POST-2015 CONSENSUS

Post-2015 Development Agenda

Bangladesh Perspectives

Tuberculosis

SPEAKERS

DR SHAYLA ISLAM OF BRAC

BRAC is a global leader in creating opportunity for the world's poor. What started out as a limited relief operation in 1972 in a remote village of Bangladesh has turned into the largest development organization in the world. Organizing the poor using communities' own human and material resources, BRAC (formerly Bangladesh Rural Advancement Committee) catalyses lasting change, creating an ecosystem in which the poor have the chance to seize control of their own lives. BRAC does this with a holistic development approach geared toward inclusion, using tools like microfinance, education, healthcare, legal services, community empowerment, social enterprises and BRAC University. BRAC's work now touches the lives of an estimated 135 million people, with staff and BRAC-trained entrepreneurs numbering in the hundreds of thousands, a global movement bringing change to 11 countries in Asia, Africa and the Caribbean.

DR ANNA VASSALL

Anna Vassall is Senior Lecturer in Health Economics at the London School of Hygiene and Tropical Medicine. She is a health economist with around twenty year of experience in economic analysis. Her first degree is in economics. She then worked in the NHS supporting funding/contracting. She then took an MSc in Health Planning and Financing at the LSHTM, thereafter working for DFID as a health economist in the UK and Pakistan. This was followed by a period at Royal Tropical Institute (KIT) Amsterdam working on health planning and financing, aid effectiveness and the cost-effectiveness of tuberculosis and reproductive health in a wide range of low and middle income countries. Thereafter she directed and provided economic support to European Community and World Bank funded health sector reform and development projects in Yemen, East Timor, Syria and Sudan. Her PhD is in the economic evaluation of tuberculosis control. She has worked as an academic since 2010 (at LSHTM) specializing in research into the economics of HIV and TB, with a particular focus on health services and systems.

Her current research interest is the costs and economic evaluation of HIV, TB and Sexual Reproductive Health. She has a keen interest in 'real world' evaluation methods and incorporating a broader health systems perspective in economic analysis. She has also published on health services financing, in particular the role of development assistance finance.

Table of Contents

Summary: White Paper Report by Anna Vassall

Every year, around 80,000 Bangladeshis die from tuberculosis (TB) and about 190,000 new cases occur. Every hour, nine people die from the disease, despite effective treatments being available. But diagnosis is not always easy, and treatment takes several months; in the meantime, loss of earnings for the sufferer may drive families into poverty, multiplying the burden of the disease.

The current situation can be dramatically improved. The target proposed is a 95% reduction in TB deaths and a 90% reduction in new cases in 20 years' time. In Bangladesh, that could be achieved for about $300 million a year. This sounds a lot, but it would give each TB patient on average about another 25 years of life. Also, treating one patient should prevent at least one more case developing.

Just $15 would buy an extra year of life for most TB sufferers. Valuing each year at $1,000 means that every dollar spent on TB control pays back thirtyfold.

. Most cases are drug-sensitive and respond well to standard treatment with a combination of drugs, but failure to complete a proper course of treatment encourages the development of multi-drug resistant TB (MDR-TB), which is difficult and costly to treat and has poorer outcomes.

Because diagnosing active TB is quite complex, almost half of the cases in Bangladesh go unrecognized. The country relies on sufficiently skilled medical staff to diagnose patients who present with symptoms, but the strong community infrastructure is also mobilized via the network of community health workers and organizations such as the Bangladeshi Rural Advancement Committees (BRACs).

TB is more common among poorer people, with proportion having the disease being about five times higher for the poorest quarter of the population than for the richest quarter. However, more than half of detected cases were from the richest quarter, with only 2% found in the poorest quarter. Prosperous people with TB are over 100 times as likely to be diagnosed as the poorest in society, but poorer people carry a much greater burden of disease.

Most cases of TB – drug-sensitive ones – need a two-month intensive phase of drug treatment followed by a four-month continuation phase. The full course needs to be completed to achieve a cure, but this can be done in the community. If this is done the chances of a cure are high; the success rate in Bangladesh is 92%. The outlook for MDR-TB is much worse: a two-year course of treatment, some of it in hospital, and a 68% chance of a cure. Tackling TB better will reduce the number of complex, hard-to-treat cases developing.

The costs of TB to a family are in the region of $150-250, the equivalent of an entire year's income for the poorest quarter of society. Treating TB effectively needs investment in diagnostics, drugs and community health services, plus social protection for patients to encourage their continuing treatment.

TB is a big problem for Bangladesh but one which can be tackled effectively. This would be a very good investment and would mainly benefit the poorest members of society.

