



Chief Medical Officer's Report 2010-2012





GOVERNMENT OF BARBADOS

MINISTRY OF HEALTH

REPORT OF THE CHIEF MEDICAL OFFICER
2010-2012

Prepared by:
The Planning and Research Unit
2015



ACKNOWLEDGEMENTS

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We sincerely wish to thank our many partners in the NGO and private sectors for their support. This work would not have been possible without the oversight and leadership of Chief Medical Officer.

Final thanks to all Ministry of Health Staff for their participation in technical consultations for the successful completion of this report.

FOREWORD

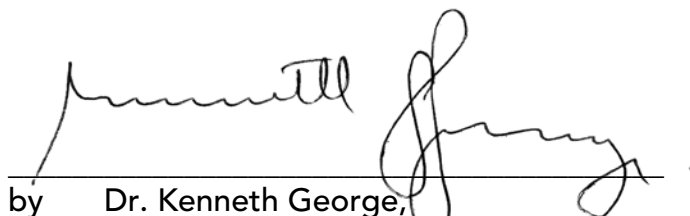
The Report of the Chief Medical Officer for the years 2010 - 2012 documents the activities of the Ministry of Health during this period. These years were characterized by the consolidation of public health functions particularly within the context of the changing global landscape in which new and re-emerging diseases and threats to public health created by the climate change phenomenon were most notable.

During the period under review, the Ministry of Health also continued to grapple with the increasing complexity of the health care system and the necessity for effective and efficient health services. Our responses included not only leadership in the provision of health care services, but a proactive approach to the formulation of health policies and an enhanced regulatory and monitoring role.

In an effort to strengthen the foundation of the health system and to maintain universal access to health services, the Ministry of Health began the review of options for sustainable financing of health care. Also, the groundwork was prepared for implementing an electronic health information system platform.

This report also represents the work of our partners throughout the health sector and it documents their support and dedication to the improvement of health status and wellness of all Barbadians. The application of public health processes through community based approaches and work with civil society organizations are highlighted.

I would like to express my gratitude to all of our partners for their support and compliment them for their dedication to the achievement of our public health goals. I would like to specially thank all those who contributed to the preparation of this report which I hope will provide valuable information on the health situation in Barbados.



by Dr. Kenneth George,
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ACRONYMS

A&E	Accident & Emergency
AGE	Acute gastroenteritis
AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
BDS	Barbados Drug Service
BNPP	Barbados National Pharmaceutical Policy
BNR	Barbados National Registry
BSPH	Barbados Strategic Plan for Health
BSS	Barbados Surveillance Survey
CAREC	Caribbean Epidemiological Centre
CBC-TV	Caribbean Broadcasting Corporation - Television
CBO	Community Based Organization
CD4	Cluster of Differentiation 4
CDC	Centers for Disease Control and Prevention
COFOG	Classification of Function of Government
CT	Chlamydia
GDP	Gross Domestic Product
GSHS	Global School-based Student Health Survey
H1N1	Influenza Swine Flu/ Hemagglutinin 1 Neuraminidase 1
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immunodeficiency Virus

HRH	Human Resources for Health
IAEA	International Atomic Energy Agency
INN	International Non-proprietary Name
IMR	Infant Mortality Rate
LRU	Ladymeade Reference Unit
MARPS	Most-At-Risk-Populations
MH	Ministry of Health
MMR1	Measles, Mumps, Rubella Vaccine
MSM	Men who have Sex with Men
NCDs	Non-Communicable Diseases
NG	Gonorrhoea
NGO	Non-Governmental Organization
PAHO	Pan American Health Organization
PEPFAR	President's Emergency Plan for AIDS Relief
QEH	Queen Elizabeth Hospital
SMOH	Senior Medical Officer of Health
STI	Sexually Transmitted Infection
TB	Tuberculosis
UN	United Nations
UNDP	United Nation Development Program
UNHLM	United Nations' High Level Meeting
UNICEF	United Nations Children's Fund
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
UWI	University of the West Indies
VDRL	Venereal Disease Research Laboratory
WHO	World Health Organization

CHAPTER 1: OVERVIEW

1.1 Physical Description

Barbados is the most easterly of Caribbean islands, located at 13° 10` north and 59° 35` west. The island, which is composed mainly of coral limestone, is 34 km long, 23 km at its widest, and occupies a total land area of 431 km². Barbados is relatively flat, except for the Scotland District in the north-east, which is hilly and rugged. The highest point on the island is Mount Hillaby which rises to 334 metres above sea level.

Barbados has a tropical climate with temperatures mostly falling within the 20° Celsius to 31° Celsius range. The average daily temperature is 27° Celsius. The island features a dry season from December to May and a rainy season from June to November. Annual rainfall averages 1,254 mm at sea level to 1,650 mm at the highest point, with Barbados recording most of its rainfall during the hurricane season from June - November. The island is also vulnerable to hurricanes since it lies in the path of tropical systems that originate off the west coast of the African continent.

Barbados is approximately four hours by air from the major eastern gateways in North America and is eight hours from London. This location has influenced Barbados' centrality to business in the eastern Caribbean and has made it a hub for international passenger travel and cargo freight into and out of the region by sea and air. This makes the island vulnerable to disease vectors and pathogens that can be transferred by people and cargo.

1.2 Socio-Economic Profile

Barbados' national development strategy is geared towards the development of its human resources and the provision of social services such as health, education, housing and social security to promote national productivity, sustainable social and economic development, and social equity. The United Nations Development Programme ranked Barbados 38th out of 186 countries with a Human Development Index (HDI) of 0.825 in 2012, classifying it as the only country in the Caribbean to achieve "very high human development" status.

According to the Barbados Economic and Social Report (2012), at the end of 2012, the Barbadian economy still exhibited signs of weakness as most of its productive sectors had underperformed. The economy showed no real GDP growth in 2012 compared to a 0.8 percent increase in 2011 and the per capita GDP at factor cost decreased by an estimated

6.1 percent to BDS\$26,500. The average rate of inflation rose from 5.8 percent in 2010 to 9.4 percent in 2011 before falling to 4.5 percent in 2012.

The three top contributing sectors to GDP were finance and business services, hotels and restaurants and government services (respectively). According to the Barbados Economic and Social Report (2012), during 2012 Barbados experience a decrease in its external current accounts deficit. There was an increase in the export of goods and services and a fall in the import of consumer goods.

The unemployment rate rose steadily from 10.7 percent in 2010, to 11.3 percent in 2011, to 11.6 percent 2012. The number of those not actively seeking work was 72,300 at the end of 2012 (28,400 male and 43,900 female), including 37,800 retired and 15,400 at school. The total labour force for 2012 was estimated at 141,700 (72,800 male and 68,900 female), a reduction of approximately 2,800 from the previous year. The majority of the employed, 65,800 (53 per cent), were in the 20-44 age range, with 5,400 aged 45-64, 3,800 aged 65 and over and 1,600 aged 15-19.

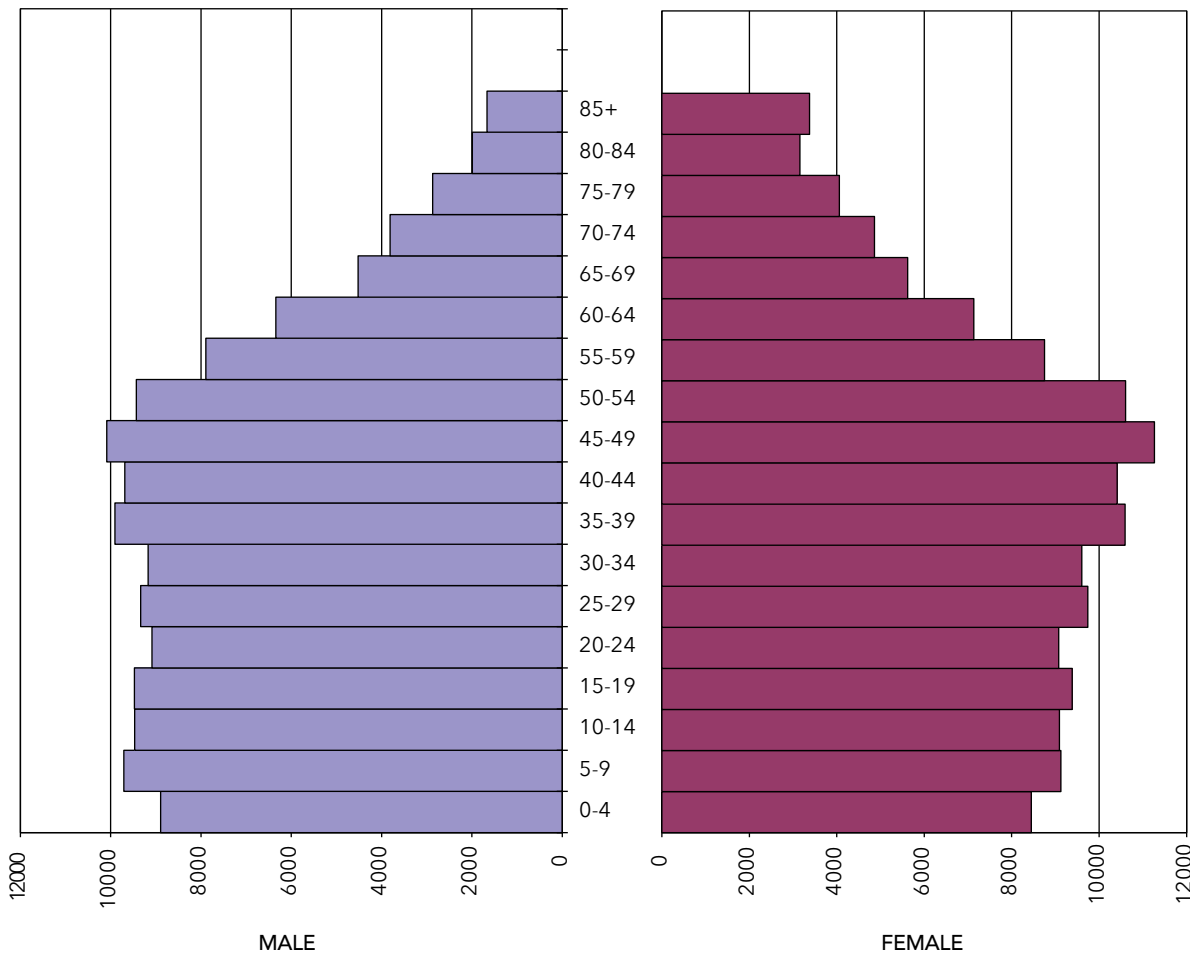
1.3 Demography

As shown in Table 1, the resident population increased from 276,199 in 2010 to 277,668 in 2012. There were 3,423 live births in 2010, falling to 3,263 in 2012. The birth rate declined steadily during the period from 12.4 per 1000 population in 2010 to 11.8 in 2012. The rate of natural increase declined from 4.2 per 1000 population in 2010 to 3.4 per 1000 in 2012. In 2012, the death rate was 8.4 per 1000 compared to 8.8 per 1000 in 2011.

Table 1: Basic Demographic Information 2010-2012

Indicator	2010	2011	2012
Total estimated mid-year population (1)	276,199	277,622	277,668
Population under 1 year	3590	3,298	3,115
1 - 4 years	13,661	14,042	14,227
5 - 14 years	37,187	37,378	37,384
15 - 19 years	18,760	18,856	18,860
20 - 44 years	96,107	96,602	96,618
45 - 64 years	71,136	71,503	71,515
65 years and over	35,759	35,943	35,949
Women 15 -44 years	58,124	58,896	58,818
Live Births	3,423	3,322	3,263
Birth rate (per 1,000 population)	12.4	12.0	11.8
Total Fertility rate (women 15-44 yrs)	1.8	2.0	1.7
Deaths occurring during the year	2,265	2,434	2,326
Death rate (per 1,000 population)	8.2	8.8	8.4
Stillbirths	36	30	32
Stillbirth rate (per 1,000 total births)	10.5	9.0	9.8
Natural increase	1,158	888	937
Natural increase rate (per 1,000 population)	4.2	3.2	3.4
Infant deaths	48	60	35
Infant mortality rate (per 1,000 live births)	14.0	18.1	10.7
Perinatal deaths	66	69	56
Perinatal death rate (per 1,000 live births)	19.3	20.8	17.2
Neonatal deaths	40	42	27
Neonatal death rate (per 1,000 live births)	11.7	12.6	8.3
Deaths in children 1-4 years	51	64	38
Age specific death rate in children 1-4 years (per 1000 population)	3.7	4.6	2.7
Maternal deaths	2	2	1
Maternal death rate (per 1,000 live births)	0.6	0.6	0.3

Figure 1: Barbados Population Pyramid (Age - Sex Distribution) 2012



Source: Ministry of Health As shown in Table 2, in 2012 children under the age of 15 accounted for 19.7 per cent of the population; 67.3 per cent was between the ages of 15 to 65 years while the elderly defined as person 65 years and over, was 12.9 per cent. Females represented 51.9 per cent of the population outnumbering males in every age cohort over the 24 -29 age group. Average life expectancy was 75.8 years (72.7 years for males and 78.6 years for females).

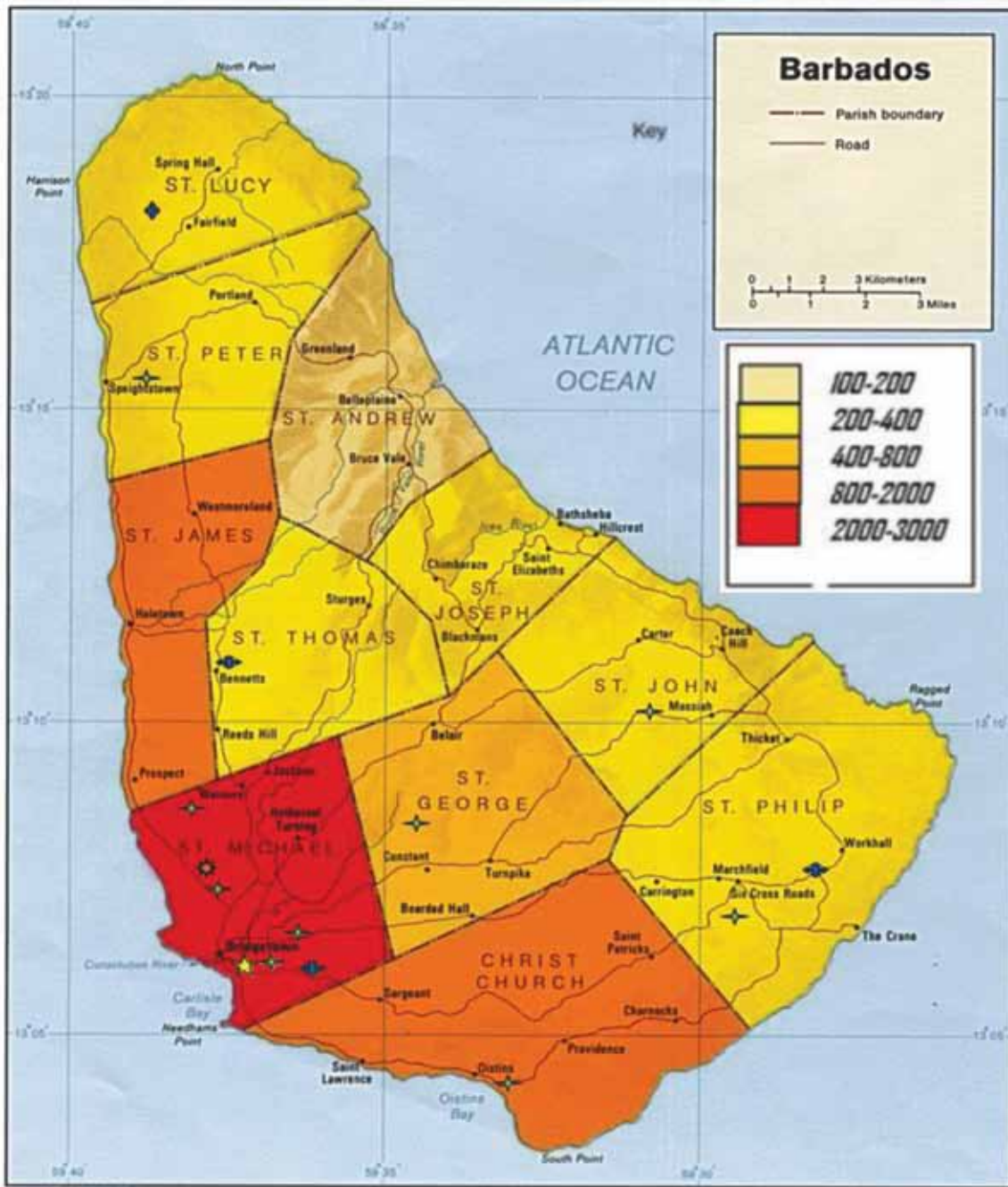
Table 2: Age and Gender Population Distribution 2012

Age	Total	%	Male	%	Female	%
<1	3,115	1.12	1,582	0.57	1,533	0.55
1-4	14,230	5.12	7,313	2.63	6,917	2.49
5-9	18,832	6.78	9,708	3.50	9,124	3.29
10-14	18,560	6.68	9,469	3.41	9,091	3.27
15-19	18,862	6.79	9,476	3.41	9,386	3.38
20-24	18,161	6.54	9,084	3.27	9,077	3.27
25-29	19,079	6.87	9,337	3.36	9,742	3.51
30-34	18,776	6.76	9,173	3.30	9,602	3.46
35-39	20,505	7.38	9,909	3.57	10,596	3.82
40-44	20,102	7.24	9,687	3.49	10,415	3.75
45-49	21,352	7.69	10,087	3.63	11,265	4.06
50-54	20,038	7.22	9,435	3.40	10,603	3.82
55-59	16,643	5.99	7,891	2.84	8,752	3.15
60-64	13,478	4.85	6,342	2.28	7,136	2.57
65-69	10,143	3.65	4,522	1.63	5,621	2.02
70-74	8,673	3.12	3,814	1.37	4,860	1.75
75-79	6,930	2.50	2,870	1.03	4,060	1.46
80-84	5,147	1.85	1,991	0.72	3,156	1.14
85+	5,041	1.82	1,664	0.60	3,377	1.22
Total	277,668	100.00	133,355	48.03	144,313	51.97

Source: Barbados Statistical Service

Barbados is one of the most densely populated countries in the world, with a density of 1,627 inhabitants per square mile (639 per km²). The 2010 population census estimated that the parishes of St. Michael and Christ Church accounted for 51.4 per cent of the population, and approximately 88.7 per cent of the population resided in the urban corridor, stretching from St. James in the north, through St. Michael, Christ Church and St. Philip.

Figure 2: Map of Barbados showing population density and location of the health facilities



Key to Symbols

- ★ Queen Elizabeth Hospital
- ✦ Polyclinic
- ✦ District Hospital
- ✦ Psychiatric Hospital

CHAPTER 2: HEALTH SITUATION

2.1 Promotion of Health and Wellness

Health promotion continued to be the leading approach for promoting health and wellness among the Barbadian population. Strategies included policy formulation and implementation, strengthening community empowerment, strengthening health services, creating conditions to support healthy choices, health education and literacy and inter-sectoral collaboration. Responses were driven by the need to address the rising level of NCDs, and readiness to respond to new and re-emerging infectious diseases and threats.

Feature Box 1: National Non-Communicable Disease Commission



National Non-Communicable Disease Commission

Members of the National NCD commission were appointed for new two-year terms starting in July 2010. Professor Trevor Hassel continued as chairman, while Mrs. Ena Harvey of the Inter-American Institute for Cooperation on Agriculture was appointed as the deputy chairman. A major initiative during this term was the appointment of a short term consultant to coordinate the commission's activities. A public education campaign was launched, in collaboration with the Healthy Caribbean Coalition, to promote the reduction of salt in the diet, stimulating much discussion on this issue.



A highlight of the Commission's term was participation in a public education campaign to support the United Nations High Level Meeting (UNHLM) on NCD's in New York, 19-20 September 2011. One outstanding feature was a text based campaign, "Get the Message", in collaboration with the Healthy Caribbean Coalition, to encourage the public to urge Caribbean leaders to support the UNHLM.

The Commission also launched a major initiative to improve health-seeking behaviour among men. Through this initiative, blood pressure monitoring machines and scales were placed in three barber shops in "the barber shop project". Owners/operators of the selected shops received training about hypertension to enable them to prompt their clientele to use the machines.

The actions taken capitalized on the foundation laid in 2007 through the establishment of the National NCD Commission and the Barbados National Registry; as well as lessons learned during the H1N1 Influenza Pandemic in 2009, specifically the use of a risk communication approach to strengthen communication and preparedness systems.

Policy and legislative achievements during this period included the introduction of legislation that banned smoking in public places in Barbados, which was introduced on 1 October 2010. A bill banning the sale of tobacco to minors was passed in the Parliament on 17 November 2009 and enacted 28 January 2010. Both pieces of legislation were well received by the public and represented a major milestone in tobacco control and helped Barbados to fulfill its obligations under the World Health Organization's Framework Convention on Tobacco Control (FCTC), ratified by Barbados in November 2005. Public education campaigns were conducted to support the implementation of both measures.

