Chronic Disease Policy in Barbados

Analysis and Evaluation of Policy Initiatives

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Glossary

BP	Blood Pressure
BPS	Barbados Pharmaceutical Services
BNR	Barbados National Registry
CARICOM	Caribbean Community
CDRC	Chronic Disease Research Centre
CEO	Chief Executive Officer
CMO	Chief Medical Officer
DM	Diabetes Mellitus
FCTC	Framework Convention on Tobacco Control
HotN	Health of the Nation study
HIS	Health Information System
MOE	Ministry of Education
MOH	Ministry of Health
NCDs	(Chronic) Non-Communicable Diseases
NGO	Non-Governmental Organisation
PA	Physical Activity
PAHO	Pan-American Health Organization
POS	Port of Spain Declaration
QEH	Queen Elizabeth Hospital
SMOH	Senior Medical Officer of Health
UN	United Nations
UNHLM	United Nations High Level Meeting
WHO	World Health Organization

Executive Summary

Background

The Port of Spain Declaration, signed on 15th of September 2007 in Port of Spain, Trinidad and Tobago, by the Heads of Government of the Caribbean Community (CARICOM) outlines five action areas to Chronic Non-Communicable Diseases (NCDs) in the region: risk factor reduction; integrated disease management; surveillance; public policy and advocacy; and programme management. The government response to NCDs in Barbados pre-dated the Port of Spain Declaration by several years, and current local and regional indicators suggest that Barbados has made the greatest progress in comparison to other Caribbean islands.

Aim

To document the progress made in government-led policy in Barbados to prevent and control chronic non-communicable diseases (NCDs), understand the basis of that progress, and determine what evidence exists for its impact on risk factors and disease outcomes.

Methods

The study used mixed methods, including a document review, semi-structured key informant interviews, and the identification and a review of available quantitative data. We chose as our frame of reference to examine policy developments largely from 2000 onwards since initial examination suggested that recent NCD policy initiatives gained momentum at the start of this century.

Document review: Documents were identified by the study team and following advice from our key informants. Each document was analysed for its content in terms of policy actions on the following 7 areas: control of four risk factors – tobacco exposure, unhealthy diet, physical inactivity, alcohol abuse; advocacy and health promotion; treatment of those with NCDs and at risk; and surveillance. In addition, documents were examined for any commitments to establishing structures or processes that are generically relevant to NCD prevention and control, such as the establishment of an NCD commission and the drafting of an NCD communications plan.

Key informant interviews: 25 semi-structured interviews were conducted to elicit each key informant's perspective, knowledge and insight on current government-led NCD policy initiatives. 11 key informants from the Ministry of Health (MOH) were interviewed to provide a narrative on current government-led NCD policy content, in particular the process of formulating those, and viewpoints and experiences on the current state of implementation of policies. Interviews with 14 key informants not directly involved in MOH-led NCD policy formulation were used to provide an outsider perspective on this process and content, as these were informants who are and have been involved in the multi-sectoral effort of implementation.

Quantitative data sources: Data on outcomes, which refer to risk factors, disease burden and coverage by recommended health care interventions, were identified in three ways: a comprehensive literature search; PAHO, WHO and Global Burden of Disease data were searched; and most importantly, recent and current initiatives on the surveillance of NCDs within Barbados were identified by key informants.

Key results

Process of policy formulation and implementation

NCD policy formulation and implementation has been achieved through a systematic process of documented strategic planning and commitment. Leading documents are the Strategic Plan for Health (2002-2012), the Strategy for the Prevention and Control of Chronic Non-Communicable Diseases (2004), the Healthy Hearts for Life CVD Task Force Report (2007) and the NCD Commission National Strategic Plan (2009-2012). Task forces such as the Task Force on the Development of Cardiovascular Services and the Task Force on Physical Activity & Exercise both initiated such strategy documents and were established to implement activities. The strategic planning also ensured the commitment to establish core NCD posts such as the post of Senior Medical Officer of Health (NCDs), Senior Health Promotion Officer and Health Promotion Officer in 2006 and the multi-sectoral NCD Commission in 2007. Legislative action most notably includes the ratification and enactment of the Framework Convention on Tobacco Control with a ban of smoking in public places, sale of tobacco products to minors and significant increase in excise duty to tobacco products. Further commitment included the contracting out and co-operation and subvention of NCD NGOs and other NCD related bodies. Examples are the agreement to set up the Barbados National Registry for Chronic NCDs (BNR) at the Chronic Disease Research Centre, contracting out cardiac rehabilitation to the Hearth & Stroke Foundation and the establishment of a specialist diabetes centre in collaboration with the Barbados Diabetes Foundation.

Analysis of the policy process with the Multiple Streams Framework found that leadership of policy entrepreneurs and political vision and commitment were reported as essential elements of current successes in formulating and implementing the NCD agenda forward in Barbados. This resulted in the establishment and on-going activities of the NCD Commission, MOH NCD posts and a wide range of programmes and initiatives. Future efforts aim to address the challenge of competing political priorities in sectors that were identified as essential for future activities and detracting overemphasis of NCDs as a 'health-only issue' and personal responsibility of the population.

Content of current policy

Significant NCD policy has taken place in a coordinated way driven by the MOH. These policies and activities cover risk factor reduction (most notably highlighted: the implementation of smoking ban, awareness raising of the risks of unhealthy diets and physical inactivity in the population), NCD treatment (most notably highlighted: provision of free access to drugs, provision of NCD specific clinics in the polyclinics, adoption of treatment guidelines, diabetes foot care programme, and movements towards a cardiac and stroke suite), and surveillance (most notably highlighted: the BNR). Several non-MOH key informants were unaware of the process and of many policy initiatives.

Lesson to be learned is the need to include and involve stakeholders in the NCD policy making process in an effort to get greater buy-in and action from them in an issue that requires a whole of society approach. Moreover, a continued effort towards monitoring and evaluation was flagged by all key informants, and would support the communication of policy activities.

Surveillance and outcomes

Clearly, there has been a great deal of work undertaken in Barbados over the past 20 years on the prevalence of risk factors for NCDs. Despite this, differences in methodology mean that it is not possible to accurately track trends over this time, although there are some broad patterns. However, Barbados is now in a strong position to monitor trends in diabetes, hypertension and associated risk factors, starting with the 2007 STEPS survey and followed by the 2011/13 Health of the Nation Study. Ideally these form the start of ongoing surveillance, at least once every five years, using comparable methods. In addition, the BNR is a resource that should enable the accurate tracking overtime of the incidence and case fatality of stroke, myocardial infarction and cancers. The BNR will also facilitate examining the adequacy of access to care and treatment coverage for these conditions. The value of the BNR as a surveillance tool will be enhanced by producing more timely data than has been the experience so far, with the most recent data available for stroke and myocardial infarction being two to three years old. The BNR started collecting data on incident cancers in 2010 and detailed reporting on these is keenly awaited.

Arguably, with the benefit of hindsight, many of the outcome targets identified in policy documents could have been better chosen. For example, in the documents of the 2002-2012 Strategic Plan for Health, and repeated in the NCD Commission 2009-2012 Strategy, a target is stated of: 'morbidity and mortality from diabetes, hypertension and cardiovascular disease reduced by 10% in those aged over 40 between 2002-2012'. While on the face of it this seems clear and relevant, it is not clear how it will be assessed. For example, how should 'morbidity' be operationalized; is this based on age adjusted rates, what data sources will be used? In addition, how realistic is a goal of a 10% reduction – specifically what interventions might be expected to deliver that? Similar questions could apply to other stated goals, such as to reduce the prevalence of overweight (in men) and obesity (in women) from 30 to 20% in five years. Such comments are perhaps unfair, given that hard lessons are being learned the world over on the difficulties of reversing trends in some NCDs and their risk factors. What is very positive is that a process exists, of which this report is part, to review outcomes against targets. In the future, outcomes and targets should be closely tied to surveillance and the availability of data. It should be clear what will be measured and how at the time the target is set.

Gap analysis

A gap analysis was undertaken to compare the current scope of NCD policy formulation and implementation with the 15 commitments of the Port of Spain Declaration (POS; 2007) and any additional priority indicators from the Strategic Plan of Action for the Prevention and Control of NCDs for Countries of the Caribbean Community 2011-2015. In the category commitment, policy and resources, all POS indicators (including NCD commission, budget and plan) have been achieved. Similarly, all FCTC criteria have been adopted. Several nutrition policy documents have been completed – for example *Nutritious and Healthy* Foods in *Schools* (2010). Legislative actions such as trade agreements for food security and for food labelling are not yet in place. Most indicators for physical activity (PA) have been fulfilled, such as mandatory PA in schools and workplace wellness

initiatives. All surveillance indicators are met, including the STEPS survey and minimum data set reporting. For treatment indicators the Chronic Care Model has only been planned in one primary care facility; there is no systematic, institutionalised training or auditing in NCD programme quality improvement. Against the regional Strategic Plan of Action (2011-2015) indicators, further policy achievements can be noted, such as current and planned studies to generate risk factor and burden of disease data to evaluate implementations and a freely accessible, and through generic drugs affordable drug formulary. The Strategic Plan also direct to future steps such as sustained multi-sectoral engagement, scaling up of evidence-based treatment and evaluation of on-going programmes and more legislative action across Government ministries.

Lessons Learned and Conclusions

Since the year 2000, the main time frame for the work of this report, much has been achieved within Barbados in formulating and implementing policy aimed at the prevention and control of NCDs. The following achievements and challenges summarise lessons learned from this process.

Achievements

- There is a very high level of awareness amongst policy makers, and indeed the general public, on the burden imposed by NCDs in Barbados. The inception of this awareness can be traced back to at least the early 1990s, and it is notable how many research papers on NCDs in Barbados have been published over the past 20 years. The establishment of the Chronic Disease Research Centre of the University of the West Indies in 1992 has undoubtedly played, and continues to play, an important role in raising awareness.
- Barbados has benefited from strong authoritative opinion leaders ('policy entrepreneurs') raising awareness on the impact of NCDs and suggesting policy solutions. These leaders have been found in Barbados and outside Barbados, most notably Sir George Alleyne.
- The combination of high level of awareness and effective policy entrepreneurs assisted in ensuring genuine political commitment and the formulation of strategic policy frameworks by MOH to address NCDs, notably in the 2002 to 2012 Strategic Plan for Health and the 2004 Strategy for the Prevention and Control of Chronic Non Communicable Diseases.
- In terms of documented policy the 2004 NCD Strategy can be seen as an inflection point that helped to change the level of commitment from Government by recommending the establishment of an NCD Commission, and the establishment of posts in MOH dedicated to addressing NCDs, including a Senior Health Promotion Officer, and Senior Medical Officer of Health. It is a measure of the political commitment within the Government that these posts were funded.
- From at least the 2002 Strategic Plan for Health, the need for a multi-sectoral response to the prevention of NCDs has been recognised, and this was evident in the composition of the NCD Commission which was convened in January 2007. Although, as noted below, achieving a genuine multi-sectoral response remains a challenge.
- There has been a longstanding commitment to surveillance of risk factors, as evidenced by MOH surveys conducted in 1992 and 2002, and more recently in the 2007 STEPS, the 2011/13 Health of the Nation Study, and the establishment of the BNR in 2008.

- On the treatment side, the Government remains committed to providing medication for NCDs free at the point of use.
- Most of the funding for the above has come from the Government of Barbados. However, support from in particular the European Development Fund (EDF) and the PAHO has proved highly valuable at key moments. For example, EDF funding enabled the establishment of the BNR.
- All the above is evidence of the recognition and commitment by policy makers that addressing NCDs is a long term process.

Challenges

- Although there is a commitment within the MOH policy documents to a multi-sectoral approach to NCD prevention, indicating the need to change environments to promote behavioural change, achieving a fully multi-sectoral approach remains a challenge. The strong impression from the stakeholder interviews was that implementing policy measures in other Government sectors, such as Education, Agriculture and Finance, to assist with NCD prevention is a low priority for them.
- One reason for the difficulties in achieving an effective multi-sectoral response is likely to be the way in which most stakeholders perceive the problem. They see the prevention of NCDs as largely an issue of personal responsibility e.g. that individuals need to learn to eat less and exercise more. While legislative, fiscal and environmental changes may support them in doing so, these are not seen as core preventive measures. This view was not shared by all, such as not by core individuals in MOH, but did include those within the health care system, some within MOH, some in the Health NGOs, and within other Ministries.
- While acknowledging that some policy statements are designed to provide an overarching framework within which more specific objectives are specified, it was the case that the majority of statements lacked clear objectives, resources and targets. Even where some targets are given, as summarised in the section on surveillance and outcomes, it is often not clear what exactly should or could be measured to know if they have been met.
- Related to the above point, surveillance has so far been of limited effectiveness, partly because of differences in the measurement of variables overtime, partly due to lack of timeliness in the availability of some data (e.g. mortality data and BNR), and partly because indicators and targets have not been clearly tied to surveillance.
- An issue that arose from the key informants in the Health NGOs is that while they acknowledge support from Government, with subventions to provide services, they also felt on the periphery and somewhat isolated from policy making in response to NCDs. It was noted by all NGO key informants that their position in this regard could be strengthened if the NGOs cooperated more, rather than seeing each other as competitors for limited resources. A specific suggestion was the creation of national forum for NGOs with an interest in NCDs.
- There are two policy areas that were identified as clear challenges, one by omission of policy statements and the other because of particular difficulties of implementation. The omission is policy on the prevention of harm from alcohol. It is perhaps too strong to claim that there is a 'blind spot' on this issue, but there is clear evidence from the majority of the stakeholders interviewed of a reluctance to address it. This is related to both the economic

role and social role that alcohol production and consumption is seen to have within Barbados, and indeed the wider Caribbean. The other policy area, where there are statements but implementation is seen to be particularly weak, is the integrated management of NCDs. It was felt, for example, that much more needs to be to promote the use of evidence based clinical guidelines, including improved and regular educational outreach for health carers and the monitoring and feedback of clinical process and outcome measures.

- Finally, the very effective roles played by 'local champions' or 'policy entrepreneurs' have been highlighted in several parts of this report. This was also seen as a potential weakness and threat to sustainability by many stakeholders who expressed the need for succession planning beyond the influence of these 'champions'.

Limitations

This study had several limitations in study design and scope. For the process and content evaluation our lens was narrowed by the focus on document review and key informant interviews. A wider perspective could be achieved by including a more extensive document review. The number of key informants was also limited by the timeframe and scope of this study. The 25 key informants purposefully sampled for this study were chosen for their core involvement and interest in NCD policy formulation and/or implementation, however, more sectors and organisations would have added further perspectives. Finally, we deliberately restricted this study to NCD policy formulation and implementation by the MOH, considering their wide range of policy activities and the limited timeframe of this research.

Conclusion

Conducting a document review and key informant interviews of government-led NCD policy in Barbados, this study outlined and analysed the processes through which policies on NCD prevention and control have been drafted, agreed and implemented, the current scope and content of NCD policy measures, and the conceptualization and awareness of government-led NCD policy across stakeholders, both within and outside the government. Reviewing available data sets, we also outlined the data that currently exist on the burden of NCDs, risk factors, treatment coverage and control and their trends. A gap analysis compared current NCD achievements with the POS commitments and the regional Strategic Plan of Action for the Prevention and Control of NCDs (2011-2015).

Background and rationale

On the 15th of September 2007 in Port of Spain, Trinidad and Tobago, the Heads of Government of the Caribbean Community (CARICOM) signed a 15 point declaration aimed at reducing the burden of Chronic Non-communicable Diseases (NCDs) (appendix 1). This is the Port of Spain Declaration "Uniting to Stop the Epidemic of Chronic Non communicable Diseases". The joint Pan American Health Organization (PAHO) and CARICOM 'Strategic Plan of Action for the Prevention and Control Non-Communicable Disease for countries of the Caribbean Community 2011-2015' [1] provided further guidance on how to operationalize and implement the declaration. It identified five priority action areas, with expected outcomes and indicators for each area. In brief, the five action areas are: risk factor reduction; integrated disease management; surveillance; public policy and advocacy; and programme management. Reports of progress obtained in 2010/11 from the NCD focal points of the Ministries of Health, indicate that, of all the CARICOM countries and territories, Barbados is among countries making the greatest progress[2 3]. In fact, as this report will show, the government response to NCDs in Barbados pre-dated the Port of Spain Declaration by several years.

The Port of Spain (POS) initiative and declaration was instrumental in promoting the United Nations High Level Meeting (UN HLM) on NCDs, held in September 2011[4-6]. The World Health Organization was charged by the UN HLM to recommend to all member states NCD targets, with guidance on how to how to meet them, and indicators through which to monitor their implementation. In May this year the World Health Assembly adopted the 'Global Action Plan for the Prevention and Control of Noncommunicable Diseases, 2013-2020'[7]. The plan provides 9 targets for 2025 and 25 indicators against which to monitor their attainment. Barbados has been intimately involved in WHO's response to the UN HLM, with, for example, Dr St John, Chief Medical Officer, Chairing the Executive Board until May this year.

It is in recognition of the progress made in Barbados in the prevention and control of NCDs that PAHO commissioned the work described here. It is hoped that the results of this case study will help to guide policy implementation in other parts of the region, as well as inform the on-going work in Barbados.

Aim and research questions

Aim: To document the progress made in government-led policy in Barbados to prevent and control chronic non-communicable diseases (NCDs), understand the basis of that progress, and determine what evidence exists for its impact on risk factors and disease outcomes.

This broad aim was operationalized by specifying the following research questions for the study:

1. What are the processes through which policies on NCD prevention and control have been drafted, agreed and implemented; and what has worked well, what less well and what are the possible reasons why?
2. What is the current scope and content of policy measures aimed at the population-wide reduction in unhealthy diet, harmful use of alcohol, physical inactivity, tobacco exposure and the integrated management of NCDs?
3. Is the conceptualization and awareness of government-led NCD policy consistent across stakeholders, both within and outside the government?
4. What data currently exist on the burden of NCDs, risk factors, treatment coverage and control and what have been their trends in Barbados to enable the impact of policy to be evaluated?
5. What are the gaps in the content of current policy and the ability to evaluate its impact and how might these be filled?

Methods

Study design

Working definition of 'Policy'

The subject matter of this study is government-led policy, what can also be called 'public policy'[8], for NCDs. A classic definition of public policy is 'anything a government chooses to do or not to do'[9], referring to all levels government[10]. The definition draws attention to the fact that 'policy' is much more than what is contained in 'policy documents' or legislation. The pragmatic definition of NCD public policies for the work reported here is also broad. It is adapted from Walt and colleagues[11]:

> *NCD public policies are broad statements made by government of goals, objectives and means in order to create a framework for activity directed at the prevention and control of NCDs. Such statements may be written or unwritten, explicit or implicit.*

Timeframe considered

The Port of Spain Declaration in 2007 is a key milestone in the Caribbean, the result of a decade of discussions on health priorities and policy in the region[2]. Policy around NCDs in Barbados was also being formulated before 2007, and we chose from 2000 onwards as our frame of reference to examine policy developments. As will be seen, this timeframe fitted well with perceived key policy initiatives addressing NCDs, in particularly the 2002-2012 Strategic Plan for Health, and the subsequent 2004 Strategic Plan for NCDs.

Analytical and theoretical frameworks

In planning this work, we drew on two complementary policy analysis frameworks. The main framework was that of Brownson and colleagues[12], the main headings of which are policy content, processes and outcomes. In addition, the framework of Walt and Gilson[13], the 'policy analysis triangle', was considered. At the centre of the triangle are 'actors' or stakeholders who have an interest in and seek to influence policy. The triangle also explicitly includes contextual factors within which policy is made, such as broader political, economic, social and cultural factors. Thus, when using the framework of Brownson, explicit consideration was given to the role of 'actors' and the influence contextual factors in the processes of policy formulation and implementation.

Finally, part of the aim of this work is to investigate reasons, and suggest hypotheses, for successes and difficulties in formulating and implementing policy. The causal theory for this was the Multiple Streams Theory[14]. This seeks to understand policy agenda setting and implementation by considering the three 'streams' of problem definition, policies and politics, and the roles of 'policy entrepreneurs' in helping to create and take advantage of 'policy windows' which occur when these three streams come together[14].

