Chronic Disease in the Caribbean: Strategies to Respond to the Public Health Challenge in the Region

What Can We Learn from Jamaica's Experience?

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ABSTRACT

With the advent of the epidemiological transition, chronic non-communicable diseases (CNCDs) have emerged as the leading cause of death globally. In this paper, we present an overview of the burden of CNCDs in the Caribbean region and use Jamaica as a case-study to review the impact of policy initiatives and interventions implemented in response to the CNCD epidemic. The findings show that while Jamaica has implemented several policy initiatives aimed at stemming the tide of the CNCD epidemic, a comparison of data from two national health and lifestyle surveys conducted in Jamaica in 2000/01 and 2007/08 revealed that there was an increase in the prevalence of intermediate CNCD risk factors such as hypertension and obesity. We therefore present recommended strategies which we believe will enhance the current CNCD response and thus reduce, or at least stem, the current epidemic of CNCDs.

Keywords: Caribbean, chronic non-communicable disease, developing countries, health policy, Jamaica, public health interventions

Enfermedades Crónicas en el Caribe: Estrategias para Responder a los Retos de la Salud Pública en la Región.

¿Qué Podemos Aprender de la Experiencia de Jamaica?

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RESUMEN

Con el advenimiento de la transición epidemiológica, las enfermedades no comunicables crónicas (ENCCs) han emergido como la causa principal de muerte a nivel mundial. En este trabajo, se presenta un panorama general de la carga que las ENCCs representa para la región caribeña. Asimismo, se utiliza Jamaica como estudio de caso para examinar el impacto de las iniciativas en materia de políticas así como las intervenciones, implementadas en respuesta a la epidemia de ENCC. Los hallazgos muestran que si bien Jamaica ha implementado varias iniciativas en cuanto a políticas, dirigidas a detener la marea de la epidemia de ENCC, una comparación de datos de dos encuestas nacionales sobre salud y estilo de vida realizadas en Jamaica en 2000/01 y 2007/08 revelaron que hubo un aumento de la prevalencia de los factores de riesgo intermedios de las ENCC, tales como la hipertensión y la obesidad. Por lo tanto, se presentan estrategias recomendadas, las cuales pueden – a nuestro juicio – mejorar la respuesta actual a las ENCC, y por ende reducir – o al menos frenar – la actual epidemia de ENCCs.

Palabras claves: Caribeño, enfermedad crónica no comunicable, países en vías de desarrollo, política de salud, Jamaica, intervenciones de salud pública

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INTRODUCTION

With the advent of the epidemiological transition, chronic non-communicable diseases (CNCDs) have emerged as the leading cause of death globally (1, 2). In 2001, chronic non-communicable diseases accounted for 54% of deaths in low and middle income (developing) countries and 87% of deaths in high income (developed) countries (1). Despite the higher proportion of deaths in high income countries, death rate from chronic diseases is higher in low and middle income countries (1). In 2008, for example, 36 million persons died from CNCDs, representing 63% of global deaths (3), with approximately 80% of these deaths occurring in low and middle income countries (3, 4).

The majority of chronic disease deaths are due to cardiovascular diseases (CVDs) such as stroke, heart attack and hypertension, which have emerged as the leading causes of death in most countries of the world, with the low and middle income countries again bearing the brunt of the burden, accounting for 80% of the deaths from cardiovascular diseases and diabetes (3, 5). In 2004, for example, an estimated 17 million persons died from cardiovascular diseases with 82% occurring in developing countries (5). Without appropriate intervention, projections are that 24 million people will die from cardiovascular diseases in 2030 (5). The grave challenge posed by this burden of cardiovascular diseases in developing countries has been aptly described as "A Race Against Time" (6). Cancers pose another major threat to global health. It is estimated that approximately 7.6 million persons died from cancer in 2007 as well as in 2008 (7, 8) with over two-thirds of cancer deaths occurring in low and middle income countries (3, 8). By 2030, it is estimated that between 11 and 12 million persons will die from cancer (7, 8). The other leading causes of chronic disease deaths are chronic respiratory disease (4.2 million deaths) and diabetes mellitus [1.3 million deaths] (3). Despite these worrisome figures, it is estimated that 80% of deaths from cardiovascular diseases and Type 2 diabetes and 40% of deaths from cancers are preventable (9). Injuries are another important cause of death, after cardiovascular disease and cancer, accounting for approximately 9% of deaths in 2005 (9, 10). Mental health disorders and arthritis may also be significant contributors to the chronic disease burden, but these are not captured in routine mortality data because they are not usually recorded as the cause of death.

The impact of CNCDs in developing countries has been highlighted in a number of publications (3, 5–8, 11–14). One consistent feature is that CNCDs in developing countries occur at younger ages than in developed countries, usually resulting in significant loss of productivity (15, 16). Control of the CNCD epidemic is therefore not only of public health concern but should be viewed as a challenge to overall development, which some experts suggest could hamper the achievement of some of the Millennium Development Goals (9, 17, 18). For example, it is estimated that China, the most populous country in the world, will forego US$558 billion in national income over the next 10 years as a result of premature deaths caused by heart disease, stroke and diabetes (9).

In light of the global threat posed by CNCDs, a United Nations (UN) resolution was passed calling for the Heads of State to address the issue at a High Level Meeting in September 2011 (17, 18). It is hoped that this meeting will serve as a catalyst towards the creation of a sustainable global movement for the reduction in morbidity, mortality, disability and economic cost due to CNCDs (17, 19).

In this review, we present an overview of the burden of CNCDs in the Caribbean region and review the policy initiatives and interventions implemented by Jamaica in response to the CNCD epidemic. We also present recommended strategies to enhance the current response in light of the varying levels of success and challenges experienced with the initiatives implemented so far.

