's National Tuberculosis and Leprosy Control Program (NTBLCP) in 14 states with a total population of some 40 million people. The year 2000 witnessed a 6% increase in newly diagnosed TB patients (19,029) compared to 1999. To help treat them, 27 new TB treatment centres were opened, bringing the total number of TB treatments centres to 276. GLRA supports NTBLCP with equipment, training and supervision, personnel costs and drugs. Total GLRA financial support in the year 2000 amounted to almost US$ 1 million.

The Damien Foundation (DFB). This Belgian NGO has worked in the states of Oyo and Osun since 1993, providing technical and financial support. It helps the local health authorities make quality DOTS services available for the total population in order to progressively reduce transmission of the disease. It was estimated that about 55 % of the 2.8 million population of Osun, and 73 % of the 4.4 million population of Oyo, were covered by DOTS services in the year 2000. A total of 1 099 and 2 341 TB cases were diagnosed in Osun and Oyo, respectively, and all patients were put on short-course combined therapy of 8 months duration with a 1999 projected success rate of 86%. Expansion of DOTS to reach full population coverage is the main priority for the coming years. The budget of the Damien Foundation for Nigeria was US$ 192 000 in the year 2000.

"We commit ourselves to ... 70% detection of infectious cases by the year 2005."

Ministerial representatives from 20 high-burden countries who adopted the Amsterdam Declaration to Stop TB

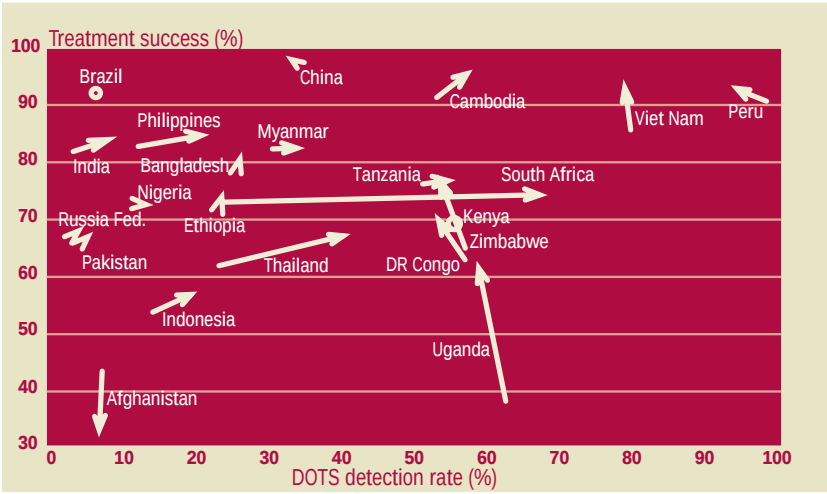
chapter 5

Brave

new TB-free world?

Progress in TB control in high-burden countries (1998–1999)

Source: WHO, 2001



Reaching the global TB control goals is contingent upon evidence, knowing where we stand, where we want to go and how to get there—that is, evidence, strategic planning and concerted action.

The global TB targets for the year 2005 tell us where we want to go. Most of the 22 TB high-burden countries are moving towards those targets. The primary task of global TB control over the next 5 to 10 years is to dramatically reduce TB deaths, shorten the duration of illness and decrease the incidence of this disease—in that order.

Looking beyond 2005, the International Development Target aims at halving the global TB burden by 2010. There is supporting evidence that an optimal application of chemotherapy using DOTS has the potential to cut the TB burden by more than 50% in ten years, thus meeting this ambitious target.

But optimal chemotherapy over a 10-year period will mean new drugs to overcome antimicrobial resistance. The development of new and better drugs would strengthen global TB control by achieving, in order of importance:

- **Reducing** defaulting—or interruption of the 6–8 month course of chemotherapy.
- **Improving** case detection.
- **Curing** MDR-TB.
- **Reducing** the number of TB deaths in HIV-positive patients.
- **Treating** latent TB infection before it has a chance to become active.