Data collection

Document review

Documents that were identified are listed in appendix 2. Each document was analysed for its content in terms of policy actions on the following seven areas: control of four risk factors – tobacco, diet, physical inactivity, alcohol; advocacy and health promotion; treatment of those living with or at risk for NCDs; and surveillance. In addition, documents were examined for any statements on establishing management structures, processes and funding commitments relevant to NCD prevention and control, such as the establishment of an NCD commission and the establishment of the Barbados National Registry (BNR). For actions under any of these areas the content of the document with respect to policy actors, targets and resources has been, as far as available, abstracted. A spreadsheet-based data abstraction form was created, into which policy statements, as defined above, were abstracted.

A form of framework analysis[15] was used to summarise and map the contents of all the documents reviewed against recommendations of both the 2011 PAHO/CARICOM Strategic Plan of Action on NCDs and the recently agreed WHO Action Plan[7]. This included identifying any possible inconsistencies between the documents. From this a 'gap analysis' against current PAHO/CARICOM/WHO recommendations was performed.

Key informant interviews

Objectives of the key informant interviews were to provide a narrative on current government-led NCD policy content, in particular the process of formulating those, and knowledge, insight and experiences on the current state of implementation of policies. Interviews with key informants not directly involved in government-led NCD policy formulation were used to provide an outsider perspective on this process and content, as these were informants who are and have been part of the multi-sectoral effort of implementation. Objectives therefore also included to determine the extent to which conceptualization and awareness of policy is consistent across key stakeholders; and to investigate from the perspectives of different stakeholders what has worked well, and what less well, in terms of drafting and implementing policy, and why.

Participants

Participants for the key informant interviews (N=25) were purposefully chosen for their involvement with NCD policy planning, implementation or evaluation in Barbados (within and outside the health sector), guided by the structure of and membership in the NCD commission. The natural initial contact points included the Chief Medical Officer, the MOH NCD focal point, and the Chair of the NCD Commission, who is a member of the study team and a co-author of this report. Additional key informants were identified through a stakeholder analysis and 'cascading' (i.e. suggestions arising from informants already interviewed).

Data collection

All semi-structured key informant interviews took place at a location convenient to the interviewees (for most, their place of work); interviews lasted 30-90 minutes and were voice recorded. The interview guide is given in appendix 3.

Data analysis

All interviews were digitally recorded and then transcribed verbatim. The technique of 'framework analysis', which is explicitly geared towards using qualitative data collection to inform policy and practice[15], was used to analyse the key informant interviews. After familiarisation with the data, a thematic analysis was undertaken to develop a coding scheme and a framework table developed to index all interview content (see appendix 4). The coding scheme analysis incorporated key aspects of the commonly used theoretical framework of the policy process: the Multiple Streams Framework[14]. This interpretive analysis aimed to explain successes and challenges in policy formulation through the concepts of problem stream, politics stream, policy stream and policy entrepreneurs. For the policy content section analysis was more descriptive than interpretive. The coding scheme was guided by, but not limited to, the policy recommendations discussed above: control of four risk factors – alcohol abuse, exposure to tobacco smoke, unhealthy diet, physical inactivity; advocacy and health promotion; treatment of those with NCDs and those at risk; and surveillance. Data presented was selected descriptively and inclusively to collect and present the consensus views as well as critical perspectives on the subject by key informants within and outside the Ministry of Health. The coding process was aided with the qualitative analysis software Dedoose (Version 4.5; www.dedoose.com) that enabled themes to be collated and compared across interviews. The data collection and reporting adheres to international guidelines on qualitative research (such as the Biomed Central review guidelines for qualitative research - http://www.biomedcentral.com/authors/rats). All quotes presented in the results section were selected when they provided an example of a common viewpoint, or if they provided unique information from a particular sector.

Finally, drawing on the data from the interviews and documents, a stakeholder analysis was undertaken as shown in figure 1A (appendix 5). This identifies the major interest groups within government, in civic society and the private sector. The stakeholder analysis seeks to define their current power and desire to influence NCD policy as narrated during interviews.

Table 1 - Key informant interviews

SECTOR (Selected leadership roles)	*NUMBER OF INTERVIEWS*
Ministry of Health (including Chief Medical Officer, Senior Medical Officer, Director of Barbados Drug Service, Chair of NCD Commission, QEH CEO, former Health Minister)	11
Other Government (including Senior Education Officer, Agriculture, Government Information Service)	3
Civil Society (including Director of CDRC, Director of BNR, President/Director/Chairman/CEO of Health NGOs; and representatives of Trade Union, Faith-based Organisation)	8
Private: Industry, Insurance, Private health provider	3
Total	*25*

Identification and collation of outcomes data

Data on outcomes, which refer to risk factors, disease burden and coverage by recommended health care interventions, were identified in four ways.

Firstly a detailed literature search was undertaken to identify published studies from Barbados on diabetes, hypertension, and their major risk factors. The literature search strategy is given in appendix 6. The databases searched were Medline (through Pubmed), Embase and the Virtual Health Library hosted by PAHO.

Secondly PAHO, WHO and Global Burden of Disease data on NCDs in Barbados were searched and the available data reviewed. Thirdly, any sources of data were identified that were referred to in the policy documents.

Finally, key informants identified recent and current NCD surveillance initiatives in Barbados.

Ethics and IRB approval

IRB approval was applied for and granted. The most important principle is that none of the key informants will be directly identified in this report or subsequent reports arising from this work. For this reason names of the key informants are not given, only the organisations or areas they represent. Before the report was finalised all key informants were given an opportunity (one week) to review and comment on the contents in which interview data is used. Amendments were made accordingly.

Results: Processes of policy formulation and implementation

Historic overview: driving the NCD agenda in Barbados

NCD policy initiatives in Barbados largely pre-date the regional Port of Spain Declaration in 2007. Policy makers and practitioners showed an early recognition of the high burden of NCD mortality and morbidity. While this report focuses on policy activities from 2000, Barbados-based NCD activities and studies are recorded even earlier (for greater detail on studies, see Surveillance and Outcomes).

These early efforts of Barbados to tackle NCDs led to the establishment of the National Commission for Chronic Non-Communicable Diseases (henceforth NCD Commission) in early 2007 as the first NCD commission with multi-sector involvement in the English-speaking Caribbean. Its remit had been defined and outlined in the Strategy for the Prevention and Control of Chronic Non-Communicable Diseases written by the Barbados Ministry of Health (MOH) in 2004. The same document planned for a Senior Medical Officer of Health for NCDs and a Health Promotion Unit with three staff as essential human resources necessary to plan and implement NCD policies outlined in the same document. These were established in 2006. Also the NCD Commission has a full time operational staff member based at the MOH since 2010. Both political parties when in government have taken the policy position to continue with the NCD Commission. The NCD Commission produced the Barbados National Strategic Plan, 2009-2012, for chronic diseases, and is currently finalizing the new Strategic Plan for 2013 - 2017.

Most of the NCD policy agenda during the period under review was funded by the Barbados Government. However, some initiatives had the financial support and seed funding from the European Development Fund (EDF). In particular, the Task Force on the Development of Cardiovascular Services was established with EDF funding and produced the Healthy Hearts for Life Report in 2007. EDF also provided the initial funding to establish the Barbados National Registry (BNR) for NCDs, in 2007 in cooperation with the MOH and the Chronic Disease Research Centre of the University of the West Indies. Data collection began in 2008 on Stroke, followed by Acute Myocardial Infarction in 2009 and Cancers in 2010. EDF also contributed to the new cardiac suite at the Queen Elizabeth Hospital. Other task forces funded through EDF were on accident and emergency care and elderly care. Finally, unrelated to the EDF, a stakeholder consultation was held in July 2010 to develop an implementation plan for use of the Innovative Care of Chronic Conditions Model in Barbados. A national multi-stakeholder consultation on NCDS leading up to the UNHLM was held in 2011.

The MOH also adopted a policy on contracting out of services in specific areas of NCD. Examples are the contracting out of Cardiac Disease and Stroke Rehabilitation to the Heart & Stroke Foundation (also training in Emergency Cardiac Care Services with placement of Automated External Defibrillators), contracting out of surveillance services to the CDRC (including the BNR and the Health of the Nation Study), and a Diabetes Specialist Centre under the guidance of the Barbados Diabetes Foundation. The MOH has also taken the definite position and decision to provide subventions to health NGOs, such as the Diabetes Association of Barbados and the Heart and Stroke Foundation. The MOH has also established an NCD Desk.

The Barbados NCD agenda greatly contributed to and influenced – as part of the organising committee – the NCD Summit Declaration (Appendix 1) from the CARICOM Heads of Government Summit on NCDs held in Port of Spain, Trinidad, in 2007 which was chaired by the Prime Minister of Barbados. Additionally, Barbados played an active part in the lead up to, and at the UNHLM in 2011, and these further strengthened the national mandate. Regionally, Barbados participated in and was a signatory to the Caribbean Cooperation in Health Initiatives, the Nassau Declaration of CARICOM Heads of Government (2001), the Caribbean Charter for Health Promotion (1993), Caribbean Commission on Health and Development Report (2006), Caribbean Regional Plan for Prevention and Control of NCDs and injuries (2008-2012), as well as the development of the CHRC guidelines for the management of diabetes (2006) and hypertension (2007). Internationally, the current Chief Medical Officer of Barbados Dr. St John has been very involved in consultation and drafting of World Health Organization's resolutions and the development of the global NCD action plans, indicators and targets. In particular, she chaired the Executive Board of the World Health Organization (2012-13), and is one of the members of the expert group convened by Assistant Director General Oleg Chestnov responsible for the cluster on NCDs.

In summary, NCD policy in Barbados has been informed and significantly influenced by a series of major initiatives led by the MOH and the NCD Commission as outlined below.

Timeline from 2000:

2003	Barbados National Strategic Plan for Health 2002 – 2012
2004	Strategy for the Prevention and Control of Chronic Non-Communicable Diseases
April 2005	International Consultation on Strategy for Prevention and control of Non-Communicable Diseases
November 2005	Framework Convention on Tobacco Control ratified and subsequently policy provisions of legislation to ban smoking in public places, legislation to inhibit sale of tobacco products to minors and significant increase in excise duty to tobacco products enacted
October 2006	Post of Senior Medical Officer of Health (NCDs), Senior Health Promotion Officer and Health Promotion Officer established
January 2007	Barbados NCD Commission established
January 2007	Report of the Task Force on the Development of Cardiovascular Services
2007	Agreement to set up the Barbados National Registry for Chronic NCDs (BNR)
2007	Contributions made in the lead up to Port of Spain Summit
September 2007	Signatory to Port of Spain Declaration with commitment to enact provisions of same
2008	First Caribbean Wellness Day celebrations (now and annual event)
2008	NCD Commission Strategic Plan 2009 – 2012
2009	Step by Step Programme for diabetic foot launched
2009	Food Based Dietary Guidelines, first published by the National Nutrition Centre
2009	Guidelines for Healthy and Nutritious Foods in Schools
September 2009	National Task Force on Physical Activity & Exercise inaugurated
2010	Legislation banning smoking in public places

2011	Active participation in lead up to and participation in UNHLM and signatory to political declaration arising out of same and agreement to implement
2011	Special Envoy for NCDs named
2011	Medical Registration Act 2010 implemented, requiring annual re-registration of physicians and requirement for Continuing Medical Education attendance.
2012	Active participation in WHO activities post UN High Level Meeting and agreement to outcomes of meeting targets
2013	Physical activity guidelines published by MOH at the time of finalising this report
2013	NCD Commission Strategic Plan 2013 – 2017 currently being finalised

Multiple Streams Framework for understanding policy process

Analysing the processes through which policies on NCD prevention and control have been drafted, agreed and implemented, we also reviewed documents and key informant statements for facilitators and barriers to the NCD policy process in Barbados. To do so we used the Multiple Streams Framework which was developed to understand policies as they develop in the context of competing priorities. We suggest contextualising NCD policy in Barbados within a growing national NCD burden (problem) that requires comprehensive, locally funded, multi-sectorial policy response (policies) but is challenged by competing national political interests (politics). Key in this framework are so-called policy entrepreneurs who are able to pull together the problem stream, politics stream and policy stream to achieve policy outcomes[14].

Problem stream

> *"I think there has been a national vision which has sort of like continued along which is in support of the Port of Spain Declaration, but not necessarily guided by it. […] This national vision had sort of taken root before 2007 […] we've moved at our own pace." [1, Civil Society/University]*

Many key policy documents on NCDs in Barbados have been developed prior to the wider regional effort framed by the Port of Spain Declaration in 2007. Key informants highlighted this 'national vision' and recognition of the importance of NCD prevention and control. Key informants also highlighted that most NCD policy initiatives have been funded by the Barbados Government (with the exception of a few funded by the European Development Fund and PAHO/WHO). This local funding included the Health Promotion Unit and above-mentioned posts, more recently a staff member for the NCD Commission, NCD-related research such as the Health of the Nation Study and the on-going funding of the BNR. This financial commitment has been seen as one of the driving forces behind much of the currently achieved interventions.

Key informants placed this local financial commitment within the larger problem of inadequate funding support from international funding sources. They highlighted regional and later international NCD agendas (Port of Spain and UN High Level Meeting) as 'unfunded mandates' with financial responsibility largely within local government and budgets. Moreover, NCDs do not gain the

international funding that HIV/AIDS initiatives can rely on, with external support for NCDs estimated at less than 2% of HIV funding. The backdrop of the economic downturn since 2008 put this national financial commitment in a precarious position, and key informants raised concerns regarding sustainable funding for already implemented policy initiatives. Case examples include inadequate human resources such as health promotion officer positions or planned positions, such as surveillance officers.

Finally, the 'problem stream' also contains the way policy makers are defining problems. Many key informants observed that the problem of NCDs is largely framed as a personal responsibility rather than as a structural, environmental or legislative issue. Further commitment and buy-in, in particular across Government, has therefore been seen as difficult to achieve.

> *"At the time when HIV was the flavour of that month a lot of resources were requested and given. NCDs has never had that kind of buy-in because a lot of persons especially at the policy level feel that its individual people's responsibility. They do not understand that policy level facilitation is necessary to get the environment that allows people to make the right choices for all of the risk factors." [9, MOH]*

Politics stream

> *"I think that political support at the high level is very important in making it a priority and pushing it. It's not always financial resources that you need […]." [8, MOH]*

Political support on a higher level was described as an essential factor in the success of driving a policy agenda in Barbados. The Port of Spain Declaration succeeded in securing buy-in from Heads of Government and Ministers of Health, but less so among other Ministries of Government, and many key informants worried about sustained attention by politicians at the present time. This is particularly an issue with involving other ministries to tackle NCD policy within their own policy agenda (for example, as recommended in the School Nutrition Guidelines). In resource-constrained times, sustained support for NCD policies and activities was linked to the problem definition of preferring education initiatives over legislative actions.

> *"[…] there is a lot of scope in there to put policies in place. But you know, […] I get the sense that […] our politicians almost sort of instinctively prefer to bring about change without using legislation." [4, MOH]*

Key informants inside and outside the Ministry of Health worried that the political focus of other ministries, whose buy-in is crucial for more comprehensive policy actions such as legislation on taxation, building, food import or school health, is weak as each ministry focusses on their own field and considers health issues as being exclusively under the remit and budget of the Ministry of Health.

> *"We have these ministries but they function in silos." [4, MOH]*

Policies stream

All NCD policy documents that were reviewed for this report outlined the importance of focusing on multi-sector involvement. Major stakeholders currently involved in government-led NCD policies (in

formulation and/or implementation) are the Ministry of Health (Minister, Permanent Secretary, Chief Medical Officer, with the Health Promotion Unit, Senior Medical Officer of NCDs and the NCD Commission), Civil Society with Health NGOs focused on diabetes, heart and stroke and cancer, faith-based organisations, media, some industry, and Ministries of Education, Agriculture, Transportation and Finance. (Appendix 5 outlines an analysis of the extent to which these stakeholders perceive that they have power to influence government-led NCD policies and further the extent of their desire to influence such policy.) The regional Healthy Caribbean Coalition also includes many of these national civil society organisations. Concerns were raised that this multi-sector involvement – and coordination between sectors – still requires greater effort.

> *I would say the experience of Barbados which should to be shared with others is the need to gather empirical evidence on the issues, to be able to analyse it, look at the implications, cost and human implications, to get stakeholders on-board to widen the net, and insure you get a wide and varied cross-section of the population involved, not just the clinicians. […] I think those involved in battling NCDs […] must have the ability to stay the course, not to be side tracked, not to feel deflated but to stay focused […]. And of course to appreciate that you cannot measure the success of your work in just a year or 2 years, this is a long term battle. [16, MOH]*

Policy entrepreneurs

A major success as narrated by all key informants was the importance of leadership to drive NCD policy. This leadership was attributed to individuals such as the Barbadian Sir George Alleyne, Director Emeritus of PAHO and Chancellor of UWI, who drove the regional initiative towards NCD policy attention of the Ministers of Health and the Heads of Government that led to the Port of Spain NCD Summit Declaration in 2007.

> *"I think Sir George Alleyne led the charge so to speak, in bringing the matter of NCDs […] onto the agenda of the Ministers of Health and the Heads of Government […]." [2, Civil Society/University]*

In Barbados, in particular the current Chair of the NCD Commission led NCD policy initiatives and was instrumental in contributing to the conceptualisation and later chairing the National NCD Commission. His leadership was also linked to improving multi-sectoral response:

> *"[…] having the Commission has made a lot of difference because that gives it a national persona and then having someone like [..the Commission Chair..] to chair it also increases the credibility and the visibility to keep moving forward." [8, MOH]*

Both these policy entrepreneurs have been closely involved in defining the problem through NCD research, have written seminal guidance for policy formulation, and perhaps most importantly have had the personal contacts to politicians as well as other societal sectors to realise these activities.

Other local champions were mentioned by key informants that might have not been influential in coupling all 'streams' but provided leadership with particular areas such as leaders within the Ministries of Health including Ministers of Health (Hon. John Boyce, Hon. Donville Inniss, Hon. David Estwick, Hon. Jerome Walcott), Chief Medical Officer, as well as leaders in other sectors.

As a side note, on a community level, many initiatives seem also driven by local champions, for example health fairs that are organized and facilitated by engaged individual health professionals of local polyclinics or the QEH in cooperation with local church and other community leaders. This also includes the volunteerism of local health NGOs and their efforts to engage the population on a community level, and initiatives such as the Nation Publishing Company's Healthy Lifestyle Extravagancy that brought together public, private and NGO sectors.

Some key informants cautioned that reliance on leadership – or policy entrepreneurship – can jeopardise sustainable planning (long term in terms of a leadership legacy, and short term in terms of continuation of on-going programmes), and called for better co-operation and coordination.

> *"My concern is that if [the current chair of the NCD Commission] isn't around for whatever reason […] I think everything would cease and I think that is poor succession planning but also speaks to the fact you know, the hard work that he clearly does to try an bring this together, we all seem to work very independently." [6, Civil Society/NGO]*

Policy process summary

NCD policy formulation and implementation has been achieved through a systematic process of documented strategic planning and commitment. Leading documents are the Strategic Plan for Health (2002-2012), the Strategy for the Prevention and Control of Chronic Non-Communicable Diseases (2004), the Healthy Hearts for Life CVD Task Force Report (2007) and the NCD Commission National Strategic Plan (2009-2012). Task forces such as the Task Force on the Development of Cardiovascular Services and the Task Force on Physical Activity & Exercise both initiated such strategy documents and were established to implement activities. The strategic planning also ensured the commitment to establish core NCD posts such as the post of Senior Medical Officer of Health (NCDs), Senior Health Promotion Officer and Health Promotion Officer in 2006 and the multi-sectoral NCD Commission in 2007. Legislative action most notably includes the ratification and enactment of the Framework Convention on Tobacco Control with a ban of smoking in public places, sale of tobacco products to minors and significant increase in excise duty to tobacco products. Further commitment included the contracting out and co-operation and subvention of NCD NGOs and other NCD related bodies. Examples are the agreement to set up the Barbados National Registry for Chronic NCDs (BNR) at the Chronic Disease Research Centre, contracting out cardiac rehabilitation to the Hearth & Stroke Foundation and the establishment of a specialist diabetes centre in collaboration with the Barbados Diabetes Foundation.

