INTRODUCTION

With a land area of 11,424 km$^2$, Jamaica is the largest English-speaking country in the Caribbean. It is located 150 km south of Cuba and 160 km west of Haiti. The island has a narrow coastal plain, where agricultural production is concentrated, but much of the terrain is mountainous and Blue Mountain Peak, the island’s highest point, has an elevation of 2,256 m. The country is divided into 14 parishes. Its capital, and largest city, is Kingston, located on the southeast coast; other major population centers are Montego Bay, Spanish Town, and Portmore. Jamaica’s estimated population in 2010 was 2.7 million, and population density is approximately 250 people per km$^2$.

Jamaica gained independence from the United Kingdom in 1962, is a member of the Commonwealth of Nations, and has maintained a stable, constitutional democracy for 50 years. It is
governed by the Parliament, comprising the Senate and House of Representatives. The Cabinet of Ministers forms the executive branch of the Government and is headed by the Prime Minister. Jamaica has been a stable democracy since its independence in 1962, with well-established traditions of democratic participation.

The primary drivers of the Jamaican economy are the services sector (mainly tourism and insurance), which accounts for some 60% of the gross domestic product (GDP), and mining. Remittances account for nearly 15% of foreign exchange earnings, exports of bauxite and alumina make up about 10%, and tourism accounts for some 10%. In addition to minerals, the country exports garments, sugar, bananas, and rum.

According to the United Nations Development Program’s Human Development Report for 2011, Jamaica’s Human Development Index rose by 0.5% annually, from 0.589 in 1980 to 0.727 in 2011. The country’s HDI rank is 79 (out of 187 countries with comparable indicators) (4).

Life expectancy at birth increased from 38 years in 1900 to just over 73.1 years in 2009, while the infant mortality rate declined from 174.3 deaths per 1,000 live births to 14.6 over the same period.

The age profile and dependency ratios of the population between 1970 and 2009 show a decline in the proportion of children (0–14 years) and increases in the working age population (15–64 years) and dependent elderly population (65 years and over) (see Figure 1). The overall trend is consistent with the ongoing demographic transition towards the aging of the population (2). The falling share of the child population has resulted in smaller households. This was recorded at a mean of 3.2 persons per household, with an average of 1.0 child per household. Jamaica continued to record a relatively high proportion of female-headed households, at 45.5%.

**HEALTH DETERMINANTS AND INEQUALITIES**

Jamaica’s literacy rate in 2009 was 89% (3). The country’s preprimary school enrollment (% gross) was 112.97 in 2010. Over the past 36 years this indicator has steadily increased, rising from its minimum value of 43.61 in 1974 to its maximum value in 2010. Figures for gender parity index (2008) at the primary school level were 0.97, 1.04 at the secondary level, and 2.22 at the tertiary level (4).

In spite of modest long-term growth, Jamaica has made substantial progress in poverty reduction since it began monitoring living conditions in 1988. Poverty fell from 30.5% in 1989 to 9.9% in 2007. With growing unemployment and reduced remittances (which accounted for 16% of GDP in 2009) caused by the global economic downturn, the incidence of poverty increased to 16.9% in 2009. Poverty spiked to an estimated 17.6% of the population in 2010 (a third consecutive year of increases) due to the severe economic contraction following the global crisis.

The underbelly of Jamaica’s success is persistent social blight, such as youth unemployment that feeds criminality, antisocial behavior, and gang enrolment. Legislators are contemplating with interest a World Bank study on youth development in the Caribbean that shows reduced net lifetime earnings by as much as US$ 157,000 for males and US$ 115,000 for females for early school-leavers (5).

The country reported a negative net migration rate of −7.42 migrants per 1,000 population in 2009. High levels of emigration (16,330 in 2009) have seriously affected family life, particularly for those children left to be raised on their own or by relatives; the labor market (through emigration of well-educated and qualified workers); remittances (a major source of foreign exchange earnings); and population structure (through low net rates of population growth) (6).