White Paper Report by Anna Vassall

Tuberculosis (TB) is a serious public health problem in Bangladesh. Bangladesh ranks 6th globally in terms of the burden of TB on the population. According to the World Health Organisation, around 350,000 Bangladeshi's developed TB in 2013 and around 80,000 die from TB every year. Tuberculosis therefore accounts for just under 9% of the deaths in Bangladesh every year. Hence, every hour, nine people die of TB in Bangladesh, despite an effective treatment being available.

The economic case for sustained investment in tuberculosis (TB) control in Bangladesh is compelling. Put simply, TB treatment is low cost and effective, and this combination results in substantial economic return. Moreover, the delivery of high quality TB services can also prevent the spread of the disease to others and slow the emergence of multidrug- resistant TB (MDR-TB), a dangerous and costly form of TB. Investment in TB is also important from a poverty reduction perspective, where loss of earnings may force those with TB further into poverty in Bangladesh.

This short report presents the economic case for substantially increasing investment in TB control post 2015 in Bangladesh. The report first provides an overview of the targets for TB, the disease and the main TB control interventions. It then outlines the costs and benefits of investment the different TB control interventions in Bangladesh; assessing that TB control should be a priority investment in Bangladesh's post 2015 development agenda.

Our starting points for this presentation is the global post 2015 strategy, supported by the World Health Assembly. This declaration aims to end the global TB epidemic, with targets to reduce TB deaths by 90% and new TB cases by 80% by 2030, while ensuring no family is burdened with catastrophic expenses due to the disease.

TB control: what can be done?

In simple terms the disease of TB has two stages. The first is *latent TB* infection, when a person first becomes infected with TB. Of those infected, approximately 5% develop *active TB* disease (become TB cases) within 18 months, followed by a further 5% risk of developing active TB disease over a lifetime [6]. The risk of developing active TB increases substantially following HIV infection [7]. Active TB can be broadly divided into two types: TB which is drug- sensitive – responding well to a standard combination first line treatment; and, multi-drug resistant TB (MDR-TB) which is resistant to two or more drugs in the first line standard TB regimen.

The treatment of MDR-TB has poor outcomes, is complex and can be costly [8-10]. While MDR-TB can be spread and circulated among populations, its origins lie in the misuse, poor delivery and adherence of TB treatment [11]. Bangladesh is classified by the World Health Organisation (WHO) as having a high MDR-TB burden, with around 4700 cases notified every year.

Identifying those with active TB is complex. The symptoms of (active) pulmonary TB include cough, fever, night sweats and weight loss, many of which are similar to symptoms of common diseases. These complexities are part of the reason as why to date almost half of all cases of active TB go unrecognised in Bangladesh - considerably higher than the global average [15]. As with most TB programmes, Bangladesh relies primarily on 'passive case finding' to identify cases of active TB. This strategy is based on the

expectation that those with TB symptoms will present at health services for their symptoms, and that health professionals are sufficiently skilled to recognise and act on them.

In addition, Bangladesh relies on its strong community infrastructure; and community health workers (CHWs) may also be used to identify those at risk of TB [19]. For example the Bangladeshi Rural Advancement Committees (BRAC's) approach for TB diagnosis and treatment includes community level education and engagement. The programme works with different stakeholders of the community to engage them in efforts to identify patients, ensure treatment adherence, and reduce stigma. Stakeholders can include cured TB patients, local opinion and religious leaders, girls' guides and scouts, other NGO workers, village doctors, pharmacists and private practitioners. However, despite the considerable effort by the government and BRAC access to TB treatment in Bangladesh remains poor.

Bangladesh also faces a substantial challenge from the unequal access of the poor to TB services. In general the use of health services in Bangladesh is far better for higher income groups compared to low income groups. Despite the economic progress that Bangladesh has made in recent years, it still remains a very poor country, with some 20 percent of people in Bangladesh live in extreme poverty. Studies have shown that the prevalence of TB is substantially higher in the poorer compared to higher income groups in Bangladesh. The prevalence of is estimated to be 5 times higher in the poorest quarter of population to compared to the richest quarter. Yet despite this, among TB cases detected in Bangladesh, more than half of them were from richest half of the population with only 2% the found in the poorest quarter.

Once a person has been identified by health services as a case of suspected TB by a health worker in Bangladesh there are a number of different methods available to diagnose active TB. Smear microscopy is recommended by the WHO and is widely used In Bangladesh, often as a ‘point of care’, low cost, method of TB diagnosis. Those who have positive smear test, are described as having ‘smear positive’ TB. However, microscopy is far from a perfect test, and may miss substantial numbers of those with active TB [38, 39]. Since 2011, the WHO therefore recommends the Xpert MTB/RIF assay for widespread use in the diagnosis of TB. Xpert MTB/RIF increases chances that a case of TB can be diagnosed [40], however the cost per test is considerably higher than that of smear microscopy [41].

