INTRODUCTION

Barbados is the easternmost of the Caribbean countries and has a land area of 430 km$^2$. The terrain is flat, with Mount Hillaby being the highest point at some 340 m above sea level. Bridgetown is the capital, and the country is divided into 11 parishes.

The country gained independence from the United Kingdom in 1966, and is a parliamentary democracy within the British Commonwealth. There is a bicameral Parliament; the Queen, who is the Head of State, is represented by the Governor General. Elections take place every five years.

In the 2010 Human Development Report, Barbados was ranked 42nd out of 169 countries and classified as having a “very high” level of human development (1). It is the only country in the English-speaking Caribbean to have received that designation. The country’s economy is highly
dependent on tourism. The economy experienced continuous growth for six consecutive years from 2002 to 2007, but declined by 0.2% in 2008. In 2009, there was further weakening of the economy with a 4.7% decline in real gross domestic product (GDP) (see Table 1). There was slight growth of 0.2% in 2010 (2).

According to the 2000 census, the population was 268,792. Data from the Barbados Statistical Service show that the population as of December 31, 2010, was estimated at 276,300 persons, an increase of approximately 7,500 over the 2000 figure. In 2010, there were an estimated 133,700 males and 142,600 females. Persons over age 60 accounted for 18% of the population, while 2.1% were over 85 years old. The population density is high, with approximately 637 persons per km². The birth rate declined to 12.2 per 1,000 population in 2010, from 12.9 in 2009. The number of live births decreased from 3,414 in 2006 to 3,366 in 2010, when there were 1,796 male births and 1,570 female births.

The death rate fluctuated over the 2006–2010 period: it was 8.5 per 1,000 population in 2006 and 8.0 in 2010. The rate of population growth averaged 0.2% for the same period. The rate of natural increase averaged 4.0 per 1,000 population over that same period. The population pyramid for 2010 showed a flattening of the slope compared to that of 1990, reflecting a further aging of the population (see Figure 1). Populations in age groups 0–4 years old and 40–44 years old were higher in 1990 than in 2010; the population older than 45 years old showed increases in 2010, compared with the figure for 1990. Barbados continued to attract migrants from the Caribbean region and beyond.

In absolute numbers, infant deaths decreased in the 2006–2010 period, dropping from 57 in 2006 to 34 in 2010. The total fertility rate remained stable between 2000 and 2010, at 1.6 children per woman and 1.7, respectively. Life expectancy at birth was 77.7 years in 2010, a slight increase over the 2006 figure of 76.8 years.

Barbados’s road system is well developed, as is its communications infrastructure. Internet users increased from 63.0 per 100 persons in 2006 to 70.2 in 2010; fixed telephone lines increased from 49.0 per 100 persons in 2006 to 50.3 in 2010; and cellular-phone subscriptions rose from 87 per 100 population in 2006 to 128 in 2010 (3).

Barbados has made significant advances in health during the reporting period. Infant and child mortality rates have decreased as a result of better access to health care and general improvements in the standard of living. The Expanded Program on Immunization continues to reduce the incidence of vaccine-preventable diseases. There is greater public awareness of the role that environmental issues play in maintaining a healthy population, and programs have been instituted to address the country’s main public health issues. Treatment with anti-retroviral drugs has led to a reduction in deaths due to HIV/AIDS and a better quality of life for persons living with HIV.

The country is dealing with the serious increase in the prevalence of chronic, noncommunicable diseases and has put systems in place, such as the establishment of a National Commission for

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**TABLE 1. Selected economic and demographic indicators, Barbados, 2006–2010.**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010a</th>
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</thead>
<tbody>
<tr>
<td>Real growth (%)</td>
<td>3.6</td>
<td>3.8</td>
<td>-0.2</td>
<td>-4.7</td>
<td>0.2</td>
</tr>
<tr>
<td>Inflation (%)</td>
<td>7.3</td>
<td>4.0</td>
<td>8.1</td>
<td>3.6</td>
<td>5.8</td>
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<tr>
<td>Unemployment (%)</td>
<td>8.7</td>
<td>7.4</td>
<td>8.1</td>
<td>10.0</td>
<td>10.7</td>
</tr>
<tr>
<td>Life expectancy (years)</td>
<td>76.8</td>
<td>77.0</td>
<td>77.3</td>
<td>77.5</td>
<td>77.7</td>
</tr>
<tr>
<td>Expenditure on health as % of country total</td>
<td>13.1</td>
<td>12.9</td>
<td>12.5</td>
<td>12.7</td>
<td>10.8</td>
</tr>
</tbody>
</table>

* Figures for 2010 are provisional.