BURDEN OF CNCDs IN THE CARIBBEAN

Epidemiological overview

Countries of the Caribbean Region have experienced an epidemiological transition over the past sixty years (20–23). This is illustrated in Table 1 which shows the leading causes of death in Jamaica for selected years between 1945 and 2004. Whereas in 1945, the top five leading causes of death included tuberculosis, syphilis, nephritis and pneumonia, since 1982 cardiovascular diseases, diabetes and malignant

Table 1: Top five leading causes of death in Jamaica for selected years from 1945–2004

1945*	1982*	1996 **	2004 ***
Tuberculosis	Cerebrovascular Disease	Cerebrovascular Disease	Cerebrovascular Disease
Heart Disease	Heart Disease	Diabetes Mellitus	Diabetes Mellitus
Nephritis	Malignant Neoplasm	Ischaemic Heart Disease	Ischemic Heart Disease
Syphilis	Hypertension	Hypertensive Diseases	Hypertensive Diseases
Pneumonia & Influenza	Diabetes Mellitus	Homicide/Assault	Other Heart Disease

* Wilks *et al*. Chronic diseases: the new epidemic. West Indian Med J 1998; **47 (Suppl 4):** 40–44.
** McCaw-Binns *et al*. Multi-source method for determining mortality in Jamaica: 1996 and 1998. Department of Community Health and Psychiatry, University of the West Indies 2002 Aug 13. Final Report.
*** Ferguson and Tulloch-Reid. Cardiovascular Disease Risk Factors in Blacks Living in the Caribbean. Curr Cardio Risk Rep 2010; **4:** 76–82.

neoplasms have been the leading causes of death. The current mortality burden due to CNCDs is illustrated in Fig. 1 which shows the ten leading causes of CNCD deaths and overall deaths, according to World Health Organization (WHO) disease groups, for Latin America and the Caribbean for the years 2004 and 2008. In each year, cardiovascular diseases caused almost 900 000 deaths and cancers over 400 000 deaths. In 2004, deaths from cardiovascular

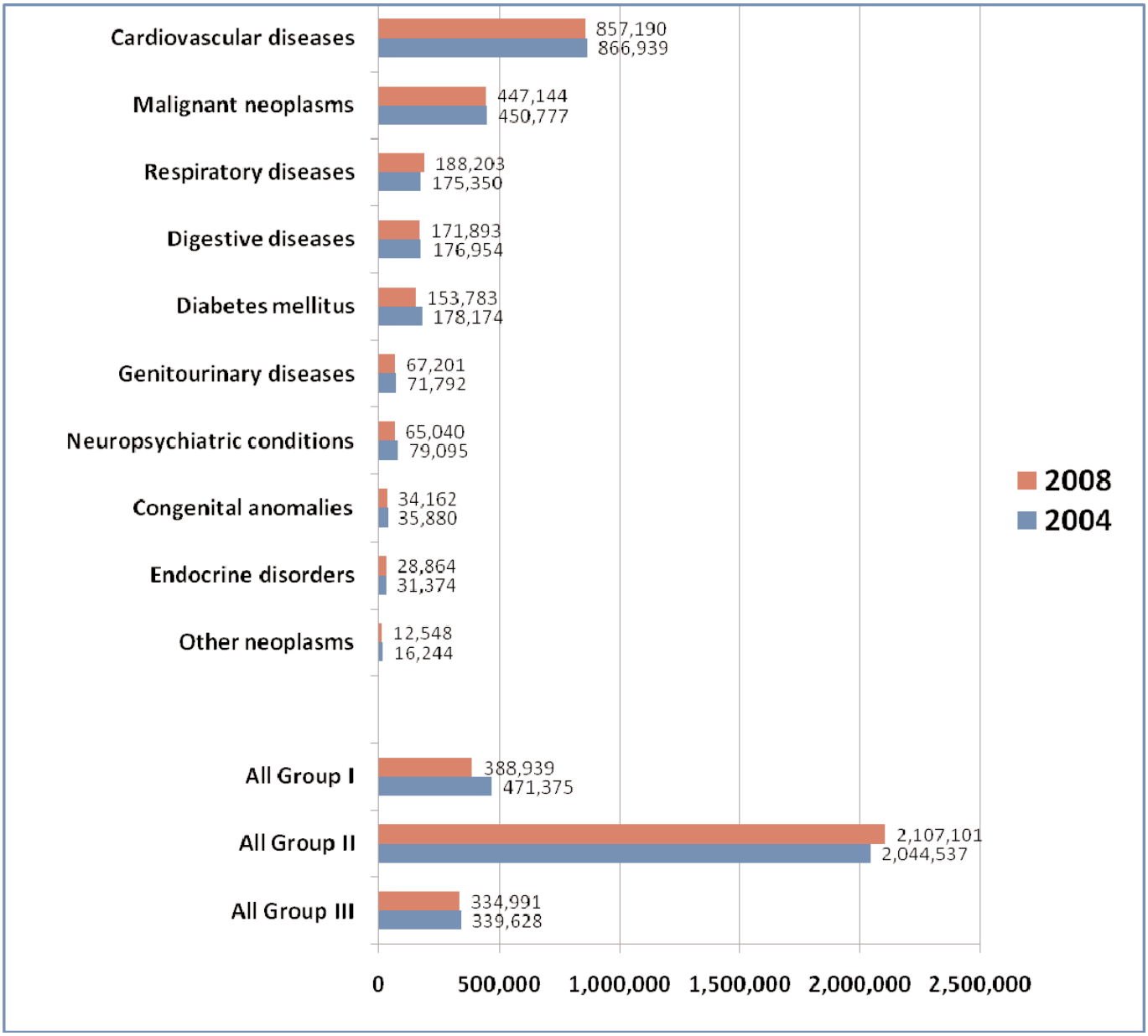

Fig. 1: Leading causes of death in Latin America and the Caribbean* for years 2004 and 2008.

Data abstracted from World Health Organization Global Health Observatory Data Repository. Available from: http://apps.who.int/ghodata/ Accessed May 22, 2011.

* Indicates WHO Americas-B (Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guyana, Honduras, Jamaica, Mexico, Panama, Paraguay, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela).

Group 1 = Communicable, maternal, perinatal and nutritional conditions; Group II = Non-communicable diseases; Group III = Injuries (intentional and unintentional).

diseases alone were twice that for all infectious diseases (including HIV and tuberculosis), maternal, perinatal and nutritional conditions combined. The situation in the English-speaking Caribbean shows even greater differences in mortality due to cardiovascular diseases compared to communicable diseases; for 2003–2005, the estimated mortality due to cardiovascular diseases and diabetes was almost 250 per 100 000 population compared to about 70 per 100 000 for communicable diseases (24). In fact, data from the Pan American Health Organization (PAHO) suggests that the Caribbean epidemic of CNCDs is the worst in the region of the Americas (25, 26).