**THE ENVIRONMENT AND HUMAN SECURITY**

**Access to Clean Water and Sanitation**

Drinking water provided through pipes and taps to residences was available for 72.5% of Jamaican households in 2009; for 13.7% of households, rainwater collected in tanks was the main water
source and 6.2% relied on public standpipes for drinking water. Households in the Kingston metropolitan area had the greatest access to water piped to their residences (96.9% coverage), compared to 86.3% in other metropolitan areas. In rural areas only 46.0% had water piped to their residence.

In 2009, 67.6% of households reported having access to flush toilets (water closets) and 32.3% reported access to pit latrines. In the Kingston metropolitan area, 87% of households reported they had access to flush toilets; in other metropolitan areas, access was 75.3%; and in rural areas, 47.8% had access to flush toilets. Overall, 76% of toilet facilities were not linked to a sewer system; in rural areas this figure was as high as 95.1%.

**SOLID WASTE**

Jamaican households use three main methods for garbage disposal. Most households (63.5%) used a garbage collection service; burning was the second most common method (33.5% of households), followed by dumping at 3.2%. The Kingston metropolitan area and other towns accounted for 92.1% and 84.4% of households served by a garbage collection system, respectively. The corresponding figure for rural areas was 33.9%.

**ENVIRONMENTAL DEGRADATION**

Deforestation, wetland destruction, removal of sea grass, and coral reef degradation have led to a loss of biodiversity in the country. In addition, population growth, coupled with agricultural, industrial, and commercial expansion, have resulted in intense competition for land, leading to encroachment on and fragmentation of natural habitats. Land degradation, fragmentation of habitats, and the introduction of alien invasive species are key challenges to biodiversity that need to be addressed. Leading environmental concerns include deforestation, soil erosion, population pressures, mining for limestone and bauxite, large- and small-scale cultivation on mountain slopes, and lack of public awareness concerning conservation. Deforestation causes massive soil erosion, and water-courses are becoming heavily laden with sediment, resulting in floods at lower levels. Until recently, interior forests were quite inaccessible; however, continued road construction into these areas will inevitably lead to selective cutting and increased deforestation.

Tourism, too, places additional stresses on the environment. Mass tourism has been developed and promoted primarily around coastal areas in Jamaica, for example, and those resources are particularly vulnerable to degradation. Improper planning of tourism developments, including inadequate sanitation and
solid waste disposal practices, has affected water quality and coastal ecosystems, especially in major tourist destinations in the island’s north and northwest areas (8, 9).

**Air Pollution**

In Jamaica, the main contributors to the poor outdoor air quality are emissions or air pollutants from business and industry, motor vehicles, and open burning of sugarcane fields and of solid waste at dumpsites and in backyards. Population growth, energy use, the number of vehicles in the country, and poor domestic and industrial practices exacerbate this pollution. Jamaica currently has 57 air-quality monitoring stations, 46 of which are located outside of the Kingston and St. Andrew region. The bauxite companies own and operate 41 of the stations, which account for 72% of all stations and 90% of the ambient air monitoring activities done in the parishes outside of the country’s capital.

**Pesticides**

There were 2,512.77 tons of pesticides imported into Jamaica in 2005 and 3,056.31 in 2010. Adopting more environmentally friendly farming practices would decrease the amount of pesticides used, benefiting the agricultural sector.

**Road Safety**

In 2009, males accounted for 58% (10,351) of the patients treated for injuries sustained in motor-vehicle accidents, with females accounting for 42% (7,392). Individuals aged 20–29 years old represented more than 30% (5,545) of total injuries, and this was consistent for both sexes in the age group.

**Violence**

Clearly, violence is one of Jamaica’s greatest challenges: the murder rate was 60 per 100,000 population in 2008. In this regard, Jamaica reflects trends in interpersonal violence that also are manifest in Latin America and elsewhere in the Caribbean, with the highest mortality rates due to violence seen among males 15–29 years old. Despite its high murder rate Jamaica has remained an outstanding tourist destination because this violence has rarely been directed at non-Jamaicans. Violence in Jamaica is generally perpetrated male on male, poor on poor, and youth on youth. Half of those admitted to high-security adult correctional centers for major crimes in 2007 were males between 17 and 30 years of age. The ratio of males to females who commit major crimes is 49:1.