Source: Compiled by the authors from reports for years 2006–2010 of: Barbados, Ministry of Finance and Economic Affairs, Barbados Economic and Social reports (Bridgetown: Ministry of Finance and Economic Affairs).
Chronic Noncommunicable Diseases, a National Task Force on Physical Activity and Exercise, the Barbados National Registry for Non-Communicable Disease and an agreement with the Heart and Stroke Foundation of Barbados for the delivery of cardiac rehabilitation services for persons with heart disease and stroke. The Barbados Drug Service has been recognized for using best practices in pharmaceutical management.

Barbados established a policy on mental health care in 2004 in response to deficiencies in mental health services. In 2008, a National Mental Health Commission was established to guide the implementation of the mental health reform process. Initiatives were undertaken to standardize the treatment and management of substance abusers, including the drafting of legislation on the Minimum Standards for Substance Abuse Treatment Facilities.

HEALTH DETERMINANTS AND INEQUALITIES

Data for 2010 showed that the unemployment rate was 10.8%. That year, the unemployment rate for males was 10.9% and for females it was 10.6%. The actual number of unemployed persons was estimated at 15,300. Participation in the labor force was 66.6%, with 71.8% of males and 62% of females employed (4).

In 2010, the Government of Barbados, in conjunction with the Caribbean Development Bank, conducted a Country Poverty Assessment of Living Conditions (CALC) to determine how Barbadians fare in terms of such important quality-of-life factors as levels of income and expenditure, consumption, employment, education, and access to social and public services. This assessment focused on identifying the causes of poverty and evaluated the type and magnitude of poverty being experienced in the country. Its results will inform poverty reduction and alleviation policies and related social policies and programs. Notably, this is the first exercise of this nature since the Inter-American Development Bank’s (IDB) study on poverty in Barbados in 1997. This study estimated the poverty line to be US$ 2,751 per capita per year and that poverty affected approximately 13.9% of the population (5).

The adult literacy rate remained at 99.7% between 2005 and 2010. Primary and secondary education is compulsory up to 16 years and is provided by the state. Data from the Ministry of Education and
Human Resource Development indicated that in the 2005/2006 academic year there were 4,782 Barbadian students enrolled in undergraduate and postgraduate studies at the University of the West Indies. This figure increased to 6,029 in 2008/2009, with 4,054 female enrollees and 1,975 male enrollees. In 2005/2006, Barbados Community College had 1,429 male and 2,685 female students, while in 2008/2009, there were 1,459 males and 3,001 females enrolled. Other tertiary institutions showed a similar trend of more female than male students.

THE ENVIRONMENT AND HUMAN SECURITY

ACCESS TO CLEAN WATER AND SANITATION

Barbados ranks 15th for water scarcity among all countries in the world—approximately 1,000 m$^3$ of water are consumed per capita per year, while available water resources are only 350 m$^3$ per capita per year (6). The country is almost completely dependent on groundwater from aquifer sources, as there is very little surface water. There is universal coverage both for drinking water service and for sewerage and excreta disposal facilities.

SOLID WASTE

Barbados disposes of 1,000 tons of solid waste daily, or an average of 3.7 kg per capita per day. Several agencies are responsible for solid waste disposal. The Environmental Protection Department is the regulatory agency, the Ministry of Health assists with enforcement, the Solid Waste Project Unit oversees solid waste management policy issues, and the Sanitation Service Authority is responsible for collecting municipal solid waste and operating four solid waste disposal sites.

SOIL EROSION

Soil erosion remains a problem in many parts of the island. This phenomenon is most apparent in Scotland District, located in the northeast of the island, which is naturally prone to land slippage due to its geologic and topographic characteristics.

AIR POLLUTION

Air pollution is not considered to be a major problem, although motor-vehicle emissions are a source of concern. Data from the Economic Commission for Latin America and the Caribbean (ECLAC) indicate that carbon dioxide emissions increased from 1,338 thousands of metric tons in 2006 to 1,346 thousands of metric tons in 2007.

PERSISTENT ORGANIC POLLUTANTS

The Stockholm Convention on Persistent Organic Pollutants (POPs) came into force in May 2004, and Barbados acceded to the Convention in June of that year. According to the National Implementation Plan for the Management of POPs, six of the listed pollutants (aldrin, chlordane, DDT, dieldrin, endrin, and heptachlor) are banned from use in Barbados; three of the listed pollutants (hexachlorobenzene, mirex, and toxaphene) were not officially banned, but no licenses were issued for their importation or use.