In addition to the high mortality from CNCDs, several published studies have documented a high burden of cardiovascular disease risk factors in Jamaica and other Caribbean countries but data on established disease are limited (27–41). The overall epidemiology of diabetes and cardiovascular diseases in the Caribbean has been recently reviewed (30, 42), and highlights the high prevalence of obesity, hypertension, prehypertension, diabetes mellitus and dyslipidaemia. Prevalence of cigarette smoking still remains an important problem. In addition, there are high levels of physical inactivity, inadequate consumption of fruits and vegetables and a predominance of frying as a method of food preparation (43). Availability of regional data on cancer morbidity and mortality is limited. Only few counties have established cancer registries and in some the coverage is not nationwide. The Jamaica Cancer Registry provides periodic updates on cancer incidence (44, 45) but data are limited to the parishes of Kingston and St Andrew. Data are also available from the Trinidad and Tobago Cancer Registry (46, 47) and will soon be available from the Barbados National Registry for Chronic Disease (48). For the years 2003–2007, the leading sites for cancer in Jamaica were prostate, bronchus and large bowel for men and breast, cervix and large bowel for women (45).

Governmental response to the CNCD epidemic in the Caribbean

This current epidemic poses a serious threat to the health and development of the Caribbean Region, and member countries have sought to use collaborative efforts in dealing with this mounting challenge. Collaboration and cooperation in health has been a strategic imperative for many years. In 1984, the Caribbean Cooperation in Health (CCH) initiative was introduced by the Caribbean Community (CARICOM) as a mechanism for health and development through increased collaboration and technical cooperation (49). In the first phase, seven health priority areas were identified; these were later increased to eight in the second and third phases of the initiative approved in 1997 and 2010 respectively (49, 50). Chronic non-communicable diseases have been included as a priority area in all three phases. The current goals for the CNCD programme area for CCH-III are: to reduce the morbidity and mortality due to chronic disease, to reduce death from chronic disease by 2% per year and to reduce avoidable, costly morbidity from chronic diseases.

The 2001 Nassau Declaration, by the Heads of Government within the CARICOM (51), underscored the intrinsic value of health as a resource for sustainable human development. The declaration explicitly stated that "the health of the Region is the wealth of the Region". Based on a recommendation arising from that meeting, the Caribbean Commission on Health and Development (CCHD) was established in 2003 as a joint effort of PAHO and CARICOM to increase investment in health. This was to be patterned after the WHO Commission on Macro-economics and Health. Mandates for this new Commission included propelling health to the centre of the development process and drawing on the body of research and development that provides for evidence-based decision-making at all levels. In response to this, a report outlining the health situation within the Caribbean was presented to the Caribbean Caucus in September 2005. It established that the CNCDs remain fixed as major causes of mortality with increases in their attendant risk factors (52). Follow-up studies conducted by the CCHD in 2005 revealed the burdensome economic costs of hypertension and diabetes in the Caribbean. When taken together, the burden of these two diseases ranged between a low of 1.36% of GDP for the Bahamas to a high of 8% of GDP for Trinidad and Tobago (53).

In September 2007, at a landmark Summit on NCDs held in Port-of-Spain, Trinidad and Tobago, the Heads of Government of CARICOM issued a declaration titled 'Uniting to Stop the Epidemic of Chronic Non-communicable Diseases' (54). Among the tenets in the Declaration was the commitment to implement comprehensive and integrated prevention and control strategies at all levels of society through programmes, partnerships and policies supported by local, regional and international partners. The Port-of-Spain Declaration has served as a catalyst for increased focus on CNCDs in the region and to the developing countries worldwide. The 2010 UN Resolution on non-communicable diseases was in fact an indirect result of this Port-of-Spain Declaration as it was the countries of CARICOM, in collaboration with other countries, that drafted the resolution and served as the driving force for its support and final approval (17).

Since the Port-of-Spain Summit, institutions in the Caribbean have sought to monitor the progress towards the implementation of the commitments made at the summit (55). As illustrated in Fig. 2, the level of implementation has varied across the region, with Jamaica having the highest implementation score, followed by Trinidad and Tobago, Guyana and Barbados. One initiative, Caribbean Wellness Day, has been instituted in all countries except for Haiti and shows potential as a tool to mobilize the region for the prevention of CNCDs (56). Overall, the regional governments' commitment to the fight against CNCDs and their cooperative approach has been proposed as a model for

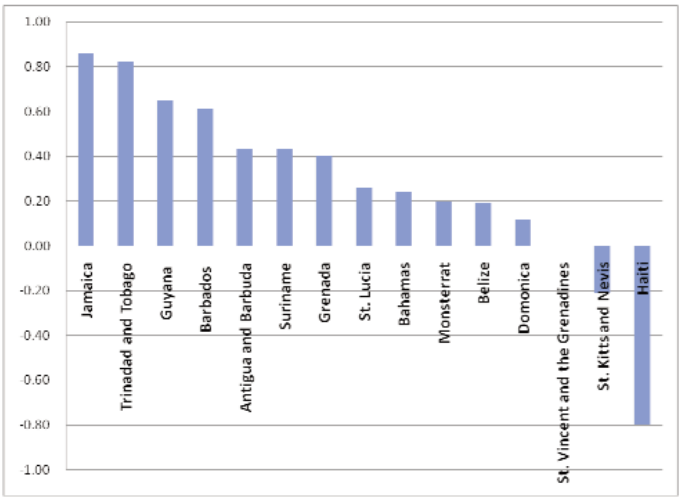

Fig. 2: Implementation scores* for the Port-of-Spain Declaration for CARICOM Countries.

* Data abstracted from Kirton *et al*. Controlling NCDS through Summitry (55). A score of 1.0 indicates full implementation whereas a score of -1.0 indicates no implementation. Scores are based on data up to 2010.

controlling CNCDs through summitry and that the lessons learnt can be taken forward to the UN High level meeting in September 2011 (55).