Concerns about the rising level of public expenditure on the Barbados Drug Service led to the re-introduction of a dispensing fee for pharmaceutical products purchased under the Barbados Drug Service's Special Benefits Service. A public education campaign was mounted to explain the change to the public as well as to address revision to the Barbados National Drug Formulary.

In an effort to strengthen the governance systems for service provision by non-public sector stakeholders, a policy setting out the terms and conditions of partnerships and collaboration between the Ministry of Health and NGOs was prepared and approved.

The National Task Force on Physical Activity and Exercise, following its establishment in 2009, carried out a number of activities in keeping with its mandate to get Barbadians more physically active. These included training community residents to plan and conduct community based exercise programmes; and physical activity sessions and motivational talks were conducted with children at several primary schools and summer camps. The Task Force also mounted mass physical activity events in celebration of Caribbean Wellness Day in each of the years under review.

Another significant initiative was the training of fifty physical education teachers through a novel programme, "Jump Rope for Heart", which promotes skipping as a form of physical activity in primary schools. This approach to physical education was first introduced in Trinidad and Tobago and has been shared with other countries in the Caribbean Region. The Trinidad and Tobago Alliance for Sports and Physical Education facilitated training and the Ministry of Education, the National Sports Council and the Heart & Stroke Foundation supported the initiative. The Ministry provided 1000 skipping ropes to the schools across Barbados that participated in the training. The Ministry also supported Super Centre Supermarkets in a programme to promote walking through distribution of pedometers to customers who purchased designated products.

The Workplace Wellness Programme in the Ministry of Health continued with aerobics, line dancing and tai chi sessions provided free of cost for staff.

In an effort to further educate the public on health matters, the Health Promotion Unit launched a weekly television series, "Get Healthy Barbados" on CBC-TV. The aim was to improve dissemination of information about health and to support healthy choices. The first programme was broadcast on September 15th 2010.

Several initiatives were undertaken with partners in the private sector and civil society to broaden the NCD response, including workplace wellness programmes conducted in collaboration with the Barbados Workers Union.

During the period under review, public education activities were intensified in response to outbreaks of dengue fever and gastroenteritis. Of special note, was the incorporation of social media platforms such as text messaging and electronic notice boards to where information was posted. The Ministry of Health participated in PAHO's Pandemic Influenza Response Review & Capacity Building Workshop, held in Trinidad and Tobago in January 2010 to assess the lessons learned in respect of the H1N1 Pandemic in 2009, and to determine how these could be applied in the future.

2.2 Chronic Non-Communicable Diseases

One quarter of all adult Barbadians have a chronic non communicable diseases (NCD). This is expected to increase to one third of all adults by 2030, based on PAHO/WHO projections. The NCDs, which include heart disease, stroke, diabetes mellitus, chronic pulmonary disease and some cancers, have several risk factors in common for their development, including exposure to tobacco, harmful use of alcohol, lack of physical activity and exercise, and unhealthy diets, particularly those high in fat, salt and sugar. The WHO estimates that up to 80% of chronic diseases are preventable using simple lifestyle interventions linked to behavioural change.

In 2012, asthma was the leading disease specific discharge diagnosis from the Queen Elizabeth Hospital (QEH) accounting for 462 cases and representing just less than one quarter of all discharges as shown in Table 3. Most asthmatics are treated and discharged within 24 hours of their admission. Unlike other chronic diseases, asthma occurred mainly in children and adolescents with the 0-14 year old age group representing 70% of all hospital discharges for asthma. It should be noted, however, that mortality due to asthma remained low and asthma did not feature in the 10 leading causes of death. After asthma the traditional NCDs including diabetes mellitus, ischemic heart disease and stroke were the leading cause of discharges for 2012 as shown in Table 3. Similar trends were reported in the previous period, 2007 to 2009, and in 2010. People 55 years and older made up the majority of discharges for both sexes.

The most frequent cancer diagnoses were breast, colon-rectal, prostate, and cervical respectively. The frequency of cancer was highest in the 55 years and older age groups reaching a peak in those 75 years and older. Chronic pulmonary disease including bronchitis, influenza and pneumonia, and heart failure were among the ten leading discharge diagnoses.

Table 3: Number of Discharge Diagnoses for NCDs by Age Group and Sex at the QEH 2012

Age Groups											
Diagnosis	Sex	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75+	Total
Cancer of Prostate	M	0	0	0	0	0	5	8	13	30	56
Cancer of Breast	M	0	0	0	0	0	0	2	0	0	2
	F	0	0	0	1	28	41	34	41	19	164
Cancer of Cervix	F	0	0	0	4	2	13	8	2	2	31
Cancer of Colon /Rectosigmoid	M	0	0	0	1	5	6	28	27	18	85
	F	0	0	0	0	1	12	23	21	37	94
Diabetes	M	1	7	6	2	6	12	16	12	26	88
	F	0	4	12	3	6	15	18	27	39	124
Asthma	M	44	148	12	14	7	10	2	1	2	240
	F	36	106	12	15	8	17	10	11	7	222
Ischaemic Heart Disease	M	0	0	0	0	1	16	13	7	14	51
	F	0	0	0	0	7	10	13	25	20	75
Stroke	M	0	0	0	0	2	9	11	21	29	72
	F	0	0	0	1	5	9	12	30	66	123
Hypertension	M	2	0	0	4	1	1	2	2	1	13
	F	0	0	0	0	4	1	2	1	0	8
Bronchitis/ Emphysema, Other COPDs	M	39	0	0	0	0	3	3	9	18	72
	F	31	0	0	0	0	1	1	1	5	39
Totals		153	265	42	45	83	181	206	251	333	1559

Source: Records Department, Queen Elizabeth Hospital

2.3 Mental and Behavioural Disorders

Mental disorders fall into a broad spectrum of conditions that also include neurological and substance use disorders. Common conditions include depression and anxiety, those due to abuse of alcohol and other substances, and also those that are severe and disabling such as schizophrenia and bipolar disorder.

There were 3,366 total admissions to the Psychiatric Hospital over the period 2010 to 2012, with an annual average of 1,122. First time admissions represent approximately 21 per cent of the total admissions. Readmissions were responsible for the majority, over 78%, of total admissions, underscoring the need for comprehensive community-based treatment and rehabilitative services to facilitate seamless continuity of care on discharge from hospital. Equally important is social support in the community for patients and their families, which may be provided through support and advocacy groups.

Voluntary admissions represented on average over 53% of total admissions, while medically recommended admissions accounted for 31% over the given period. An average of 13% of all patients admitted to the Psychiatric Hospital between 2010 and 2012 were Hospital Order Patients, meaning admitted on order of the courts. These were usually related to substance abuse.

The male to female ratio of patients admitted to the hospital is 3:1 and this trend has been consistent over the past 10 years. Discharges are reflective of this trend and during the three-year reporting period a total of 2,532 males were discharged from the hospital in comparison to 808 females.

Table 4: Number of Admissions by Classifications to the Psychiatric Hospital

Category	2010	2011	2012
Total Admissions	1,176	1,126	1,064
First Admissions	218	255	245
Re-admissions	908	894	819
Type of Admission:			
Voluntary	634	597	562
Medically Recommended	319	382	326
Hospital Order	151	132	154
Other	22	38	22

Source: Medical Records Department, Psychiatric Hospital

Table 5: Number of Patients Discharged by Sex 2010 to 2012

	2010	2011	2012
Male	881	866	785
Female	253	286	269
Total	1,134	1,152	1,054

Source: Medical Records Department, Psychiatric Hospital

Health promotion and early intervention programmes delivered to the school-aged population are considered to be strategic in reversing trends in mental health disorders in Barbados. Mental health problems in children and adolescents are generally of concern because of their high prevalence and the accompanying lifelong disabilities. Specifically, it has been documented that since most substance use disorders start during childhood and/or adolescence, there is urgent need to develop and implement appropriate and effective prevention and treatment interventions for this population group. Community outreach programmes were developed in this respect to increase youth resiliency and reduce drug abuse among children and adolescents.

Strengthening Mental Health Services

Strategies to strengthen mental health services in Barbados during the period 2010 to 2012 were informed by international human rights instruments and resolutions passed by the World Health Organization and its regional body, the Pan American Health Organization. A Draft Policy Paper outlining recommendations for the Amendment of the Mental Health Act, 1985 to include provisions under the UN Convention on the Rights of Persons with Disabilities, and provisions for the operation of mental health services in the community was submitted for the consideration of the Cabinet Committee on Governance.

The establishment of 16 posts of community mental health nurse and the addition of two posts of consultant psychiatrist in August 2012 raised the capacity to provide community-based services. A total of three psychiatrists and 16 community mental health nurses now provide services in the network of eight polyclinics and three satellite clinics.

These strategies bring Barbados closer to the goal of modernizing mental health care by providing services that are fully accessible to the entire population and by reducing the stigma and discrimination associated with such care. They are also in keeping with international human rights declarations that make provision for the protection of people affected by mental disabilities by ensuring that the level of care afforded them is of the same standard as care provided for people with any other illnesses or disabilities.

2.4 Communicable Diseases

Notifiable Disease Reporting System

All physicians in the private and the public sector are required by the Communicable and Notifiable Diseases Regulations (1969) to notify the occurrence of a communicable disease. The five most common communicable diseases reported to the Ministry of Health during the period 2010 to 2012 were gastroenteritis, dengue fever, broncho-pneumonia, salmonellosis and leptospirosis.

Table 6: Reported Cases of Five Leading Communicable and Notifiable Diseases 2010-2012

Diseases	2012		2011		2010	
	Rank	No.	Rank	No.	Rank	No.
Dengue Fever	2	351	2	96	1	734
Salmonellosis	4	14	4	19	5	2
Gastroenteritis	1	493	1	220	2	328
Leptospirosis	5	11	5	14	4	11
Bronchopneumonia	3	120	3	93	3	34

As with other countries worldwide, there is under-reporting of diseases. Compliance with notification was improved in 2010 when the outbreak of dengue fever resulted in the largest number of cases notified (n=734). Despite this, timely reporting of cases does not always occur.

The Ministry of Health in 2010 set up a Notifiable Disease Committee to advise on issues relating to the regulations notification form to be submitted within 48 hours by physicians and laboratory managers. It is expected that timely notification will facilitate the implementation of prompt public health measures. This committee was also charged with reviewing and upgrading the schedule of notifiable diseases so as to include NCDs and new infectious disease.

Dengue Surveillance

Dengue is still considered by the World Health Organization (WHO) as the most important mosquito-borne disease in the world, resulting in high levels of morbidity and mortality. An active laboratory-based surveillance program continued to receive serum specimens from ambulatory and hospitalized patients throughout the island, and clinical reports on cases hospitalized at the QEH.

All four dengue serotypes are circulating in Barbados. Suspected and confirmed cases of dengue based on the active laboratory surveillance system from 2007 to 2012 are documented in Table 7. During 2009, Dengue Serotype 3 was the predominant serotype. Dengue Type 2 emerged as the predominant serotype, causing four (4) deaths in the 2010 outbreak. Dengue

Type 1 was the principal serotype that resulted in one death in the subsequent outbreak during 2012. The Dengue case fatality rate continued to be less than 5% annually. This is in accordance with the Ministry of Health's Strategic Goal for Communicable Diseases: *to reduce the mortality of existing, new and re-emerging communicable diseases to less than 5%*. Dengue affects all age groups. As indicated in Figure 2, the attack rates of dengue for 2012 were highest in the 15-24 age group (2.08 cases per 1000 population) and lowest in the over 65 population (1.18 cases per 1000 population). For all ages the attack rate was 1.58 cases per 1000 population. For the period 2010 to 2012, most cases occurred in females (52% -54%).

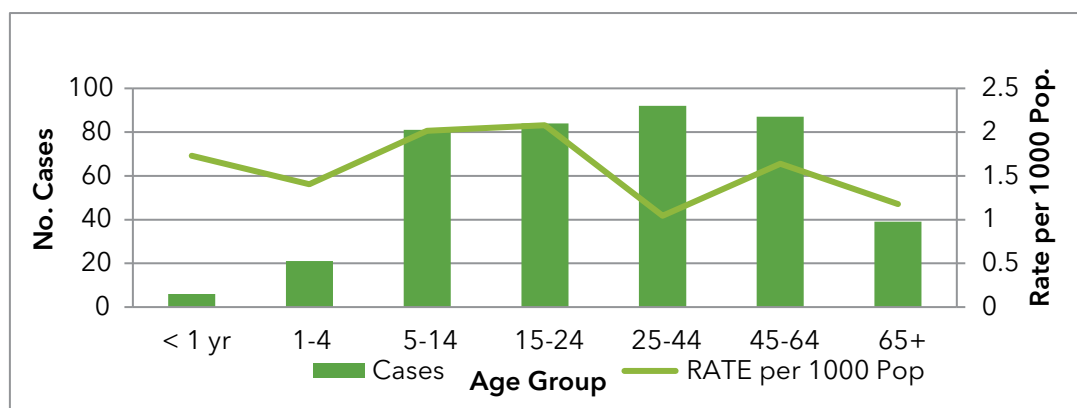
Dengue management in Barbados is facilitated through surveillance, health promotion, vector control and entomology, laboratory testing and treatment by clinical teams when cases occur. A workshop on the management of Dengue and Chikungunya for health care providers was held during 2012. During the 2010 and 2012 outbreaks health bulletins were also circulated to health care providers in the public and private sectors.

Table 7: Confirmed Cases of Dengue Fever 2007-2012

Item	2007	2008	2009	2010	2011	2012
Number Cases Tested	1,426	645	480	1,897	815	1,481
No. of Confirmed Cases	640	246	94	570	206	431
No. deaths	2	3	2	4	2	1

Source: Ministry of Health

Figure 3: Dengue Cases & Attack Rates by Age Group - 2012



Leptospirosis Surveillance

Leptospirosis refers to a group of zoonotic bacterial diseases with varying manifestations. It occurs worldwide and is endemic in Barbados. It is considered an occupational hazard for sugarcane, dairy and abattoir workers, farmers, veterinarians and army personnel. It is predominantly a disease of males, linked to occupation.

The incidence of leptospirosis in Barbados was 0.04, 0.16 and 2.0 per 1000 population for the years 2010, 2011 and 2012 respectively. Outbreaks of leptospirosis occurred in 2011 and 2012

with 44 cases and 54 cases respectively (Table 8). Press conferences and health promotion messages were issued to sensitize the public. Rat bait distribution and rat baiting were the principal methods used to reduce the rodent population and prevent further escalation of cases.

For the period 2010 to 2012 there were 3 deaths due to leptospirosis, compared to 7 deaths in the previous three years (Table 8). This reduction may be indicative of early recognition and management of the disease by health care providers

In keeping with the trend of previous years the majority of the cases reported were male, however over this period an increasing number of females were infected with leptospirosis, with females representing 23 (43%) cases in 2012. This may be due to women engaging in previously male dominated activities with risk of contracting leptospirosis. The highest incidence in 2012 occurred in the 25-44 age group for both males and females.

In the period 2008-2012, there were two cases of leptospirosis detected in the under-15 age group and 4 and 8 cases respectively in 2011 and 2012. As indicated in the previous report one possible risk factor for leptospirosis in this age group may be an increase in domesticated animals in the home in recent years and this has been considered as an area for further investigation. In this regard school health programmes continued to place emphasis on vector control activities.

Table 8: Confirmed Cases of Leptospirosis

Item	2007	2008	2009	2010	2011	2012
No. of Confirmed Cases	28	24	14	12	44	54
No. deaths	3	2	2	0	2	1

Source: Surveillance Unit, Ministry of Health

The Leptospira Laboratory continued to provide diagnostic confirmation of leptospirosis. As with other communicable diseases The Environmental Health Officers conducted investigations into each case to facilitate the necessary prevention and control measures. The Hospital Surveillance Nurse also helped identify suspected cases for investigation.

Tuberculosis Surveillance

According to the Caribbean Epidemiology Centre (CAREC) Annual Report, 2010, the annual TB incidence in the Caribbean ranged from 0 to 100 cases per 100,000 inhabitants. With the exception of Guyana, all countries reported a rate less than 35 cases per 100,000 inhabitants. Overall, approximately 25% of new cases were known to be HIV positive (co-infection).

In Barbados, since 2007 fewer than 0.01 cases per 1000 population have been recorded with 0 to 2 cases reported annually. There were no outbreaks of tuberculosis occurring during the reporting period (2010-2012). Approximately a third of tuberculosis cases was co-infected with HIV in Barbados (Table 9). Good collaboration continued between the HIV and tuberculosis

teams to ensure that all identified cases were tested for TB. No cases of multidrug resistance were detected.

Table 9: Confirmed Cases of Tuberculosis, 2007-2012

Item	2007	2008	2009	2010	2011	2012
No. of Confirmed Cases	8	3	3	6	3	1
No. deaths	0	0	0	0	0	0
No. HIV-TB Co-Infections	2	2	0	2	1	0

Source: Surveillance Unit, Ministry of Health

The TB Programme is coordinated by the TB Programme Officer in collaboration with the TB Surveillance Officer. Diagnostic capability however remained limited and cultured samples were still being sent overseas for confirmation and sensitivity patterns. Press releases are issued annually on World TB day to sensitize the public on tuberculosis transmission

Salmonellosis

The Annual Report of the Caribbean Epidemiology Centre (2010) confirms that salmonellosis has been the most commonly reported cause of food borne illness and outbreaks in the Caribbean since 1985. During 2010, salmonella accounted for 65% of food borne pathogens. There were a total of 911 laboratory confirmed specimens isolated from humans in 16 CAREC member countries. The majority (88%) of specimens were from five countries, including Barbados (14%).

Salmonella continued to be a predominant enterpathogen confirmed at the Public Health Laboratory (Table 10) even though there were fewer cases of salmonella in 2011 than in 2012.

All stool cultures collected in the public health care sector, from patients who are symptomatic for gastroenteritis, are sent to the Public Health Laboratory. Stool samples are also sent from the island's private laboratories to the Public Health Laboratory for further typing if salmonella species are isolated on screening. Testing for antimicrobial patterns for Salmonella is also conducted for human as well as animal and environmental specimens.

Table 10: Salmonella Cases in Barbados, 2007-2012

Year	Number of Cases
2007	N/A
2008	126
2009	185
2010	133
2011	92
2012	76

Source: Surveillance Unit, Ministry of Health

Burden of Illness Study

The Burden of Illness Study for gastrointestinal illness was conducted during the 2010-2012 reporting period. The aim of this study was to determine the burden and impact of acute gastroenteritis (AGE) and foodborne diseases (FBDs) in Barbados through a retrospective, cross-sectional population survey and laboratory study during August 2010–August 2011.

Face-to-face interviews were conducted with one person from each of 1,710 randomly selected households. Of these, 1,433 interviews (84%) were completed. A total of 70 respondents reported having experienced AGE in the 28 days prior to the interview, representing a prevalence of 4.9% and an annual incidence rate of 0.652 episodes per person-year. Age ($p=0.01132$), season ($p=0.00343$), and income ($p<0.005$) were statistically associated with the occurrence of AGE in the population.

The study found that Norovirus was the leading foodborne pathogen causing AGE-related illness. An estimated 44,270 cases of AGE were found to occur during the period of the study. The economic costs of AGE ranged from BD\$9.5 million to BD\$16.5 million (US\$4.25 - 8.25) annually. This study demonstrated that the public-health burden and impacts of AGE and FBD in Barbados were high, and provided the necessary baseline information to guide targeted interventions.

2.5 HIV/AIDS & Sexually Transmitted Diseases

HIV/AIDS Programme

From the start of the HIV epidemic in 1984 to the end of 2012, there have been in Barbados 3,697 cumulative HIV cases and 2,451 AIDS cases diagnosed, while 1,673 people with HIV have died. In these three categories of HIV surveillance (shown in Table 11) the numbers of men were consistently higher than the numbers of women.