The diagnosis of MDR-TB provides additional challenges. Microscopy cannot identify new drug- resistant TB, but Xpert MTB/RIF can identify cases of rifampcin-resistant TB, a strong indication that a patient has MDR-TB. Culture based tests also are used to diagnose MDR-TB. However, cultures required substantial laboratory infrastructure and even very short gaps in between the patient going to be tested for TB and receiving the test result can lead to high levels of default during the diagnostic process [45].

The treatment of drug susceptible TB involves delivering a standard regimen of TB treatment usually for six months, divided into two phases, and intensive phase for two months and a four month continuation phase. During both phases treatment must be adhered to maximise treatment success and prevent drug resistance developing. In the last twenty years the WHO has recommended the Directly Observed Treatment Strategy (DOTS). Twenty years ago, most countries, including Bangladesh hospitalised TB patients to ensure treatment adherence, but this was expensive and did not result in high treatment success rates [46, 47]. Before 1993, in Bangladesh TB control was entirely limited to TB clinics and TB hospitals. Today it is delivered through a wide range of different ambulatory approaches, with high levels treatment monitoring by health workers. DOT delivery at BRAC clinics is almost exclusively community based, with treatment delivered by community based female volunteers known as shasthya shebikas (SS).

There are 86,000 of these volunteers in Bangladesh, with each one covering 250-300 households. Along with other responsibilities in maternal and child health the SS make daily visits to 10-20 households and when a patient is diagnosed with TB, the SS becomes responsible for DOT delivery for that patient. In government run clinics and some BRAC sites DOT may be facility based, where the patient must return to the health facility on a daily basis to receive DOT. Finally, BRAC and the government work together so that TB diagnosis and treatment initiation occurs at the government run site and patients are subsequently referred to BRAC sites for community based DOT.

With this good treatment monitoring, and high adherence, TB treatment is very successful, with over a 92% cure rate in Bangladesh. Unfortunately, the treatment of MDR-TB is far more complex than first-line treatment and still requires some hospitalisation. It can take 24 months or longer. It is also much less effective than first line treatment and the success rate of MDR-TB treatment in Bangladesh is around 68% [9, 10]. New shorter TB regimens are currently being developed and Bangladesh has a history of being an 'early adopter' of new TB control technologies, including new treatment regimens that may shorten the overall course of therapy, with a number of new trials currently on-going [4] [62-64].

Despite the high success of treatment, TB and its treatment can still cause poor households substantial economic loss. Officially TB treatment is provided from free, but studies in Bangladesh consistently show that having TB can be catastrophic to poor households. The costs of TB have been estimated at being somewhere between 11700 and 19500 taka to a household. Although in some settings direct travel costs are kept low by community treatment observation, lost earning and costs for nutritional support can be significant. Therefore the provision of social protection and cash transfers to TB patients in Bangladesh, may enhance the adherence to treatment, and help mitigate the impact having TB has for those who are already extremely poor [54] [55].

In summary, the above highlights the fact that strengthening TB control to achieve the post- 2015 targets requires investment in both TB diagnostics and drugs, and the health and community based systems that support the delivery of TB services; and the health care workforce in Bangladesh [51]. In order to identify TB cases, community services and outreach will need to be extended and the health system has to be strengthened to recognise symptomatic patients quickly, even if patients are visiting clinics for other diseases or symptoms.

Beyond this, the reach of the 'public' system may be insufficient, and investment may also be required in either broadening out to involve private providers [52, 53]. Strengthening diagnosis capability also requires substantial support to laboratories and all the systems that support them, including systems to transport samples and quality control services. For treatment, ensuring a high quality of adherence support remains essential, and the treatment of MDR-TB may require substantial infrastructure investment. Both the funding of drugs and ensuring sound drugs supply systems are key to TB control in Bangladesh, particularly for new MDR-TB drugs. Programmatic, management and information support to all these services need to have the capacity to enable and support these investments; and ensure that funding flows and is spent in an efficient manner [52, 53].

Costs and Benefits of reaching TB control targets in Bangladesh

Despite the fact that considerable effort needs to be made, TB control has high economic returns for every Taka invested. There have been two studies conducted examining the costs and health returns in Bangladesh. These studies have shown that it costs somewhere between 4680 – 15600 Taka to diagnose and treat a

patient with standard drugs in Bangladesh, depending on the mode of treatment delivery. While community based treatment is generally found to be cheaper, it may not be appropriate in all settings, so we estimate the average cost of first line treatment to be around 10140 Taka per person treated, with around 1560 Taka of this cost being spent on drugs.

There are no studies examining the costs of MDR-TB treatment in Bangladesh, but there have been studies recently conducted in Nepal that estimate that the treatment of those with MDR-TB can cost around 335,400 Taka per person. This method of treatment also uses a set of standard drugs, and relies on a mixture of some hospitalisation, but when the patient stops being infectious, allows for community or ambulatory treatment support.