EVALUATION OF JAMAICA'S CHRONIC DISEASE PREVENTION AND CONTROL PROGRAMME

Jamaica is the largest of the English-speaking CARICOM countries and mirrors the demographic and epidemiological transition taking place in the wider CARICOM. This section reviews Jamaica's progress towards implementation of chronic disease policy in the Caribbean and the extent to which set goals have been achieved.

Jamaica began implementing programmes to tackle the CNCD epidemic in the late 1990s. These programmes focussed on cardiovascular, diabetes and cervical cancer prevention and control. In 2000, the Ministry of Health began scaling up these programmes. The first was the cervical cancer screening, prevention and control programme that was guided by the Caribbean Strategic Plan for the prevention and control of Cervical Cancer. This was followed in 2004 with the National Healthy Lifestyle Policy and Strategic Plan. The main policy initiatives are presented in Table 2, according to intervention areas proposed by the WHO in the 2008–2013

Table 2: Jamaican Government initiatives to address chronic non-communicable diseases

AREA	GOVERNMENTAL INITIATIVES	ACTIONS/OUTCOME/STATUS
Policy and Advocacy	Development of Healthy Lifestyle Policy and Strategic Plan[1]	The Healthy Lifestyle Policy and Strategic Plan was implemented in 2004. The plan was funded through the National Health Fund to support implementation from 2004–2008. The goal of the policy was to decrease the incidence of chronic diseases, high-risk sexual behaviour/violence and injury through the adoption of appropriate behaviours by the population and particular young children, adolescents and adults.
	National Health Fund (NHF) [2, 3]	The NHF Act was passed in 2003 and gazetted in 2004. The Fund subsidizes medications for 14 chronic disease conditions and provides institutional and individual benefit to strengthen health systems and support individual disease management (*eg* subsidies for HbA1c testing and glucose meters used in managing diabetes). The NHF has also been engaging in health promotion activities such as community and school screening, workplace initiatives and media campaigns.
	Schools Health Enhancement Committee – joint committee Ministries of Education and Health	This committee was established in 2009 and activities are in the preparatory stages.
	Abolition of user fees at government health facilities	This policy was introduced for persons 0–18 years old in 2007 and then expanded to all persons in 2008. This has resulted in increased utilization of health services (primary and secondary care).
	Early Childhood Commission (ECC) and National Strategic Plan (NSP) for the early childhood sector	A Child Health and Development Passport was implemented in 2010. The passport tracks the development of Jamaican children from birth to 17 years old monitoring key risk factors for CNCDs in children e.g. obesity.
	National Health Policy 2006 – 2015[5]	The control of chronic non-communicable diseases is included as a priority area in this policy. The conditions/diseases covered are: cardiovascular disease, diabetes, breast and cervical cancer, rheumatic fever prevention, asthma and acute respiratory illness and injuries (intentional and unintentional). Indicators to monitor these conditions included in the policy.

Table 2 (Cont'd): Jamaican Government initiatives to address chronic non-communicable diseases

AREA	GOVERNMENTAL INITIATIVES	ACTIONS/OUTCOME/STATUS
	Mental Health Policy and Strategic Plan.	Jamaica's Mental Health Policy was last revised in 1997. The Ministry has also developed a Mental Health Strategic Plan for 2008–2012.
	Development Food Security and Nutrition Policy 2006	This is a joint effort between the Ministries of Agriculture and Health that will address the nutritional requirements of Jamaicans as well as trade arrangements as they relate to the importation and exportation of foods. The policy is in draft.
	National Infant Feeding Policy (1995)	The National Infant Feeding Policy was revised and a Draft Infant and Young Child Feeding Policy developed.
Unhealthy Diet	School-based interventions	Schools Nutrition Pilots 2003, 2006 – developed Procedures and Operations Manuals on: nutrient and meal standards**,** cycle menus**,** and recipes and ingredients lists. Nutrition Support Strategy for 4–6-year olds. Nutritional Standards for the Operation, Management and Administration of Early Childhood Institutions.
	Population-based interventions	Draft Food Based Dietary Guidelines for the Population. Nutrition Promotion Campaign – media and print under the Healthy Lifestyle Project between 2004–2008.
	Implementation of interventions to promote breastfeeding	Implemented Exclusive Breastfeeding Pilot Project in St Catherine and Baby Friendly Hospital Initiative at government hospitals.
	Provision of nutritional management in health centres and hospital clinical settings	Nutrition care is now provided in some government health centres and hospitals. Caribbean Food and Nutrition Institute Jamaica Protocol for the Nutritional Management of obesity, diabetes and hypertension in the Caribbean was launched in 2004. National training was conducted in 2005, targeting health professionals and allied health professionals.
Tobacco Use	WHO Framework Convention on Tobacco Control (FCTC) Ratified in July 2005.	All Government buildings are now smoke free. Banning of ads in line with the WHO FCTC under article 13 of the Convention. Labelling of cigarettes in line with Article 11 of the WHO FCTC under part 11.1 (b)(iv). Taxes are earmarked in keeping with the National Health Fund Act 2003; 20% of tobacco tax revenue allocated to NHF since 2008. A national guideline for the management of nicotine use disorders was developed in 2007 and healthcare providers trained on these guidelines. Draft tobacco control legislation.
Physical Inactivity	National campaign promoting physical activity	The Ministry of Health developed and distributed physical activity (PA) guides and launched a media campaign promoting physical activity under the Healthy Lifestyle project between 2004–2008. Cheerleading competition in schools. Four healthy zones were established to promote physical activity 2008–2009.
Special settings – Workplace Wellness, School and Faith-based Interventions	Workplace Wellness	National Workplace Wellness programme launched in 2008. National Workplace Wellness manual developed 2008. Programme implemented in 20 companies (private and government sector).
	National Faith-based Forum on the Promotion	This initiative was developed to engage Faith-Based Organizations (FBOs) in the CNCD response and was launched in August 2009.