Table 11: Cumulative HIV cases, AIDS cases and HIV deaths from 1984 to 2012 by Sex

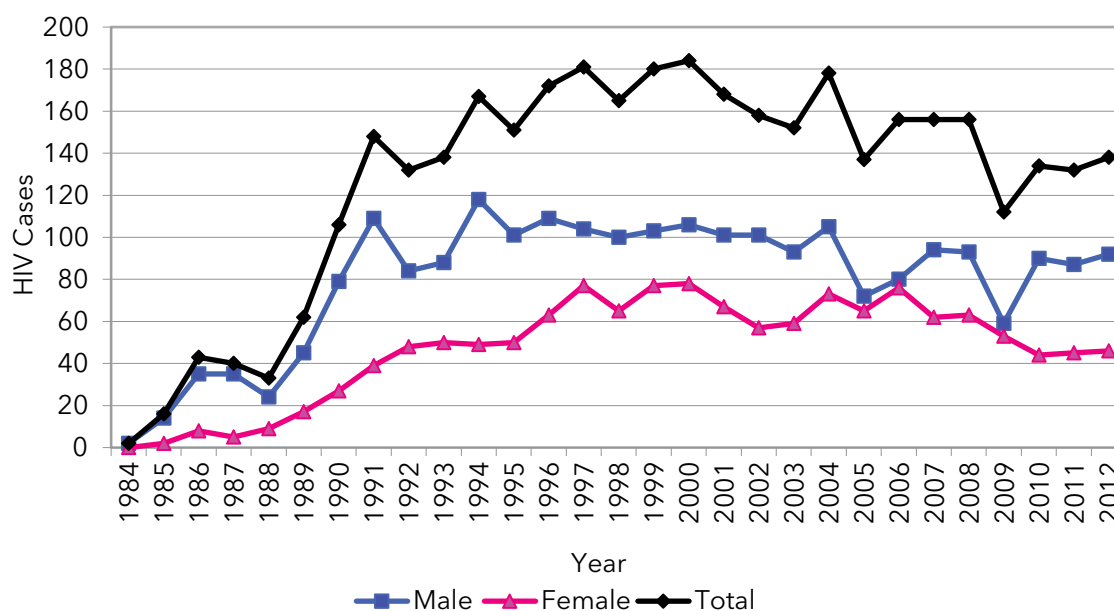
Gender	New HIV Cases	AIDS Cases	HIV Deaths
Male	2,323 (62.8%)	1,664 (67.9%)	1,206 (72.1%)
Female	1,374 (37.2%)	787 (32.1%)	467 (27.9%)
Total	3,697	2,451	1,673

Source: NHS Database 2014

Newly Diagnosed HIV Cases (Trends 1984 – 2012)

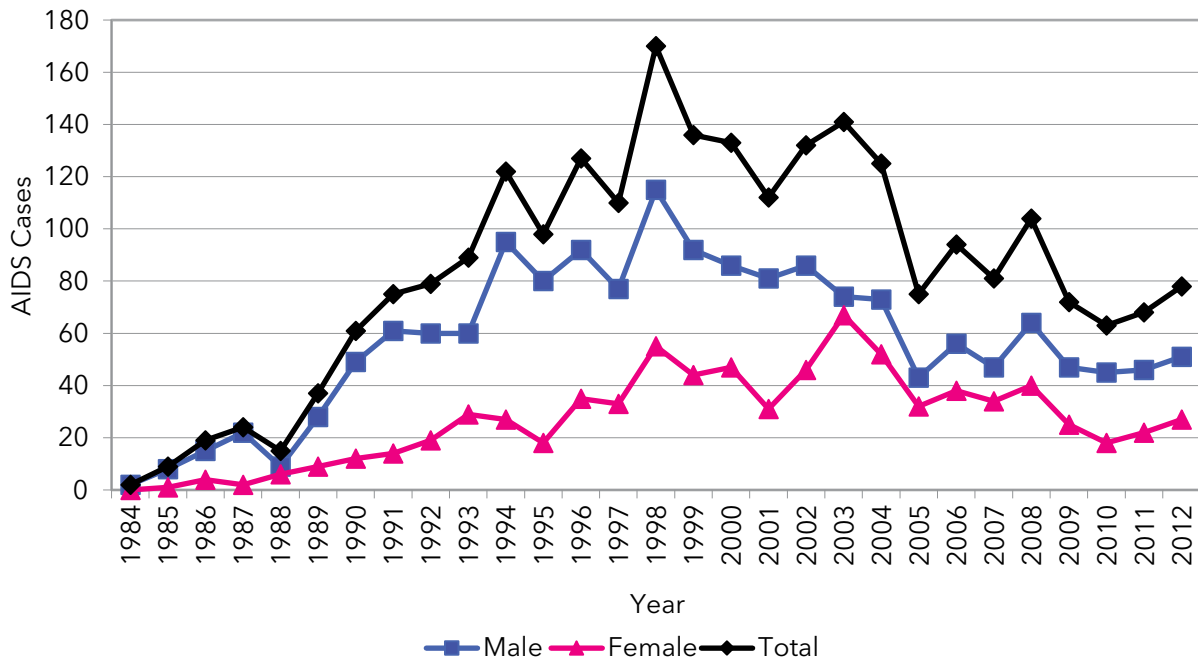
The graph illustrates a steady increase in HIV cases from 1984. There has been a noticeable decline in new annual cases seen since 2000. The numbers of HIV infections among men and women have shown significant gender disparity with men making up a disproportionate number of those diagnosed with HIV. This difference suggests that men are at a higher risk of contracting HIV in Barbados.

Figure 4: Newly Diagnosed HIV cases by year and gender; 1984 - 2012



Source: NHS Database 2014

Figure 5: Newly Diagnosed AIDS cases by year and gender; 1984 - 2012



Source: NHS Database 2014

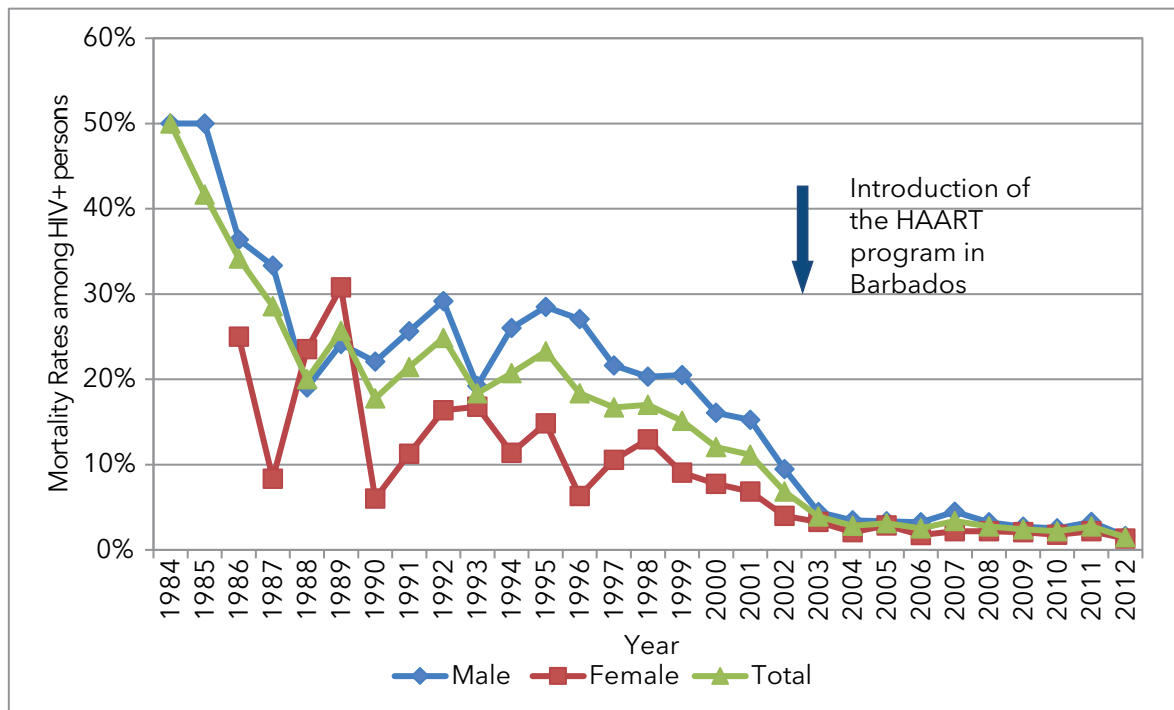
Newly Diagnosed HIV Cases (Trends 1984 – 2012)

Figure 5 shows steady increase in total AIDS cases from 1984 to a peak in 1998. These numbers have declined dramatically since 2001 when the expanded HIV programme was implemented. The previously noticed gender disparity is also seen with AIDS cases, with more men than women progressing to the immune compromised state.

HIV Mortality

Figure 5 illustrates the steady decline seen in mortality rates among the HIV+ since the start of the HIV epidemic in 1984. A more pronounced decline is noted after 2001 when ART was introduced as part of the National Expanded HIV/AIDS Programme.

Figure 6: Mortality Rates among HIV+ persons by year and gender in 1984-2012



Source: NHS Database 2014

Trends In New HIV Cases 2010-2012

Between 2010 and 2012 more men than women were consistently diagnosed with HIV. The numbers of infections during this period have remained relatively constant. The majority of people newly diagnosed with HIV were between the ages of 20-49 at the time of diagnosis. The table below details the annual number of new HIV cases disaggregated by age and sex between 2010 and 2012.

Table 12: HIV Diagnosis by sex and age group; 2010 - 2012

2010											
	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	>60	Total
Male	5	11	4	13	9	13	19	9	5	2	90
Female	2	5	10	5	8	5	5	3	0	1	44
Total	7	16	14	18	17	18	24	12	5	3	134
2011											
Male	6	11	8	6	8	11	15	10	6	6	87
Female	4	5	11	4	7	2	7	2	2	1	45
Total	10	16	19	10	15	13	22	12	8	7	132
2012											
Male	3	24	17	18	8	6	4	4	1	7	92
Female	4	5	7	7	5	6	4	1	1	6	46
Total	7	29	24	25	13	12	8	5	2	13	138

Source: SHIP Database 2014

Trends In New AIDS Cases 2010-2012

Table 13 details the annual trends of AIDS cases diagnosed between 2010-2012 by age and gender. Over this 3-year period 209 people were diagnosed with AIDS, of whom 68% were men, highlighting gender imbalances seen in HIV disease progression. The majority of those diagnosed with AIDS were between the ages of 25-49 at the time of AIDS diagnosis.

Table 13: AIDS diagnosis by sex and age group; 2010 - 2012

2010											
	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	>60	Total
Male	1	1	3	4	3	7	12	9	2	3	45
Female	1	0	3	2	5	3	0	4	0	0	18
Total	2	1	6	6	8	10	12	13	2	33	63
2011											
Male	2	5	4	3	8	6	5	6	4	3	46
Female	0	1	1	1	4	1	7	6	0	1	22
Total	2	6	5	4	12	7	12	12	4	4	68
2012											
Male	2	7	6	6	9	7	4	4	1	5	51
Female	1	1	2	7	3	6	3	0	1	3	27
Total	3	8	8	13	12	13	7	4	2	8	78

Source: SHIP Database, 2014

Trends In HIV-Related Deaths 2010-2012

There were a total 123 HIV-related deaths over this 3-year period. The trends in deaths among people with HIV according to age and gender are detailed in Table 14.

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Table 14: Death among the HIV+ by sex and age group; 2010 – 2012

2010										
	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	>60	Total
Male	0	2	1	6	2	10	2	1	1	25
Female	0	1	2	0	0	2	5	2	3	15
Total	0	3	3	6	2	12	7	3	4	40
2011										
	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	>60
Male	2	0	1	3	5	6	6	7	4	34
Female	2	1	2	4	2	3	3	1	1	19
Total	4	1	3	7	7	9	9	8	5	53
2012										
Male	0	0	2	3	0	4	3	1	5	18
Female	0	0	0	3	2	3	1	0	3	12
Total	0	0	2	6	2	7	4	1	8	30

Source: SHIP Database, 2014

People With HIV Receiving Medical Care At The Ladymeade Reference Unit (LRU) 2002-2012

Between 2002 and 2012, 1,781 people were registered for care at the LRU, and 285 died.

The highest numbers were registered in 2002 when the LRU first opened and all patients attending the Counseling Clinic at the QEH were automatically transferred to the LRU for care. Since then there has been a gradual decline in the numbers registering for care at the LRU. Fifty-six percent (56%) of registrants were male. These data are outlined in Table 15.

Table 15: Individuals registered at the LRU by sex, 2002 - 2012

Year	Male	Female	Total
2002	228	237	465
2003	96	67	163
2004	85	65	150
2005	58	66	124
2006	81	65	146
2007	80	56	136
2008	85	59	144
2009	59	46	105
2010	71	33	104
2011	69	46	115
2012	89	40	129
Total	1001	780	1781

Source: SHIP Database 2014

The following table details the annual number of deaths occurring amongst registrants at the LRU disaggregated by sex.

Table 16: Number of deaths of individuals registered at the LRU

Year	Female	Male	Total
2002	3	10	13
2003	8	12	20
2004	8	14	22
2005	13	15	28
2006	10	14	24
2007	12	20	32
2008	11	12	23
2009	12	20	32
2010	10	16	26
2011	16	26	42
2012	9	14	23
Total	112	173	285

Source: SHIP Database 2014

The proportion of deaths among men in care at the LRU, 61% over the entire 11-year period, has consistently outnumbered that among women.

Annual Trends In People Registering For HIV Care 2010-2012

Three hundred and forty eight (348) people were newly registered for HIV care at the LRU during the period 2010-2012. The following table details the annual trends according to age and sex over the three year period.

Table 17: Individuals registered at the LRU by sex and age group, 2010 - 2012

2010											
	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	>60	Total
Male	2	4	8	3	5	6	2	3	0	0	33
Female	5	8	5	8	8	9	15	8	4	1	71
Total	7	12	13	11	13	15	17	11	4	1	104
2011											
Male	3	4	9	3	10	1	9	4	2	1	46
Female	4	10	7	8	6	11	12	4	4	3	69
Total	7	14	16	11	16	12	21	8	6	4	115
2012											
Male	5	5	6	5	4	5	5	0	1	4	40
Female	8	18	17	11	11	6	3	9	1	5	89
Total	13	23	23	16	15	11	8	9	2	9	129

Source: SHIP Database 2014

The following tables detail the immunological classification, using WHO criteria, of people accessing care at the LRU at or close to their first visit. During this 3-year period, a significant proportion of those registering for HIV care were already severely immunocompromised (CD4<200). This is highlighted in each table. It should be noted that the majority of those who were severely compromised were men.

By the time people access care for their HIV, they are very immuno compromised reducing their chances of survival. Public health strategies need to be more aggressively directed at early detection and treatment.

Table 18: Immunological classifications of newly registered patients at the LRU in 2010

WHO HIV-associated immunological classification	CD4 (cells/mm ³)	Sex		Total	
		Female	Male	n	%
Severe	< 200	11	29	40	38
Advanced	200 - 349	8	16	24	23
Mild	350 - 499	5	11	16	15
None or not significant	≥ 500	8	11	19	18
No Classification	Not Known	1	4	5	5
Total		33	71	104	100

Source: SHIP Database 2014

Table 19: Immunological classifications of newly registered patients at the LRU in 2011

WHO HIV-associated immunological classification	CD4 (cells/mm ³)	Sex		Total	
		Female	Male	n	%
Severe	< 200	15	33	48	42
Advanced	200 - 349	8	19	27	23
Mild	350 - 499	9	10	19	17
None or not significant	≥ 500	14	7	21	18
No Classification	Not Known	0	0	0	0
Total		46	69	115	100

Source: SHIP Database 2014

Table 20: Immunological classifications of newly registered patients at the LRU in 2012

WHO HIV-associated immunological classification	CD4 (cells/mm ³)	Sex		Total	
		Female	Male	n	%
Severe	< 200	17	41	58	45
Advanced	200 - 349	7	16	23	18
Mild	350 - 499	7	15	22	17
None or not significant	≥ 500	9	17	26	20
No Classification	Not Known				
Total		40	89	129	100

Annual Trends In Deaths Among People With HIV At The LRU 2010-2012

Ninety-one (91) deaths occurred among LRU clients, during this 3-year period.

Table 21: Trends in annual deaths among people with HIV registered at the LRU by sex and age group

2010										
	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	>60	Total
Male	0	1	2	0	0	1	3	2	1	10
Female	0	1	1	5	1	5	2	0	1	16
Total	0	2	3	5	1	6	5	2	2	26
2011										
Male	1	1	1	3	1	3	4	1	1	16
Female	0	0	1	4	5	6	3	4	3	26
Total	1	1	2	7	6	9	7	5	4	42
2012										
Male	0	0	0	1	2	3	1	0	2	9
Female	0	0	2	3	0	2	2	1	4	14
Total	0	0	2	4	2	5	3	1	6	23

Source: SHIP Database 2014

The STI Programme

A programme to prevent and control sexually transmitted infections (STIs) in Barbados was strengthened in 2006 and incorporated into the expanded HIV/AIDS Programme. For surveillance purposes, the main STIs of interest in Barbados are chlamydia, gonorrhoea and syphilis. Surveillance and research data on these STIs are discussed below.

Syphilis Surveillance

Laboratory diagnostics for syphilis uses VDRL and TPPA tests which are done at the Public Health Laboratory. The table below details the total number of VDRL tests and the total number of syphilis cases (based on VDRL 1:4 titre and TPPA positive test) between 2011 and 2012. There was an increase in the number of syphilis cases but whether this was an insignificant increase in cases or a noteworthy outbreak could not be determined based on two data points.

Table 22: Number of VDRL tests and Acute Syphilis cases; 2011-2012

Year*	Total VDRL Tests	Total Acute Syphilis cases**
2011	14071	24
2012	9318	40

Source: STI Database 2015

*Please note that similar data from the PHL were not available for 2010 since the electronic laboratory system which is used for syphilis surveillance was only implemented in 2011.

**An acute syphilis case is defined as VDRL \geq 1:4 and TPPA positive and no evidence that this was a repeat test.

Chlamydia (CT) and Gonorrhoea (NG) Surveillance

The LRU Laboratory performs qualitative diagnostic testing for CT and NG via PCR method on urine samples. The vast majority of CT and NG tests in Barbados are done at the LRU. National surveillance for these two STIs is solely based on data from the LRU Laboratory. The total number of CT tests has increased since 2004 when CT testing started. Females account for the majority of CT tests done by the LRU Laboratory.

Table 23: Number of CT tests and cases per year by gender in 2004-2012

Year	Male	Female	Un-known	Total no. of CT Tests	Total CT cases	Positivity Rate (%)
2004	100	121	9	230	11	4.8
2005	64	73	12	149	2	1.3
2006	73	118	5	196	17	8.7
2007	63	72	1	136	12	8.8
2008	230	890	8	1,128	160	14.2
2009	325	1,309	15	1,649	206	12.5
2010	529	2,535	6	3,070	427	13.9
2011	1,061	4,002	43	5,106	611	12.0
2012	1,076	3,931	63	5,070	696	13.7

Source: STI Database 2014

The trends in the NG tests done are similar to the trends for CT testing described above with the total number of tests increasing since 2004 with the tests predominately among females. Compared to the numbers of tests done in 2008, a fivefold increase in tests had been seen by 2012.

Table 23: Number of NG tests and cases per year by gender in 2004-2012

Year	Male	Female	Sex un-known	Total NG Tests	Total NG cases	Positivity Rate (%)
2004	100	121	9	230	3	1.3
2005	64	73	12	149	1	0.7
2006	50	97	5	152	8	5.3
2007	58	70	1	129	3	2.3
2008	213	816	6	1,035	49	4.7
2009	288	1,127	14	1,429	32	2.2
2010	451	2,143	4	2,598	41	1.6
2011	1,039	3,974	43	5,056	86	1.7
2012	1,078	3,931	64	5,073	132	2.6

Source: STI Database 2014

The positivity rates for CT and NG as detailed above are similar to the prevalence data for CT and NG in Barbados as determined by a 2008 study published by Adams et al. In this study, Adams and team determined the prevalence of CT and NG to be 11.3% and 1.8%, respectively, among people 18 to 35 years of age in Barbados.

The Evaluation of the National HIV and STI Response

In 2011, PAHO conducted an evaluation of the Health System's Response to HIV and STIs as part of the Mid-Term Review of the Government of Barbados' second World Bank HIV project. The evaluation was premised on the principle that resources should be used both to strengthen the overall health system and to produce the highest possible social returns. As such, it was intended as a critical assessment of the necessary elements of a comprehensive health system response, in line with the goals of Universal Access to HIV prevention, treatment, care and support, and with the Millennium Development Goals. Stemming from this assessment, a report was produced, and presented to the MOH in March 2012, that focused on the strengths and challenges facing the Health System of Barbados and made specific recommendations for overall strengthening of HIV/STI programmes and service delivery.

The stakeholders targeted in the evaluation included the Ministry of Health (Permanent Secretary, Chief Medical Officer, Polyclinics, Ladymeade Reference Unit, Queen Elizabeth Hospital) and its HIV/STI Prevention and Control Programme, as well as the National HIV/AIDS Commission, which coordinated the overall multi-sectoral response in Barbados. Health facilities, including pharmacies and laboratories and other stakeholders, public and private providers, NGOs, CBOs, people living with HIV and most-at-risk populations, as well as several development partners (UNDP, PEPFAR/USAID/CDC, PAHO/WHO Country Office and the United Nations Theme Group) were also included in the exercise. Interviews and group discussions were held with key informants, based on a set of key questions identified during the preparation process, and which sought to address the specific questions of:

1. Are the resources for HIV, including those designated by the World Bank loan, being allocated and implemented in the most optimal way to achieve the HIV-related targets of the country?
2. If not, what changes at the programmatic and health systems levels could help to improve the effectiveness and social profitability of resource allocation and use?

The Evaluation Team identified several achievements in the Health System's response to HIV and STIs. Most important of these (based on national data) was the possible achievement of the Universal Access targets for coverage with ART and regional targets for the Elimination of Mother-to-Child Transmission of HIV and Congenital Syphilis (Elimination Initiative). Specifically, these achievements translated into the following milestones:

- a. a significant reduction in newly diagnosed HIV infections during the period 2001-2010;
- b. a significant expansion of HIV care and treatment services through decentralized testing and referral to care, care and treatment expansion and sustained high coverage, currently estimated at 86% of those who need it;
- c. a reduction of AIDS mortality rates from 50% to less than 10%;
- d. a reduction of mother-to-child transmission of HIV to 2% or less. Barbados had no reported cases of transmission of HIV from a mother to her child in the last four years;
- e. a reduction of the incidence of mother-to-child transmission of HIV to 0.3 cases or less per 1000 live births. As reported above, Barbados has not recorded transmission of HIV from mother to child in the last four years;
- f. a reduction of the incidence of congenital syphilis to 0.5 cases or less per 1000 live births. Barbados has had no reported cases of congenital syphilis in the last seven years.