Even though the costs above include all infrastructure and health care worker costs, it may cost considerably more to reach those in remote areas, and provide sound health system support. Studies have estimated that these costs may double the costs of currently providing treatment. So we also double the cost to around 20280 Taka and 670800 Taka for the identification, diagnosis and treatment of drug susceptible TB and MDR-TB respectively. We also add a cost of 7800 Taka for HIV counselling and testing, and treatment using a restricted number of TB drugs to prevent latent TB from becoming active TB in those persons living with HIV. This is a high end cost, given that the standard regimen for the treatment of latent TB is around 1560 Taka, but takes into account that currently there are low levels of HIV testing in those with TB in Bangladesh. To reach the global TB target by 2030, around 315,000 persons need to be treated currently in Bangladesh per year (a figure that may increase with population growth, but reduce if TB incidence falls over time). We therefore estimate the current total cost of the TB programme required to reach the targets to be an additional 6.8 billion Taka per year, although this may fall over time as TB incidence reduces. This is over and above the current TB programme of around 4.5 billion Taka.

This investment will give anyone in Bangladesh who develops TB around 19 additional years of life on average, based on the fact that the average age to contract TB in Bangladesh is around 45 years, and the life expectancy in Bangladesh is currently around 70 years – and including an adjustment for the fact that some with TB will self-cure. MDR-TB is assumed to have lower rate of return given that treatment is less effective, at around 13.5 years of life gained. Finally, treating TB does not just benefit the patient, but also prevents transmission, conservatively reaching and treating one person with TB, will prevent at least one more case of TB. In total, if scaled up to levels to achieve the TB targets the TB programme in Bangladesh will produce around 2.8 million additional years of life for the annual investment described above.

We value the life years saved using the recommended methods of using an economic value of 78,000 Taka or 390,000 Taka. Applying this value to life years saved describe above, we find (see table below) that the economic return per Taka spent ranges from around 29 to over 162 Taka, making this a sound investment post -2015.

		Benefits (Taka millions)				Benefit for Every Taka Spent			
		3%		5%		3%		5%	
Target	Costs (Taka millions)	YLL L	YLL H	DALY L	DALY H	DALY L	DALY H	DALY L	DALY H
Reduce TB deaths by 90%	$6,817	221841	1109207	197532	987661	**$32.54**	**$162.71**	**$28.98**	**$144.88**

We conclude that the economic case for TB control is strong. Not only is TB control a sound investment, its benefits will primarily accrue to the very poorest. TB control continues to be chronically under-funded in Bangladesh, yet the costs of addressing TB are not substantial compared to other development and health investments. The economic case for strengthening the health systems and services to support TB control presented here is therefore one of the most convincing in the area of public health today – and TB control should be a core part of the post-2015 development effort in Bangladesh.

Tuberculosis control Programme Bangladesh

Dr. Shayla Islam, Programme Manager, BRAC

GLOBAL TB Scenario

Approximately 9.0 million were notified as new TB cases in 2013

1.5 million deaths (1.1 million among HIV-negative people and 0.4 million among HIV-positive people) occurred as a result of TB

22 HBCs that have been given highest priority since 2000 accounted for 82% of all estimated incident cases worldwide

Most (56%) of the estimated number of TB cases in 2013 occurred in Asia

Tuberculosis Burden in Bangladesh

WHO declared TB as a emerging Public Health Problem in 1993

Estimates of TB burden - 2013

Incidence rate (all TB cases) 224/100,000 (199-253)

Prevalence rate (all TB cases) 402/100,000 (210-656)

Mortality rate 51/100,000 (33-69)

Proportion of MDR-TB

New cases 1.4% previously treated cases 29%

National Tuberculosis Control Programme, Bangladesh

Goal

To reduce morbidity, mortality and transmission of TB until it is no longer a public health problem

Objectives

To sustain the global targets of achieving at least 70% case detection and 85% treatment success rate among smear-positive TB cases under DOTS for the country as a whole

Halve the TB death and TB prevalence rates and to have halted and 'begun to reverse the incidence' as stated under target 6.c, Goal 6 of the MDGs set for 2015

To achieve universal access to quality TB care for all TB patients

Significance of Programme

High diseases burden of the country	• Bangladesh ranks 7th among 22 high TB burden countries
Gaps in service delivery	• Inadequate human resources in government setting • Inadequate of Community engagement and linkage to services • Inaccessible health care services in hard to reach areas
Creation of demand in the community	• Growing demand to engage all stakeholders in health service delivery • Government's commitment in reducing disease burden

Barriers to Universal Access of TB Care

Economic barriers	• Transportation cost • Investigation costs • Wage loss
Geographical barriers	• Distance to TB diagnosis and treatment facilities • Heard-to-reach, remote and slums
Socio-cultural barriers	• Marginalized/vulnerable population • Stigma, discrimination and lack of knowledge on TB
Health System barriers	• Poor adherence to treatment and unfavorable treatment outcomes • Inadequate diagnostic facilities for smear negative, extra-pulmonary and DR TB