Table 2 (Cont'd): Jamaican Government initiatives to address chronic non-communicable diseases

AREA	GOVERNMENTAL INITIATIVES	ACTIONS/OUTCOME/STATUS
	of Healthy Lifestyles and Prevention of NCDs	Eight faith-based wellness facilitators were trained in 2010. An evaluation of the impact of the forum on the faith-based organization response was conducted in August 2009.
	Camp-4-the Healthy Way	This was implemented in 20 schools and targeted obese adolescents; the intervention included: promotion of physical activity, mental health, and nutrition counselling.
	Health Promoting School Programme/Initiative	Implementation of Healthy Lifestyle clubs between 2004–2008. Implementation of the Health and Family Life Education Curriculum 2008 for grades 1–6 and 7–9. Ministry of Education and Health joint School Health Enhancement Committee.
Reduce Harmful Use of Alcohol	Media campaigns, community and school-based health education interventions to promote drinking responsibly and no alcohol use	Media campaign and health education interventions have been developed and implemented by the National Council on Drug Abuse using prominent athletes as advocates.
Improved Surveillance of Chronic Diseases	Implementation of Risk Factor Surveys and Caribbean Minimum dataset for NCDs	Population-based Cancer Registry established in 1956 at University Hospital of the West Indies (covers the parish of Kingston and St Andrew) and in 1986 at Cornwall Regional Hospital (covers the parishes of Westmoreland, St James, Hanover and Trelawny). Injuries surveillance system established in 1996. Two consecutive surveys implemented on CNCD Risk Factors – Jamaica Health and Lifestyle Survey 2000–2001 and 2007–2008. Global Tobacco School Health Survey 2006 and 2010. Youth Risk and Resiliency Behaviour Survey 2005 and 2006. Incorporation of NCD surveillance in national surveillance manual 2009. Implementation of the CAREC* /PAHO Caribbean minimum dataset on NCDs in 2010. Data used from surveys to inform policy on NCDs *eg* National Healthy Lifestyle Policy. Pap smear register implemented at government health centres in 2006.
Integrated Approach to Chronic Disease Management	Revision and updating of National Guidelines for the Management of Diabetes and Hypertension	Implementation of National Guidelines for the Management of Diabetes and Hypertension (since 1996).
	Focus on Diabetes and Hypertension in Primary Care (including establishment of model clinics)	A 'model diabetes clinic' was initiated in one specialized government health centre in 2007, which involved training in self-management, exercise and healthy eating (including cooking demonstrations). The Ministry of Health Jamaica and 9 other Caribbean countries in collaboration with Pan American Health Organization are implementing a Diabetes Quality of Care Improvement project using the Wagner Chronic Care Model and Breakthrough series model of improvement. In 2009, Jamaica commenced implementation in seven health centres in the four Health Regions and the Diabetes Association of Jamaica. In 2010, National Chronic Disease passport piloted at the seven health centre sites mentioned above.
Cancer Control	National Cervical Cancer Prevention and Control Programme	Implementation of National Cervical Cancer Screening, Prevention and Control programme since 2000. This has resulted in a reduction in incidence of cervical cancer in Kingston and St Andrew[6,7].

Table 2 (Cont'd): Jamaican Government initiatives to address Chronic Non-communicable Diseases

AREA	GOVERNMENTAL INITIATIVES	ACTIONS/OUTCOME/STATUS
	National Guidelines for Cervical Cancer	Implementation of National Guidelines for the Management of Cervical Cancer in 2000.
	HPV Vaccination	National HPV study and costing study implemented to evaluate the feasibility of introducing the HPV vaccine in 2010.

*CAREC = Caribbean Epidemiology Centre

Data Sources
1. National Policy for the Promotion of Healthy Lifestyles in Jamaica
2. Ministry of Health Jamaica (Website: www.moh.gov.jm)
3. National Health Fund (Website: www.nhf.org.jm)
4. Ministry of Health Annual and Divisional Reports 2004–2010
5. National Health Policy 2006–2012
6. Age-specific incidence of cancer in Kingston and St Andrew, Jamaica, 1998–2002. Gibson *et al* (44)
7. Age-specific incidence of cancer in Kingston and St Andrew, Jamaica, 2003–2007. Gibson *et al* (45)
8. Ministry of Education (Website: www.moec.gov.jm)

Action Plan for the Prevention and Control of Non-communicable diseases (57). A section on cervical cancer prevention and control is also included. Jamaica's progress was assessed with regards to the 2007 Port-of-Spain Declaration using 26 progress indicators adopted for reporting by CARICOM/PAHO (24, 55). These are shown in Table 3.

Table 3: Jamaica's progress report on the core indicators for the implementation of the Declaration of Port-of-Spain commitment on non-communicable diseases (NCD)

NCD Progress Indicator	Item Number in Port-of-Spain Declaration	Status
NCD plan	1, 14	Implemented
NCD budget	4	Implemented
NCD Summit convened	2	Implemented
Multi-sectoral NCD Commission appointed and functional	2	partially implemented
NCD communications plan	12	partially implemented
WHO Framework Convention on Tobacco Control (FCTC) ratified	3	Implemented
Tobacco taxes > 50% sale price	3	Implemented
Smoke free indoor public places	3	partially implemented
Advertising, promotion and sponsorship bans	3	Implemented
Multi-sector food and nutrition plan implemented	7	Implemented
Trans fat free food supply	7	partially implemented
Policy and standards which promote healthy eating in schools implemented	7	Implemented
Trade agreements utilized to meet national food security and health goals	8	partially implemented
Mandatory labelling of packaged foods for nutrition content	9	Not implemented
Mandatory physical activity (PA) in all grades in schools	6	partially implemented
Mandatory provision for PA in new housing developments	10	Not implemented

Table 3 Cont'd): Jamaica's progress report on the core indicators for the implementation of the declaration of Port-of-Spain commitment on non-communicable diseases (NCD)

NCD Progress Indicator	Item Number in Port-of-Spain Declaration	Status
Ongoing, mass PA or new public PA spaces	10	IMPLEMENTED
Caribbean Wellness Day – multisectoral, multi-focal celebrations	15	IMPLEMENTED
≥ 50% of public and private institutions with PA and diet programmes	10	–
≥ 30 days media broadcasts on NCD control/yr (risk factors and treatments	12	IMPLEMENTED
WHO STEPS* or equivalent survey	11, 13, 14	IMPLEMENTED
Minimum data set reporting	11, 13, 14	IMPLEMENTED
Global Youth Tobacco Survey	11, 13, 14	IMPLEMENTED
Global School Health Survey	11, 13, 14	IMPLEMENTED
Chronic Care Model/NCD treatment protocols in ≥ 50% PHC facilities	5	IMPLEMENTED
Quality of care (QOC) CVD or diabetes demonstration project	5	IMPLEMENTED