According to the PAHO Evaluation Team, the above findings support the growing evidence of the value of ART treatment as prevention. More robust analysis of existing data is necessary to generate the needed evidence to guide future conclusions and decisions in this area.

The Barbados Health System has achieved significant outcomes and has had a positive impact on the HIV epidemic. This was possible as a result of the sustained leadership and political support to the HIV/AIDS Prevention and Control Programme of the Ministry of Health, which has been successful in developing interventions and services in response to HIV. However, the report stated that the Ministry's HIV/STI Prevention and Control Programme is vertical and centralized, with minimum integration into existing health system services and structures. The evaluation noted a disproportionate investment in HIV that, if not addressed, will hamper sustainability of the overall health response. Re-orienting the existing programmatic structure and services to rationalize resources without compromising achievements is the key challenge to the Health System and will require strong leadership and governance in the Ministry as a whole. The National HIV/AIDS Commission and the HIV/STI Prevention and Control Programme of the Ministry of Health, as well as key stakeholders interviewed for this assessment identified a number of key issues and recommendations for the Ministry to lead and manage the necessary changes, as well as for its HIV/STI Prevention and Control Programme.

Behavioural Surveillance Survey (BSS) amongst MSM in Barbados

The preparatory phase of this study was started during this period because the MOH identified this group to be a key population at risk of HIV infection.

Noteworthy Milestones

- Formation of a MSM BSS Core Committee (January 2010);
- Completion of MSM BSS Formative Assessment Data collection (August 2010);
- Preliminary findings and Report on MSM BSS Formative Assessment (December 2010)
- Approval of BSS Protocol (UWI/MOH) and by CDC CGH Human Subjects;
- Training of BSS Personnel was conducted in November 2011 and August 2012;
- Commencement of data collection for BSS among MSM in June 2012.

2.6 Hospital-Based Reports

The Queen Elizabeth Hospital (QEH) continued in its role as the country's leading acute care medical facility, with a capacity of 552 beds and providing 94% of all hospital beds in Barbados. The QEH is accredited as a teaching hospital affiliated with the Faculty of Medical Sciences of the University of the West Indies.

The leading in-patient services for the period under review continued to be Medicine, Surgery and Obstetrics, as well as Paediatrics. As shown in Table 24, the average length of stay in hospital for 2010-2012 was 6.1 days and the average annual admissions for the same period was 20,954. Out-patient activity was highest in the departments of Ophthalmology, General Medicine and Surgery, Obstetrics and Gynaecology, and Ear, Nose and Throat (ENT) services.

Table 24: Average Admissions, Patients Days and Length of Stay for the QEH 2006-2012

Year	Admissions	Patient Days	Average Length of Stay (ALOS)
2006	21,737	143,684	6.5
2007	22,443	140,424	6.3
2008	22,554	145,074	6.3
2009	21,225	141,171	6.6
2010	21,591	139,925	6.3
2011	20,675	138,292	6.6
2012	20,597	139,977	5.5
Average	21,546	141,221	6.3

This section of the report describes the utilization of the QEH services: the main discharge diagnoses; major services and programs introduced, as well as bed utilization and outpatient attendances. The QEH statistics provide an indication of the magnitude and scope of the diseases affecting the population, and consequently these statistics are a basis from which decision makers and administrators may strengthen the delivery of prevention and control services at the primary health care level. The statistics will also highlight areas that require strengthening or realignment of resources from one area to another.

There were 20,597 admissions to the QEH in 2012. The highest number of admissions were in PA&Eiatrics, followed by the departments of Medicine, Obstetrics and Surgery. The length of stay in the departments of Medicine, Surgery, Radiotherapy, OrthopA&Eics and Psychiatry exceeded the hospital's average 7.5 days length of stay.

As shown in Table 25, there was a bed occupancy rate of 122.3 percent in the Department of Medicine in 2012. This continued to be a concern for the MOH primarily since the QEH is obligated to admit several patients affected by chronic conditions which may have been stabilized, or who are at an incurable stage in the disease process. Such patients have been a contributing factor to the high occupancy rate because of the need to reallocate, at an alternative location e.g. the Geriatric Hospital, those who no longer need acute care but have no access to social support and care in a community setting.

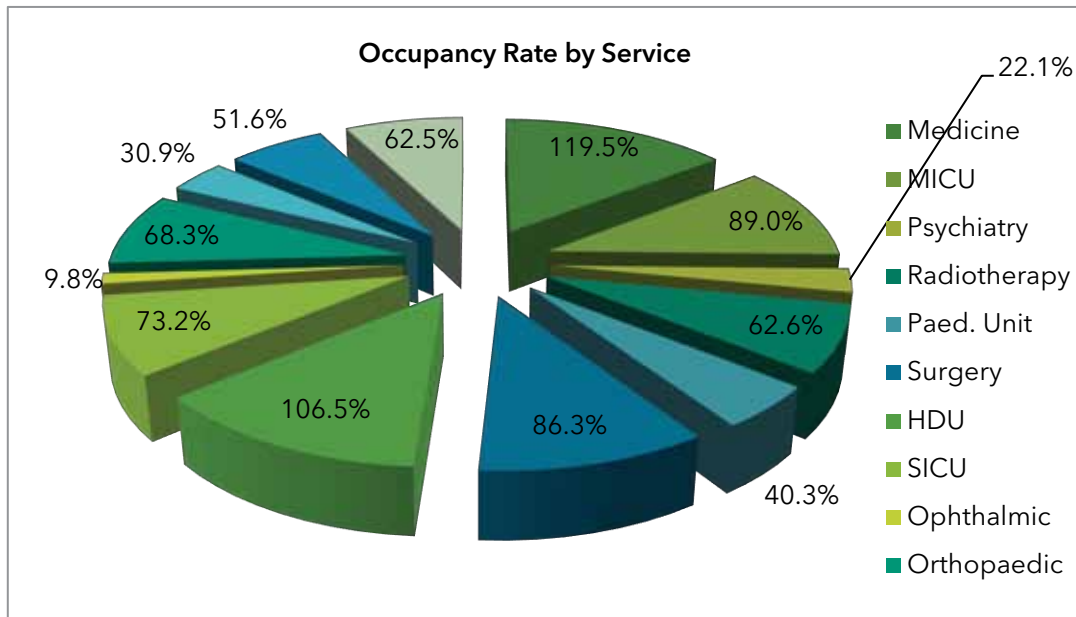
Table 25 also highlights the low occupancy rate of several departments and the long length of stay as compared to acceptable international standards for similar departments. The bed utilization statistics suggest the need to evaluate and reform the in-patient management systems; to examine the idea of recruiting a Bed Manager; and to introduce a system of discharge planning. Additionally, the MOH is examining issues with respect to the appropriateness of care and the cost effectiveness of delivering certain aspects of care in an in-patient tertiary level setting versus utilizing other modalities such as a day case setting, hospice, nursing home, or community care setting.

Table 25: Bed Utilization at the Queen Elizabeth Hospital by Service

Item	Total	Med.	Surg.	Obst.	Paediatrics	Gynae.	Orthopaedics	E.N.T.	Radio-therapy	Ophth.	PSY
No. of beds	562	102	108	58	104	33	32	16	23	31	12
Admissions	20,597	4,276	3,114	3,797	5,235	1,846	805	519	383	384	238
Patient days	139,977	48,052	36,079	11,465	18,166	6,521	8,432	1,919	5,506	1,201	2,636
Av. Length of stay	7.5	12.7	11.3	3.1	5.1	3.5	10.3	3.5	14.8	3.3	11.2
% occupancy	68.1	122.3	86.4	54	40.3	48.8	65.1	31.7	61.7	10.4	59.6
Bed turnover rate	36.7	42.6	27.7	74.5	51.8	63.1	21.5	35.5	18.2	18.5	18.4
Major operations	3310	-	1,107	608	-	616	521	340	-	118	-
Total operation	5,056	-	1,893	640	-	1,000	944	447	-	132	-

Notes: 1. Occupancy rates, Bed Turnover and Turnover intervals calculated on Public Wards only, except as follows:

Obstetrics - All Wards, Orthopaedic - B5
Source: QEH Monthly Bed Utilization Reports 2012
Figure 7: Occupancy Rate of Service at QEH



The volume of in-patient and out-patient activity continued to place a heavy demand on human resources, physical resources, financial resources and other ancillary services. Under the reporting period, the general operational plans for the QEH were designed in broad terms to meet the public's demands for the delivery of quality health care. The Hospital's focus therefore was to reduce the enterprise-wide bottlenecks within the system that could keep the average length of stay (ALOS) outside of industry standards and hinder patient flow. In terms of utilization management, the aim was to minimize waiting times, maximize productivity and improve the patient experience.

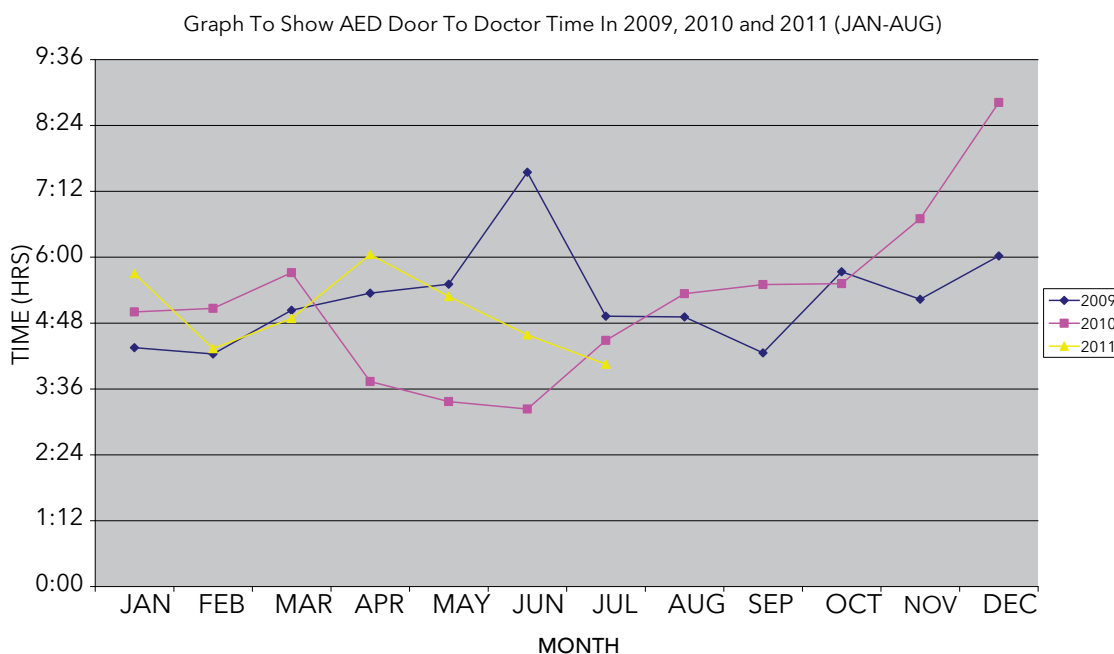
The Accident & Emergency (A&E) Improvement project was implemented in 2010 to improve the overall patient satisfaction in the department. Accordingly, the following key objectives were determined for project success:

- a. Reduction of the average door to triage time to 45 minutes
- b. Reduction of the average door to doctor time to 4 hours for category 2a patients
- c. Reduction of the percentage of left without treatment to less than 10%
- d. Strengthening of the communication link between patients/relatives and the A&E;
- e. Facilitation of the work of the Primary Health Care workers by decreasing the number of interruptions/diversions;
- f. Reducing the number of complaints due to poor communication.

The project was boosted by the development of a fast track system designed to improve the waiting times for Category 2B patients who account for approximately 25% of all patients presenting to the A&E. As such, a Minor Cases Unit (MCU) was built and opened to see and treat patients with non-urgent complaints, who still had to be seen in the A&E (for X-rays etc.) but were generally ambulant. These Category 2B patients were batched and a doctor was specifically assigned to see and treat these patients. Managing this group of patients effectively reduced overall waiting times. The A&E Improvement Project had initially secured additional medical and nursing staff and patient advocates to improve the communications with patients’ families and other internal and external customers. The project also succeeded in strengthening the linkage between patients/relatives and the A&E, and to ensure the free flow of information on patients’ condition and reason(s) for delay in treatment. The project also provided training in triaging and some equipment for point of care testing.

The project was evaluated¹ in the second quarter of the 2011-2012 financial year and showed that the allocation of additional human resources to the A&E had positively impacted the level of patient care provided. The door to triage and door to doctor times had shown overall improvement over the corresponding period in 2009 (see Figure 8).

Figure 8: A&E Door to Doctor Times in 2009, 2010, 2011



¹ Assessment of A&E Pilot Project – updated version (2011)

The Patient Advocates also made a difference to the patient care experience as evidenced by the positive feedback received from relatives regarding the timely updates on the status of their relatives who are seeking care. The staff of the department was very appreciative of the role that the Patient Advocates played in reducing interruptions/diversions and increasing their ability to focus on their primary roles. As a result of the A&E Rapid Improvement project there had been some service delivery progress during the period under review, but the evaluation supports the integration of additional staff for sustainability. Other requirements for maintaining an optimal level of efficiency in the department include:

- Requisite training for nurses and patient advocates;
- Tele radiology - the efficiency of the tele radiology service would improve real time access to diagnostic results and improve the turnaround time for diagnosis and treatment, positively impacting door to door time and reducing the percentage of LWT;
- Improved Bed Management; and
- Public Education on the appropriate use of the Hospital's emergency services.

QEH Discharge Diagnoses

The five leading QEH discharge diagnoses in 2011, based on the 10th International Classification of Diseases (ICD-10), were:

- Pregnancy, childbirth and the puerperium - 4,620 cases;
- Injury, poisoning and certain other consequences of external causes - 1,405 cases;
- All other diseases of the digestive system - 927 cases;
- Remainder of diseases of the respiratory system - 693 cases;
- Carcinoma in situ, benign neoplasms and neoplasms of unknown behaviour - 657 (see Appendix 1).

Certain conditions originating in the perinatal period, diseases of the respiratory system, and congenital anomalies were the three leading discharge diagnoses for children under five years of age as shown in Table 26.

Table 26: Three Leading Discharge Diagnoses of Children Under Five Years of Age at the QEH

Discharge Diagnoses	Total Under Five Years		< 1 yr	1-4 yrs
	No.	%		
2009				
Total Discharge Diagnoses	2,926	100.00	2,082	844
Certain conditions originating in the perinatal period	1,719	58.8	1,719	-
Diseases of the Respiratory System	388	13.3	101	287
Congenital Anomalies	132	4.5	102	30
Total - 3 Leading Discharge Diagnoses	2,239	76.5	1,922	317
2010				
Total Discharge Diagnoses	2,736	100.00	2,028	708
Certain conditions originating in the perinatal period	1,576	57.6	1,576	-
Diseases of the Respiratory System	392	14.3	96	296
Congenital Anomalies	142	5.2	119	23
Total - 3 Leading Discharge Diagnoses	2,110	77.1	1,791	319
2011				
Total Discharge Diagnoses	2,577	100.00	1,868	709
Certain conditions originating in the perinatal period	1,473	57.2	1,473	-
Diseases of the Respiratory System	415	16.1	99	316
Congenital Anomalies	102	3.6	90	12
Total - 3 Leading Discharge Diagnoses	1,190	77.2	2,038	328

Source: Queen Elizabeth Hospital

Medical Treatment Overseas

The number of people who seek treatment overseas, especially for services not available in Barbados, is not easy to estimate as data from the private sector is not currently captured. As shown in Table 27, statistics from the Medical Aid Scheme show relative consistency across the period. The numbers of people needing specialized care that is unavailable at the QEH was not decreasing, partly as a result of the chronic disease burden.

Another development has been the ability of the Barbadian private health sector to offer services that QEH has been unable to maintain. Outsourcing of certain services, especially in the diagnostics sector, has become an increasing trend.

Table 27: Number of Patients assisted by the Medical Aid Scheme in obtaining Specialised Treatment Overseas

Specialty	2010	2011	2012
Neurosurgery	3	10	6
Urology	8	4	2
Cardio-thoracic surgery	7	5	5
Orthopaedic surgery	4	2	2
Ophthalmology	0	0	0
Other	7	5	15
Total	29	26	30

Source: Queen Elizabeth Hospital

Referrals from the Eastern Caribbean

The QEH continued to be a referral point for specialist services for the region, especially the Eastern Caribbean, as shown in Table 28. However, improvements in plant and equipment are required for the QEH to keep pace with the local and regional demand for a range of services.

Table 28: Overseas Patients Referred to the Queen Elizabeth Hospital by Country of Origin 2010-2012

Country	2008	2009	2010	2011*	2012
Anguilla	7	5	1		3
Antigua and Barbuda	6	0	0		-
British Virgin Islands	0	1	0		1
Dominica	1	7	5		5
Grenada	1	0	3		-
Guyana	0	0	0		1
Montserrat	1	0	0		-
St. Kitts and Nevis	1	9	1		1
Saint Lucia	3	0	2		2
St. Vincent and the Grenadines	10	6	15		3
Trinidad	0	0	-		-
St. Maarten	0	0	6		2
Total	30	28	33		18

Source: Queen Elizabeth Hospital

*Data unavailable for 2011

As shown in Table 29, there was 68.1% bed occupancy of the QEH as compared with 41.9% at the Bayview Hospital. The high occupancy rate of the long-term care facilities - the Geriatric and District Hospitals - has made it difficult to quickly transfer all older patients out of the acute care beds at the QEH. The Alternative Care of the Elderly Programme has addressed some of the demand by facilitating a fee-for-service arrangement through which some elderly are placed in private nursing homes and senior citizens homes. However, the reach of this programme is limited by the cap on the annual financial allocation.

The community support systems contained in the Green Paper on Ageing, which are required to keep older people in their community, have not been completely established. Therefore, the elderly who can no longer live on their own, or those whose relatives can no longer cope with the challenges of care, are in many instances “abandoned” at the QEH.

The bed turn-over rates (approximately zero) and the low admission rates at the St. Michael, St. Philip, and Gordon Cummins Hospitals suggest that these institutions are operating at maximum capacity and, therefore, are making very little impact on the growing demand for institutional care for the elderly.

In 2012, the Elayne Scantlebury facility in St. Andrew closed and the 27 patients were relocated to the St. Lucy District Hospital. Four patients were also moved from Haynesville to St. Lucy in 2012.

Table 29: Bed Utilization by Hospital 2011

Items	Q.E.H	Psych. Hosp.	District Hospitals (Long Term Care Facilities)				Private
			St. Mich.	St. Philip	Gordon Cummins	St. Lucy/ Elayne Scantlebury	Bayview Hospital
Number of beds	562	550	294	152	51	57	22
Number of admissions	20,597	1,064	83	47	10	-	1160
Admissions/1000 pop.	74.1	3.8	0.3	0.2	0	0	4.2
In-patient service days	154,647	185,569	96,813	51,036	12,973	1,710	3,365
Percentages occupancy ⁽¹⁾	68.1	92%	90%	91.90%	69.60%	8.20%	41.90%
Bed turnover rate ⁽²⁾	36.7	1.9	0.3	0.1	0.5	0	50.9

Note: (1) Percentage Occupancy = $\frac{\text{In patient services} \times 100}{\text{Number of Beds} \times 365}$

(2) Bed Turnover Rate = $\frac{\text{Number of Discharges}}{\text{Number of Beds}}$

2.7 Polyclinic Reports

During the period under review, there was a network of eight polyclinics and three outpatient clinics that provide a range of primary health care services based on geographical catchments and population size. Services include maternal and child care, family planning, oral health, nutrition counselling, general practice including diagnosis, treatment and rehabilitation, and environmental health services.

Oral Health

Oral health is fundamental to overall health, well-being and quality of life. Consequently, the Dental Health Services Department is dedicated to maintaining and improving the current

Feature Box 2: Dental Services in the Public Sector



Dental Health Services in the Public Sector

The current public dental care delivery system provides a range of services for school-aged children up to age 18 years, with emphasis on prevention of decay and early intervention to restore affected teeth. The basic package of services available includes:

1. Examination and diagnosis;
2. **Preventive Treatment:** Prophylaxis – cleaning and deep scaling; Topical fluoride applications Pit and fissure sealants
3. Periapical and bite-wing X-rays where required;
4. Chair side education on oral health care;
5. All necessary restorative procedures: Amalgam for posterior teeth, Composite for anterior teeth, Glass Ionomer for deciduous teeth, and Pin-retained amalgam for large restorations;



6. Extractions
7. Emergency Treatment
8. Root canal therapy
9. Limited oral and maxilla-facial surgery at Winston Scott Polyclinic and QEH on a referral basis.