5.1 Scaling up the battle against TB beyond 2005

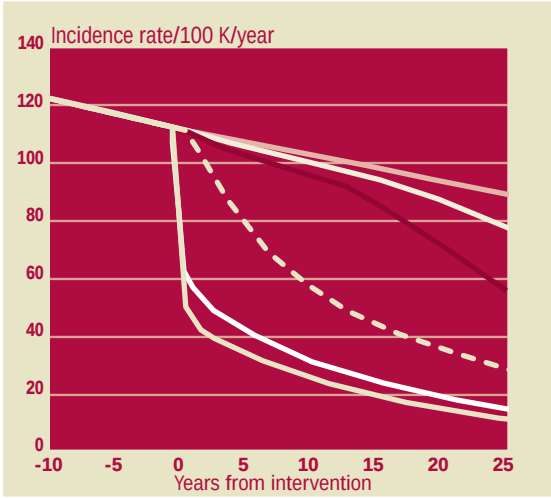
Ultimately, what we are seeking is something even more ambitious: 100% detection and cure of existing TB cases which, for a contagious disease, is the ultimate in prevention. To realize that goal and eliminate TB—as was achieved with smallpox in the 1970s and is on the verge of being accomplished with polio today—TB will also need a vaccine that can deliver long-lasting immunity.

The most effective would be an anti-disease vaccine that would prevent TB among people who do not yet have active TB, whether or not they have already been latently infected. The development of such a high-efficacy vaccine would provide an enormous stimulus to carry out mass immunization, similar to the current worldwide polio immunization campaign.

If there were a TB vaccine…

The hypothetical impact of new vaccines on TB incidence

Source: WHO, 2001



5.2 TB 2000–2010: control, yes; elimination, not yet

We are striving towards no less than a TB-free future, a world in which—for the first time ever—TB no longer poses a major public health problem. But, according to recent studies, we are still “a world away from elimination”.

Even though DOTS is being expanded and refined, and health systems are being strengthened, without a vaccine breakthrough, experts predict that TB will remain with us as a widespread chronic infection for a long time to come. Even an effective vaccine would not, in itself, be a panacea; problems like pricing and delivery would still have to be solved.

As the world’s oldest and most pervasive disease of poverty, TB’s continued presence in our midst will serve not only as an indicator of global public health but also as a marker of the quality of health services in general.

Beyond that, TB prevalence will tell us exactly how far we have come in terms of education and awareness, in terms of social justice and non-discrimination. For, in the end, the elimination of TB would have to mean the elimination of the most severe forms of poverty and discrimination. A TB-free world would be tantamount to a major development miracle.

“It really boils down to this: that all life is interrelated. We are all caught in an inescapable network of mutuality, tied into a single garment of destiny. Whatever affects one directly, affects all indirectly.”

Martin Luther King, Jr.–The trumpet of conscience, 1968

APPENDIX

APPENDIX 1

Top 22 TB high-burden countries: overview of progress

TB high-burden country (listed in order of ranking)	Performance: percentage of increase in DOTS coverage, 1998–1999*		Partners and Donors
India	**9**	**14**	World Bank, WHO, DFID, DANIDA, CIDA, USAID, national NGOs, private and voluntary sectors
China	64	64	WHO, World Bank, IUATLD, MSF, DFB, World Vision
Indonesia	**80**	**90**	WHO, KNCV, AusAID, ADB, RNLRA
Nigeria	45	45	WHO, GLRA, DFB, NLR, IUATLD, World Bank, CDC Life
Bangladesh	90	90	WHO, RIT, World Bank, UNICEF, USAID, National NGOs, (CDC Life)
Pakistan	8	8	WHO, IUATLD, KNCV, GLRA, ICD, SAPP II, DFID, World Bank
Philippines	**17**	**43**	WHO, JICA, World Vision, KNCV, CDC/DTBE, Philippine Coalition against TB, World Bank, CIDA, JICA, USAID Costs: US$ 13 m
Ethiopia	64	63	WHO, KNVC, MSF, Dutch Government, German Leprosy Relief Association
South Africa	**22**	**66**	WHO, DFID, CDC, IUATLD, USAID, Belgian Government, South African national NGOs (SANTA, TADSA, Life Care)
Russian Federation	5	5	WHO, USAID, CDC, DFID, World Bank, GTZ, IFRC. NGOs: Merlin, FILHA, EPOS, PHRI, NLHA
DR Congo	60	62	WHO, Damien Foundation Belgium, The Leprosy Mission, Aide aux Lépreux et tuberculeux de l'Ituri, European Union
Viet Nam	96	99	KNCV, WHO, CDC, Dutch Government, World Bank
Kenya	100	100	Dutch Government, KNCV, WHO, NLR, CDC/CDC Life Support, World Bank

