

The Investment Case for Non-communicable Disease Prevention and Control in Barbados

**Ministry of Health, Barbados
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EXECUTIVE SUMMARY

Over the 15 year period of the Sustainable Development Goals (SDGs), the incidence of non-communicable disease (NCDs) in Barbados is expected to steadily rise. Out of island population of 270,000 people, 49,000 people (18%) are currently on treatment for hypertension, with 1,000 new cases of ischemic heart disease (IHD) and stroke hospitalised each year. IHD, diabetes and stroke are the top three causes of death. Scaled up investment in NCD prevention and treatment is needed to stop the significant health and economic losses associated with NCDs in Barbados.

Current estimates indicate that Barbados is spending \$BBD 64 million, or approximately \$BBD 220 per capita, per year on cardiovascular disease and diabetes.¹ The economy is losing \$BBD 145 million per year due to missed work days, poor productivity, reduced workforce participation and the costs to business of replacing workers from cardiovascular disease and diabetes alone. Together these costs represent around 2.6% of projected GDP in 2015. By scaling up actions to prevent hypertension, diabetes, IHD and stroke, Barbados would increase workforce participation, productivity and GDP.

Estimates indicate that \$BBD 38 million (\$BBD 26 per capita per year) is required over the next 5 years to scale up a limited set of prevention and treatment activities for CVD. Much of this investment would have significant impact on preventing diabetes and cancer as well. Low coverage levels for pharmaceutical prevention of vascular events would be increased, along with the implementation of policy actions to lower tobacco use and salt intake in line with the list of cost-effective interventions identified by the *World Health Organization Global Action Plan for Non-Communicable Diseases (2013-2020)*.

Over the course of the 5 year scale up of treatment coverage, the implementation of the *Barbados Strategic Plan for the Prevention and Control of NCDs, 2015-2019*, would have a minimum return on investment (ROI) of 1.9. This ROI is strongly determined by interventions such as diabetes treatment which have high costs but low returns, as well as investment in preventive interventions for which the health outcomes are realised over a longer time period. Over the 15 year SDG period (2016-2030), scaling up prevention interventions, combined with diagnostic and treatment coverage over the next 5 years, and then holding coverage constant, would give a ROI of 4.1 (6.3 with health returns included), or a total of \$580 million Barbados dollars in increased productivity over this 15 year period, representing around 1% of annual GDP.

Analysis of individual interventions clearly shows that a move towards increased preventive actions will yield a greater ROI, based on the low cost of population-wide strategies, and greatest potential for change in workforce participation by preventing fatal and non-fatal events. Despite this, increasing funds must be available for treatment of CVD and diabetes until the results of prevention activities fully materialise.

¹ \$32 million USD

PROBLEM STATEMENT

Noncommunicable diseases (NCDs) are the leading cause of death in Barbados. In 2012, cardiovascular diseases (including ischemic heart disease, stroke and other circulatory causes) were responsible for 17.3% of all deaths in Barbados. There are 1,000 new cases of stroke and myocardial infarction every year, and 49,000 Bajans (18%) are on treatment for hypertension. Fully 4 in 5 women and 2 in 3 men are overweight, and over 50% of women are obese.

The burden of NCDs goes beyond direct healthcare costs. Compared to infectious diseases, NCDs are more likely to reduce productivity at a macro-economic level through interrupted ability to fully participate in the labour force and the subsequent impacts on the individual, their caretakers, and the state.

As the country continues to develop its NCD agenda, and moves from a traditional treatment-based approach to targeting of risk-factors for prevention of disease, analysis of the potential economic gains associated with each policy option is important to prioritize options and make a case for increased resources for NCD prevention and treatment.

SITUATION ANALYSIS

At the macro-economic level, there are both direct and indirect costs (such as lost productivity and workforce participation) associated with the NCD burden. When it comes to NCDs, indirect costs are larger than direct costs as NCDs often cause disabilities that impact self-care and workforce participation, thus placing a burden on caretakers as well as on country-level productivity.

National Health Account data at the disease sub-account level is not available for Barbados. Assuming consistency with those countries which have reported NCD expenditure (all with similar high burden attributed to NCDs), 17% of government expenditure on health would be attributable to NCDs. For 2015, this is estimated at \$BBD 64 million (\$32 million USD).