Effects of Barriers in TB control

Delay in care seeking >> Delay in diagnosis >> Delay in treatment initiation >> Poor treatment adherence >> Poor treatment outcome >> Progression of the disease

Importance of TB Treatment

Bangladesh is one of the most densely populated countries in the world with more than 157 million people sharing 147,570 km sq area

32% people are living under the poverty line

Spread of tuberculosis is facilitated by several factors like overcrowding, under nutrition and presence of other medical problems diabetes mellitus, HIV co-infection

Bangladesh has achieved high case detection and treatment success of smear positive cases through DOTS strategy since 1993

Issues relating case diagnosis of smear negative, extra pulmonary and child TB is still low

Community Based TB care: BRAC Model

Community health workers (CHW) receives a basic training after selection and refresher training every month

They disseminate TB knowledge during household visits and health education forum

CHWs identify and refer TB presumptive

Sputum examined at NTP designated laboratories

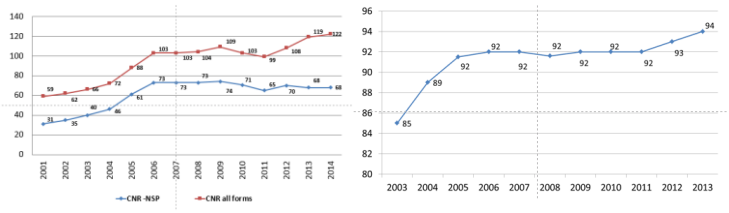
CHWs ensure DOT and sputum follow-up test

BRAC staff organize outreach sputum collection center in hard to reach and slum areas

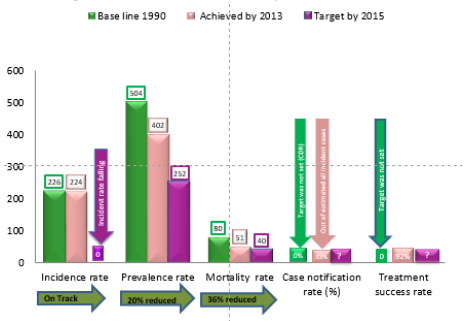
CHW receives Tk. 500 (USD 6.4) as incentive for treating each patient

Poor presumptive cases (smear negative, EP and child TB) get financial support for diagnostic purpose

Case Notification/100,000 population(2001-2014)



TB Progress Towards MDG by 2015



Treatment Success Rate of NSP(%)

Issues Affecting TB Treatment in Bangladesh

Malnutrition is associated with progression to active TB disease

Tobacco use is also associated with an increased risk of latent TB infection (LTBI), clinical disease and TB mortality

Emerging threat of NCDs like diabetes mellitus(9.2/100 population) and other medical disease such as HIV

Proportion of the population living below the poverty line is very high in Bangladesh which have impact on the unhealthy social factors such as overcrowding, low education and poor illness behavior that predispose to TB

Overall 20 % health workforce position was vacant Under DHGS in 2013

Limited funding opportunity to sustain current programme

Cost of TB Treatment

The cost per patient treated for drug-susceptible TB in 2013 fell into the range of US$ 100−US$ 500 in most high burden TB countries

In Bangladesh community based approach is more cost effective, cost per patient cured was US$ 64 in BRAC area compare to US$ 96 in non-BRAC area