DISASTERS

The natural hazards of particular relevance to Barbados are hurricanes and tropical storms, with associated storm surges and flooding. Other hazards include landslides, coastal erosion, and earthquakes. Barbados did not suffer direct impacts from hurricanes during the period under review, but the country was affected by Tropical Storm Tomas in October 2010. No lives were lost but there was damage to roofs and homes, downed power lines, uprooted trees, and roads made impassable by debris. The agricultural sector suffered losses totaling US$ 4.5 million, and an estimated US$ 18.5 million was needed to repair or replace houses.
**CLIMATE CHANGE**

Barbados was the only country in the Western Hemisphere chosen to participate in the Global Environmental Facility (GEF) Project, “Piloting Climate Change Adaptation to Protect Human Health,” covering the years 2010 to 2014. The project emphasizes water scarcity and its impact on the health of the population, and measures what must be done to lessen that impact. The Climate Change Unit that was established within the Ministry of Health demonstrates the island’s commitment to the GEF project.

**FOOD AND NUTRITIONAL SECURITY**

Barbados’ dietary guidelines were revised and adopted during the review period. It was estimated that the agriculture industry declined in nominal GDP by 5.8%, from US$ 62.9 million in 2009 to US$ 59.3 million in 2010 (2).

**FOOD SAFETY**

Data from the Caribbean Epidemiology Center indicated that there were 564 cases of salmonellosis in Barbados during the 2006–2010 period. There were no cases of avian influenza.

**HEALTH CONDITIONS AND TRENDS**

**Health Problems of Specific Population Groups**

**Maternal and Reproductive Health**

Barbados has attained UN Millennium Development Goal 5—to improve maternal health. The maternal mortality ratio was 56.7 per 100,000 in 2006 (2 deaths); 0 in 2007 (no deaths); 81.8 in 2008 (3 deaths); 83.9 in 2009 (3 deaths); and 58.4 in 2010 (2 deaths). In the reporting period, women received free antenatal care at the polyclinics and all births were attended by professionals. Contraceptive prevalence was 55% for the 2005–2009 period (7). The prevalence of the human immunodeficiency virus (HIV) among the cohort of antenatal women who delivered in 2008 was 0.96%. The proportion of pregnant women in Barbados who underwent testing for HIV increased from 84.6% in 2006 to 93.0% in 2008.

**Infants (under 1 year old)**

Perinatal conditions and congenital abnormalities continued to be the leading cause of death among children under 1 year old. In 2009, 14 (35%) infant deaths were due to respiratory disorders and 6 (20.5%) to congenital malformations. Antenatal and child-health services in the polyclinics and the Neonatal and Pediatric Intensive Care Units at the Queen Elizabeth Hospital were instrumental in improving infant survival rates. The Prevention of Mother-to-Child Transmission of HIV program reduced transmission of the virus to newborns to 1.5% in 2008; before the program started in 1995, the transmission rate was 27.1%.

**Children (1–9 years old)**

Children under 5 years old comprised 6.4% of the population and 5–9-year-olds comprised 6.7% in 2010. Acute respiratory infections and gastroenteritis were the main diseases affecting children. In 2010, there were 846 cases of child abuse reported to the Child Care Board. Of these, 372 (44%) were due to neglect, 191 (22.8%) to physical abuse, 185 (21.9%) to sexual abuse, 95 (11.2%) to emotional abuse, and 3 (0.4%) to abandonment. In 2009, there were seven deaths in the 1–4-year-old age group; these were attributed to septicemia (two); cancer of the retina (one); Guillan-Barre Syndrome (one); pneumonia due to inhalation of food and vomit (one); Sick Sinus Syndrome (one); and interstitial emphysema (one).

**Adolescents (10–19 years old)**

The age group 10–19 years old was estimated at 38,000, representing 14.0% of the total population in
2010. There were 520 teenage (13–19-year-olds) births in 2008, 525 in 2009, and 468 in 2010. Provisional data on teenage births as a percentage of total births for the years 2008, 2009, and 2010 were 15.4%, 16.3%, and 14.9%, respectively. In 2009, there were 9 deaths among 5–14-year-olds (6 males and 3 females) and 32 deaths (19 males and 13 females) among 15–24-year-olds.

The Ministry of Health, aware of the significant challenges that adolescents face, in 2009 developed a comprehensive health program for this groups based in schools and clinics. 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; the tool kit covered such topics as human sexuality, life skills, violence, and substance abuse (including alcohol).

**Adults (24–64 years old)**

Persons between 25 and 44 years old accounted for 27.5% of the total population in 2010. There were 153 deaths in this age group in 2009, of which 10 were attributed to accidents and 12 to homicide, mostly involving men. HIV incidence in Barbados in 2009 was 62.5 per 100,000 for adults between the ages of 15 and 49; incidence among men was 63.9 per 100,000 and among women it was 61.7.

In 2008, a total of 953 persons in the 25–44-year age group were treated at the Queen Elizabeth Hospital. The leading cause of morbidity for this age group was malignant and benign cancers, accounting for 38.7% of all persons treated for neoplasms. Injuries accounted for 11.4% and hypertension and cerebrovascular disease represented 4.4% and 3.2%, respectively. There were 154 deaths in this age group in 2009. Major causes of death were assault (which represented 12 deaths or 7.79% of all deaths); some categories of accidents such as falls and exposure to foreign bodies, 6.5%; pulmonary heart disease, 5.2%; and malignant neoplasms of the female breast, 4.6%.