* STEPS = STEPwise approach to Surveillance

A review of the data presented in Tables 2 and 3 shows that Jamaica has implemented several policy initiatives aimed at stemming the tide of this CNCD epidemic. With regards to the Port-of-Spain Declaration progress indicators, Jamaica has implemented 17 of the 26 indicators, with six partially implemented and only two not implemented. This suggests that Jamaica has done fairly well with regards to policy initiatives and programme implementation. In fact, as illustrated in Fig. 2, Jamaica has the highest scores with regards to the implementation of the targets of the Port-of-Spain Declaration when compared to other countries in the Caribbean region (55). However, the adequacy and effectiveness of these interventions at the level of disease prevention or risk factor reduction is yet to be determined. Anecdotal reports suggest that the interventions are either inadequate or not well promoted and that significant progress has not yet been made in reversing the trends. Data from the Jamaica Health and Lifestyle Surveys seem to support this notion. A comparison of data from the two lifestyle surveys conducted in Jamaica in 2000/01 and 2007/08 (43) revealed that there was a statistically significant increase in the prevalence of intermediate CNCD risk factors such as hypertension (20.9% to 25.2%) and obesity (19.7% to 25.3%). The estimated prevalence of diabetes mellitus in 2007/08 was higher than in 2000/01 (7.2% to 7.9%) but the difference was not statistically significant. Prevalence of hypercholesterolaemia in 2007/08 was lower than in 2000/01 (11.7% *vs* 14.6% respectively) but was not statistically significant. With regards to physical activity levels, almost twice as many persons reported being inactive in 2007/08 compared to 2000/01 (30% *vs* 17%) and the proportion of persons engaging in high activity had decreased significantly with 33% reporting high activity in 2007/08 compared to 47% in 2000/01. On a positive note, there was a small decrease in the use of cigarettes comparing 2007/08 to 2000/01 (18.5% to 14.5%).

The reasons for the secular trends above are not immediately clear. It is possible that the time frame was too short for the effects of preventive measures to be seen or it may also be that the local efforts to combat the increasing burden of chronic diseases were negated by globalization and its impact on the trends in chronic disease risk factors. Regardless of this, the trends of most indicators appear to be going in the wrong direction. It is therefore prudent that the policy interventions and policy directions be reviewed at this time and where necessary be reconfigured to ensure that desired goals and outcomes are met. It may be that small open economies will not be able to overcome these challenges based only on their own local efforts.

RECOMMENDED STRATEGIES FOR IMPROVEMENT IN CHRONIC NON-COMMUNICABLE DISEASES CONTROL

Much has been written regarding strategies to combat the chronic disease epidemic (24, 57–59). However, the previous section highlights that gaps remain between policy interventions and the achievement of desired outcomes from these interventions. It is widely accepted that we know what the problems are and what needs to be done but there has been only limited success in transferring this knowledge into

action and desired outcome. We have utilized the Knowledge Transfer Framework proposed by Graham *et al* (60) to guide proposed recommendations for curbing the chronic disease epidemic in the region. The knowledge transfer framework is illustrated in Fig. 3, and outlines the steps from knowledge

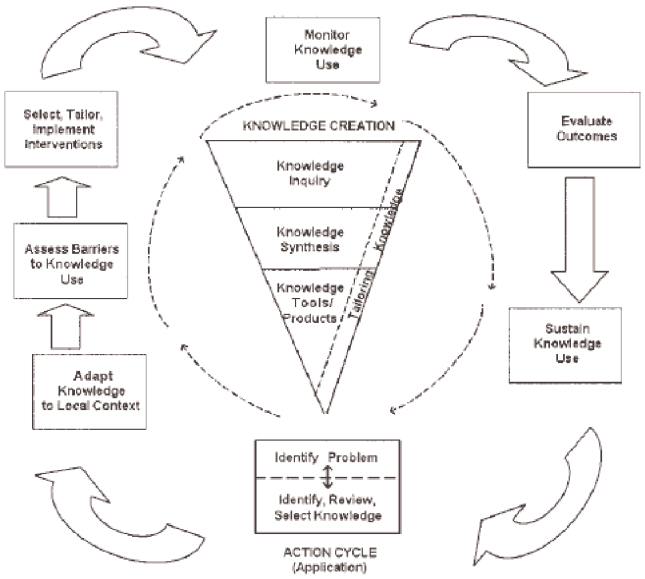

Fig. 3: The Knowledge to Action Process.

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creation to implementation and subsequent evaluation of impact and effectiveness. The recommendations are presented under the following headings selected, in part, from Graham's Knowledge Transfer Cycle: (A) Knowledge inquiry, (B) Knowledge synthesis, (C) Knowledge products, (D) Assessing barriers to use of knowledge (E) Implementing, monitoring and evaluating use of interventions; (F) Sustaining knowledge use.

(A) Knowledge inquiry

1. Continued documentation of burden of CNCDs and their risk factors

Among the English-speaking Caribbean countries, national health surveys have been conducted in Jamaica, Bahamas, Barbados and St Lucia but with some variation in the types of health data collected. Several countries have completed the WHO STEPS survey programmes or the Minimum Data Set reporting (24). We propose a strategy of conducting national health surveys every five years with ongoing telephone surveys on an annual basis. We also propose that these national surveys be expanded to include specific questions for the epidemiological assessment of stroke, coronary heart disease (61) and peripheral vascular disease (62) and that additional investigations such as lipid fractions, creatinine, haemoglobin and electrocardiograms be done to obtain objective data on these important biomedical markers. We also propose that the strategy involving national health surveys be expanded to as many other countries in the region, as is feasible, given the ethno-cultural and other socio-economic diversities that exist within the Caribbean, such that findings in one state cannot be indiscriminately extrapolated to others. The ministries of health and regional tertiary academic institutions need to ensure the continuation and expansion of these surveys and other study designs to ensure reliable and valid data upon which health policy decisions can be made. Additionally, hypothesis driven research to explore the role of traditional and novel risk factors relevant to the region should continue to be performed. Funding for these efforts will pose a challenge and two solutions are proposed. Firstly, Ministries of Health, either directly or through agencies like Jamaica's National Health Fund (NHF) must make research a part of their strategic objectives and allocate the funding support. Secondly, regional academics and research leaders must place their research, including surveys, monitoring and evaluation as well as hypothesis driven projects, in the globalized context and pursue international collaborations so as to take advantage of international funding sources.