In 2008, 77% of murders were committed using guns. Jamaica has become a trans-shipment point for guns moving between the United States and South America and this gun trade has increased their availability in the country. Crime and violence undoubtedly have a hand in Jamaica’s stagnant growth. A World Bank study conducted in 2002 found the cost of crime and violence in 2001 to be 3.7% of GDP.

With 62 murders per 100,000 population in 2009, Jamaica had the highest murder rate in the world. According to the green paper prepared by the Ministry of Labor and Social Security in 2006, the high incidence of homicide and violence in Jamaica can be attributed primarily to domestic disputes, drug-and/or gang-related conflicts, reprisals and mob killings, political “tribalism,” and a breakdown in social order.

**Disasters**

Due to its geographic location, Jamaica is particularly vulnerable to natural hazards such as hurricanes, tropical storms, flooding, and earthquakes, all of which can disrupt people’s lives, damage infrastructure, and severely constrain key sectors of the economy, including agriculture.

The impact of Tropical Storm Nicole in 2010 and associated rains was felt throughout Jamaica, with substantial damage sustained in the parishes along the southeast through to the southwest
corridor and southern sections of northern parishes. The level of flooding or damage sustained in the impacted areas appears to have been directly related to the geomorphology, location, and the nature of development undertaken in these areas. Sixteen persons reportedly lost their lives as a result of the event, 14 of whom were confirmed dead. Among those who perished were six children between 0 (newborn) and 14 years of age. Nine persons died by drowning and 10 by crush injury.

Jamaica’s Government commissioned the upgrading of the national building code following the severe 2004 hurricane season, and risk-reduction measures have been promoted to help ensure the operation of essential services during hurricane and tropical storm events.

**Climate Change**

Jamaica is at particularly high risk for frequent and intense storm surges as global warming continues to impact sea levels and the sea surface temperatures. Public health experts are concerned that if this trend continues, rising temperatures and increased rainfall and flooding will increase the risk of transmission of communicable diseases such as malaria, dengue, and leptospirosis.

**Health Conditions and Trends**

**Health Problems of Specific Population Groups**

**Maternal and Reproductive Health**

Reproductive health issues are the main reason women contact every level of the health system. Other important health problems include sexually-transmitted infections, diabetes, hypertension, and cancer. Women's reproductive health is monitored through a network of prenatal and postnatal clinics.

According to the Jamaica Reproductive Health Survey for 2008–2009, 87.1% of women had four or more antenatal visits during pregnancy and only 1.3% received no antenatal care (10). About 60% of pregnant women had their first antenatal visit in the first trimester. Approximately 93% of births reported occurred in a government hospital and 5% in other health facilities, including private hospitals or rural maternity centers; 1% of births were delivered at home. The adolescent fertility rate was 71 per 1,000 births to women ages 15 to 19, with 15% of births occurring in the 10–19-year age group.

The maternal mortality ratio for Jamaica in 2008 was 89 per 100,000 live births (11).

**Infants**

In 2009, 12.1% of newborns had a low birthweight (12). The Ministry of Health’s Monthly Clinic Summary Report (MCSR) data show that in 2008, 43.1% of children were exclusively breastfed at 6 weeks, increasing to 45.1% in 2009. These rates are significantly lower than the 47.1% observed in 2001.

Immunization coverage in 2010 for infants under 1 year of age was 95% for tuberculosis (BCG); 94% for diphtheria, tetanus, and pertussis (DTP), *Haemophilus influenzae* type b (Hib), hepatitis B (HepB), and polio (OPV); and 88% for measles, mumps, and rubella (MMR). In 2009, for children 1 year of age, coverage was 80% for DTP4; 88% for MMR1; and 79% for MMR2. The percentage of municipalities with coverage \( \geq 95\% \) was 23% for DTP3 and 8% for MMR in 2009.