In 2008, 1,628 persons between 45 and 64 years old were treated at the Queen Elizabeth Hospital. The leading cause of morbidity was malignant and benign cancers (600 persons, or 36.8% of persons treated), followed by hypertension (211, or 12%), diabetes (119, or 7.3%), and ischemic heart disease (101, or 6.2%). In 2009, ischemic heart disease was the leading cause of death in this age group, with 38 deaths and representing 8.5% of all deaths. Cerebrovascular disease and diabetes mellitus accounted for 34 and 32 deaths, respectively, and malignant neoplasm of other sites accounted for 25 deaths; pulmonary heart disease and hypertensive diseases each accounted for 20 deaths and malignant neoplasm of the female breast accounted for 19 deaths in this age group.

**The Elderly (65 years old and older)**

Persons 65 years old and older made up 14.1% of the population in 2010. There were 1,671 deaths in this group in 2009. The leading causes of death were diabetes mellitus (163 deaths), ischemic heart disease (161), cerebrovascular disease (157), and malignant neoplasm of the prostate (105).

**The Family**

Services at the polyclinics and other health institutions cater to the entire family. Men’s health programs have been introduced in all polyclinics with the aim of improving health-seeking behaviors among men. Family planning services are also available at polyclinics.

**Workers**

The Ministry of Labor is responsible for the administration of statutory requirements that ensure safety and health in the workplace. The number of industrial accidents decreased from 726 in 2008 to 672 in 2009. Of those occurring in 2009, 74 were investigated (51 factory and 23 non-factory accidents) and 90 were scheduled for follow-up investigations by the Safety and Health Section of the Department of Labor. The status of the remaining industrial accidents was undetermined at the time of writing. There were two work-related deaths in 2009.
**Mortality**

The general mortality rate per 1,000 population was 8.8 in 2009. The infant mortality rate for 2010 was 10.9 per 1,000 live births, representing 39 deaths. The perinatal mortality rate declined from 3.7 per 1,000 live births in 2006 to 2.2 in 2009, and neonatal mortality decreased from 12.5 per 1,000 live births to 8.7 for the same years. The mortality rate for children under age 5 was 14.8 per 1,000 live births in 2008.

Provisional data for 2009 revealed that the leading causes of death were ischemic heart disease, diabetes mellitus, cerebrovascular disease, acute respiratory infections, hypertensive disease, and malignant neoplasm of the prostate, in that order (see Table 2). In 2001, the leading causes were cerebrovascular disease, diabetes mellitus, ischemic heart disease, and malignant neoplasm of the prostate.

**Morbidity**

**Communicable Diseases**

**Vector-borne Diseases**

Dengue fever is endemic in Barbados, with cases fluctuating during the reporting period. In 2006, there were 153 cases, 640 cases in 2007, 280 in 2008, 91 in 2009, and 230 confirmed cases as of September 2010. There were 10 deaths caused by dengue fever from January 2006 to September 2010. The case fatality rate was low, ranging from 0.3% to 2% between 2006 and 2009. Only serotype 3 was detected in 2009, but serotypes 1, 2, 3, and 4 circulated in 2010.

Malaria is not endemic in the country, but two imported cases were diagnosed in 2010.

**Vaccine-preventable Diseases**

There were no cases of the diseases targeted by the Expanded Program on Immunization in the reporting period. The pneumococcal vaccine was added to the Barbadian immunization schedule in 2009 and the three-dose regimen is being administered to infants at 2, 4, and 6 months of age. In 2010, DTP-pentavalent coverage was 88.3% and coverage with the MMR vaccine was 87.2% (first dose) (Table 3). In the 2008–2010 period, there were 1,345 reported cases of chicken pox. The varicella vaccine was given to health workers and vulnerable populations inclusive of children, the elderly, and persons who are immunocompromised.

**Zoonoses**

There were 61 confirmed cases of leptospirosis in humans during 2006–2010.

**HIV/AIDS and Other Sexually-transmitted Infections**

Between 1984, when the first case of AIDS was confirmed in Barbados, and the end of 2008, the cumulative number of HIV cases was 3,166 (62.8%...
in males), and 2,126 cases of AIDS (68.1% in males). In that same period there were 1,436 AIDS-related deaths (with males accounting for 73.1%) (8). In 2009, 110 persons (53 females and 57 males) were newly diagnosed with HIV; 53 of these persons (21 females and 32 males) were diagnosed with AIDS, and there were 34 AIDS-related deaths (15 females and 19 males). In 2010, 81 persons (53 males and 28 females) were diagnosed with HIV (as of August). The incidence of HIV cases for the period under review was 158 in 2006, 157 in 2007, 156 in 2008, 110 in 2009, and 81 (cases reported as of August 2010) in 2010.