Analysis of the policy process with the Multiple Streams Framework found that leadership, political vision and commitment were reported as essential elements of current successes in the on-going formulating and implementing of the NCD agenda in Barbados. This resulted in the establishment and continuing activities of the NCD Commission, MOH NCD posts and a wide range of programmes and initiatives. Future efforts aim to address the challenge of competing political priorities in sectors that were identified as essential for future activities and to address where there is a perception of NCD prevention being 'only a health issue' and the personal responsibility of individuals. We need to engage the other Ministries of Government, civil society, and the private sector in an 'all of society' response to include 'health in all policies' towards creating an environment where 'the right choice is the easy choice'.

Results: Content of current policy

The results are divided into the following sections: overarching structures, processes and finance; risk factors (alcohol abuse, tobacco exposure, unhealthy diet, physical inactivity); health promotion and education; integrated disease management; and surveillance. Within each of these sections the following structure is used:

Documented policies: Statements from five core MOH documents are tabulated. These five documents (appendix 2) were identified by the key informants, and by the study team, as representing the core government policy statements on NCDs since the year 2000.

Stated policies, as described by MOH key informants, provide an overview of NCD policies as they were narrated and given emphasis by key informants within the MOH. In our analysis we were particularly interested in what way the conceptualisation and awareness of government-led NCD policy was consistent across key informants within the government. We also included the Chairman of the National NCD Commission as part of the MOH perspective due to the close link between the Commission and the Ministry.

Perceived policies: Interviews with key informants who were not part of the MOH were analysed separately in terms of their awareness of 'current and stated' government policy. Again, we are asking if the perception and conceptualisation of government-led NCD policy was consistent across stakeholders, this time outside the government.

Overarching structures, processes and finance

Table 2 – Documented policies on structures, processes and finance

Summary of Policy Statements	Comments (on document content relating to the policy statements)
Barbados Strategic Plan for Health 2002 – 2012 (2003)	
	Contains statements relevant to improving health system function, but not specifically to NCDs – these follow in the 2004 document (below)
Strategy for the Prevention and Control of Chronic Non Communicable Diseases (2004)	
Establish National NCD Commission	Envisaged as being under MOH, with membership from key sectors, both within and outside government. To be responsible for mobilizing resources for other aspects of the strategy
Establish post of Senior Medical Officer of Health for NCDs	To be supported by behavioural specialist, research officer and admin
Establish Health Promotion Unit	To comprise a Senior Health Promotion Officer and two Health Promotion Officers
Establish Committee of Focal Points from other Ministries	Broad range of Ministries listed

Healthy Hearts for Life - Report of the Task Force on the Development of Cardiovascular Services (2007)	
Establish National NCD Commission	
Design inter-ministry strategy on CVD to stimulate integrated government planning	Not clear if this is essentially the same as the Committee of Focal Points (above)
Declaration of the Port of Spain: Uniting to Stop the Epidemic of Chronic NCDs (2007)	
Establishment of NCD Commission	
Use revenue from tobacco, alcohol and other products to support the work of the NCD Commission	
Strategic Plan 2009-2012 for the National Chronic Non-Communicable Disease Commission (2008)	
A national budget line for the fight against NCDs is approved, and funds increased by 10% per year for the next 3 years	No mention of monetary amounts.
Steering committee of focal points is established	Implying not yet established (see 2004 NCD strategy)

Stated: The establishment of specific posts within MOH and the establishment of the NCD commission, which had cabinet support, were seen as key steps in mounting a response to NCDs.

> "[…] *so we developed […] a national policy or proposal which was adopted by the Cabinet and out of that would have come the establishment of the Health Promotion Unit and the establishment of the SMOH post for NCDs. So after that you would have had the commission being formed […]." [9, MOH]*

Perceived: The actual role of the Commission was seen, in a beneficial sense, to have gone beyond its original mandate, providing, for example the MOH with additional capacity, mounting intervention programmes and helping to establish new organisations (i.e. the Healthy Caribbean Coalition) to advocate for NCD policies.

> *"[…] the NCD Commission is a multi-sectoral body and it actually seems to go beyond its written mandate I believe, which is to give advice to the Minister of Health. It actually has, in a sense merged with the operational arm of the Ministry of Health on NCDs, so that for example there is a member of staff who is employed to the NCD Commission; I believe this is the only commission in the Caribbean who has a member, a full time member of staff employed to do the work of the commission." [2, Civil Society/University]*

> *"What has been successful […], through the efforts of the commission, is the creation of the Healthy Caribbean Coalition, where NGOs and medical practitioners have raised a flag across the region by forming this coalition that speaks to health issues, Pan-Caribbean." [7, Private]*

Risk factor reduction

Alcohol abuse

Table 3 – Documented policies on alcohol abuse

Summary of Policy Statements	Comments (on document content relating to the policy statements)
Barbados Strategic Plan for Health 2002 – 2012 (2003)	
	No policy statement identified
Strategy for the Prevention and Control of Chronic Non Communicable Diseases (2004)	
'..behavioural intervention programmes…..will address smoking prevention, proper nutrition, regular physical exercise and alcohol abuse prevention'	Word 'alcohol' appears once, as shown opposite.
Healthy Hearts for Life - Report of the Task Force on the Development of Cardiovascular Services (2007)	
	Promotion of moderate alcohol consumption flagged in broad statement on Health Promotion, but no specific action identified.
Declaration of Port of Spain: Uniting to Stop the Epidemic of Chronic NCDs (2007)	
	Alcohol mentioned as potential source of revenue, otherwise no statement
Strategic Plan 2009-2012 for the National Chronic Non-Communicable Disease Commission (2008)	
	Alcohol not mentioned at all

Stated: Alcohol abuse was largely agreed to be a topic not tackled yet through policy intervention and difficult to address politically:

> *"[...] there has been an inertia to craft a way forward with respect to alcohol prevention and control, […] the area of sponsorship, marketing and advertising […and the] liquor licensing act […]." [3, MOH]*

Moving forward to address the local and regional sensitivities around alcohol as a key product and generator of significant tax revenue, key informants highlighted a recent *"WHO position paper on harmful use of alcohol"* with a particular attention to *"language that maintained public health purity while recognising that Barbados is an alcohol producing country […]." [9, MOH]*

Perceived: Non-MOH key informants perceived the same difficulties of developing alcohol abuse policies:

> *"Say for example the issue of unsafe consumption of alcohol. They're not going to touch that. They don't have breathalyser tests in Barbados, and the reason is, that rum is one of our big sources of income revenue for the country." [1, Civil Society/University]*

Tobacco exposure

Table 4 – Documented policies on tobacco smoke exposure

Summary of Policy Statements	Comments (on document content relating to the policy statements)
Barbados Strategic Plan for Health 2002 – 2012 (2003)	
Between 2002 - 2004, strategy for implementing recommendations of the Global Youth Tobacco Survey developed.	Long list for overall adolescent health statements. Leadership from SMOH.
Strategy for the Prevention and Control of Chronic Non Communicable Diseases (2004)	
Establish policies for tobacco control in keeping with the Framework Convention of Tobacco Control	Only broad statement; reference to Framework Convention presumably including its targets.
Healthy Hearts for Life - Report of the Task Force on the Development of Cardiovascular Services (2007)	
Statement on promoting smoking cessation and reducing smoking exposure is part of the recommendation for 'sustained health promotion/education initiatives	Document contains a target on reducing by at least 15% the percentage aged 17 to 64 who regularly smoke cigarettes by 2012 compared to 2002
Declaration of the Port of Spain: Uniting to Stop the Epidemic of Chronic NCDs (2007)	
Pursue immediately a legislative agenda for passage of the legal provisions related to the Framework Convention of Tobacco Control (FCTC)	Reference to Framework Convention presumably including its targets.
Legislation to limit or eliminate smoking in public places	
Ban the sale, advertising and promotion of tobacco products to children	
Effective warning labels	
Introduce such fiscal measures as will reduce accessibility of tobacco	
Strategic Plan 2009-2012 for the National Chronic Non-Communicable Disease Commission (2008)	
Prohibition of smoking in public places through legislation	Broad statements without specific actions.

Stated: Legislation of a smoking ban and tobacco sales ban to minors were seen as one of the great successes of NCD policy implementation. Taxes have also been increased, primarily to enhance general government revenue, but with the likely beneficial 'side effect' of reducing consumption.

> *"The ones [successes] that come to mind specifically are the Framework Convention on Tobacco Control, the law on banning smoking in public places on, the ban on sale of tobacco to minors." [8, MOH]*

Evaluation of this success is still missing according to MOH key informants. There was also an effort reported to ensure the sustainability of the effort in regard to tobacco exposure and further legislative efforts to include packaging and e-cigarettes.

> *"[…] we haven't evaluated our 'successes', so that we are currently starting to look at a process to see how the legislation, if it had any meaning or but we haven't moved too far in that." [3, MOH]*

"We're currently working on the standards on packaging and labelling as well as the e-cigarette […]. We have to remain vigilant about the ban on smoking in public places because there could be breeches […and] the industry does not let up." [9, MOH]

Perceived: The smoking ban was also cited by non-MOH key informants as the major policy achievement. Notably the success was linked to the Framework Convention on Tobacco Control and its clear targets.

"Tobacco has the advantage of the FCTC which […has] very clear guidelines on what to do, how to do it, when to do it etc. and you sign the treaty and you have obligations that by this date you have to do this […]." [2, Civil Society/University]

Unhealthy diets

Table 5 – Documented policies on unhealthy diets

Summary of Policy Statements	Comments (on document content relating to the policy statements)
Barbados Strategic Plan for Health 2002 – 2012 (2003)	
Improved nutrition education programmes	Several targets including media nutrition programmes strengthened and 'dial a nutritionist' established.
Enhanced nutrition promotion programmes	Targets: By 2012 food and nutrition labelling developed and implemented; by 2012 intersectoral collaboration to strengthen food production at all levels strengthened.
Enhanced programme in relation to management of NCDs	Target: By 2006 comprehensive plan for nutritional management of obesity
Strategy for the Prevention and Control of Chronic Non Communicable Diseases (2004)	
Creation of a 'National Food Authority'	Broad statements without specific actions, but as this document proposed the NCD Commission and new members of staff dedicated to their NCD control, arguably the broad statements provide the framework for their work.
Ensuring that only healthy foods and snacks available in schools and healthy options are available at work places.	
Develop incentive/recognition programme for vendors/restaurants to offer healthy options	
Promote backyard gardening	
Healthy Hearts for Life - Report of the Task Force on the Development of Cardiovascular Services (2007)	
Statement on promoting healthy diet is part of the recommendation for 'sustained health promotion/education initiatives	Document contains a target on reducing to 30% adults age 18 to 64 who are overweight/obese by 2012.
Declaration of the Port of Spain: Uniting to Stop the Epidemic of Chronic NCDs (2007)	
Education sectors to promote programmes for healthy school meals	
Support elimination of transfats	Noted that Caribbean Food and Nutrition Institute will act as regional focal point.

Support for mandating the labelling of foods	Noted that will be supported by established of 'appropriate regional capability'
Promote greater use of indigenous agricultural products and foods	Noted that regional negotiating machinery to pursue fair trade policies
Strategic Plan 2009-2012 for the National Chronic Non-Communicable Disease Commission (2008)	
Reduction in high fat, sugar and salt intake	Broad statements without specific actions.
Increased consumption of fruit and vegetables	

Stated: Policy activities to tackle unhealthy eating included a salt awareness media campaign, other population-wide healthy eating initiatives in health fairs and nutrition summer camps. Most often mentioned was the "Nutritious and Healthy Foods in Schools" nutrition guidelines that were developed in cooperation with the National Nutrition Centre and approved by Cabinet. The guidelines include proposed policies for the Ministry of Education, for example regarding nutrition content, but also aim to aid efforts of individual schools, teachers or parents. The NCD Commission and MOH did some training at school canteens and is liaising with school representatives such as the Association of Principals and PTAs but full implementation has not been reached yet.

> *"What is needed now is, we would have hoped that the Ministry of Education would have taken this as the people who are responsible for running the schools […] but […] you find that a lot of the responsibility then comes back to us in health where if we don't push it, it doesn't go anywhere." [9, MOH]*

The current scope of initiatives to address unhealthy diet was generally viewed with some concern. More wide-ranging legislative measures such as taxation, import regulation, trans-fats regulation, and labelling are still to be achieved. Finally, transforming raised awareness about healthy diets into behaviour change, for example in salt or fast food consumption, was seen as a problem, and inadequate evaluation of current activities or guidance on evidence-based efficacious practice was of particular concern.

> *"Trans-fats are a challenge […].[…T]he last things that they [the previous government] had done they had approved a paper that we had sent up to reduce the level of trans-fats in locally produced foods, so it's something that we need to work on." [8, MOH]*

> *"It's going to be important to me for us to push ahead with our work with the manufacturers and importers and distributors so that we have a change in the food formulations." [9, MOH]*

Perceived: From a non-MOH perspective, unhealthy diets as a policy agenda was regarded to have made little progress, with current policy activities such as the School Nutrition Guidelines lacking in implementation and scope. A senior representative of the Ministry of Education (MOE) reported that despite other policies on health issues such as HIV and substance abuse in place at MOE, there have not yet been any MOE internal NCD policies established yet.

> *"Off the top of my head, I don't think we have currently any active programmes as it relates to chronic disease." [25, Other Government]*

"I don't think we are making a significant change in children […]. My own kids have gone through the school food programme and I think the school meals systems is fabulous in that it feeds so many children […] but […]they're getting salt fish and they're getting piece of potato and they might get a piece of fruit occasionally." [6, Civil Society/NGO]

"If you want to make a difference in the schools with the kids, […] unless there is a government policy about what foods are put into the schools it will not change." [1, Civil Society/University]

The salt campaign was highlighted but concerns were raised that it was not targeted enough, and in general many key informants were worried that public awareness may be high but behaviour change has not yet been achieved. A need for more drastic legislative action was expressed.

"I think people know about salt but that isn't translating into actual salt reduction […] in what they eat and it certainly not translating into manufactures making any changes […]." [6, Civil Society/NGO]

"What we also need as part of the policy to look at what we are allowing into the country, because if we don't bring it in then it won't be any to sell." [10, Civil Society/NGO]

"We have Burger King, we have Kentucky […], perhaps it might get worse before it gets better. But primarily […] we need a lead […] and say "okay we are going in x, y, z direction". I am not sure that we have that at this point in time." [11, Private]

The issue of food security and availability was also raised by key informants and suggested the need for a new agricultural and development policy for Barbados.

"[…] we have emphasised the need to increase the production of fruits and vegetables in the country. We have in fact recommended a new land lease, land use policy that would focus on food production zones […that are] committed exclusively to food production." [15, Other Government]

Physical inactivity

Table 6 – Documented policies on physical inactivity

Summary of Policy Statements	Comments (on document content relating to the policy statements)
Barbados Strategic Plan for Health 2002 – 2012 (2003)	
Strengthened physical activity programmes	Targets: By 2007 guidelines for the establishment of work place Health Promotion programmes; by 2007 physcial activity programmes in polyclinics strengthened and expanded; by 2012 green paper on sports adopted; by 2012 policy on development of outdoor recreational centres and community based physical fitness centres developed, implemented and monitored; by 2012 policy framework for provision on financial incentives for people taking part in PA developed

Strategy for the Prevention and Control of Chronic Non Communicable Diseases (2004)	
Ensure PA is part of curriculum for every child	Broad statements without specific actions, but as this document proposed the NCD Commission and new members of staff dedicated to their NCD control, arguably the broad statements provide the framework for their work.
Provide opportunities and facilities for PA at work	
Healthy Hearts for Life - Report of the Task Force on the Development of Cardiovascular Services (2007)	
Statement on promoting regular physical activity is part of the recommendation for 'sustained health promotion/education initiatives'	Broad statements without specific actions.
Declaration of the Port of Spain: Uniting to Stop the Epidemic of Chronic NCDs (2007)	
Re-introduction of physical education in our schools where necessary	Broad statements without specific actions.
Promote policies and actions aimed at increasing physical activity in the entire population e.g. through worksites, through sports, especially mass activities	
Commit to increasing adequate public facilities such as parks and other recreational spaces to encourage physical activity by the widest cross-section of our citizens	
Strategic Plan 2009-2012 for the National Chronic Non-Communicable Disease Commission (2008)	
Increased opportunities for PA in the population	Broad statements without specific actions.

Stated: The National Task Force on Exercise and Physical Activity was named as a policy response, announced as one of the Budgetary Proposals in 2008 and formally established in 2009. The Task Force has been working with communities to promote physical activity across the life-course. Most MOH key informants had expressed concern that the National Task Force for Physical Activity and Exercise may not have been active enough recently after it lost its initial leadership. However, at the time of finalising this report the Task Force launched the Age Specific Physical Activity Guidelines, indicating renewed activity. The boardwalk was also mentioned by many key informants, although not developed as a health policy measure. Some work in schools with physical education teachers to reduce the emphasis on competitive sports, to be inclusive of sports for all, and staff initiatives within the public polyclinic system were also mentioned.

> *"So within the Ministry itself we can see […] activities [such as] National Fun Run, and Fun Walk, National Senior Games, so there is a bit to get more people moving. Actually even at some of our polyclinics, there are free exercise [classes] and some clinics do have dance classes, that are open to not only to staff but to members of in the community." [13, MOH]*

> *"There is also a Task Force on Physical Activity and Exercise and we during the year plan a number of activities where we invite the public to come and we have instructors [...] I would say people enjoy the activities." [8, MOH]*

While there was a general agreement that some changes in terms of population awareness of the benefits of physical activity have been achieved, there are no clearly measurable outcomes. Also, environmental and legislative policy activities were seen as missing, for example transport and building legislation and guidelines.

"[…] I think we need to then press forward with our work with Town and Country Planning so that we have a better facilitation of exercise, safe exercise. [9, MOH]

"We need policies around types of activity. Whether it be as I said, activities around personal transportation, whether it be policies around recreation, so government policies around making gyms more affordable […]." [4, MOH]

Perceived: Non-MOH key informants repeated all the positive impressions as well as concerns in regard to physical activity. The National Task Force for Physical Activity, health fairs and the boardwalk were mentioned as positive policy actions that were even linked to a perception of some behaviour change within the population.