The infant mortality rate (IMR) in Jamaica was estimated at 14.6 per 1,000 live births in 2009 (13) compared to 24.5 per 1,000 live births in 2001. The main causes were prematurity, congenital abnormalities, and asphyxia. The neonatal mortality rate estimate in 2009 was 12.0 per 1,000 live births (13) and the post-neonatal death rate was 4.6 per 1,000 live births. Perinatal death rates did not show any significant change from 2006 onwards and stood at 27.2 per 1,000 total births (live births + stillbirths) in 2010. The early neonatal death rate was 14.9 per 1,000 live births and fetal deaths were 14.7 per 1,000 births in 2010. This represented a 32% increase in
early neonatal deaths and a 14% decrease in fetal
deaths over the 2006–2010 period. Table 1 shows
the perinatal, early neonatal, and fetal mortality rates

Children (0–5 years old)

The three leading causes of death for both males and
females in this age group between 2007 and 2009
were “respiratory and cardiovascular disorders spe-
cific to the perinatal period,” “infections specific to
the perinatal period,” and “disorders relating to
length of gestation and fetal growth.” Other causes
are shown in Table 2.

Mortality

Mortality data for 2006–2009 demonstrate consist-
tently higher mortality in males over the period:
9,893 male deaths and 7,660 female deaths in 2009
and 8,917 male deaths and 7,400 female deaths in
2006. The highest numbers of deaths were in the 75
and over age group (34% of all male deaths and 50%
of all female deaths in 2009), followed by the 70–74-
year age group (8.8% of male deaths and 8.4% of
female deaths in 2009).

Mortality rates for males as a result of cancer
are 1.4 times higher than for females. The reverse is
ture for diabetes mellitus, where mortality rates for
women are 1.6 times higher than for males.
Cerebrovascular diseases rank first as a cause of
death among females and second among males,
although a decrease in deaths of females due to this
cause is evident between 2007 and 2009. Similar
to global and Caribbean trends, males are at a
significantly greater risk of dying as a result of
homicides and transport accidents than are females.
The homicide rate for males in Jamaica was
approximately eight times the rate for females and
is the leading cause of death for males. There is a
positive trend, however, with the number of deaths
from external causes declining between 2007 and
2009 (14).

Morbidity

Communicable Diseases

Vector-borne Diseases

There were 12 laboratory-confirmed cases of malaria
in 2010, 10 fewer than those reported in 2009. Of
the 10 imported cases in 2010, 6 were due to
*Plasmodium falciparum*, 3 were due to *P. vivax*, and 1
was due to *P. malariae*; the two locally transmitted
cases were due to *P. falciparum*.

Imported cases of malaria remained below 10
cases annually between 2000 and 2003. In 2004 and
2005, however, cases increased dramatically, coinci-
dent with an influx of Haitian immigrants. The
number of imported malaria cases skyrocketed from
9 in 2003 to 141 in 2004, and then declined to some

<table>
<thead>
<tr>
<th>Year</th>
<th>Perinatal mortality rate (per 1,000 live births and stillbirths)</th>
<th>Early neonatal mortality rate (per 1,000 live births)</th>
<th>Fetal mortality rate (per 1,000 live births)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>28.2</td>
<td>11.3</td>
<td>17.1</td>
</tr>
<tr>
<td>2007</td>
<td>27.9</td>
<td>12.2</td>
<td>15.9</td>
</tr>
<tr>
<td>2008</td>
<td>29.7</td>
<td>13.0</td>
<td>17.0</td>
</tr>
<tr>
<td>2009</td>
<td>29.7</td>
<td>13.3</td>
<td>16.6</td>
</tr>
<tr>
<td>2010</td>
<td>27.2</td>
<td>14.9</td>
<td>14.7</td>
</tr>
</tbody>
</table>

Source: Reference (13).
88 in 2005. Since then, imported malaria cases have declined to their former numbers of fewer than 10 cases per annum, save for a slight uptick to 10 cases in 2010. Indigenous malaria transmission, which was absent since 1965, was reintroduced in 2006. Sustained malaria eradication efforts since the outbreak have resulted in a significant decline in local transmission, and imported malaria cases in 2010 exceed indigenous cases (15).

Dengue has been of national public health concern in Jamaica for the past three decades. Dengue is endemic in the country; the disease is usually seasonal, with cases increasing after the rainy season (September through March), with an outbreak periodicity of every three years. All four serotypes circulate in Jamaica.