TB high-burden country (listed in order of ranking)	**Performance: percentage of increase in DOTS coverage, 1998–1999***		**Partners and Donors**
Brazil	3	7	WHO/PAHO, GLRA, DFB, OPAS, (IUATLD, CDC), National NGOs and community health volunteers
UR Tanzania	100	100	Swiss, Dutch & Irish Governments, GLRA, IUATLD, WHO, KNCV, CDC Life
Thailand	32	59	WHO, CDC Life, IUATLD
Myanmar	60	64	WHO, IUATLD, JFAP, UNDP, National NGOs
Uganda	100	100	WHO, GLRA, Leprosy Mission International, Italian Government, ICD, CESAL, DFID, CDC Life
Afghanistan	11	14	WHO, MEDAIR, GMS, ICD
Zimbabwe	100	12**	WHO, Dutch Government, DANIDA, World Bank, CDC Life
Cambodia	100	100	WHO, JICA, RIT, JATA, World Bank, WFP, Japanese Government, National NGOs
Peru	100	100	WHO/PAHO, KNCV PIH/SES, IUATLD, Partners Coalition (WHO, CDC, PIH, TFCS, NTP Peru)
Sub-total HB countries	43	46	
Global	43	45	

** Data for the year 2000 will be available early in 2002.*

*** Due to inconsistent reporting*

APPENDIX 2

A. Key national development indicators

	Total population (1)	*Human Development Index HDI (2)*	*Human Development Rank (2)*	*GNP per capita in US$ (3)*	*Population living on less than US$ 1 a day (%) (2)*	*Total debt service as % of GDP (2)*	*Income distribution low 10% / high 10% (2)*	*Public expenditure on Health as percent of GDP (2)*	*Life expectancy at birth male/female in years (2)*	*Infant Mortality Rate (2)*	*Estimated % of adults living with HIV/AIDS (4)*	*Adult literacy rate male / female (%) (2)*	*Population without access to health services (%) (2)*
Afghanistan	21.8	…	…	…	…	…	…	…		165	< 0.01	…	…
Bangladesh	137.4	0.47	132	370	29.1	1.7	3.9 / 28.6	1,7	58.9 / 59.0	58	0.02	51.7 / 29.3	26
Brazil	170.4	0.75	69	4 350	9.0	9	1.0 / 46.7	2,9	63.9 / 71.8	34	0.57	84.8 / 84.9	…
Cambodia	13.1	0.541	121	260	…	1.1	2.9 / 33.8	0,6	54.1 / 58.6	86	4.04	80.1 / 57.7	…
China	1 282.4	0.718	87	780	18.5	2.1	2.4 / 30.4	…	68.3 / 72.5	33	0.07	91.2 / 75.5	…
Congo (DR)	50.9	0.429	142	…	…	0.3	…	…	49.7 / 52.3	128	6.43	72.4 / 48.7	41
Ethiopia	62.9	0.321	158	100	31.3	2.5	3.0 / 33.7	1,7	43.3 / 44.9	118	10.63	42.8 / 31.8	45
India	1 008.9	0.571	115	440	44.2	2.3	3.5 / 33.5	…	62.4 / 63.3	70	0,70	67.8 / 44.5	25
Indonesia	212.1	0.677	102	600	7.7	12.5	4.0 / 26.7	0,7	63.9 / 67.7	38	0.05	91.5 / 81.3	57
Kenya	30.7	0.514	123	360	26.5	6.7	1.8 / 34.9	2,4	50.4 / 52.2	76	13.95	88.3 / 74.8	…
Myanmar	47.7	0.551	118	…	…	…	…	0,2	53.6 / 58.4	…	1.99	88.8 / 80.1	…
Nigeria	113.9	0.455	136	260	70.2	2.6	1.6 / 40.8	0,8	51.3 / 51.7	112	5.06	71.3 / 54.2	33
Pakistan	141.3	0.498	127	470	31	5.2	4.1 / 27.6	0,9	59.8 / 59.5	84	0.10	58.9 / 30.0	15
Peru	25.7	0.743	73	2 130	15.5	5.7	1.6 / 35.4	2,4	66.3 / 71.3	42	0.35	94.4 / 84.9	…
Philippines	75.7	0.749	70	1 050	…	8.8	2.3 / 36.6	1,7	67.0 / 71.1	31	0.07	95.3 / 94.9	…
Russian Fed.	145.5	0.775	55	2 250	…	2.9	1.7 / 38.7	…	60.1 / 72.5	18	0.18	99.7 / 99.4	…
South Africa	43.3	0.701	94	3 170	11.5	3.7	1.1 / 45.9	3,3	51.6 / 56.2	54	19.94	85.7 / 84.2	…
Tanzania (UR)	35.1	0.436	140	260	19.9	2.2	2.8 / 30.1	1,3	50.0 / 52.2	90	8.09	84.0 / 65.7	7
Thailand	62.8	0.757	66	2 010	< 2.0	13.2	2.8 / 32.4	1,9	67.0 / 72.9	26	2.15	97.0 / 93.5	41
Uganda	23.3	0.435	141	320	…	2.9	3.0 / 29.8	1,9	42.5 / 43.8	83	8.30	76.8 / 55.5	29
Viet Nam	78.1	0.682	101	370	…	4.9	3.6 / 29.9	0,8	65.5 / 70.2	31	0.24	95.4 / 91.0	…
Zimbabwe	12.6	0.554	117	530	36	11.6	1.8 / 46.9	…	43.2 / 42.6	60	25.06	92.3 / 83.8	29

