TB CARE I

COSTING TOOLS

The estimation and projection of costs are essential for the planning, budgeting, financing and evaluation of TB services. To meet this need TB CARE I has developed four costing tools which we present here.

USAID — FROM THE AMERICAN PEOPLE

TB CARE I

COUNTING THE COST

Tools to Model Costs and Analyze Cost-Effectiveness

With significant assistance from donors, such as the Global Fund against AIDS, Tuberculosis (TB) and Malaria and the United States Agency for International Development (USAID), most countries have made great strides in expanding TB control over the last few years. While there are presently substantial external funds for TB health programs, in some countries these are diminishing as their economies improve, even though there remain large populations of poor people and TB control is still a challenge. In fact, some of these countries actually need to increase spending on the detection and treatment of TB in order to reduce the incidence of TB, which is needed in the long term to stop the epidemic.

Countries in this situation need to develop sustainable financing strategies which replace dependency on donor funding with increased government budget allocations and revenue from insurance and corporate social responsibility financing. A key related strategy is to improve cost-effectiveness and efficiency so that results can be maximized with limited resources.

Accurate analyses and projections of service delivery costs at both national and sub-national levels are essential so that governments and donors can advocate and plan future financing and conduct cost-effectiveness and efficiency analyses. Accurate costing information is also vital for financing TB detection and treatment through insurance so that reimbursement rates can be set. Having a set of costing models allows a country to quickly and accurately estimate cost and impact under changing situations, which can be very helpful, for example in the preparation of Global Fund proposals.

> **"A set of costing models allows a country to quickly and accurately estimate cost and impact under changing situations".**

To assist with this, USAID's TB CARE I program has developed a suite of four costing tools that donors and governments can use to model costs and analyze cost-effectiveness. All the tools are open source, based in Microsoft Excel and are intended for TB control program planners and managers. Blank and example versions are available as well as examples of country reports. The tools were developed and tested in individual countries but can be used by any country. The tools are:

- TB Services Costing Tool
- MDR-TB Cost Effectiveness Analysis Tool
- TB Economic Burden Analysis Tool
- Tool to Estimate Patient Costs

The **TB Services Costing Tool** is for costing all aspects of a TB control program, from case detection through treatment and for drug-susceptible and multi drug-resistant (MDR) TB. The tool has been used in Indonesia and results indicate that the approximate cost of the resources needed for the country to reach its targets of treating 364,963 TB cases and 1,692 MDR-TB cases in 2014 would be US$ 100 million and this figure would rise to US$ 118 million (excluding inflation) in 2016 as the targets increase.

Based on the above figures the average cost per TB case treated in 2014, including indirect facility running costs, would be US$ 228 and the average cost for an MDR-TB patient who starts treatment in 2014 would be US$ 10,027. The average cost per capita would be 41 US cents which can be compared with the economic burden of TB in Indonesia, which is around US$ 8 per capita, indicating that investment in TB detection and treatment is worthwhile.

This tool has been adapted to project the TB control programs long-term costs and financing needs. For example Figures 1 and 2 show the costing and financing projections for one country over 25 years.

The **MDR-TB Cost-Effectiveness Analysis Tool** is used to compare different approaches to providing MDR-TB services, including lengths of hospitalization and the impact on patient support. This tool can be used for cost-effectiveness analysis of drug-susceptible TB services as well as MDR-TB services.