It is hoped that the treatment and oral health education given in the period up to graduation from this programme at age 18 years will lead to the development of good oral habits that they will maintain throughout adulthood. The services offered to adults remain emergency treatment and extractions only. Limited oral and maxilla-facial surgery is available on a referral basis.

In addition to providing oral care in the polyclinics, the ADOs routinely conduct dental education sessions in the primary schools and, annually, they partner with Colgate-Palmolive in their education campaign, the **Bright Smiles, Bright Futures**, and with the Barbados Dental Association during Oral Health Month.

standard of oral health care to meet the present and future needs of the population of Barbados.

Treatment was delivered in dental clinics in each of the eight polyclinics, staffed by 12 Auxiliary Dental Officers (ADO) and 14 Dental Assistants. Three full-time dentists (including the Senior Dental Officer), three part-time dentists and four sessional dentists rotate among the clinics. The attendances and services rendered in the polyclinics can be seen in table 29.

Table 30: Dental Attendances and Dental Services Rendered, 2010-2012

Year	Attendances	Extracts	Filling	Prophylaxes	Root Canal
2010	18,110	4,673	3,546	8,114	35
2011	24,327	5,752	4,346	10,024	37
2012	21,792	4,952	4,069	11,148	27

The Barbados Oral Health Policy, finalized and published in 2009, was designed to “facilitate the provision of comprehensive oral health care to the population by providing a framework to guide decision making within this sub-sector”. The policy addresses and expands upon four priority areas:

- Oral Health Promotion and Prevention,
- Oral Health Services,
- Human Resource Development, and
- Oral Health Information Systems.

The main objectives of the policy that directs the activities of the service are:

- To ensure that all citizens of Barbados have a basic level of quality oral care.
- To prevent and/or minimize the incidence of oral disease through public education, health promotional activities, vigorous screening and early intervention.
- To ensure that all personnel within the oral health services are provided with the requisite training, skills and facilities to enable them to deliver the highest quality of dental care.

The policy also highlights a number of constraints such as:

- Limited facilities and trained personnel to manage and treat the growing population of special needs adults and children and other vulnerable groups.
- Lack of training opportunities and continuing education for public sector dental staff.

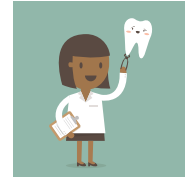
- Lack of oral and maxillo-facial service at the QEH to provide for traumatic care and special needs patients who require hospitalization.
- Lack of preventive maintenance service for equipment.

Feature Box 3: Baby's First Clinic

Ministry of Health Feature:
Baby's First Clinic

As part of the staff development and continuing education programme, the Auxiliary Dental Officers attended a refresher course in the examination and treatment of infants, age 6 months to 3 years. The sessions were conducted by Pediatric Dentist Dr Toni-Michele Marshall. On completion of the course, the ADOs were proficient in infant oral health examination. They conducted "Baby's First" clinics in the polyclinics where they were able to:

- Introduce infants to the dental setting and oral hygiene practices



- Alert parents/guardians to issues concerning the oral health of their infant
- Teach parents/guardians oral health techniques to reduce the risk of dental caries
- Inform parents/guardians of the risks of nursing caries and/or baby bottle caries and how to avoid these problems.

The "Baby's First" clinics are part of the ongoing programme of prevention and early detection of oral caries and are conducted in May during Child Health Month and at least one other time during the year.

Over the period 2010 to 2012, the activities of the Dental Health Services were guided by the objectives and priorities of the Oral Health Policy. The training programmes focused on compliance with the objectives and addressing the constraints where possible.

The Rapid Assessment Programme

The Primary Schools Rapid Assessment Programme was established to identify children who need urgent treatment, so that arrangements can be made to have them managed as soon as possible, thus reducing the severity of caries and minimizing the degree of pain and suffering. The ADOs visit the primary schools in their catchment area to conduct rapid oral visual examinations. The parents are notified by letter of the child's dental needs and given an appointment date. Alternatively, where convenient and possible, the children are transported to the polyclinics, class by class, for assessment. Treatment commences immediately on those with urgent needs, while the others are given preventive and maintenance therapy and placed on 6 or 12 month recall.

National Oral Health Survey 2011

The 2011 National Oral Health Survey was conducted by the staff of the Dental Health Services Department, trained by a team of specialists from Canada. The data were analyzed by James L Leake DDS FRCD, Professor Emeritus, Faculty of Dentistry, University of Toronto. The survey sought to determine the oral health status of children 6, 12, and 15 years old in Barbados as compared with the findings of a similar survey done in 2001. The results revealed that even though there was an improvement in the rates of dental visits, there was an increase in the prevalence of both calculus and caries and a rise in the severity of caries. Even though these results are below the range set by WHO, the deterioration in the oral health status of Barbadian children is still cause for concern. There is indication for increased oral health education to parents of young children to enhance prevention, closer monitoring of diets and oral hygiene habits of older children and early detection and intervention to minimize the severity of caries.

Dermatology Clinic

A dermatologist continued to be employed on a sessional basis and provides a monthly dermatology clinic at each of the polyclinics. The number of attendances by patients with skin conditions who required specialist consultation is shown in Table 31.

Table 31: Total Dermatological Attendances at Polyclinics (2010-2012)

Year	2010	2011	2012
Attendances	1154	1188	1,184

Rehabilitation Services

The physiotherapy service utilizes one physiotherapist who is responsible for covering the rehabilitation needs of all the polyclinics on a rotational basis. The officer is supported by Rehabilitation Therapy Technicians who administer care under supervision as prescribed by the physiotherapist. The number of clients referred for physiotherapy increased from an average of 445 during the 2007 to 2009 period to approximately 480 per year during the 2010 to 2012 period.

Table 32: Number of New Patient Referrals to Physiotherapy and Patients Assessed in the Polyclinics

Physiotherapy Services in the Polyclinics	Years		
	2010	2011	2012
Number of new patients referred	468	461	511
Number of new patients assessed	359	356	385
Number of referred patients not assessed	109	105	126
Total number of patient attendances	4,433	3,690	3,444

2.8 Population Sub-groups

Infants

Infants (children under 1 year old) represented approximately 1.1% of the estimated total population between 2010 -2012. The infant mortality rate peaked in 2011 at 18.1 per 1000 live births and was 10.7 per 1000 live births in 2012. This trend was echoed by the neonatal mortality rate which also peaked in 2011 at 12.7, and declined to 8.3 per 1000 live births in 2012. The main sources of morbidity for this age group arose from infectious diseases and conditions originating during the antenatal or perinatal periods.

The main indicators of wellness in this age group are vaccination coverage rates and incidence of vaccine-preventable diseases.

Table 33: Percentage of Immunization
Coverage for Children under Age One for the years 2010-2012

Vaccine	2010	2011	2012
Oral Polio	93	91	88
Pentavalent	88	91	87
MMR1	87	93	90

For the period 2010 to 2012, Barbados' immunization schedule required that the population under one year be immunized with three doses of polio and the pentavalent vaccine, as well as with their first dose of the measles, mumps, rubella vaccine (MMR1) at twelve months of age. The pentavalent vaccine contains the following five vaccines: diphtheria, pertussis, tetanus, hepatitis B and haemophilus influenza B.

The coverage of polio declined during the period 2010 to 2012. Pentavalent showed the highest coverage rate of 91% in 2011. The latter trend of a peak in 2011 for MMR1 coverage was also seen. The coverage data may indicate delayed vaccination or a need to improve the data recording and collection.

Children (1 –9)

Children ages 1-4 represented approximately 5.1% of the population while children ages 5-9 represented 6.8 % during the period under review. The under-5-year mortality peaked in 2011 at 19.3 driven by the increased infant mortality and not an increase in deaths within the 1-4 year age group. This cohort has for the most part survived conditions that may affect them in the perinatal and infant period. Their most common medical problems were respiratory in nature. Coverage of the second MMR vaccine fell from 96% in 2010 to 90% in 2012.

Table 34: Percentage of Immunization Coverage for Children 3-6 for the Years 2010-2012

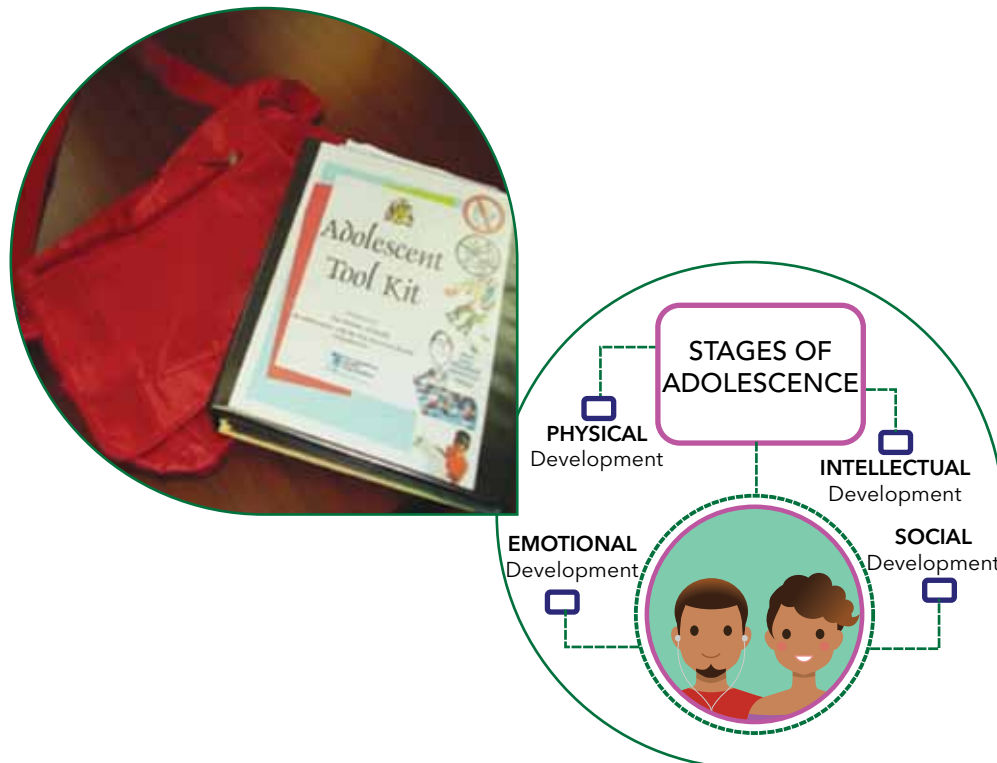
Vaccine	2010	2011	2012
MMR2	96	94	90

Adolescents

Adolescence is a critical transitional period that includes the biological changes of puberty and the need to negotiate key developmental tasks, such as increasing independence and normative experimentation. Adolescents, aged 10-19 years old, represent 14 percent of the population, or approximately 38,000 people. Adolescents are generally healthy; however this period of life is associated with risk-taking behaviours, making them vulnerable to negative social and environmental influences such as substance abuse, tobacco experimentation, violence and risky sexual practices. The behavioural patterns established during this developmental period help determine young person’s current health status and their risk for developing chronic diseases in adulthood.

Although adolescence and young adulthood are generally healthy times of life, several important public health and social problems either peak or start during these years. Many of them die prematurely due to accidents and violence and even more experience chronic ill health and disability. Furthermore, behaviours or conditions that originate in adolescence, including tobacco and alcohol use, lack of exercise, violence and injury, and risky sexual behaviours, contribute to over one-third of the disease burden.

Figure 9: Adolescent Tool Kit developed in collaboration with PAHO



The Ministry of Health, through the polyclinics, continues to provide comprehensive health educational programs in schools and clinics for this special age group. The nursing staff as well as other members of the health care team collaborate with other governmental and non-governmental agencies, for example, National Council on Substance Abuse in executing a number of programmes targeting the adolescent.

In 2010, an adolescent tool kit was developed in collaboration with the Pan American Health Organization, involving the participation of adolescents from six secondary schools. In order to develop educational material that was adolescent friendly, focus groups were held with students from these schools to acquire a better understanding of the areas they find most challenging.

Thirty (30) students from six (6) public and private secondary schools participated in the development of the toolkit. It covered topics such as human sexuality, life skills, substance abuse (including alcohol), HIV/AIDS and sexually transmitted infections (STIs). In 2011, The Global School-based Student Health Survey (GSHS), developed by the World Health

Organization (WHO) in collaboration with UNICEF, UNESCO, and UNAIDS, was conducted with technical assistance from Centers for Disease Control and Prevention (CDC). GSHS is a school-based survey conducted primarily among students aged 13–15 years.

The purpose of the GSHS is to provide data on health behaviours and protective factors among students so as to help countries develop priorities, establish programs, and advocate for resources for school health and youth health programs and policies. The survey will also allow international agencies, countries, and others to make comparisons across countries regarding the prevalence of health behaviours and protective factors; and establish trends in the prevalence of health behaviours and protective factors by country for use in evaluation of school health and youth health promotion.

Feature Box 4: Barbados Global School Health Survey

Barbados Global School
Based Student Health Survey

The 2011 Barbados GSHS measured alcohol use; dietary behaviours; drug use; hygiene, mental health; physical activity, protective factors, sexual behaviours, tobacco use and violence and unintentional injury. The Barbados GSHS was a school-based survey of students in Forms 3 and 4. The school response rate was 87%, the student

response rate was 84% and the overall response rate was 73%. A total of 1629 students participated in the Barbados GSHS. For comparison purposes, only students aged 13-15 years are included in the analyses for this fact sheet.

Some of the highlights of survey are in the table below:

Results for Students aged 13-15 years	Total	Boys	Girls
Alcohol Use			
Percentage of students who drank at least one drink containing alcohol on one or more of the past 30 days	46.9 (44.0 - 49.9)	48.0 (43.4 - 52.6)	45.8 (41.9 - 49.8)
Among students who ever had a drink of alcohol (other than a few sips), the percentage who had their first drink of alcohol before the age of 14 years	88.7 (86.0 - 90.9)	88.7 (84.9 - 91.6)	88.6 (85.2 - 91.3)
Drug Use			
Among Students who ever used drugs, the percentage who first used drugs before age 14 years	79.8 (73.6 - 84.8)	83.8 (76.8 - 89.0)	72.8 (62.5 - 81.2)
Percentage of students who used marijuana one or more time during their life	14.6 (11.9 - 17.6)	17.8 (14.3 - 22.0)	11.2 (8.4 - 14.9)

Teenage deliveries have continued to decrease with 12.3% of total births being attributed to teens (< 19 years of age). The number of teenage abortions has also been on the decline over the past five years even within the context of an increase in the total number of abortions (see table 36).

Table 35: Number of Deliveries by Age of Mother at the Queen Elizabeth Hospital 2007-2012¹

Age Group In Years	Number of Deliveries					
	2007	2008	2009	2010	2011	2012
< 15	11	14	8	5	7	2
15 - 19	499	498	514	463	440	369
20 - 24	861	830	789	802	771	767
25 - 29	763	777	763	767	724	741
30 - 34	624	637	620	610	642	614
35 - 39	401	415	392	367	391	373
40 +	128	109	91	118	102	152
Total	3287	3280	3177	3132	3077	3018

Table 36: No. Termination of Pregnancies at the Queen Elizabeth Hospital 2003-2012

Years	No. Teenage Abortions (%)	Total Abortions
2003	82 (19.0)	432
2004	78 (18.7)	418
2005	84 (15.1)	557
2006	90 (16.5)	547
2007	75 (14.5)	518
2008	126 (21.9)	573
2009	87 (16.7)	521
2010	68 (14.8)	459
2011	71 (14.6)	485
2012	61 (11.7)	519

Females (Reproductive years)

During the 2010-2012 period, females aged 25-44 represented 28% of the population. During the period, the birth rate fell from 12.3% to 11.9% and the total fertility rate was 1.84. The maternal mortality ratio decreased in 2012 with two maternal deaths recorded in 2010 and 2011 and one death in 2012. Ninety-nine percent of pregnant women attended at least one antenatal appointment in 2011; however, the percentage of pregnant women having four or more antenatal visits fell from 89% in 2010 to 81% in 2012.

The polyclinics continued to offer reproductive health services which include family planning, sexually transmitted disease, and antenatal and postnatal clinics, with emphasis on Lamaze, breastfeeding (exclusive breast feeding is promoted for the first 6 months of an infant’s life) and safe motherhood. The use of the Antenatal High Risk Referral Guidelines to identify and refer high risk antenatals to the specialized out-patient clinic at the Queen Elizabeth Hospital continued to be successful in reducing maternal morbidity and mortality.

All deliveries were attended by trained personnel throughout the period in review with all deliveries occurring in a hospital setting.

The Ministry of Health continues to be committed to educating adolescents and providing adolescent friendly health care services.

Males

Men’s Health Educational Groups established in all the Polyclinics have enabled men in obtaining improved health related knowledge during group meetings and activities. The groups also fostered social interaction and togetherness, and increased interest and awareness among men of the use of healthcare services. Infrequent attendance, limited membership, especially with younger men, and a limited range of activities to attract more members have been identified as challenges to the ongoing success of the programme. However, the Ministry of Health is committed to the development of men’s health groups as men’s health in Barbados is an emerging concern that has serious implications for employment, economic development and wider social structure of the society.

The Elderly

The numbers of the elderly, defined as those 65 years and over, were estimated at 37,242, or about 13.7 percent of the population of Barbados. The Geriatric and District hospital as well as the Alternative Care of the Elderly Programme continued to perform an important role in the provision of care for those elderly who require long term nursing and rehabilitation services. However, these facilities were unable to fully satisfy the demand for long term care beds and the waiting lists for entry are invariably lengthy. Table 35 shows the number of admissions to the Geriatric Hospital for the period under review.

Table 37: Geriatric Hospital Admissions, 2010 to 2012

Year	2010	2011	2012
Admissions	93	118	84
Bed Capacity	359	359	359
Day Care Attendances	3854	4171	4205
New Admissions to Day Care	9	9	7

The bed capacity of the Alternative Care of the Elderly Programme (ACEP) remained consistent in 2010 and 2012 with an increase to 258 in 2011 as shown in table 37.

Table 38: Bed Capacity and Admissions to the Alternative Care of the Elderly Programme

Year	2012	2011	2010
Admissions	9	59	58
Number of Beds	234	258	236

2.9 Barbados Drug Service

The drug service program of the Ministry of Health has two main mandates:

- i. the provision of quality drugs to all Government healthcare institutions, as well as the provision of medication free of cost at point of service to all residents of Barbados who qualify under the various categories of the Special Benefit Service;
- ii. to make provision for people not benefiting from the Special Benefit Program to receive medication at an affordable cost.

Since the establishment of the Barbados Drug Service (BDS), the Barbadian public have enjoyed better access to pharmaceuticals and by extension, improved quality of life. A national formulary was implemented which afforded a continuous supply of quality drugs free of cost at point of service across the government clinics and hospitals. Formulary drugs included those used in the treatment of common diseases like hypertension, diabetes, cancer, asthma and epilepsy. Glaucoma was added to the list of diseases in 2012. The mandate of the BDS has been realized over the years but not without significant financial challenges due to escalating demands on the service and rising pharmaceuticals cost on international markets. Spending for prescription drugs grew annually, outpacing the targeted 10 percent of the overall health care spending growth. This trend was attributable to a combination of factors, including the introduction of new drugs on formulary, increased volume of drug use, and rising prices. The decision was therefore taken by the then Minister of Health, The Hon. Donville Inniss, to restructure the BDS in an effort to maximize its resources while still discharging its mandate and meeting the increasing demands. The restructuring options included,

- i. implementing a dispensing fee to patients using the private sector;
- ii. enhancing the formulary selection in using the essential medicines concept and evidence based medicine; and
- iii. enforcing the benefit policy to ensure that only permanent residents and Barbadian citizens access the special benefit service.

These restructuring options were phased in, commencing with option (iii) in the 2010-11 fiscal year and options (i) and (ii) in 2011-12.

These strategic financial initiatives saw the decline in total BDS expenditure from \$52,712,466 in 2009-10 to \$47,026,770 in 2010-11 and \$22,552,464 in 2011-12. It must be noted that patients filling their prescriptions in the public sector still continue to receive medication free of cost at point of service with no added dispensing fee.

The Pharmaceutical Situation in Barbados - LEVEL II Health Facility and Household Survey was also carried out during the period under review.

This WHO Pharmaceutical situation assessment, Level II, was conducted with the full support of the Ministry of Health of Barbados, including permission from the Institutional Review Board (IRB). The assessment survey was a Pan-American Health Organization/World Health Organization (PAHO/WHO) biennial programme activity with technical support from the University of the West Indies and Harvard University, and financial support from the European Union (EU)/WHO Africa, Caribbean and Pacific (ACP) Project "Partnership on Pharmaceutical Policies".

Below are the main recommendations from the survey as reported in the Pharmaceutical Situation in Barbados-World Health Organization (WHO) - LEVEL II Health Facility and Household Surveys p. 12, February, 2011:

1. Managerial policies related to pharmaceuticals need to be improved. The findings can be used for updating the National Pharmaceutical Policy and Implementation Plan.
2. Regarding the need for improvement of the quality of services, it is recommended to develop and implement Good Practices in all tiers of the pharmaceutical chain from distribution to storage and pharmacy practices, which would contribute to improving this situation. Special attention needs to be paid to the fact that a relatively high percentage of prescription medicines are sold without a prescription.
3. It is recommended to develop strategies that guarantee the quality and strengthen the use of generic medicines. These strategies would include the regulation of aspects related to quality, safety, prices and enforcement of the prescription using the International Non-proprietary Name (INN), and generic substitution.
4. Regarding aspects related to rational use of medicines, the Barbados Drug Formulary needs to be updated using the concept of Essential Medicines, selection with evidence based criteria. Standard Treatment Guidelines (STG) for the most common conditions should be developed, officially adopted and widely disseminated to users. Priority can be given to NCDs due to their high prevalence in Barbados, with a holistic approach considering lifestyle modification and treatment.