Between 2001 and 2008 there was a steep decline—from 10% to 2%—in the AIDS case fatality rate. This was attributed to the government’s highly active antiretroviral therapy (HAART) program which started in 2002.

Tuberculosis

Three cases of pulmonary tuberculosis were confirmed during the period under review. None of these cases was drug resistant.

Emerging Diseases

There was an outbreak of influenza A(H1N1) in 2009; 155 people fell ill, and there were 3 disease-related deaths.

Chronic, Noncommunicable Diseases

The Task Force on the Development of Cardiovascular Services was formed in 2006, and the following year the National Commission for Chronic Noncommunicable Diseases (CNCD) in Barbados was established. The Commission developed the Barbados National Strategic Plan for Chronic Noncommunicable Diseases for 2009–2012, which aims to prevent and reduce chronic diseases. Part of this initiative was the establishment of the Barbados National Registry for Chronic Noncommunicable Disease (see Box 1).

According to the Barbados Behavior Risk Factor Survey (utilizing the WHO STEPwise approach to chronic disease risk factor surveillance) conducted in 2007, approximately 44% of the population reported having at least three of the risk factors for a chronic disease (9).

Barbados has experienced an increase in the incidence and economic burden of chronic, noncommunicable diseases over the past 30 years. The Ministry of Health estimates that by the year 2030, 86.3% of all deaths in Barbados will be caused by this category of illness. In 2010, the Ministry of Health undertook a needs assessment to assist in the development of palliative care services and to develop appropriate models of care.

BOX 1. The Barbados National Registry for Chronic Noncommunicable Disease

The Barbados National Registry for Chronic Non-Communicable Disease is the country’s first disease surveillance system to monitor multiple chronic diseases—stroke, heart attack, and cancer.

The Registry broke ground with BNR-Stroke in July 2008, following with BNR-Heart the following year, and with BNR-Cancer in April 2010. This national, population-based registry gathers patient data from hospital and community records and from face-to-face interviews with patients.

Now a well-established surveillance tool, the Barbados National Registry for Chronic Non-Communicable Disease provides accurate and timely data on stroke, cardiovascular disease, and cancer among Barbadians. This information will allow the health sector to effectively evaluate the burden these diseases place on the population, guide practices and policies so that scarce resources can be best utilized, and facilitate the monitoring and evaluation of interventions. The Registry has already played a major role in identifying gaps in clinical practice, informing public health policies, and producing statistics related to incidence, mortality, and survival.
Cardiovascular Diseases

In 2007, there were 423 hospital admissions for cerebrovascular disease (207 males and 216 females) and 301 for ischemic heart disease (172 males and 129 females). In 2009, 322 females and 237 males suffered strokes; 319 (70%) were classified as ischemic and 70 (15%) as hemorrhagic (9). The incidence of stroke increased with age for both sexes.

The Barbados National Registry is a population-based registry for chronic, noncommunicable diseases. The Registry began to operate on 1 July 2009, tracking incidence rates of acute myocardial infarction, stroke, and cancer. From its inception to 31 December 2009 there were 182 deaths (82 females and 100 males) due to myocardial infarction and sudden cardiac arrest. The proportion of men under 55 years old with an acute myocardial infarction was about twice that for women (19% vs. 10%); however, the numbers are too small to draw any firm conclusions. Most of the myocardial infarctions in men were among males 55 years old and older, while most myocardial infarctions in women occurred in females 65 years old and older.

Barbados National Registry data show that, based on the incidence of strokes occurring between January and December 2009, there were 559 stroke events (322 females and 237 males). Of these, 70.0% were ischemic strokes, 16.0% were hemorrhagic strokes, and 14.0% were unspecified. In 2009, 448 persons with strokes were admitted to Queen Elizabeth Hospital; of those, 117 (26.0%) died in the hospital. Of those admitted to Queen Elizabeth Hospital in 2009, 416 (93%) had a computed tomography (CT) scan as part of their diagnostic evaluation.

Malignant Neoplasms

In 2009, there were 122 (55 males and 67 females) hospital admissions for malignant neoplasm of the colon, 108 for malignant neoplasm of the female breast, 89 for malignant neoplasm of the prostate, and 62 for malignant neoplasm of the cervix. Cancer of the prostate was the sixth leading cause of death in 2009, down from fourth in 2001.

Diabetes

In 2007, there were 328 hospital admissions due to diabetes mellitus (103 males and 225 females). Most (185) of these admissions were in persons 65 years and older. In 2009, diabetes mellitus was responsible for 202 deaths (78 males and 124 females), with 80.7% of those deaths occurring in the population 65 years and over. The Step-by-Step program, introduced to Barbados in July 2009, aims to provide on-going education in diabetic care for health professionals and the diabetic client, to reduce the incidence of complications and amputations, and to empower persons living with diabetes to take better care of themselves.