From 2000 to 2011, there have been 3,337 IgM positive dengue cases in Jamaica. According to data provided by the National Surveillance Unit, up to Epidemiological Week 19 of 2012, there have been 172 clinical dengue cases, of which 79 were laboratory confirmed (i.e., dengue

<table>
<thead>
<tr>
<th>Leading causes of death in males</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>No.</td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td>Respiratory and cardiovascular disorders specific to the perinatal period</td>
<td>171</td>
<td>161</td>
<td>157</td>
</tr>
<tr>
<td>Infections specific to the perinatal period</td>
<td>35</td>
<td>45</td>
<td>39</td>
</tr>
<tr>
<td>Other disorders originating in the perinatal period</td>
<td>12</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td>Disorders relating to length of gestation and fetal growth</td>
<td>18</td>
<td>18</td>
<td>29</td>
</tr>
<tr>
<td>Congenital malformations of the circulatory system</td>
<td>13</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>Hemorrhage and hematological disorders of fetus and newborn</td>
<td>16</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Other congenital malformations</td>
<td>4</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Birth trauma</td>
<td>13</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Fetus and newborn affected by maternal factors and by complications of pregnancy, labor, and delivery</td>
<td>8</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Congenital malformations and deformities of the musculoskeletal system</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total male deaths</strong></td>
<td><strong>295</strong></td>
<td><strong>309</strong></td>
<td><strong>282</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leading causes of death in females</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>No.</td>
<td>No.</td>
<td></td>
</tr>
<tr>
<td>Respiratory and cardiovascular disorders specific to the perinatal period</td>
<td>108</td>
<td>147</td>
<td>110</td>
</tr>
<tr>
<td>Infections specific to the perinatal period</td>
<td>27</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Other disorders originating in the perinatal period</td>
<td>8</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Disorders relating to length of gestation and fetal growth</td>
<td>19</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>Congenital malformations of the circulatory system</td>
<td>13</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Hemorrhage and hematological disorders of fetus and newborn</td>
<td>4</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Congenital malformations of the nervous system</td>
<td>8</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Chromosomal malformations, not elsewhere classified</td>
<td>3</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Congenital malformations and deformities of the musculoskeletal system</td>
<td>4</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Birth trauma</td>
<td>8</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Other congenital malformations</td>
<td>1</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total female deaths</strong></td>
<td><strong>203</strong></td>
<td><strong>262</strong></td>
<td><strong>225</strong></td>
</tr>
</tbody>
</table>

**Source:** Reference (13).

**Note:** Provisional data.
IgM positive from the University of the West Indies [UWI] lab). *Aedes aegypti* is the only dengue vector present in Jamaica, and it is found in all parishes. In 2011, the Breteau Index ranged from 11% to 56% across the country.

**Vaccine-preventable Diseases**

Historically, Jamaica has had an outstanding record for immunization. Vaccination is mandatory for school entrance, but this regulation is not strongly enforced. No cases of tuberculous meningitis, diphtheria, tetanus, pertussis/whooping cough, or vaccine-derived polio were reported in 2010. There were 2,646 cases of chicken pox reported that year.

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

The HIV/AIDS National Strategic Plan for 2007–2012 outlined the policy framework for Jamaica’s response to the global pandemic. The overall prevalence rate of HIV infection among the adult population is estimated at 1.6%, but certain groups are at particularly high risk. For example, the rate of infection among men having sex with men is 31.8%. Sex workers are also at high risk, as are crack cocaine users and prison inmates, with infection rates as high as 4.9%, 4.5%, and 3.3%, respectively for these groups. Between 1982 and 2009, a cumulative number of 14,354 AIDS cases were registered by the National HIV/STI Program, with 7,772 deaths reported. Between 2004 and 2009, the number of AIDS deaths decreased by 43%, from 665 in 2004 to 378 in 2009. Since 2008, approximately 85% of HIV-infected pregnant women receive antiretrovirals to prevent vertical transmission to their newborns. Thanks to this strategy, the HIV transmission rate decreased from 25% in 2003 to approximately 3.9% in 2010. Despite Jamaica’s gains in fighting HIV/AIDS, it remains the second leading cause of death for both men and women in the 30–34-year age group. The rate of HIV infection is increasing more steadily among women than among men.