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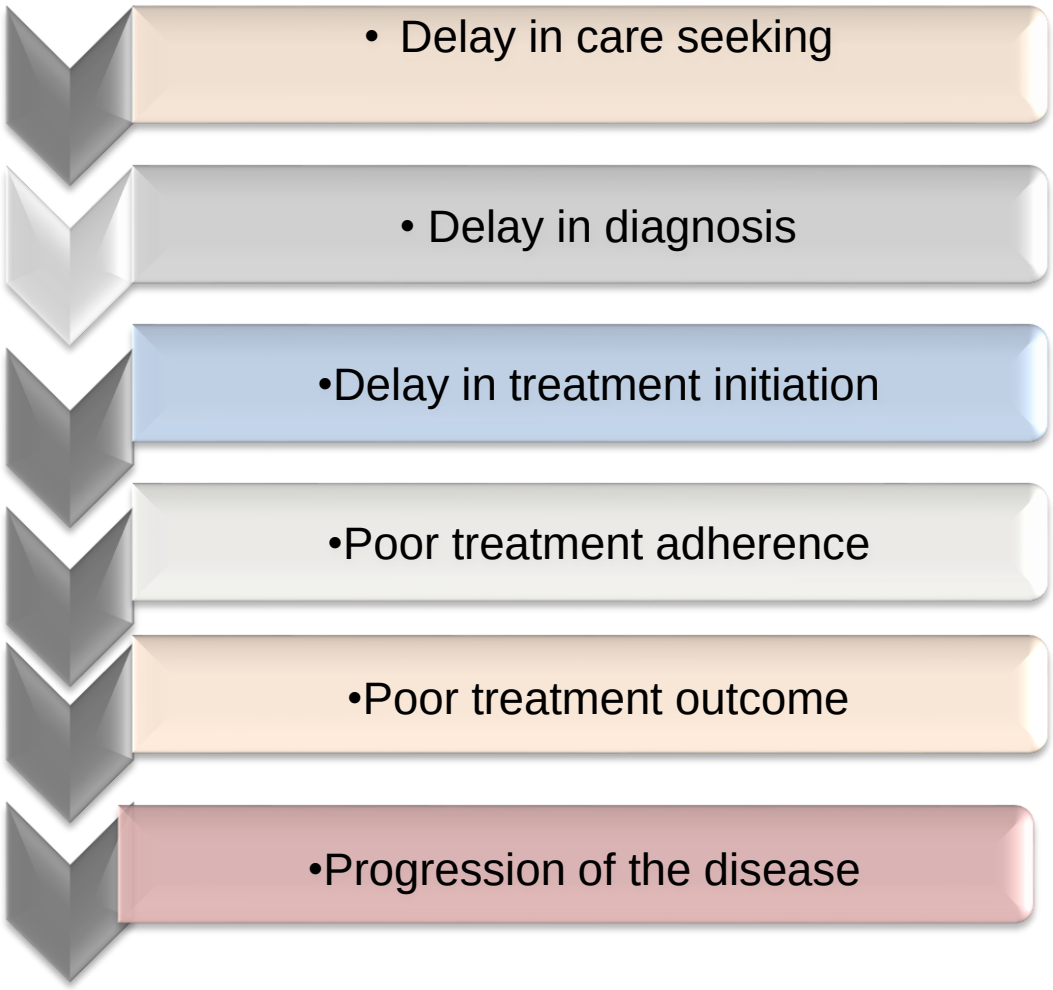

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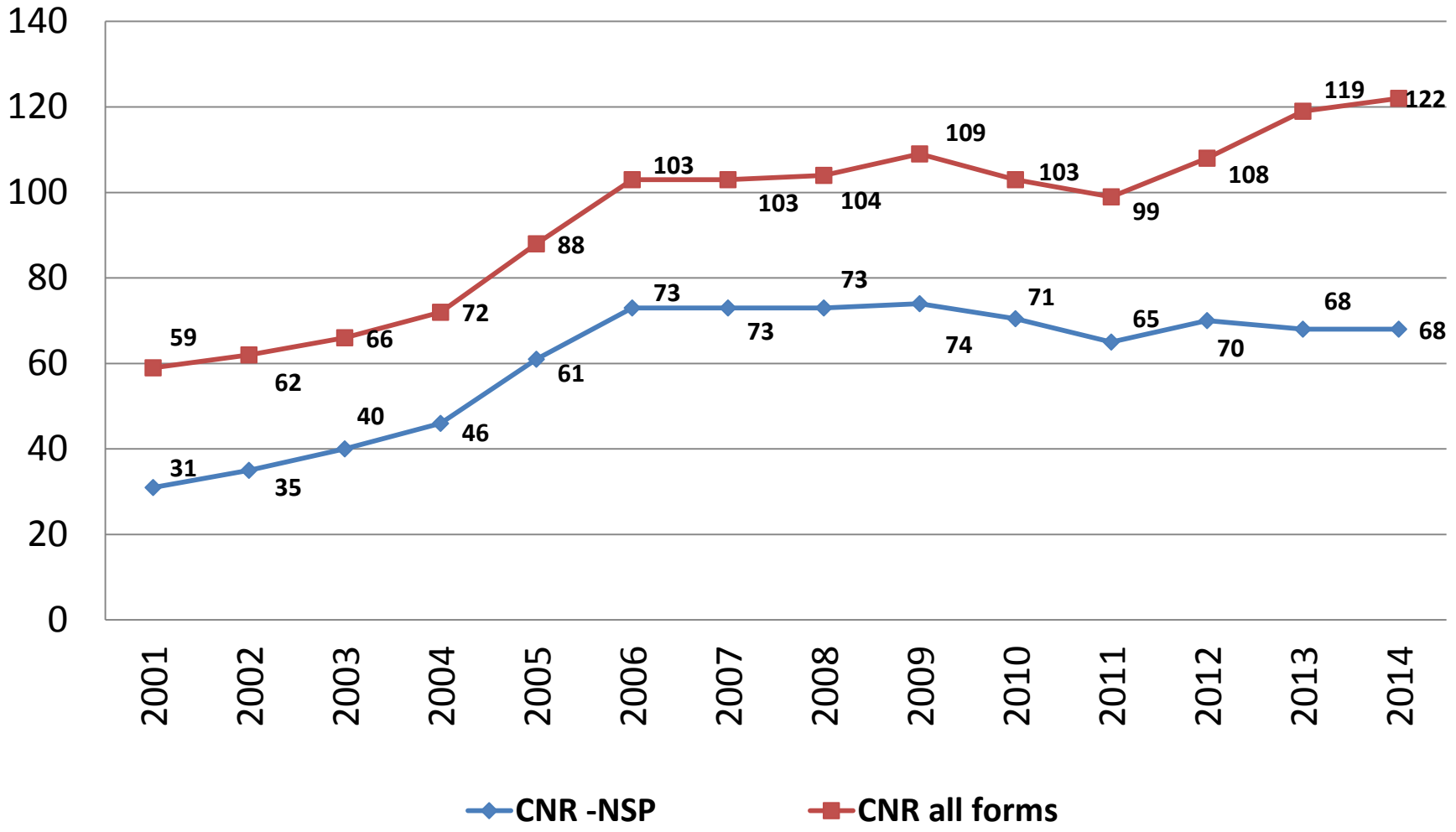