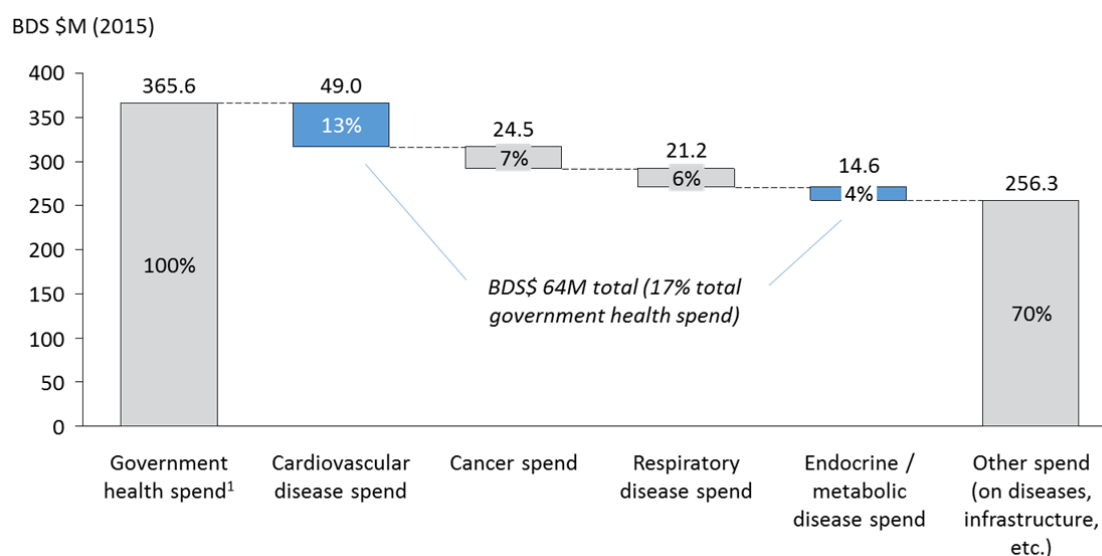


Figure 1: Government expenditure on Health, Barbados 2015

Indirect economic costs associated with cardiovascular disease and diabetes accumulate due to reduced labour force participation, increased absenteeism and increased presenteeism. For 2015,

this is estimated to be \$BBD 146 million (\$73 million USD). Two thirds of these costs are associated with presenteeism in those with hypertension and diabetes (Figure 2).²

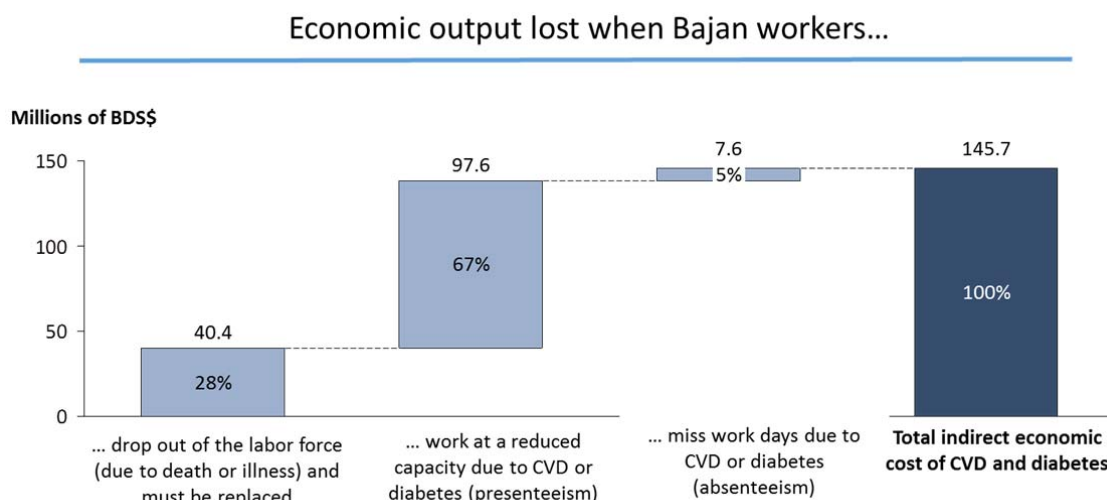


Figure 2: Current economic burden attributed to CVD and diabetes in Barbados, 2015

SOLUTION OPTIONS

The current status of NCD prevention and control in Barbados focuses on a ‘medical model’ of in - and out-patient treatment of people following CVD events, or on those with known risk factors (hypertension, diabetes). There is strong support within the Ministry of Health for a paradigm shift towards prevention of diabetes and CVD through control of risk factors, including physical inactivity, poor diet, tobacco use and harmful use of alcohol.

Due to the multifaceted nature of the causes and determinants of NCDs, solutions must be comprehensive and multisectoral. Along with action to scale up pharmaceutical treatment and secondary prevention activities, Barbados will need improved national government awareness and coordinated response, as well as from industry, academic institutions, health professionals, nongovernmental organizations (NGOs), financing agencies, patients’ organizations and the general public.

Table 1 lists options to address the growing NCD burden in Barbados. Whilst other policy options are available, the capacity to calculate their ROI was not available at the time of undertaking the analysis. Some important examples are trans-fat reduction, salt and sugar consumption policies, for which either baseline data is not available (trans-fat and sugar) or the capacity to effectively identify the health outcomes of a policy was not available (salt). For cancer treatment and physical activity interventions, impact models were not available to assess health outcomes. As data become available these deficits in the current ROI model can be addressed.