Hypertension

In 2007, there were 501 hospital admissions (206 males and 295 females) because of hypertension. Approximately half (50.9%) were in the age group 65 years and older and 38.7% were in persons 45–64 years old. In 2009, hypertension was responsible for 120 deaths (51 males and 69 females).

Nutritional Diseases

Obesity

Data from the Barbados Risk Factor Survey conducted in 2007 showed that 65.2% of the population 25 years and older was overweight (BMI ≥ 25) or obese (BMI ≥ 30); the level of overweight was 54.6% among males and 74.3% among females. The survey also showed that most of those questioned (95.4%) reported they ate fewer than five combined servings of fruit and vegetables each day (9).

Accidents and Violence

There were 8,676 traffic accidents in 2006 (22 fatal) and 8,317 in 2009 (25 fatal). Homicides decreased from 35 in 2006 to 19 in 2009. Drug-related crime decreased from 919 cases in 2006 to 830 in 2009. There were 265 crimes involving firearms in 2006 and 207 in 2009.
Mental Disorders

In 2007, US$ 13.7 million, or approximately 7% of the national health budget, was allocated to the Psychiatric Hospital, which is a sub-program under “Hospital Services.” This figure did not include the costs of the community inpatient unit at the Queen Elizabeth Hospital or the medicines used to treat mental illness. In 2008/2009, the allocation was US$ 16,093,435 and the budget for 2009/2010 was US$ 16,531,569. In 2007, there were 1,166 admissions and 861 discharges with the main discharge diagnoses being schizophrenia (39%) and behavioral disorders (29%). There were 1,023 admissions to the Psychiatric Hospital in 2009 (10).

Risk and Protection Factors

Physical Activity

In 2009, the Cabinet approved the appointment of the National Task Force on Physical Activity and Exercise with the aim of encouraging and implementing physical activity programs at the national level. Physical activity is compulsory for all students attending schools in Barbados, as evidenced by the integration of curricular and extracurricular competitive and noncompetitive sports in academic programs.

Smoking

The WHO Global Youth Tobacco Survey (GYTS) for 2007 was conducted in 22 public secondary schools in Barbados among 13–15-year-old students (11). In this representative sample, 28% reported that they currently used some form of tobacco product (34.5% of all males and 23.2% of all females surveyed). There were 11.6% of students who reported they were currently smoking cigarettes (14.3% of all males and 9.3% of all females surveyed). This represents a 2% increase in tobacco use among students since the 2003 survey. Following the ratification of the Framework Convention on Tobacco Control in 2005, legislation was enacted to double cigarette taxes (2008); ban duty-free sale of cigarettes (2008); ban sale of cigarettes to minors (2009); and ban smoking in all public places (in effect on 1 October 2010).

The Barbados Behavior Risk Factor Survey conducted in 2007 reported the overall prevalence of tobacco smoking at 8.4%, with the average age of onset 20.0 years (19.7 years old for males and 21.9 years old for females). The Barbados Behavior Risk Factor Survey (2007) reported that 8.4% of adults 25 years old and older smoked tobacco (15.3% of males and 2.2% of females over age 25). Most of the respondents (62.2%) stated that they did not drink alcohol in the previous year.

HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Health Policies and the Health System’s Stewardship Role

The Ministry of Health carries out both steering and health care delivery functions. Decision-making is centralized and there are no local health authorities. The Ministry’s Strategic Plan for Health 2002–2012 feeds into the National Strategic Plan, which has as one of its objectives the improvement of the health of all Barbadians. Priority areas are health systems development; institutional health services; family health; food, nutrition, and physical activity; chronic, noncommunicable diseases; HIV/AIDS; communicable diseases; mental health and substance abuse; health and the environment; and human resource development (12).

The regulation of health professionals is conducted through various professional councils such as the Medical, Pharmacy, Dental, Nursing, and Paramedical Councils.

The Health System’s Performance

An assessment of the performance of the Essential Public Health Functions (EPHF’s) in 2010 showed that there has been improvement in some areas when compared with the results of the 2002 assessment (13). Nine of the 11 EPHF’s scored 50% or higher. EPHF 10 (Research in public health), EPHF 11 (Reduction of the impact of emergencies and disasters on health), and EPHF 5 (Development of
policies and institutional capacity for public health planning and management) generated the highest scores, 88%, 83%, and 81%, respectively. Low-scoring functions were EPHF 6 (Strengthening of public health regulation and enforcement capacity) and EPHF 7 (Evaluation and promotion of equitable access to necessary health services), which received scores of 43% and 49%, respectively. In the assessment conducted in 2002, EPHF 11 (Reducing the impact of emergencies and disasters on health) had the second highest performance (72%). While EPHF 10 (Research in public health) scored lowest (24%) in 2002, it received the highest rating in 2010.