B. Key tuberculosis-related programme and outcome indicators

	Estimated new cases of TB (thousands per year) (5)	Estimated deaths from TB (thousands per year) (5)	Estimated new cases of TB due to HIV (thousands/y.) (5)	Number of cases of TB notified in 1999 (6)	Male to female ratio of new infectious TB cases (6)	% of new smear + TB cases in active age group (15-54) (6)	Prevalence of MDR-TB in cases not previously treated (%) (7)	DOTS population coverage (%) (6)	Proportion of new SS+ cases detected under DOTS (%) (6)	Treatment success in new smear-positive cases treated under DOTS, 1998 (%) (6)	National inter-agency coordinating committee incorporating TB (8)	Government funding per estimated TB case (US$) (8)	Multi year plan for DOTS to reach global targets (8)
Afghanistan	69.8	18.7	0.0	3 314	…	87	…	…	…	33	no	…	no
Bangladesh	332.2	69.7	0.2	79 339	71 /29	78	…	90	25	77	no	40	yes
Brazil	116.2	15.7	1.7	78 460	65 / 35	77	0.9	7	4	40	no	464	no
Cambodia	74.9	16.5	7.7	19 266	51 / 49	68	…	100	57	95	yes	25	yes
China	1 364.9	244.5	2.9	460 169	67 /33	72	1.4–10.8	64	32	95	yes	39	no
Congo (DR)	162.9	41.1	23.9	59 531	54 / 46	88	…	62	53	70	no	…	yes
Ethiopia	249.5	74.4	62.7	72 095	55 / 45	88	…	63	22	74	no	8	yes
India	1 856.2	402.7	42.3	1 223 127	68 / 32	84	3.4	14	6.4	27	no	44	no
Indonesia	594.7	130.2	0.9	69 064	48 / 52	84	…	90	19	58	no	52	yes
Kenya	148.6	38.1	44.2	57 266	59 / 41	92	0	100	53	77	yes	78	yes
Myanmar	80.2	19.8	4.9	19 626	…	81	…	…	33	…	yes	…	yes
Nigeria	347.4	96.8	50.2	24 143	…	88	…	45	12	73	no	9	no
Pakistan	246.5	56.6	0.7	20 936	44 / 56	69	…	8	1.9	23	yes	6	yes
Peru	54.3	5.1	0.6	40 345	50 / 50	83	3.1	100	95	92	no	231	yes
Philippines	249.4	48.4	0.5	145 807	…	…	…	43	20	71	yes	141	yes
Russian Fed.	192.5	34.8	1.2	134 360	81 / 19	85	6.5–9.0	5	1,6	68	yes	707	no
South Africa	227.9	71.4	82.4	129 055	61 / 39	89	1.5	66	68	72	no	760	yes
Tanzania (UR)	126.1	32.2	26.3	52 437	62 / 38	87	…	100	51	76	yes	23	yes
Thailand	87.8	15.3	5.6	29 413	68 / 32	63	2.1	59	40	68	no	219	no
Uganda	80.9	21.7	17.2	34 994	58 / 42	87	0.5	100	59	62	no	69	yes
Viet Nam	147.7	19.7	1.0	88 879	68 / 32	61	2.3	99	80	92	yes	114	yes
Zimbabwe	73.7	20.4	29.7	50 138	…	…	1.9	12	55	70	no	…	no

References

1 *Source: Human Development Report 2001, UNDP, p.154*
2 *The World Bank: World Development Indicators 2001, p.12. See http://www.worldbank.org/data/wdi/pdfs/tab1_1.pdf*
3 *UNAIDS epidemiological fact sheets by country. See http://www.unaids.org/hivaidsinfo/statistics/june00/fact_sheets/index.html#h1*
4 *Unpublished WHO estimates*
5 *WHO Global Tuberculosis Report 2001*
6 *WHO/IUATLD Global Project on Anti-Tuberculosis Drug Resistance Surveillance Report No. 2*
7 *WHO Global DOTS Expansion Plan (updated July 2001)*

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