5. It is recommended to develop a strategy to improve knowledge and rational use of medicines by the population. This would address medicines access, quality and safety of medicines, their management at home (labeling, storage conditions, etc) adherence to treatment (especially for chronic conditions) and the use of generics or INN drugs.
6. It is recommended to design strategies to improve equity in medicines access: tackling the higher prevalence of chronic and acute conditions in the lower socio-economic status groups, and the under use of medicines in these groups. Equity in access to medicines is one aspect to be further investigated; interventions can be designed for specifically targeted people of lower lower socio-economic status."

These recommendations, in collaboration with the 1999 draft of the Barbados National Drug Policy, were used to drive the preparation of the Barbados National Pharmaceutical Policy (BNPP). The goals of the BNPP are consistent with the broader health objectives and it seeks to promote equity and sustainability of the pharmaceutical sector. The implementation, monitoring and evaluation of the BNPP is carried out under the oversight of the BNPP Steering Committee and its subsidiary committees of the Access, Rational Use of Medicines, and the Regulatory Frame.

2.10 Mortality

Statistical Overview

In Barbados, the average number of deaths per year for the period 2010-2012 was 2,342. The crude death rates were 8.2, 8.8 and 8.4 per 1,000 population for 2010, 2011 and 2012 respectively. After these rates were standardized to the world standard population, the adjusted mortality rates for Barbados were per 5.8, 6.3 and 5.9 per 1,000 population for 2010, 2011 and 2012 respectively. Barbados' age-adjusted death rates are lower than the average rate for the Non-Latin Caribbean sub-region which was 7.7 per 1000 in 2012 according to the publication from the Pan American Health Organization entitled, "Health Situation in the Americas- Basic Indicators".

Comparison of the gender distribution of the proportion of deaths reveals that in the younger age groups (less than 44 years), men consistently account for higher proportion of deaths. The ratio of male to female deaths is more evenly distributed in the older age groups. There has been no significant change in Barbados' crude death rate, nor its infant mortality rate for the period 2002-2012. However, there has been a slight gradual increase in the neonatal mortality rate over this period.

Causes of Death

Chronic non-communicable diseases accounted for the top five causes of death in Barbados in all three years being reviewed. As occurred in 2009, ischaemic heart disease (IHD) was the number one cause of death in Barbados in 2010. In 2011 and 2012 the top spot was occupied by cerebrovascular disease (stroke) while diabetes mellitus was the second most common cause of death from 2010-2012. Prostate cancer was ranked as the fourth most common cause of death in the first two years but slipped to number five in 2012. Hypertensive heart disease also constituted part of the top five over the years being studied. Three communicable diseases - acute lower respiratory tract infection, urinary tract infection and septicaemia - featured in the top ten lists of underlying causes of death.

Prostate cancer accounted for the highest proportion of deaths in men, in 2010, but was second to cerebrovascular disease in 2011 and 2012. In women, diabetes mellitus and cerebrovascular disease continue to account for the highest proportions of deaths (Tables 36-38). The traditional lifestyle diseases namely diabetes mellitus, ischaemic heart disease, hypertensive heart disease and cerebrovascular disease continue to account for a higher proportion of deaths in women than in men. Together these conditions account for approximately one quarter of deaths (23.4%, 26.0% and 25.9% in 2010, 2011 and 2012 respectively) among men. Amongst women these diseases are responsible for almost one third of all deaths in 2010-2012 respectively: 29.9%, 31.3% and 32.6%. This data was supported by the BNR Annual Reports of 2010-2012.

Homicides and Suicides

Homicides are generally more common in younger age groups and in men (Tables 36-38). The numbers of homicides noted on death certificates (the source of this data) are significantly lower than the numbers of homicides reported from other government sources such as the Royal Barbados Police Force. This was particularly noticeable in 2012 when no deaths were attributed to homicides according to death certificates. Because homicides are considered by some pathologist to be a manner of death as opposed to a cause of death, it is often not documented on the certificate. There are also ongoing discussions with the Coroner's Office to rectify this discrepancy. Most of the deaths among men ages 15-34 are due to homicides. In 2010-2012, homicides caused more than half of the deaths observed in men ages 15-34 years (Table 38). A similar phenomenon was not seen among women of this age group. For the period 2010-2012, suicides were more common in men but numbers were relatively small in both sexes. This excess suicide rate in men was also noted in the 2007-2009 review.

Infants and Under Fives

The infant mortality rate (IMR) for the period 2002 to 2012 ranged from a low of 10.1 per 1000 live births in 2004 to a high of 18.5 per 1000 in 2011. When examined against other countries in the Non-Latin Caribbean region, Barbados' figure for 2012 (10.7 per 1000) compared favourably, but the rate noted in 2011 provided some cause for concern as it was above the average for the Non-Latin Caribbean. Other high income countries in the region such as Antigua and Barbuda and Trinidad and Tobago reported IMRs of 12.8 and 12.7 per 1000 respectively during the period of interest. The improvement noted in 2012 is commendable. In the United States of America, the IMR for 2012 was 6.1 per 1000 live births, a figure to which Barbados aspires. Still birth rates were fairly constant during the period with an average of 9.8 per 1000. There were one and two maternal deaths per year during the review period.

The age specific death rates in children one to four years old in Barbados for 2010, 2011 and 2012 were 0.2 per 1000, 0.3 per 1000 and 0.5 per 1000 respectively. The main causes of death in infants were prematurity, respiratory disorders specific to the neonatal period and bacterial sepsis of the newborn. Other causes of death occur sporadically in this age group and they include congenital malformations, influenza and pneumonia, as well as malignant neoplasms.

Table 39: Principal Causes of Death with Rate per 1000 Population 2010-2012

Cause	2010			2011			2012		
	Rank	No.	Rate	Rank	No.	Rate	Rank	No.	Rate
	Number of Deaths								
Stroke, not specified as haemorrhage or infarction	1	159	0.58	1	165	0.59	1	184	0.59
Unspecified Diabetes mellitus without complications	2	129	0.47	2	155	0.56	2	123	0.44
Malignant neoplasm of prostate	3	109	0.39	3	94	0.34	4	92	0.33
Acute myocardial infarction, unspecified	4	94	0.34	4	88	0.32	3	105	0.38
Unspecified acute lower respiratory infection	5	80	0.29	-	-	-	7	68	0.24
Breast, unspecified	6	62	0.22	5	74	0.27	8	64	0.23
Septicaemia, unspecified	7	55	0.20	6	68	0.24	5	76	0.27
Colon unspecified	8	48	0.17	8	60	0.22	-	-	-
Unspecified dementia	9	45	0.16	10	46	0.17	10	50	0.18
Urinary tract infection, site not specified	10	43	0.16	-	-	-	-	-	-
Pneumonia, unspecified	-	-	-	7	62	0.22	6	74	0.27
Unspecified acute lower respiratory infection	-	-	-	9	55	0.20	-	-	-
Essential (primary) hypertension	-	-	-	-	-	-	9	51	0.18

Table 40: Number of Deaths and Proportional Mortality Due to Selected Causes, by Age and Gender 2010

Disease	AGE GROUPS IN YEARS																			Total		
		<1		1-4			5-9		10-14		15-24		25-34		35-44		45-64		65+		YPLL	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#		%	
Hypertension	M	10	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1.1	7	1.0	31.5
	F	25	2.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1.6	22	2.6	31.5
Hypertensive Heart Disease	M	37	3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	9	3.2	28	3.9	94.5	
	F	50	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	10	5.4	40	4.7	105	
Diabetes	M	69	5.9	0	0	0	0	0	0	0	0	0	0	0	0	0	13	4.7	56	7.7	136.5	
	F	88	7.6	0	0	0	0	0	0	0	0	0	0	0	5	20.8	14	7.6	69	8.1	274.5	
Ischaemic Heart Disease	M	78	6.6	0	0	0	0	0	0	0	0	0	1	5.3	0	0	19	6.9	58	8.0	235	
	F	81	7.0	0	0	0	0	0	0	0	0	0	1	7.7	0	0.0	7	3.8	73	8.6	109	
Cerebrovascular Disease	M	90	7.7	0	0	1	50.0	0	0	0	0	0	0	1	5.3	6	15.8	11	4.0	71	9.8	366.5
	F	126	10.9	0	0	0	0	0	0	0	0	0	0	0	0	0	13	7.1	113	13.3	136.5	
Suicides	M	3	0.3	0	0	0	0	0	0	0	0	0	0	0	1	2.6	2	0.7	0	0	0	46.5
	F	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Homicides	M	18	1.5	0	0	0	0	0	0	0	5	26.3	4	21.1	2	5.3	6	2.2	1	0.1	483.5	
	F	10	0.9	0	0	0	0	0	0	0	6	46.2	1	7.7	0	0.0	1	0.5	2	0.2	319	
HIV/AIDS	M	8	0.7	0	0	0	0	0	0	0	0	0	1	5.3	2	5.3	5	1.8	0	0	139	
	F	2	0.2	0	0	0	0	0	0	0	0	0	1	7.7	0	0	1	0.5	0	0	46	

CHAPTER 3: ENVIRONMENTAL HEALTH SERVICES

The primary mandate of the Environmental Health Department is to ensure that actions to mitigate environmental health risks are undertaken expeditiously, thus securing a healthy living environment for the population. During the period under review, the operational framework of the Department involved the execution of programs in the sub-areas of food safety, vector control, waste disposal, port health, and health education.

3.1 Food Safety

Food safety continues as a national priority in Barbados because of the growth of the food service industry; and the tourism industry's strategic objectives in strengthening food safety programmes.

Critical aspects of a comprehensive food safety programme require the inspection and monitoring of food service establishments by the regulatory authority; application of the principles of good hygiene, Hazard Analysis Critical Control Point (HACCP) practices, and an appropriate level of food safety training for food service managers and food workers.

The Department continued the inspection, licensing and monitoring of food services establishments under the Health Services Act, to ensure that foods served to the public by restaurants, bakeries, and all other food businesses were wholesome and fit for human consumption. During the period under review the Department received on average of 714 applications for restaurant annually. Table 41 shows the percentage of licenses issued by the Department.

Table 41: No. of Applications and Licenses Issued

Restaurants	2010	2011	2012
Applications	701	743	698
Licenses Issued	524	527	513
Percentage of Licenses Issued	75	71	74

The category called food businesses includes supermarkets, minimarts and grocer's shops, stalls and street vendors. During the period under review, the Department received on average 2,693 applications for a license to operate a food business. As is shown in Table

42, the percentage of food businesses licensed by the Department increased from 63 to 67 percent during the period.

Table 42: No. Applications and Licenses Issued

Food Businesses	2010	2011	2012
Applications	2612	2645	2822
Licensed	1647	1723	1892
Percentage of Licenses Issued	63	65	67

Epidemiology

Food borne illness is a major cause of morbidity and mortality worldwide. In Barbados the disease burden and its economic impact are currently unknown and reliable epidemiological data is therefore needed to quantify the burden in monetary terms, assess the cost effectiveness of interventions and ensure appropriate allocation of resources.

The viability of the tourist industry is sensitive to health threats both internally and externally. Outbreaks of food borne illnesses have occurred in the hotel sector resulting in adverse publicity, for the country.

The occurrence of outbreaks suggested that food safety management systems needed to be strengthened but this goal depended on the availability of precise estimates of the magnitude, distribution and specific risk factors associated with food borne illness. In this regard, a burden of acute gastro-intestinal and food borne illness study was conducted from August 2010 to August 2011.

As with previous studies, handwashing was shown to be a major element in preventing disease and approximately one out of every four people who contracted a foodborne disease did not practice hand washing before meals. The study described the epidemiology of food borne diseases in Barbados and demonstrated that norovirus was the leading food borne pathogen.

A Proposed Food Hygiene Award System

The Food Hygiene Award System was customized for Barbados in June 2010 from the Scores on the Doors Award in Middlesbrough, England and a proposal submitted to the Ministry of Health for a pilot of the programme to be undertaken in the Eunice Gibson Polyclinic catchment.

The objectives of the scheme were:

- To create a standardized method of inspection for licensing purposes.
- To create greater consumer awareness of food hygiene and safety.
- To reward businesses demonstrating constant high levels in food hygiene.
- To give encouragement and opportunity to other businesses to improve and maintain their standards.

Twenty-one (21) restaurants in the Eunice Gibson catchment participated in the pilot. An evaluation was conducted after the project in May 2011 to:

- Determine the Knowledge Attitudes and Practices of the management of the participating restaurants in the Eunice Gibson (then Warrens) Polyclinic Catchment regarding food hygiene.
- Assess the measures in place for temperature control, pest control and waste management in the participating restaurants.
- Assess the measures in place for stock control.
- Determine the existence of illness exclusion policies within the restaurants.
- Assess the implementation of cleaning schedules.
- Assess the management relationships with the Environmental Health Department at the Eunice Gibson Polyclinic.

Subsequent to this evaluation, a recommendation was made to roll out the programme starting with the Randal Phillips Polyclinic catchment (Christ Church), which has the greatest number of restaurants in the island.

Feature Box 5: Challenges, Public Health Risk and Threats associated with the Free Movement of Persons



Challenges, Public Health Risk and Threats associated with the Free Movement of Persons

Non-nationals travel with epidemiologic profiles, levels of exposure to infectious agents, genetic and lifestyle-related risk factors, culture-based health beliefs, and susceptibility to certain conditions. They also carry the vulnerability present in their original communities.

There is evidence that certain non-communicable diseases, such as hypertension, cardiovascular diseases, diabetes and cancer are an increasing burden on all populations including non-national populations and will impose considerable demands on the health system of Barbados when it has to provide health care for these chronic conditions.



Another area of concern is that the free movement of people has the potential create some threats, including housing overcrowding, particularly in city areas.

The Ministry of Health is committed to providing health care to non-nationals and ensuring that all non-nationals have easy access to the health services in order to protect the health of all people residing in Barbados. An important dimension for facilitating access to health care for non-nationals is to mitigate the health risks and any public health implications associated with these risks as a means of proactively responding to health challenges and threats that may be imposed on the health system.

3.2 Port Health Services

The ports of entry in Barbados are the Grantley Adams International Airport, the Bridgetown Port and Port St. Charles. Environmental Health Officers stationed at these points of entry inspected all foods imported into Barbados. The table below shows the total amount of foods imported in 2010, 2011 and 2012. Foods which were unfit for human consumption were condemned and destroyed.

The Ministry of Health continues to work with the Agricultural Health and Food Control Programme (AHFCP) on the various aspects of the National Agricultural Health and Food Control System (NAHFCS). Port Health continued to collaborate with the Commerce and Consumer Affairs Department in relation to international recalls for imported foods.

Table 43: Total Food Inspected In Kgs at Points of Entry for 2010 - 2012

	2010	2011	2012
AIRPORT			
Total Food Inspected	2,373,491	1,462,022	1,065,526
Wholesome Food Released	2,372,684	1,461,697	1,065,520
Food Condemned	807	325	6
SEAPORT			
Total Food Inspected	123,950,105	114,805,808	121,460,406
Wholesome Food Released	123,600,320	114,644,894	121,287,170
Food Condemned	349,785	160,914	173,236
TOTAL FOOD Imported and Inspected	126,323,596	116,267,830	122,525,932

The International Health Regulations (IHR) provide for the inspection of ships and aircraft and replaced the Deratting Control/Exemption Certificate with the Ship Sanitation Control/Exemption Certificate in June 2007. This certificate is issued on the condition that disease surveillance and mitigation, food safety, integrated pest management and hospitality services on board are in compliance with international standards. Barbados implemented its ship sanitation inspection program in January 2008. Information for this program is provided in Table 44 for the years 2010, 2011 and 2012.

Table 44: Ship Sanitation Control/Exemption Certificate Issued

YEAR	Cargo	Cruise Vessels	Yacht	Oil & Gas Tankers	Tugs	Research	Barge	Supply Vessels	Total No. Vessels
2010	14	17	7	5	3	1	1	0	48
2011	26	13	7	4	4	1	0	2	57
2012	18	13	10	5	7	1	2	0	56
TOTALS	58	43	24	14	14	3	3	2	161

The Implementation of the International Health Regulations (2005)

The Government of Barbados in 2005 signed on to the International Health Regulations (IHR), which provides the flexibility for countries to implement surveillance, response, administrative, legal and other measures in response to diseases outbreaks, specific hazards and other public health events of potential international concern. This all-hazards approach to public health events requires countries to establish and maintain specific IHR core capacities and mandates the development of new protocols for disease surveillance and response within the country and at points of entry.

Barbados became a member of the International Civil Aviation Organization' (ICAO) Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation (CAPSCA) programme in 2010. This programme helped to improve the working relationships between health officials, the civil aviation departments and the airport authority.

The vector control programme at the airport was strengthened and extended to a 400 meter perimeter around the aerodrome in 2010 in accordance with the IHR Annex 5 after the commencement of direct flights from a yellow fever endemic country. A surveillance protocol was also established for people arriving from this destination who did not have valid yellow fever vaccination certificates.

Barbados continued to support the building of IHR core capacity in the region by agreeing to have its staff in Port Health and the IHR seconded to the Pan American Health Organization. The country hosted several workshops with support from PAHO for the region including a Ship Sanitation Certificate Inspection workshop for Port Health Officers and a legislation workshop for health and legal professionals in 2011.

The Fukushima Daiichi nuclear disaster in Japan in 2011 brought into sharp focus the lack of the core capacity within the region to detect and respond to radiological and nuclear emergencies. In this regard PAHO and the International Atomic Energy Agency (IAEA), with technical assistance from other international agencies, hosted workshops on radiation. Barbados has started the process obtaining membership of the IAEA by 2016 so as to fulfill its obligation relating to radiological and nuclear hazards under the IHR.

3.3 Vector Control

During the period, the Ministry established an insectary for the purpose of providing sound scientific data concerning the mosquito population of the island. Resistance testing of the A&Ees Egypti to Malathion was carried out, and species identification and investigation studies were conducted in a number of districts including the Graeme Hall swamp.

Table 45: House Index for Aedes aegypti Mosquitoes 2010-2012

Year	Mosquito House Index
2010	3.1
2011	3.0
2012	3.6

Source: Ministry of Health

Note: Number of Houses positive for the Aedes aegypti mosquito per 100 houses inspected

A number of new chemicals were investigated and recommendations made to the Pesticide Control Board.

Table 46: Quantity of Rodenticide Distributed to the Public

Year	No of Bags Distributed (100g / bag)
2010	11,712
2011	15,198
2012	15,712

Source: Ministry of Health

Work continued on the Geographic Information System with the loading of the software onto the Ministry of Health computers. Environmental prevention and control strategies were scaled up at the QEH, District Hospitals and the Psychiatric Hospital.

3.4 Climate Change

Climate change has become the greatest challenge to human health of the twenty-first (21st) century. To this end the United Nations recognized the need for a comprehensive strategy to place climate change on the world agenda. This strategy was funded by the Global Environment Facility (GEF) and comprises seven pilot countries, including Barbados.

The Government of Barbados approved the project, "Piloting Climate Change: Adaptation to Protect Human Health", in April 2011 and the pilot project was launched on July 3, 2011. The objective was "to increase the adaptive capacity of the national health system institutions, including field practitioners, to respond to and manage long-term and climate-sensitive health risks" to be achieved through the following project specific outcomes:

- An early warning and response system with timely information on likely incidence of climate-sensitive health risks established in the participating countries;
- Capacity of health sector institutions to respond to climate-sensitive health risks based on early warning information improved;
- Disease prevention measures piloted in areas of heightened health risk, e.g., low lying and flood prone areas due to climate change; and
- Cooperation among participating countries on innovative adaptation centric strategies, policies and measures are promoted.

CHAPTER 4: POLICIES, PLANS & PROGRAMMES

During the period under review, the overall aim of the Government's health policies was to ensure that there was greater potential for investment in the health sector; to maximize the utilization of human and financial resources; to promote greater usage of health NGOs in the delivery of health services; to improve monitoring and evaluation of services to ensure that quality health care was delivered; and to recommit to the Primary Health Care approach as the fundamental and efficient way to re-organize Barbados' health system.

During 2011, the Ministry made significant strides in developing appropriate plans and strategies to strengthen Barbados' health system in light of the social and economic changes that were occurring within the region. The Ministry activated a Cholera Action Plan to mitigate the occurrence of cholera in Barbados given the cholera epidemic in Haiti and outbreaks in the Dominican Republic. In 2011, the Ministry also collaborated with the Pan-American Health Organization on a National Cholera Seminar with the goal of sensitizing a wide range of stakeholders to their roles in respect of surveillance, infection control, clinical and environmental management.