Barbados has no national health insurance system. The 1969 Health Services Act of Barbados (Cap. 44) and the Drug Services Act (1980) ensure public universal health coverage for Barbadians. However, persons may opt to access care through private health insurance schemes. The National Insurance Scheme covers employed and self-employed persons from ages 16 to 65. Benefits under this scheme include sickness, maternity, unemployment, and work-related injury.

**Health Expenditures and Financing**

In 2009/2010, the Ministry of Health’s budget amounted to US$ 134,284,639, which was 10.8% of total government expenditures. Table 4 shows the allocations to the Ministry and its various departments. For fiscal year 2010/2011, the budgetary allocation to the Ministry of Health was approximately 9% of total government expenditure (14).

The Government of Barbados continued its commitment to give the highest priority to the response against HIV/AIDS. Domestic public expenditure on HIV/AIDS in 2009 was US$ 8,010,457. The total amount of HIV/AIDS expenditure in 2009 (inclusive of international and private sources of funds) was US$ 11,903,094. The country receives a significant amount of international funding earmarked for this effort (Table 5).

**The Health Services**

The provision of health care services in Barbados is guided by principles of equity and universal access. The government’s policy of providing free health care services at the point of delivery, the strategic placement of community-based polyclinics, a medical aid scheme, the Barbados Drug Service, and extended hours of service are some of the measures put in place to ensure that health care is accessible to all Barbadians.

Primary health care is an essential component of the health services provided in Barbados. It is available at the eight polyclinics, which are fully staffed and equipped to deliver a wide range of health care services, and at the three satellite clinics. These facilities are located within easy access of their catchment areas and provide services such as maternal and child health, mental health, dental health, and general practice clinics.

<table>
<thead>
<tr>
<th>Program areas</th>
<th>2009/2010 (US$)</th>
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<td>Direction and policy formulation</td>
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<td>Primary health care</td>
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<td>15,573,749</td>
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<td>Hospital services</td>
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<td>Care of the disabled</td>
<td>1,712,970</td>
<td>1,664,656</td>
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<td>Pharmaceuticals (Barbados Drug Service)</td>
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<td>20,502,185</td>
</tr>
<tr>
<td>Care of the elderly</td>
<td>20,914,249</td>
<td>21,284,536</td>
</tr>
<tr>
<td>HIV/AIDS prevention and control</td>
<td>7,291,430</td>
<td>5,664,584</td>
</tr>
<tr>
<td>Environmental health services</td>
<td>10,428,275</td>
<td>9,954,984</td>
</tr>
<tr>
<td><strong>Total health sector allocation</strong></td>
<td><strong>192,048,272</strong></td>
<td><strong>177,923,708</strong></td>
</tr>
</tbody>
</table>

Polyclinic staff make visits to the community to conduct home and family assessments and establish effective client relationships; detect and manage at-risk situations, including environmental factors that may harm the family and the community; encourage family support systems and use of available resources; provide nursing care procedures in the home, as required (such as wound care management); provide antenatal and postnatal care; administer insulin; and, where necessary, make referrals to other levels of care.

Four district hospitals provide long-term care for the elderly. At the community level, there is the Alternate Care of the Elderly Program, which is a public/private contractual arrangement between the Ministry of Health and private nursing and senior citizens’ homes. These homes provide 24-hour residential care at home for older persons who no longer require institutional care or for those who need this level of care within their home environment.

A Geriatric Community Clinic project also operates within the primary care setting; this modality was conceived to provide specialized geriatric services to a subset of elderly persons living in the community, enabling them to enjoy a better quality of life. The project mainly aims to increase the target group’s ability to manage their activities of daily living (ADLs); assess the onset of delirium or dementia; issue recommendations for the development of programs aimed at reducing admission of elderly persons living in the community to geriatric institutions; assess the need for social-work support; and coordinate the delivery of that support.

Queen Elizabeth Hospital is the main facility that provides secondary and tertiary care. Other public health facilities include a psychiatric hospital, a half-way house for persons with mental disorders, a long-term care facility, a rehabilitation center for children with physical and mental challenges, and a hostel for homeless persons with AIDS.

Total expenditure on pharmaceuticals for financial years 2008/2009, 2009/2010, and 2010/2011 amounted to US$ 24,782,850, US$ 26,356,233, and US$ 23,513,385, respectively. To address the high expenditure of the Barbados Drug Service over these years, the Ministry of Health has considered proposals for introducing a handling fee in private-sector pharmacies and rationalizing the Barbados Drug Formulary. In September 2010, a comprehensive assessment of the National Drug Formulary was undertaken and the Formulary Committee was strengthened; recommended adjustments were undertaken.