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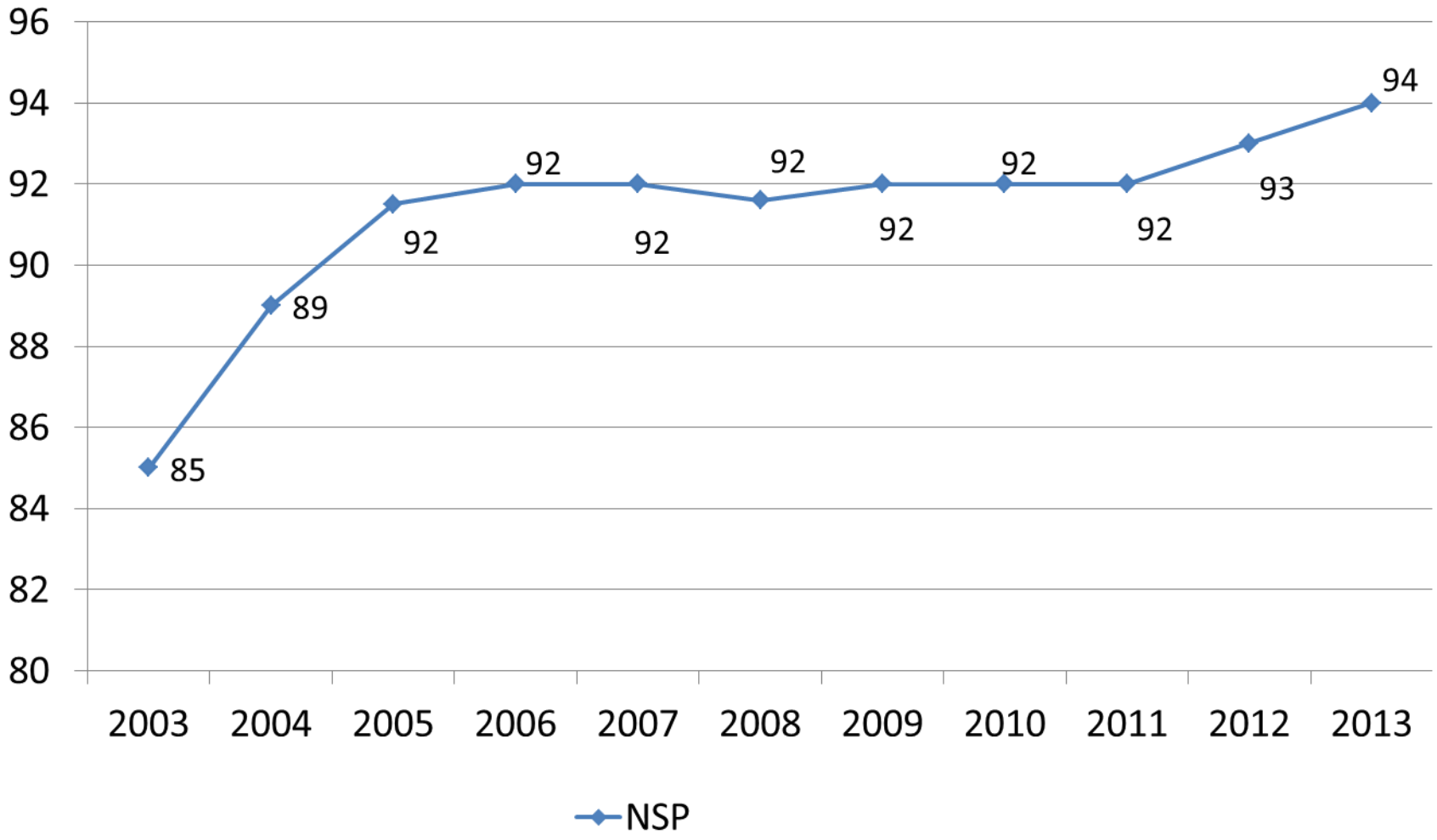