"[…] I'm seeing more and more physical activity, whether it's at the level that it should be, you know there's lots of people walking but there's not lots of people walking breathless, you know that's what they should be doing, there's walking and there's walking." [6, Civil Society/NGO]

"It needs to be far more encompassing than that. So in other words if there is any new residential development, walking trails or places to have safe activity must be built into it by law. […] And there are potential places,[…] if for example government had a policy […] to make the periphery of all playing fields a walking path, a well-lit walking path and a place to park cars. That might well serve as a magnet to go exercise in those areas. There are ways the government can facilitate it." [1, Civil Society/University]

Health promotion and education

Table 7 - Documented policies on health promotion and education

Summary of Policy Statements	Comments (on document content relating to the policy statements)
Barbados Strategic Plan for Health 2002 – 2012 (2003)	
Improved nutrition education programmes	Several targets including media nutrition programmes strengthened and 'dial a nutritionist' established.
Strategy for the Prevention and Control of Chronic Non Communicable Diseases (2004)	
Develop education programmes and campaigns providing information about NCDs	Noted that should be based on social marketing, and target various audiences; target not given, but list of desirable outcomes given.
Create a reward based system to encourage participation in the Health Schools Initiative	
Aid in the development and implementation of information, education and communication strategies that are behaviourally oriented and are designed to raise awareness of the risks associated with diabetes and other NCDs	
Assess perception of clinical practice and practitioners	

Healthy Hearts for Life - Report of the Task Force on the Development of Cardiovascular Services (2007)	
Sustained health promotion/education initiatives raising awareness and addressing alcohol consumption, healthy diet, regular PA and smoking cessation and exposure	Targets: Each polyclinic to develop, in partnership with the local community, a health promotion strategy by the end of 2007; other targets mentioned as 2007 or 2008, unclear if this refers to start or end date.
Strengthening Health Promotion at the central level	
Continuing education of clinical professions in ways of implementing lifestyle and health promotion among their patients	
Specification of roles, functions, standards for all PHC providers, NGOs and community resources	
National programme of public awareness on recognition of CV events	
Education of lay and health providers on benefits of cardiac rehabilitation	
Encourage insurance industry to develop policies aimed at providing premium benefits to those with healthy life styles	
Declaration of the Port of Spain: Uniting to Stop the Epidemic of Chronic NCDs (2007)	
Provide incentives for comprehensive public education programmes in support of wellness, healthy life-style changes, improved self-management of NCDs	
Embrace the role of the media as a responsible partner in all our efforts to prevent and control NCDs	
Declare the second Saturday in September "Caribbean Wellness Day"	
Strategic Plan 2009-2012 for the National Chronic Non-Communicable Disease Commission (2008)	
Increased work place wellness programmes	Broad statements.
Promote all health professionals to opportunistically use patient contacts to engage on NCDs	
Establish faith-based initiative for promotion of healthy lifestyles	
Development of activities for celebration of Caribbean Wellness Day	
Continuous and sustained highly visible public education media campaigns	

Stated: Closely related to risk factor reduction activities are policy initiatives on health promotion and education. In particular, the MOH initiated the salt campaign and other healthy eating campaigns, but also health fairs that promote physical activity and healthy eating. Health education is also delivered through the polyclinics and the Queen Elizabeth Hospital (QEH) addressing secondary (early detection) and tertiary prevention (evidence based management) of NCDs.

> *"And we have […] a media campaign with messages for television, radio, print and we're using social media also to promote those messages, along with that were also promoting increased consumption of fruit and vegetables […]." [8, MOH]*

"So we [polyclinics] do outreach programmes as well, where you might go into to the work place and have a lecture discussion on whatever NCDs and offer screening to the workers […or] sometimes a school or maybe a community centre […]. [13, MOH]

"The hospital is trying to do more education, rather than just treatment […]. Individually, physicians are frequently doing lectures for associations, or churches or polyclinics, for their patients and on evenings when requested […]." [19, MOH/QEH]

Perceived: Raising awareness in the population was highlighted as an important focus of policy and an achievement of the NCD Commission (multimedia campaigns, radio jingles, interviews and other activities such as Caribbean Wellness Day). Key informants also highlighted the help and advice they got from the NCD Commission, or as members of the NCD Commission, in terms of instigating workplace wellness programmes and health initiatives driven by faith-based organisations (for example walks and screening through their health guilds). However, the current extent and impact of health promotion activities on behaviour change was often questioned. In particular, a greater emphasis on enhancing teaching skills in the future was mentioned. Key informants also raised worries about the lack of planning and target audiences in campaigns as well as a lack of evaluation of campaigns and sustainability. Finally, it was suggested that advocacy should include the education of other sectors that NCDs is more than a health issue but, for example, a concern for work productivity in the private sector.

"Don't just go into a community and do a health fair, that's what I've been telling polyclinics. Focus it. You want people to know how to eat better and you want to focus on salt, hire a chef, focus on that, don't do blood pressure checks and breast checks and all this thing because it waters down the message. [12, Other Government]

"I think government's main problem is that they are too bureaucratic. The money is allocated for this and it can't be tweaked. Not enough funding is channelled in the preventative area." [22, Civil Society]

"I would say that there is a lot of information but the information is not always self-transformative […]." [23, Civil Society]

"[…] we need to have much more focus and just don't do one off things and they drop by the wayside, for me, in my opinion they have to be continued focus on various areas to bring success and don't give up." [18, Private]

"[…] companies must wake up to the realisation that a sick work force is an unproductive workforce, and that a lot of the complaining we do […] is put down to a sense that Caribbean workers tend to be a lot more relaxed and less productive by nature but in fact a large part of problem in the work force is as a consequence of people who have NCDs." [7, Private]

Integrated disease management

Table 8 - Documented policies on treatment and care

Summary of Policy Statements	Comments (on document content relating to the policy statements)
Barbados Strategic Plan for Health 2002 – 2012 (2003)	
Reduced incidence of diabetes occurrence and complications	Targets: By 2012, clinical policies for management of DM, BP, and CVD implemented in all public and private clinics; by 2012 DM education programmes in all private and public health care facilities; education on all above for health professionals strengthened;
Improved supportive environments	Targets: Referring here to health care environments: by 2006 policy framework for referral of people with DM, hypertension, and CVD developed and implemented; by 2008 prevention and early detection programmes in all primary care institutions strengthened
Strategy for the Prevention and Control of Chronic Non Communicable Diseases (2004)	
Develop protocols for the provision of quality diabetes care	Note general targets, not linked to specific policy statements, are set for improving diabetes control and blood pressure management. See table 12 for details
Develop at least one health facility as a model centre for diabetes care	
Strengthen rehabilitation programmes for those affected by NCDs	
Provide clinical and laboratory supplies consistent with best practices as resources permit	
Healthy Hearts for Life - Report of the Task Force on the Development of Cardiovascular Services (2007)	
Expert guidelines group to design, disseminate and maintain, under NCDC for screening and treatment for DM, BP, lipids	Note that there is a list of targets related to improvements in care, some given in table 12, that collectively the policy statements listed opposite would be expected to contribute to.
Development of clinics, within the government primary care system, for specialised management of NCDs	
Introduce opportunistic health awareness/screening initiatives for DM and BP	
Expansion of drug therapy benefit programmes for treatment of NCDs	
Several statements on improving emergency response to acute CVD events - myocardial infarction and stroke, including the establishment of a stroke unit at QEH	
Declaration of the Port of Spain: Uniting to Stop the Epidemic of Chronic NCDs (2007)	
That our MOHs, in collaboration with other sectors, will establish by mid-2008 comprehensive plans for the screening and management of chronic diseases and risk factors so that by 2012, 80% of people with NCDs would receive quality care and have access to preventive education based on regional guidelines.	Note that 'quality care' and 'preventive education' are here defined by what is in regional guidelines
Comprehensive plans for the screening and management of chronic diseases and risk factors	Note that in Barbados much of this had already been covered by the above document on Cardiovascular Services

Strategic Plan 2009-2012 for the National Chronic Non-Communicable Disease Commission (2008)	
Patients with NCD are well controlled and receiving optimum care	Little detail on what this means, but presumably links into statements from the CVD task force
Annual training given to primary health care professionals on NCD protocols.	

Care standards

Stated: MOH key informants highlighted the adoption of guidelines on treatment of diabetes, hypertension and asthma (by the CHRC/CARPHA) but the implementation of these guidelines was largely described as a problem. Although MOH key informants described the introduction and training of the guidelines, informants from the field did not see an on-going effort of implementation.

> *"I think that we have them [standards] and we have then in written format and we have distributed to and taught people how to use them […]" [24, MOH]*

> *"[A]s far as I know, there wasn't a real specific introduction to the guidelines. It was kind of handed down through the heads of departments. […] But […] I don't remember, something like a training workshop, or something with the introduction of the guidelines." [13, MOH/Health Professional]*

More updated guidelines along with consistent and on-going training of the guidelines were reported as potential facilitators for health professionals' buy-in.

> *"[…] there are two major issues with this. One the uptake of the guidelines is very poor and […] secondly the guidelines are outdated […] and there has never been any attempt, to the best of my knowledge, to update those guidelines." [3, MOH]*

Key informants reported that a future effort should focus on national care standards on particular conditions such as stroke, and robust auditing with the potential for a reward or penalty system.

> *"I think that one of the areas that we need to pay more attention to is in the delivery of the service, what are the protocols and the methods that are being used, that we need a better way of maybe monitoring what is done at the service deliver level […]." [8, MOH]*

> *"[…] I think what we need to do now is to make sure that they're being followed, so that we have to do stronger auditing and quality control." [24, MOH]*

> *"My main issue is to have a standard national protocol […and] I wanted to have the protocols of care linked to our evaluation of performance, so […] it would need an audit to see if they're following protocols, so that's a kind of way of, of almost having punishment if you don't follow them." [9, MOH]*

Perceived: The existence of guidelines was also acknowledged by non-MOH key informants, with the same concern about lacking implementation, standards in care delivery, for example in regard to

stroke or cancer, and audit. Moreover, lack of training of health professionals was highlighted as a concern.

> *"Well, the Caribbean Health Research Council, now part of CARPHA has guidelines on treatment of diabetes and hypertension, asthma I think are the main guidelines, […] and I believe that Barbados has adopted these guidelines; […] the implementation […] that is where the challenges still remain." [2, Civil Society/University]*

> *"There is no standardisation for how care is administered. It is very much consultant specific." [1, Civil Society/University]*

> *"I think we're missing the boat […], we're talking about the policy, we're talking about goal setting but where is the education that goes along with that, you can't expect […] individuals who are meant to be implementing this structure, what level of knowledge base do they truly have, where is the specialties, you know, coming out of this." [6, Civil Society/NGO]*

Care delivery

Stated: Over the past ten years the polyclinic system has established disease-specific chronic care clinics such as for diabetes, hypertension, with asthma and a renal clinic introduced this year. These clinics aim to provide more holistic care at the point of access, such as screening, education, nutrition and foot care in diabetes clinics. The Step by Step foot care programme trains polyclinic health professionals to provide foot care screening and (limited) care. There is also an agreement with the Heart and Stroke Foundation to provide cardiac rehabilitation care. It was reported that with regard to NCD management there is no formal agreement in place between the MOH and the QEH. However, it was noted that QEH has diabetes and hypertension clinics, a respiratory unit and will shortly commission a new cardiac suite, and stroke unit. Training is also provided to QEH nurses on diabetes, peritoneal dialysis and hypertension.

The implementation of new legislation requiring the annual re-registration of physicians, contingent upon evidence of attending approved continuing medical education events, should lead to greater knowledge and awareness among them of up to date evidenced based NCD care.

> *"There is no structured organisational setup to address NCDs [in the QEH]. [20, MOH/QEH]*

> *"We have had a number of initiatives to treat cancers, strokes, heart attacks, whose pathology link back to the lifestyle diseases. For instance, we very shortly will be commissioning our new cardiac suite […]." [19, MOH/QEH]*

A concerted effort to introduce an Integrated Chronic Care Model was not reported. An established task force was considered to have as yet little drive but the new St John Polyclinic was positively highlighted to serve as a model to pilot the introduction of the chronic care model. Current disease-specific clinics opened their remit, for example to include hypertension in diabetes clinics; key informants mentioned the importance to now adequately implement and monitor existing regional guidelines. Finally, the problem of patients using both the public and private system was mentioned, and lacking communication between the systems can lead to problems such as double-prescription.

"[…] we are planning to make the St. John Polyclinic a model clinic wherein there would be full integration between the community and their care givers and the person who is receiving care […]." [3, MOH]

"We still have the separation into silos, there is a hypertension clinic and the diabetes clinic, the nutritionist are there and they don't support from the integrated approach, they support from the diabetes and hypertension." [9, MOH]

Perceived: Non-MOH informants also commented on a lack of Integrated Care in Barbados. An emphasis on hospital care, and a lack of interface between the private and public system was also seen as a concern by private practitioners.

"I know Barbados is experimenting with the chronic care model in one of its health centres, which is also very important because they, we need at some point to talk about the aspect of treatment for people who already have chronic diseases because the evidence shows that is the most, that intervention will save the most lives." [2, Civil Society/University]

"W*e don't have formal programmes set up, that I am aware of for any of the three arms, we don't have national screening programmes […], we haven't sort of focused on prevention because most of the countries tend to focus a lot on putting money into the hospital […]." [11, Private]*

"The health in most of the Caribbean countries is a mixture of public and private as you know. But tackling that interfaces has never been done." [11, Private]

Drugs

Stated: Key informants highlighted citizens' free access to medication without a dispensing fee and out of pocket costs as a great achievement in Barbados for the treatment of NCDs. Significant cost reduction was achieved through the introduction of generic drugs and limiting the number of drugs in the same category, undertaken by the Drug Formulary Committee. There were concerns voiced about the prescription behaviour of health professionals, recognising that generic drugs may be mistaken as counterfeit drugs or at least their efficacy questioned.

"Barbados is very fortunate […] in having a Drug Service and because you go all over the world and people have to pay a pound and a crown for all these […] drugs, […] and we don't really know it but the Drug Service, I think, is doing a marvellous job and the Drug Formulary committee […] in trying to make sure that at least we have the majority, all the basic drugs and some of the second line and even third line drugs available to people. Most of them are free of charge and for the chronic diseases almost all are free of charge." [24, MOH]

"We have on our formulary the vital, essential and necessary drugs to treat the NCDs. We ensure we have the adequate stocks so that we do not pose a risk to those patients. [20, MOH/QEH]

"With the generic products we still had a little problem especially from doctors and pharmacist who pass it on to the patient that generic drugs are not as good. […] Barbados is

more or less like a brand market. […] So sometimes you would see irrational prescribing just because they want to beat the system and go with their habits." [21, MOH]

"What has worked well, I would say communication. Once you communicate with the stakeholders: this is what you want to do, this is what has works very well. When [...] there is no communication with them, then it's like: [...] we don't know anything about this. [...] And not just communicating but [...] making sure that they get the message [...]." [21, MOH]

Perceived: Free access to drugs was also seen as an achievement, reducing costs while keeping medication free within the public system. Containing costs was also linked to a move to generic drugs, however concerns were raised over the efficacy of generic drugs and key informants expressed little knowledge about the process and evidence-base for acceptance of the formulary. Similar to the MOH perspective, there was a concern noted that training of health professionals on the appropriate use of medication is missing.

"*I think in terms of access to drugs we do reasonably well, we do quite well, I think, because the drugs are on the drug formulary and they are free and available for people with chronic conditions that is actually very, very positive." [1, Civil Society/University]*

"I think where we could be better is in terms of knowledge among health care providers about the appropriate use of drugs." [1, Civil Society/University]

Surveillance, evaluation and research

Table 9 - Documented policies on surveillance, evaluation and research

Summary of Policy Statements	Comments (on document content relating to the policy statements)
Barbados Strategic Plan for Health 2002 – 2012 (2003)	
	Issue of NCD surveillance not specifically addressed, however, under "Health systems strengthening" it is stated that programme for monitoring and evaluation mechanisms will be developed. It was noted that MOH has a weak information base at present, and that 'guidelines for monitoring and evaluating health' have been developed'.
Strategy for the Prevention and Control of Chronic Non Communicable Diseases (2004)	
Statements on the importance of Monitoring and Evaluation, and Research. From Research perspective noted that socio-economic impact studies were required. From M&E perspective evaluation of education and prevention programmes, and adherence to treatment protocols, identified as medium term priorities.	Broad statements without specific actions, but as this document proposed the NCDC and new members of staff dedicated to their NCD control, arguably the broad statements provide the framework for their work.
Healthy Hearts for Life - Report of the Task Force on the Development of Cardiovascular Services (2007)	
Develop comprehensive health information strategy for Barbados.	Resources: European Development Funding was identified as providing the resources for some of these statements, including the registry and the HMIS for QEH
Establish cardiac and stroke event registry	
Commission a research to develop appropriate baseline measures for	

health improvement and service framework	
Re-assess functionality of proposed polyclinic HIS, including capability for an age/sex register	
Ensure that the proposed HMIS for QEH accords with MOH information strategy & integrates with Polyclinic system	
Declaration of the Port of Spain: Uniting to Stop the Epidemic of Chronic NCDs (2007)	
Establish, as a matter of urgency, the programmes necessary for research and surveillance of the risk factors for NCDs	
Strategic Plan 2009-2012 for the National Chronic Non-Communicable Disease Commission (2008)	
Implementation of yearly surveillance system for NCDs	Not entirely clear what this means, but possibly intention of annual surveillance on adherence to clinical recommendations.
Strengthen links with CDRC and NCD Commission to promote its role as a centre of excellence next to CAREC	
Repeat of the BRFS in 2010	
Use the NCD registry as a priority data source to inform NCNCDC action	
Private sector data NCD data fed into national NCD data	

Surveillance and monitoring

Stated: The main surveillance system is the Barbados National Registry for Chronic NCDs (BNR), which collects data on heart attack, stroke and cancer. Its existence was seen as a success in establishing NCD surveillance in Barbados. However, missing electronic reporting systems in the public and private system hinder the efficient establishment of the registry.

> *"[BNR has] been very useful, it's internationally a best practice and well before its time, so there have been request for them to show people how to do it, so there is the local benefit and the international benefit." [9, MOH]*

In terms of electronic reporting systems, the polyclinic system uses Shankar Suite that captures demographic data of patients, diagnoses and visits but has only very limited functionality and current practical application. The Barbados Drug Service has the most sophisticated electronic record system in Barbados.

> *[...T]he pharmacy is now computerised, so [...w]e can actually pull a list of patients who receive drugs at the pharmacy who have the NCDs, so we can actually link the value of the drugs for patients with NCDs […]." [20, MOH]*

A new Health Information System hopes to link polyclinics, QEH and private practices in the future but despite original EU funding and plans to move forward, a clear introduction timeline or steps forward seem to be missing. Generally monitoring and reporting practices by health professionals – including private practitioners – was described as poor and severely hindering any surveillance

efforts. The manual data system for medical records at QEH hampers even the most basic analysis of utilisation and is a major obstacle to auditing for quality of care.

> *"And [we] had started the process last year […] to engage the record staff at Queen Elizabeth Hospital in collecting the data. […] It is just that I only have 2 surveillance officers and - and I don't think I'm going to get anymore because of the economic situation." [14, MOH]*

> *"There is little reporting from the private sector in terms of volumes of patients that are being seen or diagnosis and all that, it's not required at this time. […]In the public sector there is a great discrepancy between the systems in place for communicable disease and the systems in place for non-communicable diseases." [3, MOH]*

A regional surveillance manual contains recommendations on reporting of NCDs, diabetes and cancer as notifiable diseases, and there is a minimal dataset for which the MOH provides reports. Myocardial infarction and stroke should also be included. As reporting is nonetheless in practice mainly confined to communicable disease, efforts to move forward on NCD surveillance was perceived as curtailed by these structural as well as financial factors. However, there was noted to be recent activity between MOH and CDRC to achieve mandatory reporting of new cases of selected NCDs.

> *"[…] we are revising our notifiable disease form and […] we already have diabetes and cancer on our notifiable disease form but we're expanding it to include myocardial infarction as well as stroke." [14, MOH]*

Perceived: The current success of the BNR is seen in its impact on training and changing reporting practice in health professionals. The reports to date from the BNR are not timely, largely attributed to a combination of no electronic health information system (software and computer analysis systems, as well electronic medical records) and a lack of human resources. BNR data have not yet been used to influence health policy and practice. That said, it was noted that in the process of optimising the BNR, policy and practice on notification and reporting has been influenced positively.

> *"[The BNR is] an improvement, it's a good idea, because it is young, because it is a new concept in this part of the world it would take some, it has an incubator period before it becomes effective." [11, Private]*

> *"I think the BNR is probably our most successful NCD project, but the BNR is basically surveillance. […] We've also been able to impact the policy for death certificates and death registration. I see these all as successful outcomes. Because you are changing things in a positive way." [1, Civil Society/University]*

Not having an electronic health information system that would link polyclinic, QEH, drug service and private practice was also perceived as a shortcoming of any surveillance and reporting efforts. Non MOH key informants also reported as concerns the lack of current data, for example timely CMO annual reports, and more sustained commitment towards surveillance.