2. Better assessment of CNCD morbidity and mortality

Although all countries within the region have vital statistics registration and some form of hospital/health service use data systems, the quality of the data is not always as accurate as desired. In addition, there are no established computer-based linkages between data sources so it is not possible to make easy links and track patients morbidity and mortality (63). We support the recommendation that data management systems within and between health institutions need to be linked to facilitate inter-operability. Specifically, we propose the establishment or upgrading of reliable electronic records systems initially for hospital discharge summaries and ultimately full electronic medical records in other health facilities. The systems should include a unique identifier for each patient and software developed such that the data can be easily exported from one system to another (*eg* between hospitals and Ministries of Health) so these data can be pooled for national analysis. The data should also be collected in such a way to allow its utilization by members of the health team within each facility to assess the quality of care they provide and track their progress towards institutional and national performance improvement objectives. The chronic disease passport may serve as the initial template for this database.

Attempts should also be made to facilitate linkages with vital statistics and other health-related survey data although it is recognized that in some Caribbean countries the collection of these data is done by institutions outside of the traditional health sector. Stronger efforts, which may require passage of legislation, should be made to include private healthcare data into this record linking system. International

best practices must be adopted to ensure security of the data and adherence to the highest ethical standards. This may allow for more accurate and less expensive assessment of secular trends in disease and risk factor burden as well as health behaviours and ultimately on morbidity and mortality statistics. These data will also facilitate the development of locally validated risk prediction tools.

3. *More use of qualitative research to better understand issues related to CNCD risk factors and adherence to therapies*

We have indicated above that despite a number of health promotional activities and policy intervention, the burden of CNCD risk factors in Jamaica appears to be increasing. This may suggest the need for better understanding of the upstream psychosocial factors involved in behaviour change in order to fully address this CNCD epidemic. We, therefore, propose expanded use of qualitative research strategies and techniques, applied to both patients and healthcare providers in order to better understand factors that motivate change and barriers to uptake of recommendations. Important research questions could include how each group would respond to particular policy-directed decisions and proposed intervention. This type of 'social marketing' may allow for improved packaging of messages to make them more effective.

(B) Knowledge synthesis

4. *Improvements in evidence-based policy development including structured programmes knowledge synthesis*

Evidence-based medicine and evidence-based public health have emerged as standards of care in recent decades (64, 65). These practices require appropriate review and synthesis of existing literature in order to guide decision-making. However, most of the articles synthesizing evidence do not include studies from developing countries and do not focus on interventions in developing county settings (66). In resource limited settings, such as is seen in the Caribbean, it is critical that decisions on how to manage chronic diseases should be based on the best available, regionally relevant, evidence. We therefore recommend active review of the literature (including systematic reviews) to answer questions that are specific to the needs of the region. In Jamaica, for example, some funds from the National Health Fund could be devoted to this purpose. It may also be possible to develop and accommodate this knowledge synthesis capacity within the planned amalgamation of regional health units into the Caribbean Public Health Agency [CARPHA] (67). In addition, research groups may be able to access funds to support such reviews through grant funding.

(C) Knowledge tools or products (dissemination)

5. *Making routine data publicly available and accessible*

Hospital and clinic-based morbidity data and utilization of health services is collected but is not often readily accessible or may not be presented in a format that can provide useful information for the public, scientists and policy-makers. We propose the collection, collation and publication of carefully analysed annual morbidity and mortality statistics in standardized formats, thereby facilitating easier comparisons within the health sector and with data from other relevant ministries or agencies. In order to improve access to these data by the general public and the scientific community, the timely publication of these reports in regional scientific journals and on government and non-governmental organization (NGO) websites should be given greater priority than currently obtains. It is important that staff assigned to these tasks be given greater institutional support and recognition for this important effort.

6. *Development or revision of clinical practice guidelines based on local evidence with training and re-orientation of healthcare providers to better manage CNCDs*

It is widely believed that many healthcare providers are not adequately equipped to deal with the prevention and control of CNCDs. In fact, a number of studies have documented poor quality of care among patients with diabetes (68–72). While some clinical practice guidelines have been developed by various Ministries of Health and the Caribbean Health Research Council, they are often not adequately utilized. In addition, it may be necessary that the skills to promote adherence and management of the more common CNCDs form a larger part of the core training curriculum. We propose better dissemination of these existing guidelines and the development of guidelines for other CNCDs of high prevalence, for example obesity, where culturally relevant ones are unavailable. Given this current epidemic of CNCDs, Continuing Medical Education (CME) courses that emphasize the improvement of technical knowledge and skills should be strengthened and made available to larger numbers and broader groups of health-workers and made a requirement for the continued registration of key health professionals such as physicians, nurses and pharmacists. Developing easy to use audit tools that can allow practitioners in private and public sector settings to track their performance could motivate protocol-based care.

7. *Aggressive social marketing for promotion of healthy lifestyles and appropriate health-seeking behaviour*

Awareness of the level of risk posed by the threat of CNCDs in the population is still relatively low. Where there is awareness, this is often countered by a sense of apathy or inevitability. In addition, there are several myths in relation to the CNCD epidemic which needs to be dispelled by appropriate facts (9). We, therefore, propose that the Ministries of Health step up the engagement of the print and electronic media through a more aggressive campaign to improve awareness, dispel myths and empower the population to deal with this burden of chronic diseases. Health practitioners should be encouraged to make use of all available opportunities to appear in the media and provide up-to-date and

accurate information. The Health Promotion Divisions in health ministries should lobby the privately-owned media to make more free slots available for this effort. Additionally, a review of the use of time allocated for government broadcasts should be undertaken to ensure greater utilization for health promotion and education efforts to stem the CNCDs causing greatest morbidity and mortality. Well-known sports personalities, entertainers, academics, professionals, and other persons of influence should continue to be identified and invited to endorse campaigns as a strategy to improve uptake.