### KNOWLEDGE, TECHNOLOGY, INFORMATION, AND HUMAN RESOURCE MANAGEMENT

#### Scientific Production in Health

Barbados produces a large body of research. The Chronic Disease Research Center, for example, has...
been undertaking research to better understand the nature of the chronic diseases that affect the population, as well as determining interventions to improve the situation. Other research involves communicable diseases such as dengue, leptospirosis, and hantavirus.

An Information Management and Information Technology Task Force created in 2007 leads the development of the country’s health information system. In October 2010, the Ministry of Health undertook an assessment of the country’s current health information system using the Health Metrics Network, a tool developed by the World Health Organization to assist in strengthening these systems. The assessment provided the Ministry with a number of important findings and recommendations that serve as the basis for officially establishing a health information system.

**Human Resources**

The Ministry continued to deal with the challenges of human resource development, including the formulation of strategies to retain staff. The health sector experienced shortages of health human resources including nurses, doctors and physiotherapists. In 2006 there were 28 physicians, 28.8 nurses, and 2.8 dentists per 10,000 inhabitants. One cause of the shortages is the migration of health personnel to more developed countries. Health professionals, especially nurses, are recruited to Barbados from other Caribbean countries, Africa, and Southeast Asia.

**Health Personnel Training**

Training for health professionals is conducted mainly at the Barbados Community College and the University of the West Indies. In September 2008, the University Medical School in Barbados was upgraded to a Faculty of Medical Sciences and now offers a Bachelor of Medicine and Bachelor of Surgery (MBBS) degree through a five-year program. Barbados Community College offers a range of associate degree and non-degree programs, covering areas such as nursing and environmental health. Continuing education is undertaken through in-service training or other training opportunities in-country or abroad. The Ministry has also worked with the University of the West Indies and the European Development Fund (EDF) technical assistance team to develop a diploma in health services management.

In 2008, the Ministry of Health began developing a Human Resource Strategy for the management and mobilization of human capital. In 2009, the Pan American Health Organization assisted the Ministry in developing a minimum dataset for human resources in the health sector. A consultancy to collect data that measure the baseline indicators on human resources in health was conducted in Barbados in 2010.

**Health and International Cooperation**

Barbados received US$ 11.3 million in grants from the 9th European Development Fund (EDF) to assist in the implementation of the Barbados Strategic Plan for Health 2002–2012. The grants cover projects for the management of chronic, noncommunicable diseases; family health services; and strengthening health systems. This last component addresses the development of a modern health information system involving both public and private sectors. Table 5 shows amounts of international funding for HIV/AIDS programs in 2008 and 2009.

**Synthesis and Prospects**

While acknowledging that Barbados has achieved much success in health, the country’s health care system must be retooled to meet country-specific challenges as well as those of a Caribbean Single Market and Economy. Changes envisioned for the current system include providing more cost-effective services; developing a more integrated approach to delivering services; improving the quality of services; fulfilling unmet needs in disadvantaged or frail
population groups; improving access to appropriate care (especially for post-acute needs); maximizing the use of the health care workforce’s skills and knowledge; and introducing new communications and information technologies. Meeting these challenges will require modifications in policies, structures, funding, and incentives.

Clearly, tourism offerings must be diversified in a country that so heavily relies on this sector for its gross domestic product (GDP) as does Barbados. The Ministry of Health has begun to explore the possible development of a health-and-wellness tourism market; to that end, it established a Health and Wellness Tourism Development Task Force in 2009. This task force, integrated by representatives from various governmental departments, agencies, and the private sector, is charged with providing advice on stimulating investment, developing links between the health and tourism sectors, and marketing health tourism services internationally.

Needed changes in human and organizational behavior can be accomplished in part by continuing targeted education and ensuring that a performance-based remuneration system is capable of providing incentives and disincentives in a flexible and transparent way.

Barbados is committed to the primary health care approach as a strategy for protecting vulnerable populations. To that end, it has established a Task Force on Primary Health Care to bolster this strategy. Barbados remains committed to streamlining health spending, promoting equity, and building solidarity in health; it is actively seeking to develop appropriate models to address health care financing.

Delivering quality health care is another important reform priority for the Ministry of Health, in that this is the building block for all other reforms in health service delivery. Areas to be addressed include performance standards and the establishment of effective monitoring systems and performance quality indicators. A major undertaking is a project to rationalize programs for delivering acute, secondary, and tertiary care services at the Queen Elizabeth Hospital. The project will encompass the development of options for clinical and support services as well as financing models.

To begin to address the aging of the population, as well as social changes and their impact on society, in 2010 Barbados undertook a legislative review of modalities for developing a framework for community and home-based care. This effort is designed to recast or expand current local approaches and services.

REFERENCES