> *"I think surveillance of some the major diseases has been established. But to my mind even though it's established, it is still a bit precarious, because we are forever negotiating: the next tranche of money, next set of extensions." [1, Civil Society/University]*

Evaluation and research

Stated: In terms of NCD research, MOH informants particularly highlighted were the population-based Health of the Nation study, and smaller studies such as school health studies, and a currently planned alcohol study.

> *"We've been lucky to have policy level buy-in to the Health of the Nation because there was a point at which it was not considered necessary, even though we were recommending it and explaining why we need a population-level survey like STEPS, so we were lucky to have that buy-in. And we were lucky to have the involvement of the CDRC to execute the study and you're aware of the sub-studies that have come out of it, so now we are over that barrier, were actually executing it, I feel confident." [9, MOH]*

Key informants reported that it would be important to evaluate on-going programmes; these were often conducted without knowing if they work or how they might best work.

> *"What I will also say that I suspect that we may not have gotten it fully right yet here in Barbados is to have systems in place that measure our deliverables, how do we measure the success of our policy changes." [16, MOH]*

> *"The time has come for us now to start really look […] to evaluate our programmes, and to look at this whole question of value for money." [20, MOH/QEH]*

Perceived: Non-MOH key informants also stressed the Health of the Nation study as a potentially valuable source for data. Key informants based in research reported that there has been a marked shift recently to fund NCD prevalence studies such as the Health of the Nation study and surveillance such as the BNR by Government that had previously largely been financed through external grants.

> *"Compared to where we were 10 years ago. A lot of projects that we did really were internationally funded NIH projects, […] we're doing a more a mix of local projects on the table, […] we have made sure we have a lot more local and regional prerogatives and local monies." [1, Civil Society/University]*

> *"The idea was that Health of the Nation would be sort of a baseline risk factor survey because the STEPS survey in 2007 really fell down in terms of the blood measurements […] so we'll actually send the teams out and go to people's homes." [5, Civil Society/University]*

Concerns about lack of evaluation was also a widely shared concern among non-MOH key informants, in particular in terms of evidence that would help guide current and future programmes and initiatives. There was also a reported need for translating research into practice.

> *"Monitoring and Evaluation, we need, we need to look at those things. We do work, people leave the workshops feeling good, but how do you know that they are actually putting into place things that you ought to be looking at." [17, Civil Society]*

"[…]one of the problems we have with policy is that we put together policy but we don't put evaluation mechanisms and the indices for evaluation up front. When you do not do that, what you are doing is setting up yourself for policy failure." [15, Other Government]

"No, no translation. […] Because you are kind of saying the problems, but nobody is doing anything about it. It's kind of frustrating." [11, Private]

Policy content summary

Significant NCD policy has taken place in a planned coordinated way driven by the MOH and the NCD Commission. These policies and activities cover risk factor reduction (most notably highlighted: the implementation of smoking ban, awareness raising of the risks of unhealthy diets and physical inactivity in the population), NCD treatment (most notably: provision of free access to drugs, provision of NCD specific clinics in the polyclinics, diabetes foot care programme, and movements towards a cardiac and stroke suite), and surveillance (most notably highlighted: the NCD risk factor surveys and the BNR). Several non-MOH key informants were unaware of the process and of many policy initiatives. Lesson to be learned is the need to include and involve stakeholders outside the MOH in the NCD policy making process in an effort to get greater buy-in and action from them. Moreover, a continued effort towards monitoring and evaluation was flagged by all key informants. An area on which there was a strong consensus on the need for improved policy statements and implementation was reduction in alcohol related harm. An area on which there was strong consensus for improved implementation was the integrated management of NCDs.

Results: Surveillance and outcomes

Historical overview and future needs

Disease and risk factor prevalence

There is a relatively long history of research studies in Barbados concerned with risk factors for and the burden of NCDs. For example, a detailed literature search (see appendix 6 for the search strategy) was performed to identify studies undertaken in Barbados between 1992 and 2012 that had something to do with one or more of diabetes, hypertension and associated risk factors in Barbados. We have chosen in our review of surveillance and outcomes to focus on cardiovascular disease and diabetes because of their centrality to MOH policy and outcome indicators, described below, while acknowledging we could have broadened it to include other NCDs. Our literature search identified 78 publications. In addition, there were studies undertaken on behalf of or in collaboration with the Ministry of Health, including surveys in 1992 [16], 2000[17], 2002[18] and 2007[19].

Our interest in reviewing the available studies was to identify those that provide population based, rather than for example health facility based, data on diabetes, hypertension, cardiovascular disease and risk factor prevalence and that might therefore enable trends over time to be assessed. Table 10 provides a summary of those studies in adults that are population based. Seven studies were identified between 1992 and 2012. As is shown in the table there are some differences between the studies, including in the age ranges and age/sex structures of the samples, the approach to sampling and the methods of assessment of the disease and risk factors. These differences present challenges (described in the outcomes section below) in robustly tracking trends over the past 20 or even 10 years. It is possible that further work, particularly if it was possible to go back to the original data sets, could provide a more robust tracking of trends in certain diseases and risk factors.

Finally, the latest diabetes, cardiovascular disease and risk factor survey in Barbados should be highlighted: the Barbados Health of the Nation Study. At the time of writing this report the study is being completed, with first analyses expect by the end of 2013. The study was commissioned and funded by the MOH, and will provide the most comprehensive assessment of diabetes, cardiovascular disease and NCD risk factors to date. Further details are in table 10. However, it is worth noting that the study will provide comparable data to the 2007 STEPS survey, and in this sense is the second and what promises to be a series of ongoing NCD risk factor surveillance surveys. In addition, the study includes the following novel (for Barbados) aspects: the objective measurement of sodium intake in adults aged 25-64 years, using 24 hour urine collection; the objective assessment of physical activity levels using a combined heart rate monitor and motion sensor; and an estimate of the cost of cardiovascular disease and diabetes. The objective assessment of physical activity is being undertaken in collaboration with Medical Research Council Epidemiology Unit, Cambridge University, UK.

Incidence, mortality and burden of disease

The Barbados National Registry

The Barbados National Registry is housed at the Chronic Disease Research Centre (CDRC), and is conducted by the CDRC on behalf of, and on contract to, the Ministry of Health. It was established over 2008 and 2009, triggered by senior staff of the MOH, the NCD Commission and the leadership of the CDRC, with financial support from the European Development Fund. It is the first registry of its type in the Caribbean. It aims to collect, collate and feedback population based data on the incidence (including fatalities) of stroke, myocardial infarction and cancer, using internationally accepted criteria for the definition of cases.

It is a resource that should make a critical contribution to guiding and evaluating interventions for the prevention and cardiovascular disease and cancers. At the time of writing this report, and as noted in the section on surveillance under policy content, the BNR has so far reported on data collected in 2009 and 2010, and thus it is far too early to comment on likely trends in disease incidence. That said, the findings to date, as described below have already indicated areas in which health care system interventions can be made to improve outcomes.

Mortality data

At the time of writing this report data that are considered comparable over time on mortality from diseases of interest, including ischaemic heart disease, cerebrovascular diseases, circulatory diseases (including the previous two) and diabetes are available for Barbados from the year 2000 to 2008. These data used in outcomes section that follows were taken from the Pan American Health Organization mortality data. It is noted that work is ongoing to provide PAHO with more recent mortality figures. It is also noted that the BNR has been active in promoting standardized approaches to cause of death reporting by medical practitioners in Barbados, in particular help ensure that trends over time reflect trends in underlying disease mortality and not in assigning cause of death.

Burden of disease

The 2010 Global Burden of Disease (GBD) study, published at the end of 2012, provides estimates on mortality and morbidity from 1990 to 2010 for over 180 countries[20], of which Barbados is one. The estimates are presented in highly accessible formats through the Institute of Health Metrics and Evaluation (IHME) website. Trends, for example, in diabetes and cardiovascular related disability adjusted life years (DALYS) for Barbados are readily obtained. The investigators in the GBD study will have provided each country with the opportunity to comment on the data used for that country. Nonetheless, these data must be used critically. Where country specific morbidity and mortality data do not exist for a given country for the whole time period, as is the case for Barbados and indeed the majority of countries, they are modeled, using for example data from similar settings, to provide plausible estimates.

Table 10 - Summary of population based prevalence studies on diabetes, hypertension and associated risk factors undertaken in Barbados since 1992

Year(s) conducted	Title (author, year of publication)	Target population, Sampling, sample size	Risk factors and methods of measurement	Comments
2011-2013	Barbados Health of the Nation, funded by Ministry of Health, undertaken by the Chronic Disease Research Centre & Public Health, Cave Hill.	**Target population:** Men and women ≥ 25 years **Sampling:** Multistage: enumeration district, household, one individual per household **Sample size**: 1265 individuals **Response rate**: current estimate 60 to 65% (to be confirmed)	**Anthropometry:** height, weight, waist and hip **Smoking:** questionnaire (STEPS) **Alcohol:** Questionnaire (STEPS) **Diet:** questionnaire on all for daily consumption fruit and veg (STEPS), plus other limited aspects; 24 urine collection for sodium on subsample of ~ 400 aged 25 to 64 yrs, plus detailed dietary FFQ and 24 hour recalls **Physical activity**: questionnaire (RPAQ) on all; objective assessment (Actiheart) on subsample of 368 aged 25 – 54 yrs **Hypertension**: BP measurement (automated machine) or reported diagnosis **Lipids:** fasting lipid profile (total, hdl, ldl cholesterol, triglycerides) **Diabetes**: fasting glucose, HBA1c or reported diagnosis	Data collection finished in July 2013. Double data entry being completed at the time of writing this report.
2007	Behavioural risk factor survey: STEPS Report (Ministry of Health, 2007)	**Target population:** Men and women ≥ 25 years **Sampling**: Multistage: enumeration district, household, one adults per household **Sample size**: 1270 individuals, for questionnaire data; ~330 for biological data. **Response rate**: 65% questionnaire data, 17% biological data	**Anthropometry:** height, weight, waist (not hip) **Smoking:** Questionnaire (STEPS) **Alcohol:** Questionnaire (STEPS) **Diet:** Questionnaire (STEPS) **Physical activity**: Questionnaire (STEPS) **Hypertension**: BP measurement (automated machine),or reported diagnosis **Lipids:** total cholesterol **Diabetes**: fasting glucose (WHO criteria), or reported diagnosis	Data collection for STEP 1 (questionnaire data) in people's homes; and STEPS 2&3, the biological measurements, at a later date in a health centre
2002	Barbados Risk Factor and Health Promotion Survey (Ministry of Health, year not stated on report)	**Target population**: Men and women ≥ 15 years **Sampling:** enumeration districts; systematic sampling of households; one adult per household; quotas used to give sample with sample age/sex distribution of the 2000 census population **Sample size**: 2109 **Response rate**: unclear given quota approach and lack of data on how many approached vs participated. 100% 'completion rate' claimed	**Anthropometry:** not assessed **Smoking:** Questionnaire: current smoker, frequency/amount **Alcohol:** Questionnaire: Frequency, amount **Diet:** Questionnaire: servings vegetables per week, and frequency ('regularly' through 'never') of other selected items **Physical activity**: Questionnaire: nature of daily activity, if supplement 'normal activity' with exercise, frequency types of exercise **Hypertension**: Reported diagnosis **Lipids:** Reported high cholesterol **Diabetes**: Reported diagnosis	Only questionnaire based data collected. Survey includes data on sources of media people use for health information.
2000	Barbados Food Consumption and Anthropometric Survey (National Nutrition Centre, Ministry of Health, 2003)	**Target population:** Men and women ≥ 18 years **Sampling**: enumeration districts; systematic sampling of household clusters; head of household (or main cook if different) plus one other randomly selected adult (if available). **Sample size**: 1051 households, 1704 individuals **Response rate**: unclear. Stated that 1638 households selected, but some (no. not given) unoccupied, others refused. No details on response rate of individuals	**Anthropometry:** Height and weight **Smoking:** Not assessed **Alcohol:** Questionnaire on alcohol in past 24 hours **Diet:** Food frequency questionnaire and 24 hour recall **Physical activity**: Questions on 'planned exercise' **Hypertension**: Reported diagnosis **Lipids:** Not assessed **Diabetes**: Reported diagnosis	Given the method of sampling (or at least how it is described) the individual based data (as opposed to the household food consumption data) are unlikely to be representative of the 18+ population

1991-94	ICSHIB - International Collaborative Study on Hypertension in Blacks (3 main publications, 1995-1998)	**Target population**: Men and women 25-74 years **Sampling**: Random sampling of households within purposively chosen enumeration districts **Sample size**: 883 **Response rate**: 63% (participation rate based on those contacted in person)	**Anthropometry:** Height and weight **Smoking:** Not assessed/reported **Alcohol:** Stated that assessed by questionnaire. However, not reported **Diet:** 24 hour urine collection on sub-sample (number not clear) **Physical activity**: Not assessed/reported **Hypertension**: BP measurement (standard shyg) or on treatment **Lipids:** Not assessed/reported **Diabetes**: Reported diagnosis	As ICSHIB had seven different centres, across 6 countries, the details that can be obtained for Barbados alone from the published papers are relatively limited.
1988-1992	Barbados Eye Study (several publications, 1999-2007)	**Target population**: Men and women ≥ 40 - 84 years **Sampling**: 'Simple random sample of Barbadian born citizens' (from the electoral register) **Sample size**: 4709 **Response rate**: 84% (described as 'participation' rate – based on those contacted in person?)	**Anthropometry:** Height, weight, waist and hip **Smoking:** Questionnaire: frequency, amount **Alcohol:** Questionnaire: frequency, amount **Diet:** Not assessed/reported **Physical activity**: Not assessed/reported **Hypertension**: BP measurement (zero shyg) or on treatment **Lipids:** Not assessed/reported **Diabetes**: Reported diagnosis or HBA1c (non-standardised measurement) >10%	This study has published both prevalence data, from the phase of establishing the cohort (1988-1992) and incidence data, including on the incidence of obesity by socio-economic status
1992	Barbados Risk Factor Survey (Ministry of Health, & Pan American Health Organisation/World Health Organisation Office of Caribbean Program Coordination, Barbados 1992)	**Target population**: Men and women ≥ 15 years. **Sampling**: Strategy not stated in document, believed to be multistage, starting with enumeration districts then households. **Sample size:** 2035 **Response rate**: Not stated	**Anthropometry:** Self-reported height and weight **Smoking:** Questionnaire: current smoker, frequency/amount **Alcohol:** Questionnaire: frequency, amount **Diet:** Questionnaire: freq consumption selected items, but not fruit and vegetables **Physical activity**: Questionnaire: nature of daily activity, if supplement 'normal activity' with exercise, frequency types of exercise **Hypertension**: Reported diagnosis **Lipids:** Not assessed **Diabetes**: Reported diagnosis	This survey was undertaken by 'Systems Caribbean Limited' on behalf of the Ministry of Health and the other authors.

A review of outcomes

Targets related to mortality, morbidity and risk factors

Table 11 summarises targets set in the major policy documents identified as part of this review. There follows a brief review, based on the data sources described above, of our current ability to evaluate whether or not they have been met.

Table 11 – Targets related to mortality, morbidity and risk factors

Target	Source
Mortality and Morbidity	
Morbidity and mortality from diabetes, hypertension and cardiovascular disease reduced by 10% in those aged over 40 between 2002-2012	Strategic plan for health 2002-2012
Reduce the mortality rate of selected NCDs by 15% by 2012	Strategy for the prevention and control of CNCDs 2004
Reduce the rate of premature and avoidable death from heart disease and stroke among those under, and those over, 65 years by 10% by 2012 compared to 2002 baseline	CVD Task Force Report 2007
Reduce the prevalence of CVD by 10% by 2012 compared to 2002 baseline	CVD Task Force Report 2007
Morbidity and mortality from diabetes, hypertension and cardiovascular disease reduced by 10% in those aged over 40 between 2002-2012	Strategic Plan for the Nation CNCD Commission, 2009-2012
Risk factors	
Overweight and Obesity	
5% reduction in age specific Body Mass Index between 2002 and 2012	Strategic plan for health 2002-2012
Decrease *obesity* prevalence *in women* from 30% to 25% in 3 years and to 20% in 5 years	Strategy for the prevention and control of CNCDs 2004
Decrease *overweight* prevalence *in men* from 30% to 25% in 3 years and 20% in 5 years	Strategy for the prevention and control of CNCDs 2004
Reduce to at most 30% those aged 18 to 64 classified as overweight or obese by 2012	CVD Task Force Report 2007
Physical Inactivity	
Increase the proportion of the adult population from 47% to 67% supplementing daily activities with exercise	Strategic plan for health 2002-2012
Increase the proportion of the population taking regular physical activity from 47% to 67% in 3 years and to 80% in five years	Strategy for the prevention and control of CNCDs 2004
Smoking	
Reduce by at least 15% the percentage aged 17 to 64 who regularly smoke cigarettes by 2012 compared to 2002	CVD Task Force Report 2007

Mortality and morbidity

A robust analysis of recent trends (e.g. since 2002) in morbidity and mortality from selected NCDs, as suggested in the indicators above, is not possible given the currently available data. Mortality data for Barbados on the PAHO database, supplied by the Barbados MOH, are available for the year 2000 to 2008. Age adjusted mortality rates in men and women are shown for diabetes and circulatory diseases (combining ischaemic heart disease and stroke) for the year 2002 to 2008. The data are suggestive of rising diabetes mortality in men, and little evidence of other trends at present. Estimates of the burden of disease due to cardiovascular and circulatory diseases, from the Global Burden of Disease study, suggest that age adjusted rates fell over the 1990s and are plateauing in the since 2000. In fact, this impression of falling age adjusted rates, followed by plateauing is present in the GBD estimates for NCDs as a whole, and whether mortality is described alone or with morbidity.

Figure 1 – Age adjusted death rates by year from diabetes per 100,000 population (source: PAHO)

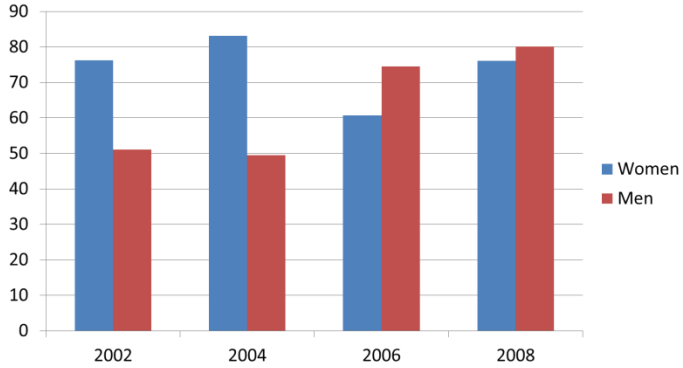


Figure 2 – Age adjusted death rates by year from circulatory diseases per 100,000 population (source: PAHO)

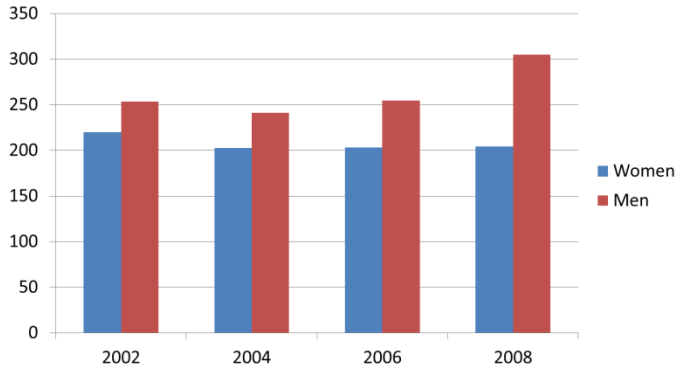
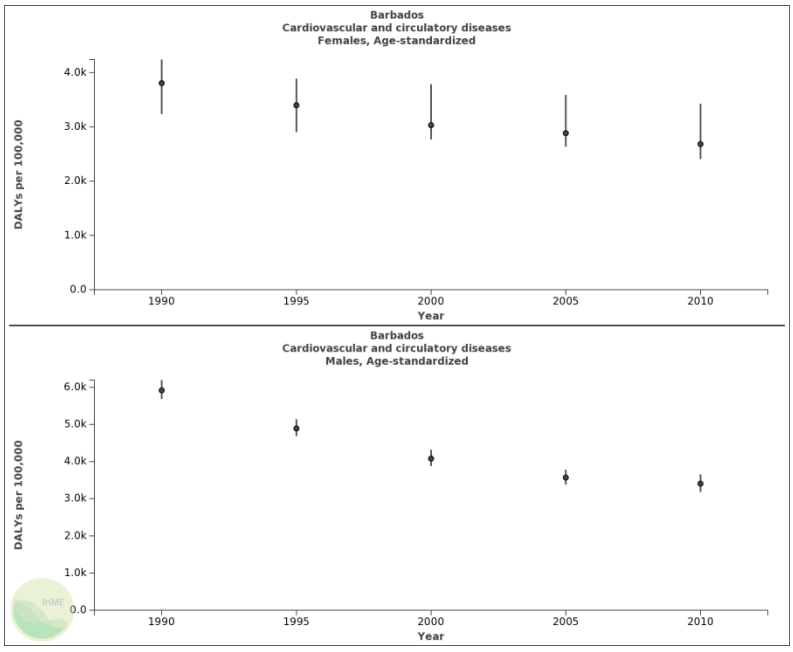


Figure 3 – Estimated disability adjusted life years per 100,000 population in women (top chart) and men due to cardiovascular and circulatory diseases by year (source: Institute of Health Metrics and Evaluation) NB the dots are the estimate the lines indicate the range uncertainty on them.