Non-communicable diseases (NCDs) continued to be a subject of critical concern in Barbados and the countries of the Eastern Caribbean. The United Nations' High Level Meeting (UNHLM) on the Prevention and Control of NCDs, convened in September 2011, evidenced the fact that governments and leaders had recognized the devastating effects of these diseases to the economies of the Caribbean region. The Prime Minister of Barbados, the Honourable Freundel Stuart, in addressing the UNHLM, stated that the economic burden of these diseases accounted for over 5.3 per cent of Barbados' GDP. He therefore made a call for support for training, research and development, quality control, and monitoring and evaluation to assist Barbados and other Small Island Developing States (SIDS) in the fight against these diseases.

Non communicable diseases continue high on the Ministry's agenda. In keeping with this assertion, the Ministry in January 2012 participated in the inaugural Caribbean Obesity Forum Conference held at the Hilton Hotel Barbados. In Barbados the prevalence of obesity was 70 per cent for females and 56 percent for males. This represented an increase over the previous ten to fifteen years whereby females represented 65.0 percent and males 50.0 percent.

Construction resumed on the St. John Polyclinic in 2011. It was proposed that this facility would facilitate further decentralization of the emergency ambulance service through the provision of an ambulance bay, and basic diagnostic facilities such as x-ray services. The availability of an ambulance would reduce the response time in providing emergency services to people in St. Philip and St. John and the surrounding areas. In addition to providing health services, the building would also facilitate the provision of social service activities by the Ministry of Social Care, Constituency Development and Community Empowerment - The Welfare Department, the St. John Constituency Council and a branch of the National Library Service.

During 2012, the Ministry of Health re-emphasized its commitment to the provision of equitable, efficient and accessible healthcare to contribute to the national development of Barbados. In January 2012, financial assistance was received through the European Development Fund for the purchase of essential medical equipment and training for the staff at the Eunice Gibson Polyclinic.

In February 2012, the Ministry witnessed the ceremonial breaking of soil to mark the start of construction of the first dedicated Diabetes Specialist Centre for Barbados at Warrens, St. Michael. Through this centre, a range of specialist services would be provided to persons who had complications due to diabetes.

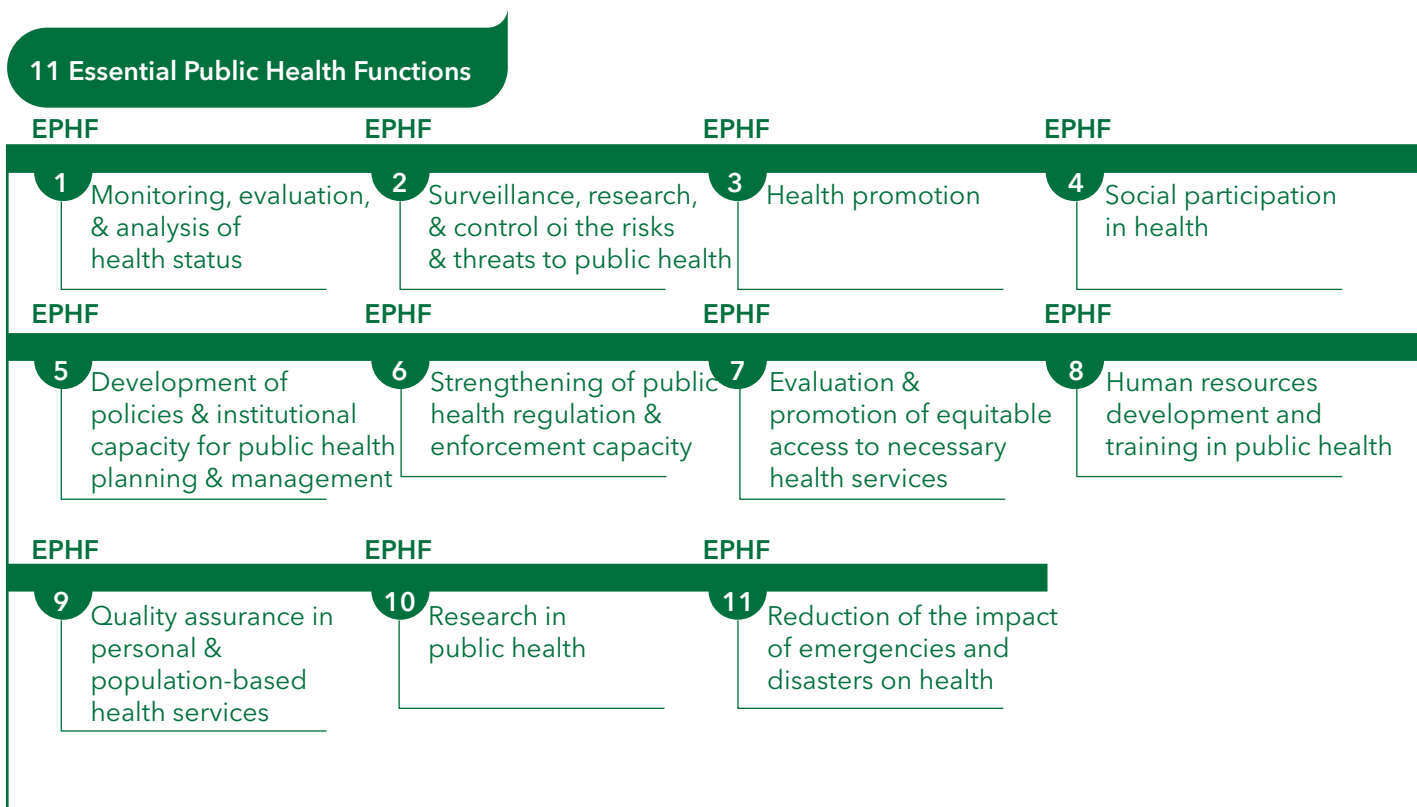
A Health NGO Desk was introduced in June 2012 as an experiment to strengthen the relationship between the Ministry of Health and the NGO sector. Among other tasks, the Ministry introduced initiatives to strengthen health systems, the HIV/AIDS programme, initiatives to strengthen the QEH, and launched a booklet on the criteria for the licensing of private hospitals, nursing homes, senior citizen and maternity homes as a practical guide for operators of these facilities to the standards, procedures and policies expected.

4.1 Initiatives to Strengthen Health Systems

Essential Public Health Functions

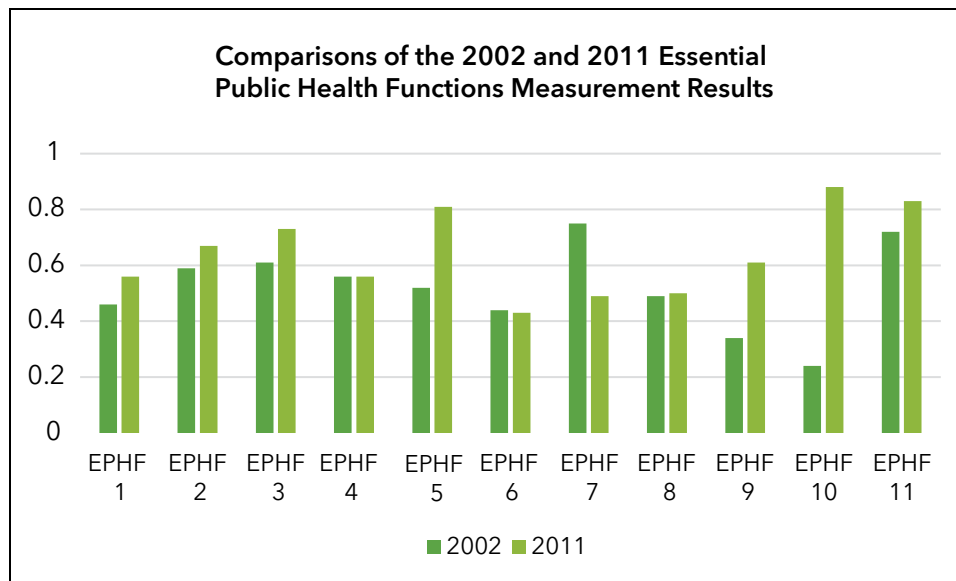
During the period under review, the MOH in collaboration with PAHO conducted an assessment of its performance based on the eleven (11) Essential Public Health Functions (EPHFs), a self-evaluation diagnostic tool used to analyze health systems. This tool provided a framework for institutional development and a system of accountability for health outcomes.

Figure 10: Essential Public Health Functions



The overall results of this analysis when compared with the 2002 assessment indicated that the Barbados health system had improved with (3) functions - research in public health, development of policies and institutional capacity for public health planning, and management and reduction of the impact of emergencies and disasters on health - performed optimally by scoring above the eightieth percentile.

Figure 11: Comparison between the 2002 and 2011 Results for the Assessment of the Essential Public Health Functions in Barbados



Continuous Quality Improvement

Quality is at the nexus of all reforms in health care delivery and as such Continuous Quality Improvement (CQI) has been one of the critical reform priorities of the Ministry of Health as it is paramount to the reinforcement of the Ministry's stewardship role "To deliver safe, efficient and effective health care to all citizens of Barbados".

In July 2010, over 400 healthcare workers within the public and private sector participated in a series of training workshops designed to sensitize them to the issues of Leadership, Tools and Techniques in Quality Assurance. It was anticipated that over 4000 health care workers would be trained in this regard. During the period, the Ministry considered the first draft of a Bill to establish a National Health Care Quality Programme. The objective of a National Health Care Quality Programme was to standardize the delivery of healthcare in public and private institutions through the introduction of standards and protocols, with a system of monitoring and oversight through a Healthcare Quality Council.

In 2011, the management of the QEH sought to strengthen health care delivery at the QEH by focusing on the following: assessment of the drivers of the Length-of-Stay at the Hospital; development of a strategy for ambulatory and day case care; and the inappropriate use of the Accident and Emergency Department for non-emergency services, which had often led to serious challenges in bed management. In that vein, the QEH identified the following five (5) strategic objectives:

- Strengthen patient-centered care, quality of service and patient safety;
- Strengthen financial management systems;
- Improve the environment of care and operations;
- Improve human resources management and development; and
- Improve public trust and confidence.

These strategic objectives are underpinned by six (6) main themes that encompass

- i. the improvement of service quality;
- ii. cost control and containment;
- iii. information technology intelligence;
- iv. hospital accreditation;
- v. public confidence; and
- vi. staff pride.

Health Financing

In 2012 the Ministry of Health implemented the Health Satellite Accounts Methodology to provide a set of health economic indicators to inform public policy and improve decision making in Barbados. The introduction of a system of health satellite accounts as a tool to assess the economic and financial dimensions of the health care sector in Barbados has been a long term goal of the MOH. As an extension of the National Accounts System, health satellite accounts provide a rational framework through which policy analysts, planners and managers can analyze the flow and use of funds, and how much is expended on specific health products, services and medical activities. In December 2012, the MOH in collaboration with the Pan American Health Organization (PAHO) held an inter-sectoral training workshop on the development of health satellite accounts in Barbados to establish the methodological guidelines to facilitate the continuous production of healthcare expenditure and financial indicators based on government records and continuous house hold survey data. One important step identified was the definition of the institutional scope/configuration of the general government (public sector) in Barbados in order to understand how the country's health care system was organized and financed. The Classification of Function of Government (COFOG) was also seen as a necessary tool in illustrating the production of historical surveys and in comparing government expenditure over several fiscal years as well as with other countries. The Ministry produced preliminary estimates on the composition of public and private health expenditure but further analysis was needed to develop the mechanisms for sourcing information and establishing processes for correcting discrepancies and duplication before final estimates could be produced. The outputs of these activities will provide information to assist policymakers in determining alternative health care financing mechanisms to ensure universal access to health care for all Barbadian citizens.

Health Information Systems

Health information systems are essential for health systems strengthening, providing the material for evidence based decision making and resource management within the health sector. An assessment of health information systems within the Ministry of Health (MOH) using the Health Metrics Network (HMN) tool in 2010 revealed:

- Poor enforcement of regulations governing health information;
- Outdated core or minimum data set;

- Different data management procedures in institutions for resulting in non-standardized collection, processing and presentation of data;
- Much time and effort spent in completing log books and registers;
- Limited dissemination of data;
- Poor utilization of data for decision making;
- Missing data from the private sector;
- Poor integration of data from various sources into more complete and better quality information on health services; and
- A lack of dedicated trained personnel to facilitate the management and day to day operations of a Health Information System (HIS).

Funding for the development of a health information system was identified under the Second HIV/AIDS Prevention and Control Project. In 2011, the World Bank conducted a review of all documents developed by the Information Management and Information Technology Task Force. This review called for more planning and further development by the Ministry of Health in:

- Standards,
- Patient confidentiality,
- Inclusion of private sector data, implementation strategies,
- Per capita costs,
- Health Insurance, and
- Patient access opportunities

An initial Health Data Dictionary was developed in 2009 that addressed specific programmes within the Ministry of Health, however the World Bank consultant raised the need for a more comprehensive dictionary to be developed. The World Bank also recommended that more ground work be completed before the procurement of software for the Health Information System. The following consultancies were therefore proposed:

- Health Data Dictionary (HDD) Development
- Health Information Training Needs Assessment
- Health Information Systems Infrastructural Assessment
- HIS Consultant Project Manager.

Renewed Primary Health Care

A draft policy on Renewed Primary Health Care of Barbados 2010-2015 was completed in August 2010. The policy was intended to implement fundamental systemic reforms to the Barbados Health System by building on the existing strengths, addressing the weaknesses and threats as well as taking hold of the opportunities. The draft policy therefore complemented the work of the Primary Care Task Force, established in 2010 to address primary care services delivery.

The policy, *inter alia*, emphasizes greater synergy between Public Health and Primary Care, greater access to care through expanded service provision, a rekindled community approach and involvement, as well as greater accountability to all publics.

The impact of these reform initiatives include addressing the issues of chronic diseases upstream, significantly reducing the burden on the Queen Elizabeth Hospital in the short and long term, as well as strengthening the social protection infrastructure.

Relations with Non-Governmental Organizations (NGOs)

The Government remained committed to the reality that NGOs will play a greater role in influencing Barbados's health policy.

The Cabinet has commitment to the establishment of an NGO desk to

1. Facilitate effective engagement with Non-Governmental Organizations;
2. Coordinate donor funding for health related projects; and
3. Establish Linkages with the Barbadian Diaspora at home and abroad.

A draft policy for the Relations with non-governmental organizations was developed in June 2010. The draft policy defines the formal relationship between the Ministry of Health and all health related Non-Governmental Organizations and promotes a partnership that seeks to address the national health agenda through not only financial relationships, but sharing of technical skills.

Training and Other Health Systems Reform

In January 2010, two (2) individuals were accepted to pursue the diploma programme at the University of the West Indies under the Medical Sciences Faculty and in September 2010, four (4) others were enrolled in the Masters in Public Health Programme. This initiative is expected to strengthen the sector in delivering a contemporary health agenda.

Mental Health

The National Mental Health Commission was officially launched in the period under review. Two reform initiatives outlined in the Mental Health Reform Plan were executed: a Clinical Evaluation of the Substance Abuse Programme delivered at the Substance Abuse Foundation

(Verdun House), Teen Challenge and the Coalition against Substance; and an Evaluation of the Supported Housing Component of the Mental Health Programme. Reports were presented to the Ministry by the consultants and the implementation of recommendations was to be undertaken in the following financial year. In addition, stakeholders' comments on the Minimum Standards of Care for Drug Treatment Facilities were drafted.

Development of mental health services for children and adolescents is one of the priorities of the reform programme. A workshop was held in October 2010 to disseminate the findings of a Technical Report, on the existing drug treatment services in Barbados, that recommended the establishment of treatment programmes for children and adolescents. As a result, an Inter-sectoral Workshop was held in November 2011 to develop a programme for the prevention and treatment of substance abuse in children and adolescents. It was envisioned that addressing the issue at that level would reduce the incidence of drug use among young people and consequently reduce the incidence of drug use and its negative socio-economic impact on a national level. This strategy also recognized the direct correlation between drug use and the incidence of mental illness, and the lifelong impact that both could have on young people.

Mental Health Reform remains a priority for the Ministry of Health. Consequently emphasis has been placed on strengthening community mental health services to ensure the mentally ill can be managed and maintained in their homes and communities, the development of mental health services dedicated to the care of children and adolescents, and the updating of legislation.

The modernization of mental health practice was supported by appropriate legislation and in December 2012, the Cabinet approved a proposal for amendment of the Mental Health Act, 1985. The proposed amendments make provision for the recognition and protection of human rights and the enhancement of community-based mental health services that are easily accessible by the population.

Substance Abuse

A Pilot Project for children and adolescents was implemented in July 2012 to combat the rising incidence of substance abuse and dependency. A nine-week intervention, "Strengthening Families Programme for Parents and Youths 12 - 16 years" was developed to create stronger family connections, increase youth resilience and reduce drug abuse among children and adolescents. The pilot was implemented through an inter- sectoral initiative led by the Ministry of Health in collaboration with the Ministry of Education and the Centre for Counselling Addiction and Support Alternatives (CASA). Six families completed the Pilot Project and an evaluation conducted at its conclusion showed that the youth were generally more positive about their perceived place in the family unit and felt that being in the programme was generally beneficial. The parents similarly reported that they had more positive relationships with their children and had a better understanding of their needs. A second cohort of the Pilot Project was scheduled for May, 2013

National Nutrition Centre

During the period under review the National Nutrition Centre partnered with the Ministry of Agriculture, Food, Fisheries and Water Resource Management to develop a National Food and Nutrition Security Policy and Plan for Barbados with technical assistance from the Food and Agriculture Organization (FAO). The development of this policy would serve to guide current and future strategies and activities pursued by government to improve the food security status of the Barbadian population.

The National Nutrition Centre continued to collaborate with the Health Promotion Unit and the Ministry of Education towards the adoption of Guidelines for Healthy and Nutritious Foods in Schools. The third edition of the National Food Based Dietary Guidelines was completed and was widely disseminated. Emphasis was placed on encouraging children to eat healthy, hence, the theme **'Saving our Future, Protecting our Children from Chronic Non Communicable Diseases'** was used during the week of activities held in June 2012.

In an effort to combat obesity in children the National Nutrition Centre in collaboration with the Caribbean Food and Nutrition Institute (CFNI) conducted a workshop to strengthen the surveillance system for children five years of age and under. A consultation was also held and a proposal submitted to the MoH to develop a system to monitor overweight among children, aged 7-8 years in public and private primary schools in Barbados.

Disaster Management

The Ministry of Health is a critical partner with the Department Emergency Management in responding to natural and manmade disasters. Tropical storm Tomas caused damage to the island in 2010, testing the Ministry of Health's response capabilities, including activation of standard response mechanisms as outlined in the disaster management plan. This plan is revised every two years.

4.2 Initiatives to Strengthen HIV/AIDS Programme

Expansion of HIV/STI Services

The HIV/AIDS Programme continued to make progress in its Expansion of HIV/STI Services, including decentralization of the care services being offered. The Maurice Byer Polyclinic and the Randall Phillips Polyclinic were identified as pilot sites for decentralization. Training of clinical staff from these pilot sites was conducted in June 2011, facilitated by the Howard University Caribbean Clinical Preceptorship Programme.

HIV/AIDS Programme

In 2012, the HIV/AIDS Programme continued to play the fundamental role in the prevention, treatment and care facets of the national, multisectoral AIDS Programme, with heavy emphasis on strategically enhancing the health response to HIV, with integration and sustainability as the key goals. To achieve Millennium Development Goal 6: Universal Access to All HIV services

by 2015, it was agreed that HIV services needed to be expanded. The key components to the expansion process included:

- Strengthening of HIV surveillance;
- Expansion of HIV care services, including decentralization;
- Integration of HIV, Sexual and Reproductive Health, and Maternal and Child Health services;
- Scale-up of HIV testing through provider initiated testing and counselling; and
- Rapid testing and targeted testing, and training and capacity building.

For the period under review, the HIV/AIDS Programme continued to make progress in expanding HIV/STI services. Two steering committees governed the decentralization of HIV services: the Audit and Oversight Committee and the HIV Action Plan Implementation and Evaluation Working Group. The committees revised the Action Plan for the decentralization process and implementation was started, including development of Clinical Management Protocols and Standard Operating Procedures for the decentralization of HIV services prior to active referral of clients. To the time of preparing this report, there had been decentralization of care services to the two (2) polyclinics identified as pilot sites, the Maurice Byer Polyclinic and the Randall Philips Polyclinic.

HIV Testing Policy

Given the pivotal role of HIV testing in the prevention and control of the AID epidemic, HIV testing policies have been evaluated and a National HIV Testing Policy subsequently developed through a wide consultative process. The policy, approved by Cabinet in September 2012, outlines the overarching direction and the guiding principles in HIV testing followed by additional strategies for sub-policy areas such as: rapid testing, HIV testing in key populations, people with disabilities, pregnant women, young people and HIV testing in special circumstances.

4.3 Initiatives to Strengthen the Queen Elizabeth Hospital

Accident & Emergency Improvement Project

The A&E Department continued to see an average of 44,000 patients a year, with on average, 120 patients per day. The Rapid Improvement Project, implemented to improve the overall experience in the A&E, resulted in some service delivery progress. Overall, triage times were reduced, as was the waiting time for medical consultation. The use of patient advocates continued to make a significant difference to the patient care experience as evidenced by the positive feedback from relatives regarding the timely updates on the status of their relatives seeking care. An initial evaluation of the project identified the critical factors for sustainability of the project as the integration of additional staff, improved bed management and the education of the public on the appropriate use of hospital emergency services.