COST-BENEFIT ANALYSIS

The financial resources required to implement the prevention and primary care activities in the *Barbados Strategic Plan for the Prevention and Control of NCDs, 2015-2019* are \$BBD 56 million in

² The working age range in Barbados is 15-64 – the model only addresses this age range. NB. Findings regarding costs of presenteeism must not lead to institutionalised and hidden discrimination in the workplace. Improved codes of conduct and watchdog mechanisms may be needed as a deterrent.

2015, increasing to \$BBD 97 million in 2019. These costs are dominated by the drug and supply costs required for pharmaceutical prevention of CVD and diabetes treatment (Figure 3).

Table 1: Interventions included as policy options for CVD prevention and control in line with the WHO-NCD Global Action Plan

Tobacco Control
Package warnings
Advertising bans
Cessation programmes
CVD
Combination drug therapy for those at 30% or greater risk of CVD event over the coming 10 years
Drug therapy for those with SBP >160 mmHG, but total CVD risk <30%
Drug therapy for those with total cholesterol >8 mmol/l, but total CVD risk <30%
Aspirin post-acute stroke
Combination drug therapy for those with IHD
Combination drug therapy for those with Stroke
Diabetes
Standard Glycaemic Control
Intensive Glycaemic Control

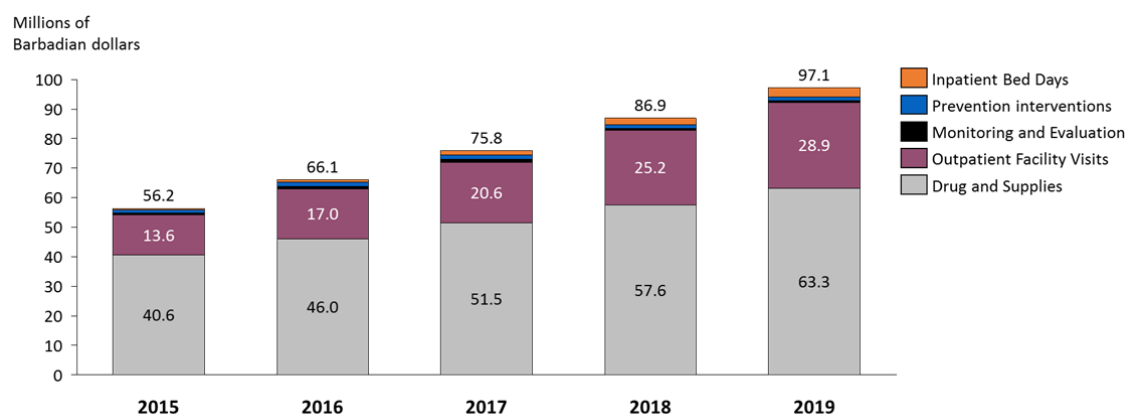


Figure 3: Costs of scaling up prevention and control of NCDs in Barbados, 2015-2019

It is estimated an additional 73,000 man hours is required in 2015, increasing to 127,000 additional man hours in 2019 to deliver the *Barbados Strategic Plan for the Prevention and Control of NCDs, 2015-2019*. This does not include the requirements for two additional full time equivalent (FTE) staff at the national administration level to implement additional NCD activities.

Economic ROI due to increased workforce participation, reduced absenteeism and presenteeism and reduced replacement costs are shown in Table 2. ROI is shown for both the 5 year period of the *Strategic Plan*, and the 15 year SDG period through to 2030. Avoided mortality is the greatest contributor to the GDP gains, which reach \$BBD 17 million in 2019, and \$414 million in 2030 due to

this selected set of interventions. The total predicted GDP gain is \$580 million Barbados dollars over the 15 year period, or 1% of annual GDP.

Table 2. Returns on investment for each BBD\$ invested for selected policy actions in the Barbados Strategic Plan for the Prevention and Control of NCDs, 2015-2019, and for the SDG period to 2030.