Incidence of myocardial infarction and stroke - data from the BNR for 2010

The first complete year for data on both stroke and myocardial infarction from the BNR is 2010, and at the time of writing these are the latest data available. There were 347 myocardial infarctions recorded in 344 individuals. Seventy eight of the events were sudden cardiac deaths. The crude incident rate is similar in men and women, being 128.5 and 129.7 per 100,000 population in men and women respectively. However, age of onset is younger in men than in women.

The number of strokes in 2010 was 584, at a crude rate of 231.4 per 100,000 population in women, and 202.1 in men. As for myocardial infarction a higher proportion of strokes in men occurred in younger adults compared to women. Three quarters of all strokes were ischeamic. The age adjusted (to the new world population) incidence of stroke in men and women combined was 152.3 per 100,000 compared to 93.2 for myocardial infarction. Although the incidence rate for stroke significantly higher than for myocardial infarction, the number deaths are more similar: 291 and 242 respectively, reflecting a higher case fatality in the latter.

Going forward the BNR ought to provide the most useful source of data for monitoring the impact of interventions on both the incidence and mortality of stroke and myocardial infarction.

Prevalence of hypertension

The available data suggest that prevalence of individuals reporting taking medication for the treatment of hypertension has increased, although the caveat that these data are not adjusted for potential differences in age structure between these surveys is an important one. The table shows the prevalence from three surveys, the first two for the age range 15 years and above and the STEPS survey for adults aged 25 years and above. Note that the STEPS data are based on those who chose to attend for blood pressure measurement, essentially a (self-selected) subsample (see table 10).

Robust comparisons of prevalence based on measured blood pressure or on treatment are not possible at this time. In 1993 ICSHIB[21] (see table 10) reported a prevalence of 28.2% in women and 25.9% in men for those aged 25 to 74 years. In the 2007 STEPS survey the overall prevalence in men and women aged 25 to 64 years was 20.5%, but was 41.5% for all those aged 25 and over. Numbers are small and confidence intervals wide in the STEPS survey. In short, more robust evidence on likely trends in the prevalence of hypertension will come from the Health of the Nation Study.

Table 12 – Crude prevalence (%) estimates for people reporting a diagnosis of hypertension and taking medication by year of study. See table 10 for details of the studies, including age range, and note caveats in their interpretation and comparison.

Definition:	On treatment (BP not measured)		
	MOH - 1992	MOH - 2002	STEPS – 2007
Women	17.0	25.5	31.4
Men	10.7	13.4	20.6

Prevalence of diabetes

Examining possible trends in the prevalence of diabetes is more problematic than estimating trends in hypertension, given the fact that there are not two studies that have used the same diagnostic criteria. The Barbados Eye Study (undertaken between 1988 and 1992) reported a prevalence in adults aged 40 and over of 16.5% in men and 21.5% in women[22]. This was based on known diabetes and an (non-standardised) glycated haemoglobin level of greater than 10%. Using different diagnostic criteria (a fasting plasma glucose of $\geq$ 7 mmol/l) or on treatment for diabetes, the 2007 STEPS survey reported a prevalence in those aged 45 and over 20.4% in men and 25.2% in women (12.7% and 16.7% respectively in those aged 25 and over). Given the very poor response rate for blood glucose testing in the STEPS survey, it is quite possible that many people with already diagnosed diabetes did not attend, as has been found in population based surveys elsewhere (ref). The diabetes prevalence estimates from the Health of the Nation study are eagerly awaited. It does appear that women may have higher rates of diabetes than men – a finding that was statistically robust in the Barbados Eye Study, but not in the much smaller STEPS survey.

Overweight and obesity

The table below shows the crude prevalence of overweight and of obesity as reported in three of the studies where height and weight were measured. Even allowing for differences between the studies and their weaknesses, the data strongly support that the prevalence has increased between 1993 and 2007, particularly in men, although the prevalence of obesity remains higher in women.

Table 13 – Crude prevalence (%) estimates for overweight and obesity by year of study. See table 10 for details of the studies, including age ranges, and note caveats in their interpretation and comparison.

	ICSHIB - 1993		Food Survey – 2000		STEPS – 2007[1]	
	Overweight	Obesity	Overweight	Obesity	Overweight	Obesity
Women	28.3	30.9	34.0	29.6	38.8	35.5
Men	18.0	10.1	40.4	15.0	34.3	20.3

Overweight = BMI 25 - <30; Obesity BMI $\geq$ 30 [1]For ages 25 to 64

Physical inactivity

The approach to collecting data on physical activity in the 1992 and 2002 Ministry of Health Surveys are similar and enable a crude comparison between these time points. Based on this comparison there is no major change over these 10 years (although this does not mean there were no changes). For example, in 1992 21.3% of men said they spent most of the day sitting down compared to 23.7% in 2002, and the figures for women being 33.9% and 36.3% respectively. In 1992, 58% of men and 39.5% of women (47% overall) said that they undertook exercise in addition to their normal daily activities, compared to 54.1% and 42.9% (48.1% overall) respectively in 2002.

The data from the 2007 STEPS survey were collected and presented quite differently, being designed to provide the prevalence of adequate physical activity according to World Health Organization guidance. According to these data 42.5% of men had low (inadequate) levels of physical activity, and 59.0% of women.

The pattern that emerges across all these data is lower levels of physical activity in women compared to men.

Smoking

Between 1992 and 2002 there was no evidence for change in the prevalence of tobacco smoking based on a crude comparison of the two MOH studies. Thus, the prevalence of 'regular' smoking in men in 1992 was 18.6% and in 2002 was 19.3%, the figures in women were 2.0% and 3.0% respectively. The main definition of smoking for the 2007 STEPS survey was daily smoking, and this presumably is more stringent than the definition of 'regular' used above. Daily smoker prevalence was 11.3% in men and 1.4% in women. The main conclusions possible from these data are that smoking is predominantly a male activity in Barbados, and that there is no evidence of an increase in smoking prevalence between 1992 and 2007.

Alcohol, diet and lipids

Only a very crude comparison of alcohol consumption over time is possible given the available data. In the 1992 MOH survey 51.2% of men and 75.5% of women reported that they did not drink alcohol. In the 2007 STEPS survey the equivalent figures are 49.3% and 73.5% respectively (based on not having drunk alcohol within the past year). In 1992 10.3% of the male respondents reported drinking on 4 or more days in the past week, compared to 17.8% in 2007, and for women the figures are 2.9% vs 4.4%. These differences between 1992 and 2007 are entirely compatible with chance. The main conclusion that the data support is that alcohol consumption is less common in women than in men, and that this fact has not changed between the two time points.

Comparisons of diet over time given the available data can also only be very limited given differences in data collection. A major finding from the 2007 STEPS survey is that the vast majority of men (96.6%) and women (94.3%) consumed less than 5 servings of fruit and vegetables per day. In the 2000 Food and Nutrition Survey it was estimated that 86% of men and women consumed less than 370g (based on the WHO recommendation of the time) of fruit and vegetables. Interestingly, however, in the 2000 survey it was noted that 80% of respondents thought they consumed adequate amounts.

Finally, it is worth noting that up until the 2007 STEPS survey there were no population based data of cholesterol and other lipid levels. A small (N=404) study of Seventh Day Adventist adults in the 1990s did report lipid levels[23], but clearly this population cannot be considered 'representative' of the general population – not least because of higher levels than of vegetarianism (around 40%) in this population. In the 2007 survey 35% of men and women had a total cholesterol greater than or equal to 5.2 mmol/l, but as noted the response rate for the blood tests was poor. Further information on the prevalence of dyslipidaemia will come from the results of the Health of the Nation Study

Targets related to disease detection, treatment and control

Table 14 - Targets related to disease detection, treatment and control

Target	Source
Diabetes	
Reduce poor diabetes control to 30% in 3 years and 20% in 5 years	Strategy for the prevention and control of CNCDs 2004
Hypertension	
Increase the proportion of hypertensives treated from 66% to 75% in 3 years and 80% in 5 years	Strategy for the prevention and control of CNCDs 2004
Increase the proportion of hypertensives controlled from 30% to 50% in 5 years	Strategy for the prevention and control of CNCDs 2004
Increase to over 90% those aged over 25 years who have had their blood pressure measured in the previous 5 years by 2012	CVD Task Force Report 2007
Myocardial Infarction and Stroke	
2012 compared to 2007 (using BNR) reduce by 10% or more deaths from sudden cardiac arrest and stroke	CVD Task Force Report 2007
2008 75% of eligible patients in receipt of thrombolysis within 30 mins of arrival at QEH A&E	CVD Task Force Report 2007
By 2008 80% of patients discharged from QEH following myocardial infarction to be on effective medicines (e.g. aspirin, beta blockers, and statins) in line with new protocols.	CVD Task Force Report 2007

Diabetes control

The first population based study that will provide data on diabetes control is the Health of the Nation study. All participants in this study, including those with known diabetes, had an international standard glycated haemoglobin (HBA1c) measurement.

Hypertension

In the 2007 STEPS survey 75% of women classified as hypertensive (based on $\geq$ 140/90 or on treatment) had a previous diagnosis, compared to 50% of the men. Data on the blood pressure control in those with a diagnosis were not provided; neither were data on when participants last had their blood pressure measured. In the 1992 MOH survey 80% of respondents reported having had their blood pressure checked with the past 2 years; and similar proportion (77.3%) reported the same in the 2002 MOH survey. Data all on these aspects, including blood pressure control in those with known hypertension, will be available from the Health of the Nation study.

Myocardial Infarction and Stroke

The data for all the targets under this heading in the table above will be available, and can be monitored over time, from the BNR.

Surveillance and Outcomes Summary

Clearly, there has been a great deal of work undertaken in Barbados over the past 20 years on the prevalence of risk factors for NCDs. Despite this, differences in methodology mean that it is not possible to accurately track trends over this time, although there are some broad patterns. However, Barbados is now in a strong position to monitor trends in diabetes, hypertension and associated risk factors, starting with the 2007 STEPS survey and followed by the 2011/13 Health of the Nation

Study. Ideally these form the start of ongoing surveillance, at least once every five years, using comparable methods. In addition, the BNR is a resource that should enable the accurate tracking overtime of the incidence and case fatality of stroke, myocardial infarction and cancers. The BNR will also facilitate examining the adequacy of access to care and treatment coverage for these conditions. The value of the BNR as a surveillance tool will be enhanced by producing more timely data than has been the experience so far, with the most recent data available for stroke and myocardial infarction being two to three years old. The BNR started collecting data on incident cancers in 2010 and detailed reporting on these is keenly awaited.

Arguably, with the benefit of hindsight, many of the outcome targets identified in policy documents could have been better chosen. For example, in the documents of the 2002-2012 Strategic Plan for Health, and repeated in the NCD Commission 2009-2012 Strategy, a target is stated of: 'morbidity and mortality from diabetes, hypertension and cardiovascular disease reduced by 10% in those aged over 40 between 2002-2012'. While on the face of it this seems clear and relevant, it is not clear how it will be assessed. For example, how should 'morbidity' be operationalized, is this based on age adjusted rates, what data sources will be used? In addition, how realistic is a goal of a 10% reduction – specifically what interventions might be expected to deliver that? Similar questions could apply to other stated goals, such as to reduce the prevalence of overweight (in men) and obesity (in women) from 30 to 20% in five years. Such comments are perhaps unfair, given that hard lessons are being learned the world over on the difficulties of reversing trends in some NCDs and their risk factors. What is very positive is that a process exists, of which this report is part, to review outcomes against targets.

The main recommendation going forward to arise out of this section is that outcomes and targets should be closely tied to surveillance and the availability of data. It should be clear what will be measured and how at the time the target is set.

Results: Gap analysis

Barbados has led, and continues to lead, the region in the implementation of the NCD Summit Declaration (appendix 1). This gap analysis reviewed the Barbados NCD performance as documented in the POS NCD Summit Evaluation Grid[2], and any additional priority indicators from the Strategic Plan of Action for the Prevention and Control of NCDs for Countries of the Caribbean Community 2011-2015[1] (see full Gap analysis tables 1A-14A in appendix 7):

NCD Commission, plan, budget

The Barbados NCD Commission had convened 62 monthly meeting to present time under the leadership of Chair Prof Trevor Hassell. The 2013-2017 NCD strategic plan is now being finalised, while the previous 2009-2012 plan needs to be formally evaluated. Despite attempts to engage partners in non-health Ministries of Government, the private sector, faith based organisations and other civil society groups, full multi sectoral and inter sectoral approaches are yet to be achieved with the health sector still championing prevention and control strategies.

The Government of Barbados has funded NCD programmes. Including support for Health of the Nation (HotN) survey, BNR active surveillance and a staff member for NCD Commission, working with MOH NCD division. The government has not yet addressed the POS mandate #4, which calls for earmarking of tobacco and alcohol taxes for NCD programmes. While the NCD Commission is inter-sectoral, there is still need for enhancing the capacity of health NGOs and civil society in networking, information-sharing, resource mobilisation and advocacy strategies.

Risk factor control – tobacco & alcohol

FCTC was ratified November 2005, entered into force February 2006. Smoke free public spaces legislation was passed August 2010 and implemented October 2010 with positive effect and compliance. Taxes have been increased several times, now approximating 50% of sale price. There is not yet legislation to ban advertising, promotion and sponsorship. There is little evidence of an alcohol policy or interventions.

Risk factor control – nutrition

Several policy documents have been completed – Food Based Dietary Guidelines (2009), Nutritious and Healthy; "*Nutritious and Healthy* Foods in *Schools* (2010) and a draft National Food and Nutrition Security Action Plan (2013). Legislation requiring food labelling is not in place and the taxation on basic food basket has not yet been updated from unhealthy to healthy foods. This is the weakest area of the NCD response, and will also require regional action to "enhance food security and our strong support for the elimination of trans-fats from the diet of our citizens" POS#7 and "Caribbean Regional Negotiating Machinery (CRNM) to pursue fair trade policies in all international trade negotiations … and reducing the negative effects of globalisation on our food supply" (POS#8)

There has been an active salt campaign led by the NCD Commission including public education, and some progress has been made for example in reducing salt in breads.

Risk factor control – physical inactivity

Nursery, primary and secondary school all have physical education on calendar at least twice weekly. In tertiary institutions there is no mandate, but there are local programmes, e.g. UWI Cave Hill Healthy Campus Initiative since 2011. There are anecdotal reports of increased physical activity with population based estimates expected shortly from HotN study. Sea-side boardwalks are being expanded. Caribbean Wellness Day has been celebrated in Barbados every year since the 2007 NCD Summit (POS#15), though the celebrations are limited to Ministry of Health activities in a single location. More could be done to engage civil society and the private sector in these celebrations.

Health promotion in schools, workplaces, faith based organizations, community

Healthy eating guidelines have been published, and implementation has begun, but is slow. PE in schools is mandatory. The NCD risk factor prevention needs to be enhanced in the Health and Family Life Education curriculum, probably at the regional level.

Workplace Wellness programmes have just gotten off the ground. The Chamber of Commerce launched "Walk the Talk" campaign in 2013 and screening and health promotion in workplace being developed.

The Physical Activity (PA) Taskforce created in 2009, launched their Physical Activity Guidelines on Caribbean Wellness Day 2013 and has been working with community councils to enhance PA in communities.

The media

There are regular, but ad hoc radio discussions. Newspapers have regular publications - Barbados Advocate weekly health page and Nations newspaper monthly Better Health magazine. The TV programme Get Healthy Barbados is currently commencing its fourth season.

Surveillance

This is one of the strong points in Barbados. STEPS NCD risk factor survey was completed in 2007, and these measures were repeated in 2011/2013 HotN study now being analysed. This will allow for population based trend analysis. The Global Youth Tobacco Survey was completed in 1999 and 2007 and the 2013 survey is now in the field. The Global School Health Survey was completed in 2011 and 2013. Active surveillance by the BNR for heart attack, stroke and cancer started in 2009.

However there is still room for improvement. Routine mortality and morbidity data reporting is significantly delayed. The main medical records department at the only tertiary care institution, the queen Elizabeth Hospital is still paper based, and there is incomplete private sector reporting.

Treatment and quality of care

There are plan to introduce the chronic care model at the new St. John Health Centre as a pilot. While there has been some training by BNR in death certification, there is no systematic, institutionalized training or auditing or in NCD programme quality improvement. The National NCD Commission has just recently started to look at the question of treatment as a specific component of NCD control. Quality of care guidelines are not widely referenced.

The Barbados Pharmaceutical Services (BPS) offer a high quality product, fully computerized for both the public and private sector, with high quality generics widely available free of cost to the citizens of Barbados.

Reporting on WHO 25 indicators (appendix 7)

A review of the 25 targets established following the UNHLM shows that Barbados currently collects data to report on 21 of the 25 indicators, but in the 25 years age group, not the 18years as suggested.

The target for Hepatitis B vaccination is not a priority for Barbados

At present Barbados does not have the capacity to report on three indicators:

- Age-standardized mean proportion of total energy intake from saturated fatty acids in persons aged #18+
- Harmful use of alcohol: Total (recorded and unrecorded) alcohol per capita #(15+ years old) consumption within a calendar year in litres of pure alcohol, as appropriate, within the national context
- Harmful use of alcohol: Alcohol-related morbidity and mortality among adolescents and adults.

Gap analysis summary

A gap analysis was undertaken to compare the current scope of NCD policy formulation and implementation with the 15 commitments of the Port of Spain Declaration (POS; 2007) and any additional priority indicators from the Strategic Plan of Action for the Prevention and Control of NCDs for Countries of the Caribbean Community 2011-2015. In the category commitment, policy and resources, all POS indicators (including NCD commission, budget and plan) have been achieved. Similarly, several of the FCTC criteria have been adopted. Several nutrition policy documents have been completed – for example Food Based Dietary Guidelines (2009) and Nutritious and Healthy Foods in Schools (2010). Legislative actions such as trade agreements for food security and for food labelling are not yet in place. Most indicators for physical activity (PA) have been fulfilled, such as mandatory PA in schools and workplace wellness initiatives which are now getting started. All surveillance indicators are met, including the STEPS survey and minimum data set reporting. For treatment indicators the Chronic Care Model has only been planned in one primary care facility; there is no systematic, institutionalised training or auditing in NCD programme quality improvement. Against the regional Strategic Plan of Action (2011-2015) indicators, further policy achievements can be noted, such as current and planned studies to generate risk factor and burden of disease data to evaluate implementations, and an access to free at the point of use generic drugs from the drug formulary. The Strategic Plan also recommends future steps such as sustained multi-sectoral engagement, scaling up of evidence-based treatment, and evaluation of on-going programmes and more legislative action across Government ministries.