The QEH's strategic direction continues to focus on strengthening operating systems, and improving performance management, communications and clinical services, to move away

from a functional alignment to aligning business processes around Patient Care Services, Ancillary Services, Support Services, Engineering Services and Corporate Administration. The Hospital's Strategic Objectives for Financial Year 2012-2013 were therefore to:

- i. Strengthen patient-centered care, quality of service and patient safety;
- ii. Strengthen Financial Management Systems;
- iii. Improve the environment of care and operations;
- iv. Improve Human Resources Management and Development; and
- v. Improve public trust and confidence.

QEH Re-capitalization Programme

The hospital's Recapitalization Programme is built around a "Stabilization Framework" that addresses the hospital's physical, financial, service/operational and development needs. To this end, a BDS\$35m loan was facilitated through the National Insurance Scheme (NIS). At the end of this reporting period, approximately BDS\$20m has been expended on the following:

- Renovations and refurbishment of the Medical Intensive Care Unit;
- Installation of an air conditioning system at the Lions Caribbean Eye Care Centre;
- Upgrade of the QEH electrical infrastructures; and
- The procurement of medical equipment.

The considerations for future implementation of a strong Stabilization Programme and consequential success at modernization continued to be financing, cost recovery, cost control, embracing innovation, re-defining the essential packages of services, capacity building and elective care strategies.

Feature Box 6: Barbados National Registry for Chronic Non-Communicable Diseases



The Barbados National Registry For Chronic Non-Communicable Diseases

The Barbados National Registry for Chronic Non-Communicable Disease (BNR) is a national surveillance system being conducted by the Chronic Disease Research Centre on behalf of the Ministry of Health. Funding was secured in 2011 for a three year contract to run the BNR for the period April 2011 to March 2014. The BNR was made up of 3 registries: BNR-Stroke, BNR-Heart and BNR-Cancer. Each registry collected data about new cases of cancer, stroke, and acute myocardial infarction (also known as a heart attack or cardiac arrest) and produced statistics concerning incidence, mortality, and survival. Information from the BNR is used to inform public health policy and clinical practice and was an important resource for Caribbean researchers investigating the problems of chronic disease.

The BNR is a unique initiative in the Caribbean. It is a Ministry of Health initiative being conducted by the Chronic Disease Research Centre of The University of the West Indies. The BNR conducted seminars targeted at medical professionals who

were part of the BNR Continuing Medical Education Series. From 2012, these seminars were awarded continuing professional education credits by the Barbados Medical Council. Some of the challenges faced during the period under review were the lack of human and information technology resources.

Some challenges were also experienced with regard to notification. These included: the 1976 Pathology Act restricting release of confidential information from laboratories, which made it difficult to obtain information on tumours from private laboratories; difficulty obtaining commitment from some private physicians to provide data even though by law cancer is notifiable by private physicians; and convincing data sources and the public of the BNR's commitment to maintain confidentiality despite the small size of Barbados and the relatively newness of the BNR.



CHAPTER 5: HEALTH INFRASTRUCTURE

5.1 Organization of the Health System

The Ministry of Health is the executing agency for the delivery of health care in the public sector. The Ministry is headed by a Minister whose authority is vested in the Health Services Act Cap 44 of the Laws of Barbados. The Minister has overall responsibility for formulating health policies, setting strategic directions, norms and standards, enforcing regulations, as well as providing the political leadership for the sector. Decision-making is centralized and there are no local health authorities.

The Permanent Secretary is the administrative head of the Ministry, functioning as the chief executive and accounting officer, and is responsible for the proper functioning of all sections of the Ministry. The Chief Medical Officer is responsible for all technical and professional functions of the health sector. In this regard, the Chief Medical Officer has statutory responsibilities which are wide ranging and include oversight of the practice of health care professionals, as well as the standards of clinical practice throughout the sector.

The overarching objectives of the Ministry of Health are to promote health, provide comprehensive health care and to ensure that environmental concerns are considered in all aspects of national development. In addition to these objectives, the Barbados Strategic Plan for Health (BSPH) 2002 -2012 and the United Nations Millennium Development Goals have provided strategic directions and programme areas for the promotion of health and the delivery of health services. The health services are organized into the following programme areas:

Primary Health Care - delivered from the eight polyclinics and three satellite clinics that are strategically located along the major road networks within each catchment area. The polyclinic model is based on the primary health care approach and therefore provides a wide range of preventive and curative services, including maternal and child care services, immunization, family planning, dental care, general practice (GP) services, nutrition counseling and environmental health services.

Acute, Secondary, Tertiary and Emergency Care - provided at the Queen Elizabeth Hospital with support through the Medical Aid Scheme for services that are not available at the QEH.

Mental Health - provided at the Psychiatric Hospital, with the Roseville Halfway House and Everton House serving as community centres for the rehabilitation of people with psychiatric disorders who have been discharged from hospital. In 2003, the MOH entered into a partnership arrangement with the Substance Abuse Foundation and Teen Challenge to treat those who were medically recommended for drug treatment services.

Care of the Elderly - provided through the Geriatric Hospital and three District Hospitals that provide in-patient long term care for the elderly. This programme also includes the Alternative Care of the Elderly Programme, which is a partnership arrangement between the MOH and private sector providers of long term care for the elderly. The Geriatric Hospital also houses an adult day care programme that caters for approximately 30 patients.

Care of Persons with Disabilities - provides for the assessment and rehabilitation services for children with disabilities at the Children's Development Centre. In-patient long term care for people with physical and mental disabilities is provided at the St. Andrew's Children Home, which was renamed the Elayne Scantlebury Centre in 2006.

Pharmaceutical Services - provided by the Barbados Drug Service, which is responsible for the annual production of the Barbados National Drug Formulary, and for the procurement and distribution of the drugs listed in the formulary.

Inspection and Licensing Programmes:

The Ministry of Health continued to perform the dual role of provider of health care services and regulator of the sector. The Medical Council, the Nursing Council, the Pharmacy Council, the Dental Council and the Paramedical Professional Council were each responsible for setting the standards for professional conduct and for registration of physicians, dentists, nurses, pharmacists, and allied health professionals respectively.

During the period, the Drug Inspectorate maintained the inspection and licensing programme for pharmacies (public and private) and drug manufacturing plants in keeping with the requirements of the Health Services Act. Similarly, the Environmental Health Officers maintained the inspection and licensing programme for hotels, restaurants, bakeries, supermarkets and hairdressers, in keeping with the requirements set out in the respective regulations of the Health Services Act.

The Advisory and Inspection Committee comprising a public health nurse, an environmental health officer, a nutrition officer, and a drug inspector was responsible for the inspection, licensing and periodic monitoring of the operations of nursing homes and senior citizens homes. The Senior Laboratory Technologist similarly headed a team responsible for licensing and providing oversight of the operations of private and public medical laboratories.

5.2 Resources

Human Resources for Health

The effective management of human resources in the health sector is essential to improving Barbados' health system and improving overall patient care outcomes. As Barbados seeks to achieve its national health goals, ensuring that the right health workers are in place continues to be a challenge.

In 2007, the 27th Pan American Sanitary Conference adopted Resolution CSP27/10, which addressed strategies for strengthening the human resource component of the health sector. As a result of that resolution, a Regional Task Force comprising experts in human resource and data management developed a set of goals for human resources for health (HRH) for the period 2007 to 2015. The goals provided a regional orientation for analysis and formulation of workforce planning priorities and national ten year HRH plans, in line with the needs and priorities of countries.

In 2008, the Pan American Health Organization (PAHO) partnered with the Ministry of Health to support the systemic collection and analysis of HRH data in keeping with Barbados' ten year commitment to health workforce development. Five other Eastern Caribbean countries took part in this HRH data collection exercise, which was expected to form the basis for a regional HRH database. It was envisioned that this effort would assist in identifying priorities and developing sustainable policies for a healthcare workforce tailored to the needs of individual countries and the region as a whole. The Minimal Dataset for Human Resources in Health Report, which was completed in March 2009, identified, collated and summarized HRH resources from all existing sources of information and highlighted the challenges in data collection and management. It was revealed that due to minimal regulations and a lack of standardized data collection, information on healthcare professionals in the private sector was limited. Therefore, mechanisms to gather and analyze this data needed to be established to ensure a comprehensive data set was created that reflected the true composition of Barbados' health workforce.

As shown in Table 47, there were on average 20 doctors in the public sector per 10,000 (or 1 doctor per 516) population. In 2012, there were 1,215 nurses in the public-health system, a density of 44 nurses per 10,000 population, or one nurse for every 227 Barbadians. This equates to an average of 2.3 nurses per doctor, achieving HRH Goal 4 which requires a ratio of qualified nurses to physicians of at least 1:1. As it relates to Goal 1, the WHO has suggested that countries require a minimum of 25 professionals (doctors, nurses and midwives) per 10,000 population in order to provide the minimum acceptable level of health care services to the population. During the period under review, Barbados continued to achieve this goal with a cadre of 49 health professionals per 10,000 population.

Table 47: Human Resources for Health in Barbados per 10,000 Population

Category	2010			2011			2012		
	Number of Workers	Density per 10,000 population	Population per worker	Number of Workers	Density per 10,000 population	Population per worker	Number of Workers	Density per 10,000 population	Population per worker
Doctors	564	20.3	492.3	477	17.2	582.0	582	21.1	474.6
Dentists	77	2.8	3606.1	65	2.3	4271.1	69	2.5	4002.9
Hospital Administrators	10	0.4	27766.8	10	0.4	27762.2	10	0.4	27619.9
Veterinarians	34	1.2	8166.7	25	0.9	11104.9	27	1.0	10229.6
Social Workers	11	0.4	25242.5	11	0.4	25238.4	11	0.4	25109.0
Nutritionists/ Dietitians	8	0.3	34708.5	6	0.2	46270.3	9	0.3	30688.8
Nurses	1322	47.6	210.0	1149	41.4	241.6	1215	44.0	227.3
Nursing Assistants	394	14.2	704.7	352	12.7	788.7	355	12.9	778.0
Radiographers (Diagnostic)	33	1.2	8414.2	19	0.7	14611.7	29	1.0	9524.1
Laboratory Technologists/ Technicians	79	2.8	3514.8	68	2.4	4082.7	28	1.0	9864.3
Pharmacists/ Dispensers	274	9.9	1013.4	232	8.4	1196.6	261	9.4	1058.2
Physiotherapists	48	1.7	5784.8	42	1.5	6610.0	46	1.7	6004.3
Occupational therapist	14	0.5	19833.4	13	0.5	21355.5	12	0.4	23016.6
Dental Auxiliaries	9	0.3	30852.0	9	0.3	30846.9	9	0.3	30688.8
Environmental Health Officers	113	4.1	2457.2	117	4.2	2372.8	117	4.2	2360.7
Environmental Health Assistants	92	3.3	3018.1	92	3.3	3017.6	92	3.3	3002.2
Statistics and Medical	74	2.7	3752.3	74	2.7	3751.6	74	2.7	3732.4

Financial Resources

During the 2010-11 to 2012-13 fiscal years, the Ministry of Health expenditure (Public Health Expenditure) rose from \$355.3 million to \$415.0 million. These funds facilitated the eight programme areas listed in the Table below and which have been described in the foregoing narrative of this report.

Public Health Expenditure is used worldwide as one of the indicators of the performance of the health sector. In 2012-13 Public Health Expenditure accounted for approximately 11% of Total Government Expenditure, and was estimated at 4.7% of Barbados' Gross Domestic Product. Public health expenditure per capita was estimated at \$1,495.50.

Table 48: Actual Expenditure BDS\$ for Fiscal Years 2010/11 to 2012/13

Programme	2010-2011	2011-2012	2012-2013
Direction and Policy Formulation Services	20,293,946	27,854,174	30,379,521
Primary Health Care	28,131,964	27,343,699	29,754,483
Hospital Services	184,301,728	195,036,812	253,266,026
Care of the Disabled	2,848,319	2,805,400	2,868,812
Pharmaceutical Programme	52,723,161	29,548,705	30,742,332
Care of the Elderly	39,324,601	38,369,120	38,191,396
HIV/AIDS Prevention and Control Project	10,143,854	9,339,250	11,736,528
Environmental Health Services	17,502,996	17,511,190	18,085,953
Total MH Expenditure	355,270,569	347,808,350	415,025,051

Source: Barbados Estimates, 2012-13, 2013-14 and 2014-15

Consistent with the situation in previous years, Hospital Services were allocated the largest share (51.8% in 2010-11 and 61.0% in 2012-13). The expenditure of all other programmes tended to be stable except that of the Pharmaceutical Programme, which declined by approximately 41% during the period. The reasons for the change were discussed previously in the section on the Pharmaceutical Programme.

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APPENDIX 1: QEH DISCHARGE DIAGNOSES

CAUSE	Age Group by Year								
	TOTAL	<1	1-4	5-14	15-24	25-44	45-64	65+	Unk
Symptoms, Signs and Ill-defined Conditions	740	44	52	27	77	131	136	273	0
Intestinal Infectious Diseases	223	54	83	28	1	9	21	27	0
Tuberculosis	5	0	0	0	1	1	3	0	0
Certain vector-borne diseases and rabies	77	2	1	8	15	12	29	10	0
Certain diseases preventable by vaccination	9	0	0	0	3	3	3	0	0
Meningitis	6	1	0	0	0	3	2	0	0
Septicaemia, except neonatal	109	2	1	0	2	9	17	78	0
Infections with a predominately sexual mode of transmission	6	0	1	1	1	2	1	0	0
HIV diseases (AIDS)	57	0	0	0	2	29	24	1	0
Acute Respiratory Infection	693	75	117	62	35	58	72	274	0
Other Infectious and parasitic diseases (remainder of A00-B99)	222	28	31	47	25	41	23	27	0
Malignant Neoplasm of the Stomach	16	0	0	0	0	0	3	13	0
Malignant Neoplasm of Colon and rectosigmoid junction	150	0	0	0	0	7	67	76	0
Malignant Neoplasm of the digestive organs and peritoneum except stomach and colon	84	0	0	0	0	10	31	43	0
Malignant Neoplasm of trachea, bronchus and lung	26	0	0	0	0	4	11	12	0
Malignant Neoplasm of respiratory and intrathoracic organs, except trachea bronchus and lung	20	0	0	0	4	0	10	10	0

CAUSE	Age Group by Year								
	TOTAL	<1	1-4	5-14	15-24	25-44	45-64	65+	Unk
Malignant Neoplasm of the cervix uteri	24	0	0	0	0	5	12	7	0
Malignant Neoplasm of other unspecified parts of uterus	28	0	0	0	0	0	15	13	0
Malignant Neoplasm of prostate	75	0	0	0	0	0	20	55	0
Malignant Neoplasm of bladder and other genitourinary organs	43	0	0	0	0	3	22	18	0
Leukemia	28	0	1	7	2	6	3	9	0
Malignant neoplasm of lymphoid, other hematopoietic and related tissue	59	0	0	0	0	12	35	20	0
Malignant neoplasm of other and unspecified parts sites (remainder of C00-C97)	161	0	2	1	3	32	59	64	0
Carcinoma in Situ, benign neoplasms and neoplasm of uncertain or unknown behavior	657	4	2	7	17	290	281	56	0
Acute rheumatic fever and chronic rheumatic heart diseases	3	0	0	1	0	0	1	1	0
Hypertensive diseases	419	0	0	1	2	41	152	223	0
Ischemic Heart diseases ³⁰⁴	304	1	0	0	0	22	138	139	0
Pulmonary Heart Disease, diseases of pulmonary circulation and other forms of heart disease	345	1	0	1	8	35	133	167	0
Cerebrovascular diseases	316	0	0	0	1	18	81	215	0
All other diseases of the circulatory system	212	0	2	9	6	29	69	97	0
Fetus and Newborns affected by obstetric complications, birth trauma	189	189	0	0	0	0	0	0	0

CAUSE	Age Group by Year								
	TOTAL	<1	1-4	5-14	15-24	25-44	45-64	65+	Unk
Respiratory disorders specific to the perinatal period	481	481	0	0	0	0	0	0	0
Hemolytic diseases of the fetus or newborn	40	40	0	0	0	0	0	0	0
Remainder of certain conditions originating in the perinatal period (rest of P00-P96)	610	610	0	0	0	0	0	0	0
Injury, poisoning and certain other consequences of external causes	1405	11	65	114	227	366	357	265	0
Motor vehicles traffic accidents	200	1	4	13	49	72	49	12	0
Other transport accidents	23	0	0	0	4	8	5	4	0
Falls	318	3	14	37	20	47	60	137	0
Accidents caused by machinery and by cutting and piercing instruments	52	0	1	1	12	16	17	5	0
Accidents caused by firearm discharge	0	0	0	0	0	0	0	0	0
Accidental drowning and submersion	8	0	2	0	0	3	1	2	0
Exposure to smoke, fire and flames	9	0	0	2	1	1	3	2	0
Accidental poisoning by and exposure to noxious substances	34	0	23	2	0	3	3	2	0
All other accidents	752	16	29	52	48	153	255	199	0
Intentional Self Harm (Suicide)	120	0	0	6	40	40	26	8	0
Assault (homicide)	244	1	1	6	67	105	56	8	0
Events of undetermined intent	12	0	0	2	3	0	3	2	0
Diabetes mellitus (E10-E14)	261	0	0	7	16	29	76	133	0
Nutritional deficiencies and anaemias	28	0	2	0	0	7	10	9	0
Mental and behavioural disorders	241	0	0	13	57	69	68	34	0

CAUSE	Age Group by Year								
	TOTAL	<1	1-4	5-14	15-24	25-44	45-64	65+	Unk
Chronic lower respiratory diseases excluding asthma	35	0	0	0	0	1	2	31	0
Asthma	468	4	81	259	31	39	33	21	0
Remainder of diseases of the respiratory system (rest of J00-J99)	389	17	98	37	31	47	72	87	0
Appendicitis, hernia of abdominal cavity and intestinal obstruction	458	24	8	24	37	77	140	147	0
Cirrhosis and certain other chronic diseases of the liver	30	0	0	0	3	3	16	8	0
All other disease of the digestive system (rest of K00-K93 i.e. K00-K31)	927	25	28	37	39	209	287	302	0
Diseases of the urinary system	423	4	11	17	18	58	89	226	0
Hyperplasia of prostate (N40)	36	0	0	0	0	0	6	30	0
Pregnancy, Childbirth, and the puerperium	4620	0	0	4	1849	2751	16	0	0
Congenital malformations, deformations and chromosomal abnormalities	171	119	23	15	3	9	2	0	0
Factors influencing health status and contact with health services (Z00-Z99)	2020	1538	51	35	65	164	102	65	0
Remainder of all other diseases (Rest of A00-Q99)	2446	29	77	121	198	556	723	742	0

GLOSSARY/ DEFINITIONS

Crude Birth Rate

The number of live births per year per 1,000 mid-year population. Crude birth rate indicates the magnitude of the fertility level.

Total Fertility Rate

The expected average number of children that would be born to a woman in her life time, if she were to pass through her child bearing years experiencing the age specific fertility rates prevailing in a given year/period for a given country. It is calculated as the sum of age - specific fertility rates (referring to women ages 15-49 years) or five times the sum if data are given in five year age groups.

Life Expectancy at Birth

The number of years a newborn baby is expected to live, given the prevailing mortality conditions in the population.

Crude Death Rate

The total number of deaths due to all causes occurring in a year per 1,000 mid-year population. Crude death rate is a measure of the frequency at which deaths from all causes are occurring in the population during a specific period.

Still Birth Rate

The number of stillbirths occurring in a year per total number of live births and stillbirths occurring in the same year. A stillbirth is a fetal death that occurs after the 28th week of gestation.

Perinatal Death Rate

The number of perinatal deaths occurring in a year per total number of live births and stillbirths occurring in the same year. The number of perinatal deaths is equal to the sum of the stillbirths and the number of infant deaths that occur under one week of age. The perinatal death rate

is a measure of the risk of death occurring either during pregnancy after the 28th week of gestation, or within one week after delivery.

Neonatal Death Rate

The number of infant deaths occurring before the 28th day of life per total live birth occurring during a given year. The neonatal death rate measures the risk of an infant dying within 28 days of birth.

Infant Mortality Rate

The infant mortality rate measures the risk of death occurring during infancy. i.e. The probability

Maternal Mortality Ratio

The total number of females deaths due to complications of pregnancy, childbirth and the puerperium in a year per total number of live births in the same year. The maternal mortality ratio measures the risk of women dying from maternal causes.

Age-Specific Death Rate

The total number of deaths occurring in a specific age group of the population in a year per estimated population of the same age group in the same year. The age-specific death rate measures the risk of death among persons in a specific age group.

Years of Productive Life Lost (YPLL)

Provides an estimate of the number of years of lives lost prematurely. It is the number of years of life lost by persons who die prior to 65 years of age.

Natural Increase Rate

The rate of natural increase refers to the difference between the number of live births and the number of deaths occurring in a year, divided by the mid-year population of that year, multiple by 1000.

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