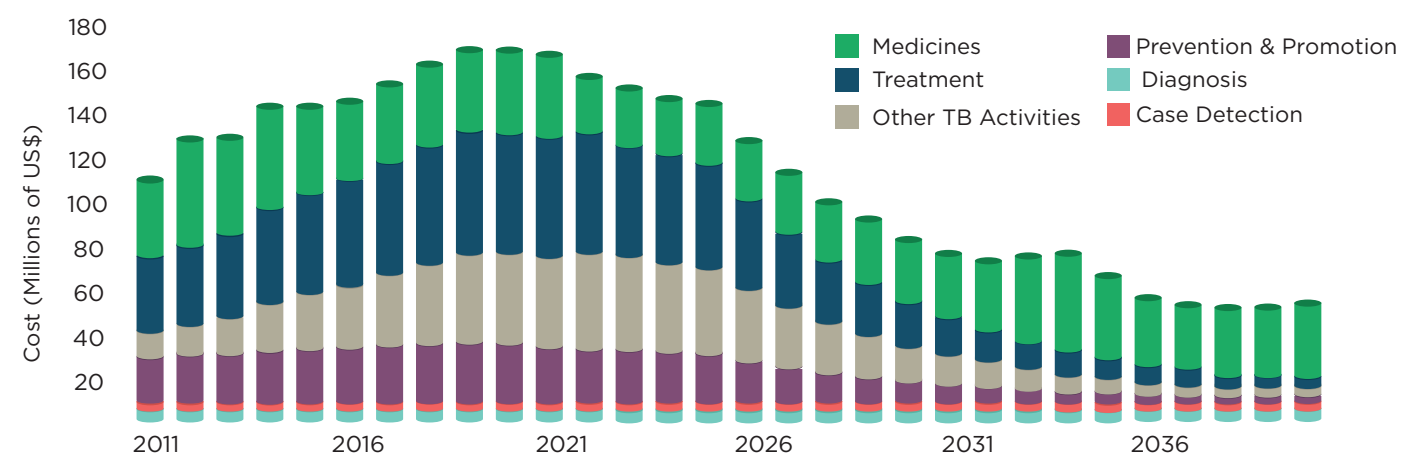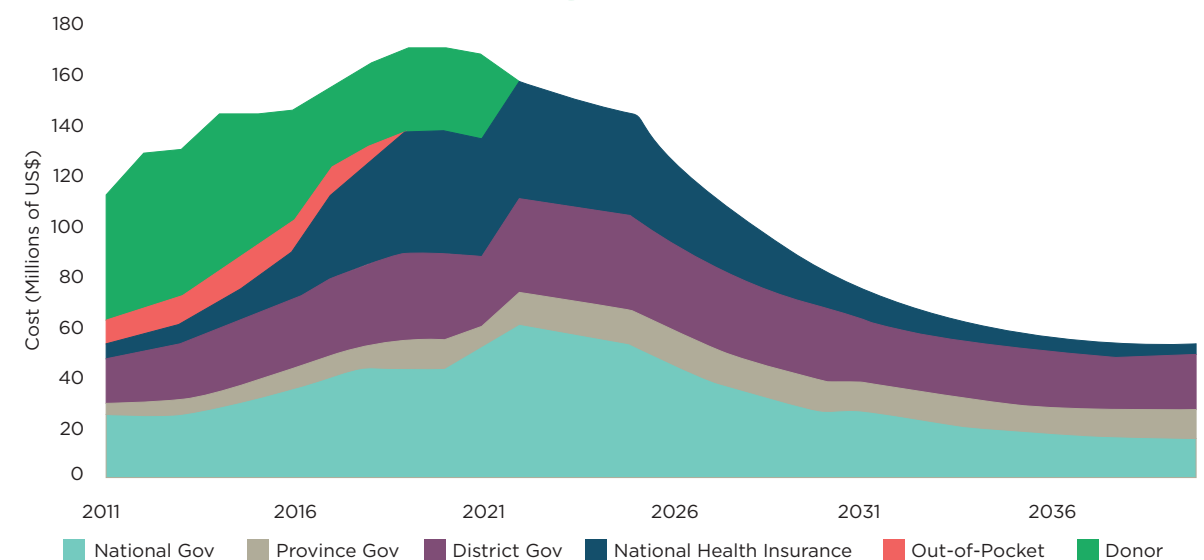**Figure 1. Projected TB control Program Costs Over 25 Years**

Legend:
- Medicines
- Treatment
- Other TB Activities
- Prevention & Promotion
- Diagnosis
- Case Detection

Figure 2. Projected TB Control Program Financing Over 25 Years

Legend: National Gov · Province Gov · District Gov · National Health Insurance · Out-of-Pocket · Donor

The model was used to cost MDR-TB diagnostic and treatment services at Moewardi Hospital in Surakarta, Indonesia. It will serve as a baseline to analyze the impact of changes in procedures over time (such as in length of hospitalization and patient support) and to compare performance with other hospitals. The 2009 MDR-TB cohort comprised 144 patients, of which 68 were cured and 3 completed treatment and were presumed cured, resulting in a 52% cure rate. The remaining patients failed, defaulted, died or were transferred out. This performance reflects the fact that this was the first cohort of MDR-TB patients. The total program cost came to US$ 687,512. The individual cost of treating a patient was US$ 5,589; the average program cost per patient cured was US$ 9,683; and the average program cost per death averted was US$ 15,237.

The **TB Economic Burden Analysis Tool** is used to estimate the economic burden of TB on society and on a country's economy. It is used primarily for advocacy with government policy–makers and financial planners and budgeters as well as with donors. Used in Indonesia, the tool showed that the 2011 TB cohort would result in about 1.9 million years of life lost and the number of years of productive life lost would be about 1.5 million. The total economic burden related to that 2011 cohort would be would be roughly US$ 2.1 billion. Loss of productivity due to premature death would be by far the largest element, comprising 63% of the total cost. Loss of productivity due to disability, medical costs and direct non-medical costs incurred by patients and their households are likely to be 31%, 3.6% and 0.4% respectively of the total economic burden. Note that this is the economic burden that will be borne over a number of years related to the number of new infections in 2011.