Overall, Barbados has done very well, supporting their commitments to NCD prevention and control, even in the face of overall budgetary constraints. The leadership in this sector is to be commended.

Lessons Learned and Conclusions

Since the year 2000, the main time frame for the work of this report, much has been achieved within Barbados in formulating and implementing policy aimed at the prevention and control of NCDs. In this brief closing section we summarise some of the key lessons learned, highlight the limitations of this work, and draw some conclusions.

Lessons learned

What has been achieved and why?

In answering this question, we highlight the following:

- There is a very high level of awareness amongst policy makers, and indeed the general public, on the burden imposed by NCDs in Barbados. The inception of this awareness can be traced back to at least the early 1990s, and it is notable how many research papers on NCDs in Barbados have been published over the past 20 years. The establishment of the Chronic Disease Research Centre of the University of the West Indies in 1992 has undoubtedly played, and continues to play, an important role in raising awareness.
- Barbados has benefited from strong authoritative opinion leaders ('policy entrepreneurs') raising awareness on the impact of NCDs and suggesting policy solutions. These leaders have been found in Barbados and outside Barbados, most notably Sir George Alleyne.
- The combination of high level of awareness and effective policy entrepreneurs assisted in ensuring genuine political commitment and the formulation of strategic policy frameworks by MOH to address NCDs, notably in the 2002 to 2012 Strategic Plan for Health and the 2004 Strategy for the Prevention and Control of Chronic Non Communicable Diseases.
- In terms of documented policy the 2004 NCD Strategy can be seen as an inflection point that helped to change the level of commitment from Government by recommending the establishment of an NCD Commission, and the establishment of posts in MOH dedicated to addressing NCDs, including a Senior Health Promotion Officer, and Senior Medical Officer of Health. It is a measure of the political commitment within the Government that these posts were funded.
- From at least the 2002 Strategic Plan for Health, the need for a multi-sectoral response to the prevention of NCDs has been recognised, and this was evident in the composition of the NCD Commission which was convened in January 2007. Although, as noted below, achieving a genuine multi-sectoral response remains a challenge.
- There has been a longstanding commitment to surveillance of risk factors, as evidenced by MOH surveys conducted in 1992 and 2002, and more recently in the 2007 STEPS, the 2011/13 Health of the Nation Study, and the establishment of the BNR in 2008.
- On the treatment side, the Government remains committed to providing medication for NCDs free at the point of use.
- Most of the funding for the above has come from the Government of Barbados. However, support from in particular the European Development Fund (EDF) and the PAHO has proved

highly valuable at key moments. For example, EDF funding enabled the establishment of the BNR.

- All the above is evidence of the recognition and commitment by policy makers that addressing NCDs is a long term process.

What have been some of the challenges and why?

In answering this question, we highlight the following:

- Although there is a commitment within the MOH policy documents to a multi-sectoral approach to NCD prevention, indicating the need to change environments to promote behavioural change, achieving a fully multi-sectoral approach remains a challenge. The strong impression from the stakeholder interviews was that implementing policy measures in other Government sectors, such as Education, Agriculture and Finance, to assist with NCD prevention is a low priority for them.
- One reason for the difficulties in achieving an effective multi-sectoral response is likely to be the way in which most stakeholders perceive the problem. They see the prevention of NCDs as largely an issue of personal responsibility e.g. that individuals need to learn to eat less and exercise more. While legislative, fiscal and environmental changes may support them in doing so, these are not seen as core preventive measures. This view was not shared by all, such as not by core individuals in MOH, but did include those within the health care system, some within MOH, some in the NCD NGOs, and within other Ministries.
- While acknowledging that some policy statements are designed to provide an overarching framework within which more specific objectives are specified, it was the case that the majority of statements lacked clear objectives, resources and targets. Even where some targets are given, as summarised in the section on surveillance and outcomes, it is often not clear what exactly should or could be measured to know if they have been met.
- Related to the above point, surveillance has so far been of limited effectiveness, partly because of differences in the measurement of variables overtime, partly due to lack of timeliness in the availability of some data (e.g. mortality data and BNR), and partly because indicators and targets have not been clearly tied to surveillance.
- An issue that arose from the key informants in the NCD NGOs is that while they acknowledge support from Government, with subventions to provide services, they also felt on the periphery and somewhat isolated from policy making in response to NCDs. It was noted by all NGO key informants that their position in this regard could be strengthened if the NGOs cooperated more, rather than seeing each other as competitors for limited resources. A specific suggestion was the creation of national forum for NGOs with an interest in NCDs.
- There are two policy areas that were identified as clear challenges, one by omission of policy statements and the other because of particular difficulties of implementation. The omission is policy on the prevention of harm from alcohol. It is perhaps too strong to claim that there is a 'blind spot' on this issue, but there is clear evidence from the majority of the stakeholders interviewed of a reluctance to address it. This is related to both the economic role and social role that alcohol production and consumption is seen to have within Barbados, and indeed the wider Caribbean. The other policy area, where there are statements but implementation is seen to be particularly weak, is the integrated

management of NCDs. It was felt, for example, that much more needs to be to promote the use of evidence based clinical guidelines, including improved and regular educational outreach for health carers and the monitoring and feedback of clinical process and outcome measures.

- Finally, the very effective roles played by 'local champions' or 'policy entrepreneurs' have been highlighted in several parts of this report. This was also seen as a potential weakness and threat to sustainability by many stakeholders who expressed the need for succession planning beyond the influence of these 'champions'.

Study limitations

This study had several limitations in study design and scope. For the process and content evaluation our lens was narrowed by the focus on document review and key informant interviews. In future evaluations a wider perspective could be achieved by including a wider document review, in particular a systematic analysis of the meeting notes such as those of the NCD Commission to trace the genesis of policy actions and a media content analysis of major milestones and societal discourse.

The number of key informants was also limited by the timeframe and scope of this study. The 25 key informants purposefully sampled for this study were chosen for their core involvement and interest in NCD policy formulation and/or implementation. We selected most interview participants in consultation with and upon recommendation from key informants who identified these core competencies and roles. However, more sectors and organisations (e.g. media, other ministries) had been suggested for further perspectives that we could not include in this study.

Finally, we deliberately restricted this study to NCD policy formulation and implementation by the MOH, considering their wide range of policy activities and the limited timeframe of this research. We acknowledge that many other government-led policies by other ministries impact directly and indirectly on NCD control and prevention, both positively and negatively. Examples for these are increased duties on tobacco and alcohol which should promote NCD prevention, to the negative impact of tax concessions on the basic basket of foods which favours foods high in salt and fat. We acknowledge that there are efforts now being undertaken by the civil and private sector to put NCD policies in place. We only reported on those directly linked or instigated by the MOH.

Conclusion

Conducting a document review and key informant interviews of government-led NCD policy in Barbados, this study outlined and analysed the processes through which policies on NCD prevention and control have been drafted, agreed and implemented, the current scope and content of NCD policy measures, and the conceptualization and awareness of government-led NCD policy across stakeholders, both within and outside the government. Reviewing available data sets, we also outlined the data that currently exist on the burden of NCDs, risk factors, treatment coverage and control and their trends. A gap analysis compared current NCD achievements with the POS

commitments and the regional Strategic Plan of Action for the Prevention and Control of NCDs (2011-2015).

Summarising the lessons learned from the Barbados case study, communication seems key in the understanding of achievements and future challenges. 'Communication' encapsulates Barbados national vision to drive an NCD agenda that has resulted in a high level of awareness in both political and societal sectors. NCD risk factors, means for prevention and availability of treatment are widely known within the Barbadian population. Communicating this public health message across Government, civil society, the private sectors and the wider population has been a core activity of the multi-sectoral NCD Commission and the MOH, particularly the SMOH(NCD), Health Promotion Unit, the Chief Medical Officer and Ministers of Health. NCD prevention and control has been identified as a national priority by the Social Partnership of Government, Private Sector and Trade Unions, which in return act to further communicate the message.

Communication has also been identified as vital for future steps to drive the NCD agenda forward. For example, emphasis on the existence of treatment guidelines, the systematic, evidence-based inclusion and efficacy of generic drugs, and the importance of monitoring and evaluation named. Communicating about current achievements and the value of on-going programmes will also be invaluable to ensure sustained funding and buy-in, and on-going surveillance and evaluation efforts with a focus on timely outcome data.

A particular challenge is for other sectors and Government ministries take full ownership of the NCD agenda with the necessary financial and human resource commitments. One strategy being utilised is to communicate about NCD differently, reconceptualising health as 'wellness' to highlight employees' productivity or school children's attentiveness. In addition, this study suggests that the problem of NCD prevention, or of promoting 'wellness', needs to be reframed. The problem definition needs to move from one that is largely, albeit not wholly, seen as an issue of personal responsibility towards one that acknowledges how current economic, social and environmental conditions lead to the behaviours that lead to the NCDs[24]. Arguably, reframing the problem in this way with policy makers and the public they serve is a pre-requisite to the more effective multi-sectoral action that is required.

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Appendices

Appendix 1: Port of Spain Declaration: Uniting to stop the epidemic of Chronic NCDs

We, the Heads of Government of the Caribbean Community (CARICOM), meeting at the Crowne Plaza Hotel, Port-of-Spain, Trinidad and Tobago on 15 September 2007 on the occasion of a special Regional Summit on Chronic Non-Communicable Diseases (NCDs);

Conscious of the collective actions which have in the past fuelled regional integration, the goal of which is to enhance the well-being of the citizens of our countries;

Recalling the Nassau Declaration (2001), that "the health of the Region is the wealth of Region", which underscored the importance of health to development;

Inspired by the successes of our joint and several efforts that resulted in the Caribbean being the first Region in the world to eradicate poliomyelitis and measles;

Affirming the main recommendations of the Caribbean Commission on Health and Development which included strategies to prevent and control heart disease, stroke, diabetes, hypertension, obesity and cancer in the Region by addressing their causal risk factors of unhealthy diets, physical inactivity, tobacco use and alcohol abuse and strengthening our health services;

Impelled by a determination to reduce the suffering and burdens caused by NCDs on the citizens of our Region which is the one worst affected in the Americas;

Fully convinced that the burdens of NCDs can be reduced by comprehensive and integrated preventive and control strategies at the individual, family, community, national and regional levels and through collaborative programmes, partnerships and policies supported by governments, private sectors, NGOs and our other social, regional and international partners;

Declare -

- Our full support for the initiatives and mechanisms aimed at strengthening regional health institutions, to provide critical leadership required for implementing our agreed strategies for the reduction of the burden of Chronic, Non-Communicable Diseases as a central priority of the Caribbean Cooperation in Health Initiative Phase III (CCH III), being coordinated by the CARICOM Secretariat, with able support from the Pan American Health Organisation/World Health Organisation (PAHO/WHO) and other relevant partners;
- That we strongly encourage the establishment of National Commissions on NCDs or analogous bodies to plan and coordinate the comprehensive prevention and control of chronic NCDs;
- Our commitment to pursue immediately a legislative agenda for passage of the legal provisions related to the International Framework Convention on Tobacco Control; urge its immediate ratification in all States which have not already done so and support the immediate enactment of legislation to limit or eliminate smoking in public places, ban the sale, advertising and promotion of tobacco products to children, insist on effective warning labels and introduce such fiscal measures as will reduce accessibility of tobacco;

- That public revenue derived from tobacco, alcohol or other such products should be employed, inter alia for preventing chronic NCDs, promoting health and supporting the work of the Commissions;
- That our Ministries of Health, in collaboration with other sectors, will establish by mid-2008 comprehensive plans for the screening and management of chronic diseases and risk factors so that by 2012, 80% of people with NCDs would receive quality care and have access to preventive education based on regional guidelines;
- That we will mandate the re-introduction of physical education in our schools where necessary, provide incentives and resources to effect this policy and ensure that our education sectors promote programmes aimed at providing healthy school meals and promoting healthy eating;
- Our endorsement of the efforts of the Caribbean Food and Nutrition Institute (CFNI), Caribbean Agricultural Research and Development Institute (CARDI) and the regional inter-governmental agencies to enhance food security and our strong support for the elimination of trans-fats from the diet of our citizens, using the CFNI as a focal point for providing guidance and public education designed toward this end;
- Our support for the efforts of the Caribbean Regional Negotiating Machinery (CRNM) to pursue fair trade policies in all international trade negotiations thereby promoting greater use of indigenous agricultural products and foods by our populations and reducing the negative effects of globalisation on our food supply;
- Our support for mandating the labelling of foods or such measures as are necessary to indicate their nutritional content through the establishment of the appropriate regional capability;
- That we will promote policies and actions aimed at increasing physical activity in the entire population, e.g. at work sites, through sport, especially mass activities, as vehicles for improving the health of the population and conflict resolution and in this context we commit to increasing adequate public facilities such as parks and other recreational spaces to encourage physical activity by the widest cross-section of our citizens;
- Our commitment to take account of the gender dimension in all our programmes aimed at the prevention and control of NCDs;
- That we will provide incentives for comprehensive public education programmes in support of wellness, healthy life-style changes, improved self-management of NCDs and embrace the role of the media as a responsible partner in all our efforts to prevent and control NCDs;
- That we will establish, as a matter of urgency, the programmes necessary for research and surveillance of the risk factors for NCDs with the support of our Universities and the Caribbean Epidemiology Centre/Pan American Health Organisation (CAREC/PAHO);
- Our continuing support for CARICOM and PAHO as the joint Secretariat for the Caribbean Cooperation in Health (CCH) Initiative to be the entity responsible for revision of the regional plan for the prevention and control of NCDs, and the monitoring and evaluation of this Declaration.
- **We hereby declare the second Saturday in September "Caribbean Wellness Day," in commemoration of this landmark Summit.**

Appendix 2: List of documents for document review

Documents included for systematic document abstraction
Barbados National Strategic Plan for Health 2002 – 2012 (2003)
Strategy for the Prevention and Control of Chronic Non Communicable Diseases (2004)
Healthy Hearts for Life - Report of the Task Force on the Development of Cardiovascular Services (2007)
Declaration of the Port of Spain: Uniting to Stop the Epidemic of Chronic NCDs (2007)
Strategic Plan 2009-2012 for the National Chronic Non-Communicable Disease Commission (2008)

Further documents consulted
Health and Family Life Education 2002 (UNICEF)
Report of the International Consultation on a Strategy for the Prevention and Control of CNCDs in Barbados 2005
Behavioural Risk Factors Survey 2007
National NCD Commission Mandate
Health Systems Profile Barbados, PAHO/WHO HSS December 2008
Reports of the Chief Medical Officer
Report of the Barbados National Registry (CDRC) 2010
Nutritious and Healthy Foods in Schools: Nutritional and practical guidelines for Barbados 2010
Protocol IV of the Social Partnership 2011-2013
Ministry of Health Submission Economic and Social Report 2012
PAHO/CARICOM Strategic Plan of Action on NCDs 2011
WHO Global NCD Action Plan 2013-2020

Appendix 3: Key informant interview guide

BCPS Interview Guide

(approx. 30-60 minutes; check with participant on time available when scheduling each interview)

Introduction of study:

This is a study commissioned by PAHO on NCD policies in Barbados and in what way Barbados can serve as an example for other Caribbean islands. We aim to determine the present scope and content of NCD policies in Barbados and are particularly interested in the process of implementation of policy measures, lessons learned, and ways forward. For the study we are using a mix of methods, including quantitative data available, a document review and these key informant interview.

Interview procedure:

This is meant to be a flexible semi-structured expert interview. By that we mean that there are general areas we would like to cover; however, this is meant to be just a guide. As you are the expert you should be able to put emphasis on particular topics and add topics if you feel we haven't covered everything important.

Just to let you know about the rough structure: We could first talk about:

1) Your personal involvement in the policy implementation in Barbados (the operational side)
2) Some questions on the regional NCD policies development and implementation into Barbados
3) The current scope and content of policy measures in Barbados
4) Lessons learned
5) Any other key informants or documents you would recommend for us to include

You can appreciate that this is a lot to cover, so let me just double check with you how much time you have available for this interview. The interview is being tape-recorded.

Consent procedure:

Did you read and understand the information sheet and consent form? Can I explain anything? Do you have any questions? We would like to stress that we would not identify the specific source of comments in the report or other write ups. You will be able to review the final draft of the report before submission.

(Review participant information sheet and consent form and sign consent forms)

Main questions	More detailed follow-up questions / prompts	Clarifying questions
Questions on the operational side of policy implementation in Barbados:		
Please tell me how you are, and have been , involved in helping to come up with and implement measures to prevent and control NCDs in Barbados	What is your role, remit, scope of your role or activity? In what way does this address the PoS commitments? How did you get involved? Since when? Who got you involved? Can you tell us about particular programmes? Which ones were particularly successful, which ones didn't work?	Can you give me some examples? What did you mean when you said….? Can you expand a little on this?
Please tell me about the support and resources that you gained, or were provided with, for this work.	What international organizations, regional/national government support do you have? What resources are essential (human, financial, organizational, structural)? What resources are available to you? Who is ensuring these resources?	Can you expand a little on this? Is there anything else on the topic of support and resources that you would like to address?
What are future plans in moving forward?		
Questions on regional NCD policies development and implementation into Barbados [*not for all key informants*]:		
Taking a step back: Can you describe the processes through which policy on NCD prevention has been and is drafted, agreed and implemented?	What is/was the regional process? In what way is Barbados involved?	Can you expand a little on

		this?
Who is/was involved, instrumental in realizing NCD policy agenda in Barbados?	Can you tell us about particular people, organisations? Can you tell us about the involvement of the private sector, civil society, NGOs and non-health ministries?	We already talked about your own involvement. Is there anything you'd like to add – e.g. how you are linked to these?
Questions on current scope and content of policy measures in Barbados [*not for all key informants*]:		
What is the current scope and content of policy measures in Barbados aimed at a population wide reduction of risk factors?	Tell me in particular about: - unhealthy diet - harmful use of alcohol - physical inactivity - and tobacco smoking Are there essential documents on this we should review?	Can you give me some examples? Can you expand a little on this?
What is the current content of policy measures in Barbados aimed at the integrated management/treatment of NCDs?	Tell me in particular about: - drugs for NCDs - monitoring and auditing care at population level (infrastructure of reporting) - target population; % of people who are controlled -involvement of the private sector (e.g. regarding compliance of reporting) and civil society The Strategic plan 2011-2015 mentions the scaling up of evidence-based treatment-Strategic Plan 2011-2015); Is this relevant to Barbados, is this happening?	Anything else? Are there essential documents onthis we should review?
Questions on policy implementation lessons from Barbados:		
	Why do you think it has worked	

What has worked well in terms of drafting and implementing policy in Barbados?	well?	Can you expand a little on this?
What has NOT worked well in terms of drafting and implementing policy in Barbados?	Why do you think it has not worked well? (Still missing according to score card:) What about: *transfat free foot supply, trade agreements supporting food security and health agenda, mandatory food labeling, PA programmes in public and private institutions*	Can you expand a little on this?
What in your view are the gaps in both current policy and the ability to evaluate its impact?	How would you recommend that these gaps are filled? Can you in particular comment on reporting systems and data quality/ data gaps?	Can you give me some examples?
What in your view are the barriers to driving the NCD agenda forward?	Any particular organisations, individuals, structures, sectors?	Can you give me some examples?
What in your view are the lessons learned from the experience in Barbados?	And how can the lessons learned from Barbados assist guiding activities in other CARICOM countries, and beyond?	
Final questions on further key informant and document suggestions:		
Can you direct us to available data on NCD risk factors, management, incidence and mortality?	Can you as far as possible describe recent trends in these (e.g. over the past 5 to 10 years)?	
Which other individuals (and their organisations) have been key in making progress to move the NCD agenda forward?	Why do you think so? Who else do you think we should interview as a key informant? Why would you recommend this person?	
Thank you very much. These are our questions. **Is there anything else you would like to add you think we forgot to discuss today?**		

Appendix 4: Framework Analysis 'frame' to index interview data

Codes	Definition	Quotes by sector			
		MOH	Civil (NGOs)	Civil (University)	Etc.
RF achieved	Any achievements related to risk factors diet, PA, alcohol, tobacco exposure				
RF gaps	Any gaps/barriers related to risk factors diet, PA, alcohol, tobacco exposure				
Care achieved	Any achievements related to NCD treatment				
Care gaps	Any gaps related to NCD treatment				
Etc.					
Problem stream	Indicators (rates, costs), focusing events, feedback from previous programmes, problem load/burden				
Politics stream	Ideas by policy specialists (academics, bureaucrats, legislators), programmes, activities				
Policy stream	Mood, ideology, attitudes of policy makers and public				
Policy entrepreneurs	Individuals or organisations with 'pet projects' who attempt to couple the 3 streams, power brokers and champions				
Etc.					