	ROI - 5 year Strategic Plan		ROI - SDG period	
	In Net Present Value BBD\$ for total investment		In Net Present Value BBD\$ for total investment	
	GDP only	GDP + health returns value ³	GDP only	GDP + health returns value
Tobacco Control				
Package warnings	7	10	38	57
Advertising bans	7	10	26	38
Cessation programmes	4	5	11	16
CVD				
Combination drug therapy for those at 30% or greater risk of CVD event over the coming 10 years	3	6	15.5	23.3
Drug therapy for those with SBP >160 mmHg, but total CVD risk <30%	0.3	0.6	0.7	1.5
Drug therapy for those with total cholesterol >8 mmol/l, but total CVD risk <30%	1.0	2	1.9	4.3
Aspirin post-acute stroke	7	8	15.5	17.8
Combination drug therapy for those with IHD	10	11	31.0	35.5
Combination drug therapy for those with stroke	18	20	37.5	42.9
Diabetes				
Standard Glycaemic Control	0.03	0.2	0.3	1.0
Intensive Glycaemic Control	0.1	0.7	1.1	3.4

Preventive interventions have a greater return on investment than treatment options for those who already have CVD. Returns on investment for diabetes treatment are low, due to the high cost of treatment and low potential to increase labour force participation. For the preventive interventions, the ROI continue to grow beyond the current 5 year Strategic Plan due to the long term nature of the health outcomes.

³ It is common when estimating the benefits of improved health to put a value on being alive, based on either the value of a life or the value of a year of life. Health benefits are thus non-market-valued health benefits, i.e. 'intrinsic' health benefits like longevity and health-related quality of life. Consistent with the approach used by the *Commission on Investing in Health* and in the *Inclusive Wealth Report's* national accounts for health capital, estimated longevity benefits were valued by applying an estimate of price deriving from data on wage differentials found between occupations of varying mortality risk.

CONCLUSIONS/RECOMMENDATIONS

Returns on investment vary across the range of interventions included in the analysis, due to the effectiveness of the intervention and the costs of the interventions. For some interventions, such as combination drug therapy for CVD, the full impact is yet to be seen in the 5 year Strategic Plan, thus looking to the longer-term SDG period provides important information when deciding on investment strategies.

It is clear from the analysis that a move towards increased preventive actions will yield a greater ROI, based on the low cost of population wide strategies, and greatest potential for change in work force participation by preventing fatal and non-fatal events. Despite this, funds must still be available for treatment of CVD and diabetes until the results of prevention activities begin to become apparent.

To operationalize the interventions suggested within this analysis;

1. The Barbados MOH needs to identify the distribution of costs and benefits across the whole of government and identify key financial and operational partnerships, particularly with education, labour/social affairs, commerce, town planning, youth and sports, and agriculture.
2. The Ministry of Health should work to centralize data on NCDs, scale up public education campaigns on NCDs, utilize social marketing approaches to reach targeted populations, and strengthen NCD response human resource capacity, especially in nutrition functions such as policy, surveillance, and audit, and in obesity and tobacco control programme areas.
3. To strengthen the 'whole of government' and 'whole of society' approaches, outside of the MOH, the private sector should be encouraged to review and scale up workplace wellness programmes that are proven to have positive impact on the health of Barbados (for example, the Lenox Presod Pharma Wellness). The various methods and benefits of the programmes can be assessed for public sector adaptation and scale out.
4. In regard to alcohol policy, delays over breathalyzer introduction should be minimised. Legislation is drafted and to be submitted under the new Traffic Act.
5. Civil society should be encouraged to scale up community based screening, taking advantage of grassroots associations unique to Barbados (such as the Diabetes Association). Continued advocacy and sensitization for NCD prevention and control through various social media, especially with young people, needs to be strengthened.
6. Within the public sector, the Ministry of Education should continue to scale up Health Promoting Schools,⁴ implementing policies that improve the health of school-aged children (including the elimination of soda machines, make fresh drinking water available, regulating the quality of food and beverages sold in and around schools and controlling advertising of food and beverages aimed at children/youth, periodical review of the nutrient contents of school feeding programmes, enhancing the home economics curriculum and in-school functions, and ensuring that curricula include adequate physical activity).

⁴ Reported institutionalised behaviours and constraints include: (a) schools are replete with tuck shops and unrestricted fund raising activities (particularly primary schools) that sell unhealthy foods with few healthy options (b) canteens cannot cope with ovens to cook fresh food (c) procurement of local food supplies is a problem (d) limited human resources in the education sector to implement and monitor school based wellbeing or nutrition programmes; (e) many girls actively shun physical education classes; (f) school meals are 'stigmatised'.

7. The Ministry of Agriculture should promote fruit and vegetable intake as well as improving supply and demand chains for better accessibility, availability and affordability, especially for those enrolled in social assistance programmes.⁵
8. Implement the National Childhood Obesity Plan – overall returns will be greatest in the medium to long term, balancing against shorter term outlays.
9. Proceed with passing of legislation for package warnings for tobacco and accelerated implementation of high impact, demand reducing articles of the Framework Convention on Tobacco Control (FCTC).
10. The Ministry of Health must maintain leadership in this area, including data collection and communication, to better articulate the financing gap for policy and interventions and aggressively identify sources. The costs of inaction are too great to sustain.

⁵ Vouchers for the national food basket could connect with informal markets and local producers as well as, or instead of, formal commercial outlets, potentially diversifying consumption options, stimulating local production and realizing local multiplier effects.