The model shows that increasing the number of cases treated has a major impact on the economic burden. If, for example, in 2011 the TB treatment rate would have been 92.7% instead of 72.7% and the MDR-TB treatment rate would have been 31.4% instead of 6.7%. The resulting economic burden would have been US$ 1.3 billion instead of US$ 2.1 billion. An investment of an additional US$ 35 million in medical costs (US$ 0.14 per capita) would have resulted in an overall saving of US$ 800 million (US$ 3.36 per capita). The number of TB-related deaths would have been reduced by 37%.

The **Tool to Estimate Patient Costs** is used to help estimate the costs to patients of seeking and completing treatment. A major problem for TB patients is the high out-of-pocket cost of getting diagnosis and treatment, related partly to the length of treatment time, which can be more that 24 months. In most cases patients also lose their jobs or suffer a significant drop in income. As a result some persons do not seek, delay seeking, or do not complete treatment – thus becoming sicker or dying and often infecting others. At the same time the reduction in income and increased out-of-pocket costs causes families to become impoverished, which in turn causes their health and nutrition status to deteriorate, further increasing the risk of other family members catching TB. In addition, sometimes children drop out of school to seek work or to care for a parent.

> **"If they were not already poor before catching TB they certainly were afterwards".**

In Ethiopia, this model showed that on average each patient spent, more than US$ 233 on diagnosis, treatment, travel and food. Most of the patients lost their jobs and, on average, patients lost 40% of their income. To cover the diagnosis and treatment costs, 38% of the patients sold property (mostly livestock), 14% leased out property (mostly land) and 41% took out loans. In both cases this reduced their wealth and their current and future income. Forty-seven percent of the patients received some assistance from donors, but the amounts involved were generally much smaller than the costs. The cost to families was overwhelmingly catastrophic and if they were not already poor before catching TB they certainly were afterwards.

The Economic Burden of Tuberculosis in Indonesia

Understanding the economic burden to society from a disease like TB is important as it can be used as evidence when advocating for greater investment. This report describes the development of a tool to estimate the economic burden of TB in Indonesia and the results of its use.

Modeling the Cost-Effectiveness of Multi-Drug Resistant Tuberculosis Diagnostic and Treatment Services in Indonesia

Services must be provided in the most cost-effective ways so that the best results can be achieved with available resources. This report describes the development and use of a tool to compare the cost-effectiveness of different MDR-TB service delivery models. The analysis was done in Indonesia but the tool and lessons are applicable globally.

Costs faced by Multi-drug Tuberculosis Patients During Diagnosis and Treatment - Report from a pilot study in Ethiopia, Indonesia and Kazakhstan

Ministries of Health and National Tuberculosis Control Programs need to understand patient costs, in order to identify and mitigate potential bottlenecks in access and adherence to (MDR)TB treatment and the negative impact on the economic status of patients and their families. This report summarizes the main findings on (MDR) TB patient costs in the three pilot countries of Ethiopia, Indonesia and Kazakhstan, and recommendations from respective policy workshops (The individual reports for each country can be found on the costing pages of the TB CARE I website).

The Cost of Scaling Up TB Services in Indonesia

To facilitate the development and implementation of the exit strategy for TB, it is necessary to have a good understanding of the cost of current and future services at all levels so that the necessary domestic funding can be provided and areas can be identified where greater efficiency and cost-effectiveness might be achieved. To assist the Indonesian NTP to analyze and project service delivery costs, a simple, user-friendly costing tool was developed for use by national, district and provincial program managers. The tool was tested in Central Java and the resulting model was then used to estimate the projected costs for the whole country. This report documents those projected costs.

There are more costing reports available on the Costing Pages of the TB CARE I website, where of course our full-range of tools is also available.

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What is TB CARE I?

TB CARE I is a USAID five year cooperative agreement (2010-2015) that has been awarded to the Tuberculosis Coalition for Technical Assistance (TBCTA) with KNCV Tuberculosis Foundation as the lead partner. TB CARE I is a unique coalition of the major international organizations in TB control:

American Thoracic Society (ATS), FHI 360, International Union Against Tuberculosis and Lung Disease (The Union), Japan Anti-Tuberculosis Association (JATA), KNCV Tuberculosis Foundation, Management Sciences for Health (MSH), World Health Organization (WHO).

TB CARE will contribute to three USAID target areas:
- Sustain or exceed 84% case detection rate and 87% treatment success rate
- Treat successfully 2.55 million new sputum-positive TB cases
- Diagnose and treat 57,200 new cases of multi-drug resistant TB (MDR-TB)

By focusing on eight priority technical areas:
- Universal and Early Access
- Laboratories
- Infection Control (IC)
- Programmatic Management of Drug Resistant TB (PMDT)
- TB/HIV
- Health Systems Strengthening
- Monitoring & Evaluation (M&E), Operations Research (OR) and Surveillance
- Drug Supply and Management

And four over-arching elements:
- **C**ollaboration and Coordination
- **A**ccess to TB services for all people
- **R**esponsible and Responsive Management Practices
- **E**vidence based M&E