In addition to traditional media, social networks and cellular telephone technology now have the capacity to reach massive numbers of people in a fairly short time and at relatively low cost. We propose that studies be conducted to evaluate the best ways to use such technology in the fight against CNCDs. Text messages sent by cellular telephone service providers to all persons using their network on a periodic basis could prove to be a powerful health promotion tool. Text messaging has been used to encourage participation in getting support for the Healthy Caribbean Coalition (http://www.healthycaribbean.org/), which has been one NGO's response to the call for a response to the CNCD epidemic. Some NGOs in the region have already established social network sites thus suggesting that this approach is potentially feasible.

(D) Assessing barriers to use of knowledge

8. Ensure adequate cadre of personnel to staff the healthcare services and improve access to specialized treatments and diagnostic services for persons with acute events or complications of CNCDs

One of the main barriers to quality care is the inadequacy of staff in the various health facilities. In a recent report, Wilks *et al* found significant shortages across the health workforce with a human resource in health density of less than half that recommended by the WHO (73). We propose a review of available data in human resources in health and a commitment to the implementation of the industry standards to adequately correct the shortage of physicians, nurses, and other health professionals working in areas related to the prevention, management and control of the CNCDs. The skill-mix of workers in the healthcare sector should be tailored to meet the epidemiological profile of the country. The man-power requirements at health centres should also be reviewed to allow more time for behavioural counselling and group lifestyle programmes.

Despite the best preventive efforts, chronic diseases will affect a proportion of the population. The healthcare system must endeavour to provide the quality healthcare required to minimize adverse outcomes. We recommend improved efficiencies in the delivery of healthcare including access to medications, counselling in nutrition and lifestyle practices as well as the management of complications (heart attacks, strokes, chronic kidney diseases and peripheral vascular disease) when they occur. Access to rehabilitative care, pain and palliative care should also be facilitated.

9. Creating an enabling environment to facilitate healthy food choices and increase physical activities

It has been suggested that change is more likely and more sustainable if both the macro-environment and micro-environment in which choices are made support options promoted as healthy and rewarding (74). We propose that the CNCD response continue to highlight strategies designed to promote healthy food choices, including lower fat, salt and refined sugars and increased physical activity. Such strategies should emphasize increasing the availability of healthy options at fast-food outlets and restaurants; encouraging reduced portion-size options at food outlets; creation and maintenance of parks, walking tracks and cycling tracks and modelling of healthy behaviours by persons in influential capacities. Efforts should also be made to ensure that the cost of healthy food options is competitive possibly by placing additional "health tax" on food choices recognized to increase the risk of CNCDs.

(E) Implementing, monitoring and evaluating the use of interventions

10. Integration of private sector providers and academia in the CNCD prevention and control programmes

A large segment of the population accesses their healthcare through the private sector. While this is believed to represent good quality care for the most part, quality is not uniform and studies have suggested that quality of care for hypertension and diabetes was not at an acceptable level within the private sector (68, 72). We propose that the Ministries of Health engage and integrate key private sector professional organizations in the chronic disease prevention and control programmes to ensure that the recommended strategies are adopted among health practitioners in that sector.

The integration of academic institutions in the effort should also be strengthened. It is important that training is continually aligned with the evolving needs of the health sector and that academic institutions continue to provide research support to inform public health policy. A close working relationship between academia and the Ministries of Health is likely to enhance the quality of care offered and improve the chances of a successful response to the CNCD epidemic.

11. Increased involvement of NGOs including faith-based organizations, community groups and professional organizations

In addition to the integration of the private sector and academia, integration of NGOs and faith-based organizations have played an important role in the CNCD response within the region. Several healthcare professional organizations provide a forum for training of their members in skills for management of chronic diseases, dissemination of guidelines

and may also be involved in developing and improving standards of patient care. We propose greater engagement and recognition of these organizations as key partners to the CNCD response. These organizations have brought the spirit of volunteerism and community participation into the CNCD programmes. Within Jamaica, for example, these organizations have established community screening programmes for hypertension, diabetes, heart disease as well as for breast and cervical cancer that augment the services delivered at traditional public or private health facilities. Many utilize mobile units as a cost efficient way to deliver healthcare and along with faith-based organizations conduct screening for CNCDs and their risk factors at health fairs and other similar type outreach events. It is important, however, that this screening and other healthcare provided follow recommended practice guidelines. Ministries of Health should endeavour to maintain the dialogue with these institutions, including periodic training of health personnel on clinical care and data management and reporting in a format that would improve planning and evaluation of CNCD prevention and control programmes.

(F) Sustaining knowledge use

12. Adequately funded coordinating body to coordinate the process

None of the above recommendations will be feasible if adequate funding is not provided for the implementation, monitoring and evaluation of the specific programmes. The CNCD epidemic must be seen as a major public health problem and a threat to national and regional development (9, 19, 71). We propose that The Region (through CARICOM) ensures that adequate funding is provided for CNCD prevention and control programmes including the development of knowledge translation capacity and a national coordinating body within the Ministries of Health. This coordinating body would consist of a team of multidisciplinary specialists and would provide oversight for the implementation, monitoring, evaluation and revision of CNCD programmes. Funding for human and other resources for this purpose may not be readily available from individual governments in the region thus necessitating the regional approach. We propose that regional governments actively seek to leverage the appropriate level of funding to address the CNCD epidemic. The Region should also ensure that the Ministries of Health, academic institutions and NGOs be prepared to access any opportunities that may result from the UN high level meeting in September 2011.

CONCLUSION

We have shown that CNCDs remain a major problem in the Caribbean region and that despite a fairly robust policy response in Jamaica, the burden of CNCD risk factors appears to be increasing. We believe that the recommendations presented should help to improve the current response and has the potential to reduce, or at least stem, the current epidemic of CNCDs. In light of the grave threat to health and development posed by this chronic disease epidemic, regional governments must continue to lobby for support for the fight against CNCDs. Strategic plans must be implemented in an efficient manner and programmes evaluated to ensure effectiveness. We must recognize that we are indeed in "a race against time" and the time for effective action is now.

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