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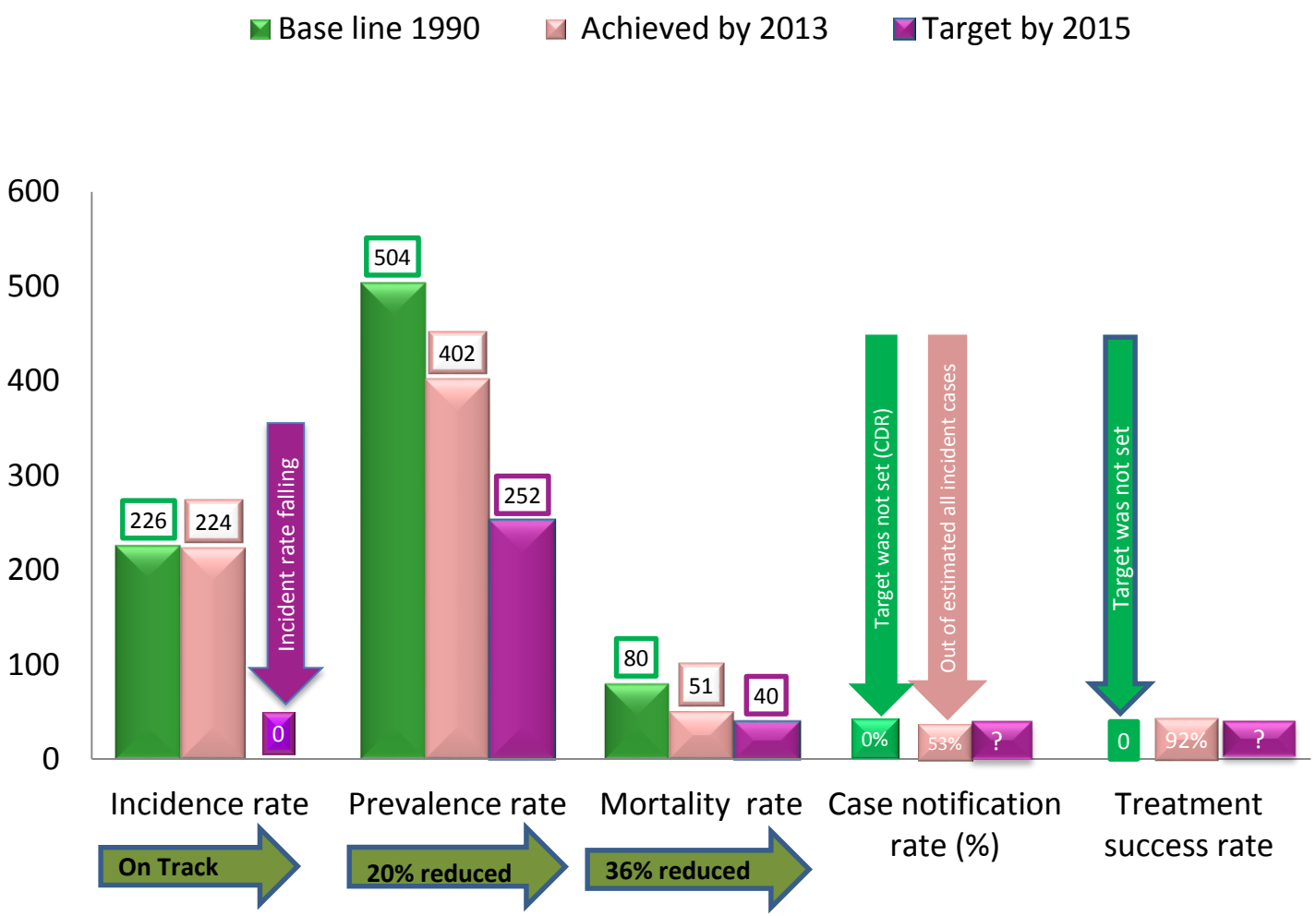

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- In Bangladesh community based approach is more cost effective, cost per patient cured was US$ 64 in BRAC area compare to US$ 96 in non-BRAC area

Way Forward

- Intensified research and innovation
- Improved community, civil society and private sector engagement
- Policy level advocacy to improved political commitment
- Innovation in program with prioritization of socio economic situation, HIV, Under nutrition and other risk factor associated with TB
- Systematic screenings for high risk populations
- Regulatory frame work to ensure mandatory case notification, infection control and rational use of quality assured drug