Appendix 5: Figure 1A - Stakeholder analysis

Appendix 6: Literature search

Search terms for the literature search in Pubmed, with the same terms (minus the 'Mesh' and 'tw' labels) used in Embase, LILACS, MedCarib, IBECS, PAHO and WHOLIS through the Virtual Health Library. Note that the 'social determinants' body of terms means that all identified studies had to have at least a description by gender.

Social determinants

"Health Status Disparities"[Mesh] OR "Socioeconomic Factors"[Mesh] OR "Vulnerable Populations"[Mesh] OR "Sociology, Medical"[Mesh] OR "Prejudice"[Mesh] OR "Insurance, Health"[Mesh] OR "Health Services"[Mesh] OR "Continental Population Groups"[Mesh] OR "Ethnic Groups"[Mesh] OR "Social Conditions"[Mesh] OR "Urban Health"[Mesh] OR "Urban Population"[Mesh] OR "Rural Population"[Mesh] OR Socio*[tw] OR social position[tw] OR educat*[tw] OR gender[tw] OR ethnic*[tw] OR race[tw] OR poverty[tw] OR social determinant*[tw] OR social support[tw] OR social capital[tw] OR (religion[tw] AND discrimination[tw]) OR different*[tw] OR culture[tw] OR occupation*[tw] OR income* [tw]

Diabetes, risk factors and complications

"Nutritional and Metabolic Diseases"[Mesh] OR "Diabetes Mellitus"[Mesh] OR "Glucose Intolerance"[Mesh] OR "Prediabetic State"[Mesh] OR Diabet*[tw] OR sugar[tw] OR impaired glucose tolerance[tw] OR IGT[tw] OR impaired fasting glucose[tw] OR prediabetes[tw] OR IFG[tw] OR glycem*[tw] OR glycaem*[tw] OR borderline diabet*[tw] OR Oral glucose tolerance test[tw] OR OGTT[tw] OR glucose[tw] OR hba*[tw] OR glycated[tw] OR retinopathy[tw] OR nephropathy[tw] OR neuropathy[tw] OR diabetic foot[tw] OR metabolic syndrome[tw] OR insulin resistance[tw] OR insulin sensitivity[tw] OR insulin insensitivity[tw] OR syndrome X[tw] OR Body mass index[tw] OR bmi[tw] OR waist[tw] OR waist circumference[tw] OR abdominal[tw] OR obesity[tw] OR physical activity[tw] OR exercise[tw] OR physical inactivity[tw] OR alcohol[tw] OR smoke[tw] OR smoking[tw] OR diet[tw] OR hypertension[tw] OR blood pressure[tw] OR cardiometabolic[tw] OR cardio metabolic[tw] OR cardio-metabolic[tw]

Caribbean region and countries[1]

Barbados

Combinations and limits

1 AND 2 AND 3, limited to humans and dates 1st Jan 1992 to 31st December 2012

Appendix 7: Gap analysis

Barbados NCD performance reviewed against the POS NCD Summit Evaluation Grid, and any additional priority indicators from the Strategic Plan of Action for the Prevention and Control of NCDs for Countries of the Caribbean Community 2011-2015:

Tables 1A and 2A - COMMITMENTS, POLICY, RESOURCES

POS NCD #	NCD Progress Indicator	B A R	Comments
1,14	NCD Plan	√	2009-2012 plan to be evaluated. 2013-2017 NCD Commission plan being finalized including clear objectives, mandates from the POS Declaration, 9 targets and 25 indicators from the UNHLM.
4	NCD budget	√	NCD line item. Budgetary support for Health of the Nation (HotN) survey, Barbados National Registry (BNR) active surveillance, staff member for NCD Commission, working with MOH NCD division.
2	NCD Summit convened	√	Preceded POS Summit. International NCD meeting in 2003 resulting in NCD policy and plan of 2004 establishing NCD Commission and NCD Unit in MOH
2	Multi-sectoral NCD Commission appointed and functional	√	Oldest NCD commission in the region, established early 2007. Has had convened 62 monthly meeting to present time. Consistent leadership by Prof Trevor Hassell

PRIORITY PROCESS AND OUTPUT INDICATORS FROM CARICOM NCD PLAN	
8. ADVOCACY AND HEALTHY PUBLIC POLICY	
8.1.2) Model regional guidelines for advocacy of NCD policy framework and legislation, identifying networking resources developed by end of 2012	REGIONAL ACTION REQUIRED – not achieved
8.1.3) Capacity built for health professionals, NGOs and Civil Society in networking, information-sharing and advocacy strategies to lobby for healthy public policies in five (5) countries by 2013	Not achieved
8.1.4) Priority government ministries and agencies review their policies that are relevant to NCD prevention and control by 2013	Not achieved
11. RESOURCE MOBILISATION/ HEALTH FINANCING	
11.1.1) Fundable projects identified from the Regional *Plan* presented to donors and funding secured for national NCD programmes, with regional support by Dec 2011	REGIONAL ACTION REQUIRED – not achieved
11.1.2) Joint training for stakeholders (public, private, civil society) in resource mobilisation and grant applications conducted in at least two (2) countries by 2012	Not achieved
11.4.1) Tobacco taxes funding NCD prevention and control activities in at least eight (8) countries by 2013	Tobacco taxes increased, but not earmarked for NCD programmes

Tables 3A and 4A - RISK FACTOR CONTROL: TOBACCO

POS NCD #	NCD Progress Indicator	B A R	Comments
3	FCTC ratified	√	FCTC ratified November 2005, entered into force February 2006
3	Tobacco taxes >50% sale price	√	Recent tax increases now brings taxes up to approximately 50%. However, these taxes are not earmarked to support NCD programmes, as mandated by POS Declaration
3	Smoke Free indoor public places	√	Legislation passed August 2010. Implemented October 2010. Evaluation shows pollution levels of indoor places in Barbados were significantly lower than the pollution levels of indoor places in Guyana, Jamaica and Suriname - countries without 100% smoke-free laws. Mandated "No Smoking" signs present in 83% locations surveyed[1]
3	Advertising, promotion & sponsorship bans	√	No legislation. Ban in place through "gentleman's agreement" 2012 FCTC report submitted (http://apps.who.int/fctc/reporting/database/)

PRIORITY PROCESS AND OUTPUT INDICATORS FROM CARICOM NCD PLAN	
1. NO TOBACCO, NO HARMFUL USE OF ALCOHOL	
1.1.5) Smoking prevalence declines by 15% in at least two (2) countries by 2013	Repeat of risk factor survey (HotN) will show change in smoking prevalence from 2007 STEPS survey.
1.2.1) Reduction by 40% in the number of youths (< 18 yrs) consuming alcohol in six (6) countries by 2013	Will be determined by analysis of 2013 vs. 2011 Global School Health Survey
1.2.2) Reduction by 20% in motor vehicle and pedestrian fatalities associated with drunk driving in six (6) countries by 2013	No baseline data available to MOH

Tables 5A and 6A - RISK FACTOR CONTROL: NUTRITION

POS NCD #	NCD Progress Indicator	B A R	Comments
7	Multi-sector Food & Nutrition	√	Draft 10 year national Food and Nutrition plan launched September 2012

	plan implemented		
7	Trans fat free food supply	X	No legislation, no capacity to monitor trans fat
7	Policy & standards promoting healthy eating in schools implemented	√	Healthy and Nutritious Foods in Schools guidelines published by National Nutrition Centre in 2010. Implementation is uneven
8	Trade agreements utilised to meet national food security & health goals	X	Taxation on basic food basket favours unhealthy foods. NCD Commission has made representation to the Social Cabinet to align taxation policy with healthier options
9	Mandatory labelling of packaged foods for nutrition content	X	Has not been achieved

PRIORITY PROCESS AND OUTPUT INDICATORS FROM CARICOM NCD PLAN	
2. HEALTHY EATING (INCLUDING TRANSFAT, FAT, SUGAR)	
2.2.1) Model nutritional standards for schools, workplaces and institutions developed by 2013	Schools completed. Workplaces and institutions outstanding
2.2.2) At least six (6) countries adopt and implement food-based dietary guidelines in at least two (2) sectors by 2015	Guidelines developed. Implementation sub-optimal
3. SALT REDUCTION	
3.1.1) The CARICOM Regional Organisation for Standards and Quality (CROSQ) issues standards for salt by 2012	REGIONAL ACTION REQUIRED – not achieved
3.1.2) At least 80% of large food manufacturers following the Caribbean Association of Industry and Commerce (CAIC) pledge to reduce the salt and fat content of processed and prepared foods (including in schools, workplaces and fast-food outlets) by 2013	Some modest progress e.g. reduced salt in breads. Monitoring and evaluation sub-optimal

Tables 7A and 8A - RISK FACTOR CONTROL: PHYSICAL INACTIVITY

POS NCD #	NCD Progress Indicator	BAR	Comments
6	Mandatory PA in all grades in schools	√	Nursery, Primary and Secondary school – physical education on calendar at least twice weekly. Tertiary institutions, no mandate, but local programmes, e.g. UWI Cave Hill Healthy Campus Initiative since 2011
10	Mandatory provision for PA in new housing developments	√	No legal requirement
10	On-going, mass PA or new public PA spaces	√	Anecdotal reports of increased physical activity. Baseline population based physical activity estimates from HotN study. Sea-side Boardwalks being expanded.

PRIORITY PROCESS AND OUTPUT INDICATORS FROM CARICOM NCD PLAN	
4. PHYSICAL ACTIVITY	
4.2.1) At least five (5) countries with weekly car-free Sundays or some other on-going mass-based, low cost physical activity event by 2013	Mass activities ad hoc. No public weekly physical activity programmes.
4.3.2) Caribbean Wellness Day (CWD) celebrations in at least three (3) separate locations in each of 12 CARICOM countries by 2011	Single location celebrations. Sub-optimal promotion of CWD to private sector and civil society
4.3.4) Sustained multi-sectoral physical activity programmes spawned by CWD in at least four (4) countries by 2013 and eight (8) countries by 2015	Not achieved
5. INTEGRATED PROGRAMMES, ESPECIALLY IN SCHOOLS, WORKPLACES AND FAITH-BASED SETTINGS	
5.1.2) At least 20% increase in the number of schools with healthy meal choices and physical education programmes by 2013	Likely achieved with new school nutrition guidelines. No routine monitoring
5.1.3) At least 50% increase in the number of workplaces with healthy food choices and Wellness Programmes, including screening and management of those at high risk by 2013	Likely achieved, but no evidence. Chamber of Commerce launched "Walk the Talk" campaign. Screening and management in workplace being developed.
5.1.4) Strategies for engaging with faith-based organisations (FBOs) in six (6) countries by 2012	No stated policy. NCD plan speaks to need to develop toolkit for FBOs

Tables 9A and 10A - HEALTH PROMOTION

POS NCD #	NCD Progress Indicator	BAR	Comments
12	NCD Communications plan	±	Being discussed at NCD Commission
15	CWD multi-sectoral, multi-focal celebrations	√	Celebrated CWD every year since inception in 2008. Mobilization could be enhanced
10	≥50% of public and private institutions with physical activity and healthy eating programmes	X	Workplace Wellness programmes now being defined and introduced
12	≥30 days media broadcasts on NCD control/year (risk factors and treatment)	√	Regular, but ad hoc radio discussions. Newspaper features more systematic with Barbados Advocate weekly health page and Nations newspaper monthly Better Health magazine

PRIORITY PROCESS AND OUTPUT INDICATORS FROM CARICOM NCD PLAN	
9. MEDIA AND SOCIAL COMMUNICATIONS	
9.1.3) Capacity built for media (health journalists and reporters) to empower them to be more effective behaviour change and communication agents in four (4) countries by 2012 and 10 countries by 2015	Ad hoc
9.1.4) Social Change Communication strategies, public education and information for preventive education and self-management, implemented in at least five (5) countries by 2013	Discussions under way

Tables 11A and 12A - SURVEILLANCE

POS NCD #	NCD Progress Indicator	B A R	Comments
11, 13, 14	Surveillance: - STEPS or equivalent survey	√	STEPS completed in 2007. Measures were repeated in 2013 HoTN study now being analysed
	- Minimum Data Set reporting	√	Being reported to CAREC/CARPHA
	- Global Youth Tobacco Survey	√	Completed 1999 and 2007. 2013 data collection in train. Reports not available publicly
	- Global School Health Survey	√	Completed in 2011 http://www.who.int/chp/gshs/2011_Barbados_GSHS_FS.pdf 2013 study now available

PRIORITY PROCESS AND OUTPUT INDICATORS FROM CARICOM NCD PLAN	
7. SURVEILLANCE, MONITORING AND EVALUATION	
7.1.1) Health information policy and plan adopted in all countries by 2012	HIS policy in draft only, being debated repeatedly
7.1.2) CARICOM countries collecting and reporting data at least annually on NCDs (risk factors, morbidity, mortality, determinants, health systems performance, including private sector data), using standardised methodologies, in at least 10 countries by 2011 and in 14 countries by the end of 2014	Mortality and morbidity data reported, but delayed. Risk factor surveys scheduled for every 4 years. NCD minimum data set, including utilization and health systems performance reported to CAREC/CARPHA. Incomplete private sector reporting
7.3.3) Risk factor and Burden of Disease data used to evaluate implementation of the *NCD Declaration* in at least eight (8) countries by 2013	Currently under way

Tables 13A and 14A - TREATMENT AND QUALITY CARE

POS NCD #	NCD Progress Indicator	B A R	Comments
TREATMENT			
5	Chronic Care Model / NCD treatment protocols in ≥ 50% PHC facilities	±	Plans to introduce in the new St. John Health centre as a model and pilot
5	QOC CVD or diabetes demonstration project	√	Project was done. However, much CVD care does not fully align with international best practice.

PRIORITY PROCESS AND OUTPUT INDICATORS FROM CARICOM NCD PLAN	
6. SCALING UP EVIDENCE-BASED TREATMENT	
6.1.2) 80% of at risk populations screened and treated according to evidence-based guidelines from the Caribbean Health Research Council (CHRC) or other national Guidelines, including the risk chart approach, in at least two (2) countries by 2013	No estimate of target population on which to calculate coverage. No mechanism to track and report number of persons treated in private and/or public sector.
6.1.6) Countries and CARICOM develop and implement a proposal for shared tertiary treatment services that addresses technical, legal, economic and political realities	REGIONAL ACTION REQUIRED – not achieved Barbados continues to provide specialist care for populations from Eastern Caribbean states
6.2.1) Ministry of Health senior personnel, NCD programme managers and at least 50% of primary health care (PHC) professionals trained in NCD programme quality improvement, based on national guidelines	Some training by BNR in death certification. No training in NCD programme quality improvement, based on national guidelines
12. PHARMACEUTICALS	
12.1.2) Formularies for vital essential and necessary drugs established in at least 10 countries by 2013	In place
12.2.1) Essential (accessible, affordable and high quality) generic drugs for NCD control available in eight (8) countries by 2012 – aspirin, beta-blocker, statin, thiazide diuretic, ACE inhibitor	In place

UNHLM 25 NCD INDICATORS and *BARBADOS DATA SOURCES*

GSHS Global School Health Survey
HotN Health of the Nation
GYTS Global Youth Tobacco Survey
BPS Barbados Pharmaceutical Service

#Age Ranges for Barbados Surveillance and reporting on Global Indicators are
Adolescents: 13 – 15 years
Adults: ≥25 years

Mortality and morbidity

1. Unconditional probability of dying between ages 30 and 70 years from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases.
   MORTALITY STATISTICS
2. Cancer incidence, by type of cancer, per 100 000 population.
   MORTALITY STATISTICS

Risk factors

Behavioural risk factors

3. Harmful use of alcohol: 1 Total (recorded and unrecorded) alcohol per capita #(15+ years old) consumption within a calendar year in liters of pure alcohol, as appropriate, within the national context.
   SOURCE UNCLEAR
4. Harmful use of alcohol: Age-standardized prevalence of heavy episodic drinking among adolescents and adults, as appropriate, within the national context.
   GSHS, HotN
5. Harmful use of alcohol: Alcohol-related morbidity and mortality among adolescents and adults,
   SOURCE UNCLEAR
6. Age-standardized prevalence of persons #(aged 18+ years) consuming less than five total servings(400 grams) of fruit and vegetables per day.
   HotN
7. Prevalence of insufficiently physically active adolescents (defined as less than 60 minutes of moderate to vigorous intensity activity daily).
   GSHS
8. Age-standardized prevalence of insufficiently physically active persons aged #18+ years (defined as less than 150 minutes of moderate-intensity activity per week, or equivalent).
   HotN
9. Age-standardized mean population intake of salt (sodium chloride) per day in grams in persons aged #18+ years.
   HotN sub study
10. Age-standardized mean proportion of total energy intake from saturated fatty acids in persons aged #18+ years.2
    SOURCE UNCLEAR
11. Prevalence of current tobacco use among adolescents.

GYTS

12. Age-standardized prevalence of current tobacco use among persons aged #18+ years.
    HotN

Biological risk factors

13. Age-standardized prevalence of raised blood glucose/diabetes among persons aged #18+ years (defined as fasting plasma glucose value ≥7.0 mmol/L (126 mg/dl) or on medication for raised blood glucose).
    HotN
14. Age-standardized prevalence of raised blood pressure among persons aged #18+ years (defined as systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg); and mean systolic blood pressure.
    HotN
15. **Prevalence of overweight and obesity in adolescents** (defined according to the WHO growth reference for school-aged children and adolescents, overweight – one standard deviation body mass index for age and sex, and obese – two standard deviations body mass index for age and sex).
    GSHS
16. Age-standardized prevalence of overweight and obesity in persons aged #18+ years (defined as body mass index ≥25 kg/mÇ for overweight and body mass index ≥ 30 kg/mÇ for obesity).
    HotN
17. Age-standardized prevalence of raised total cholesterol among persons aged #18+ years (defined as total cholesterol ≥5.0 mmol/L or 190 mg/dl); and mean total cholesterol.
    HotN

National systems response

18. Proportion of women between the ages of 30–49 screened for cervical cancer at least once, or more often, and for lower or higher age groups according to national programmes or policies.
    HotN
19. Proportion of eligible persons (defined as aged 40 years and over with a 10-year cardiovascular risk ≥30%, including those with existing cardiovascular disease) receiving drug therapy and counseling (including glycaemic control) to prevent heart attacks and strokes.
    HotN
20. Availability and affordability of quality, safe and efficacious essential noncommunicable disease medicines, including generics, and basic technologies in both public and private facilities.
    BPS data
21. Vaccination coverage against hepatitis B virus monitored by number of third doses of Hep-B vaccine (HepB3) administered to infants.
    not a priority for Barbados
22. Availability, as appropriate, if cost-effective and affordable, of vaccines against human papillomavirus, according to national programmes and policies.
    BDS
23. Policies to reduce the impact on children of marketing of foods and non-alcoholic beverages high in saturated fats, trans-fatty acids, free sugars, or salt.
    Government Legislation
24. Access to palliative care assessed by morphine-equivalent consumption of strong opioid

analgesics (excluding methadone) per death from cancer.
BPS with MORTALITY DATA

25. Adoption of national policies that limit saturated fatty acids and virtually eliminate partially hydrogenated vegetable oils in the food supply, as appropriate, within the national context and national programmes.
Government Legislation