Ministry of Health data indicate that 78% of pregnant women receiving antenatal care in public-sector facilities are routinely screened for syphilis. The rate of syphilis infection among pregnant women ranged from 0.9% in 2004 to 2% in 2010. In 2009, 50 cases of congenital syphilis were notified; only 20 of these were investigated, with 8 found to be positive. The incidence of congenital syphilis is currently estimated at 0.21 cases per 1,000 live births (16).

**Tuberculosis**

Tuberculosis (TB) was the leading cause of death in Jamaica in the 1930s, but the case fatality rates for the disease have been steadily declining since then. From a high of 20% in 2003 these rates dipped to 9% in both 2007 and 2009. In 2010, Jamaica had 145 confirmed cases (the third highest in recent history) (17).

Jamaica has had high rates of HIV/TB coinfection, exceeding the global average of 5%. In 2010, of the 145 confirmed cases, 29 tested positive for HIV. TB/HIV coinfection impacts significantly on the case fatality rates for TB, accounting for 5 of 17 deaths in 2010 (17).

**Emerging Diseases**

Beginning on 27 April 2009, there were 202 laboratory-confirmed cases of H1N1 influenza, with 49 hospitalizations and 7 deaths. In 2010 there were 76 confirmed influenza cases, 62% fewer than in 2009 (202 cases).

**Intestinal Diseases**

As per weekly epidemiological surveillance reports of the Ministry of Health, diarrhea and gastroenteritis of presumed infectious origin were the most commonly reported intestinal diseases, with 51,381 cases (24,575 cases in children under 5 years of age) in 2010. There was one confirmed case of typhoid fever in 2007.

**Chronic, Noncommunicable Diseases**

Jamaica faces a double burden of disease—the continued challenge of dealing with emerging and reemerging communicable diseases coupled with an
increased prevalence of chronic, noncommunicable diseases. Over the past 25 years, noncommunicable diseases have become the leading cause of death in Jamaica. In 2009, diseases of the circulatory system, neoplasms, endocrine and metabolic diseases, and diseases of the respiratory system accounted for approximately 60% of deaths among men and 75% of deaths among women (18).

According to the 2008 Health and Lifestyle Survey, the prevalence of chronic, noncommunicable diseases and their risk factors is trending upwards, as shown by the following figures showing prevalence increases between 2000 and 2008: diabetes rose from 7.2% to 7.9%; pre-hypertension increased from 29.9% to 35.3%; hypertension went from 20% to 25%; obesity rose significantly from 9.7% to 25%; and physical inactivity skyrocketed from 17% to 30%.

In 2007, myocardial infarction and stroke accounted for 0.62% and 2.36%, respectively, of hospital discharges from government hospitals for those under age 65. The average length of stay in these hospitals was 14.9 days for myocardial infarction and 9.3 days for stroke (19).

**Malignant Neoplasms**

In 2009, 2,849 persons over 5 years old died of a malignant neoplasm. This accounts for 21% of all deaths in Jamaica. The most common types of cancer deaths (in order of frequency) in men were lung, prostate, stomach, non-Hodgkin’s lymphoma, and leukemia; in women, they were cancer of the breast, cervix, colorectal, uterus, and lung (13).

The Jamaica Cancer Registry, which records cancer incidence for the Kingston and St. Andrew Corporation (the amalgamation of Kingston and St. Andrew parishes), showed that between 2003 and 2007, the most common cancers in men were, in order of frequency, prostate, bronchus, and large bowel; in women they were breast, cervix, and large bowel (20).

**Diabetes**

Diabetes is responsible for considerable morbidity and mortality in Jamaica and is a significant burden for the country’s health services. It was the second leading cause of death for Jamaicans under the age of 70 in 2009 (21).

Among persons known to have diabetes, 71.5% were undergoing treatment, and of this group, blood sugars were controlled in 43.9% of respondents and were not controlled in 52.6%. A higher proportion of men than women were controlled (46.8% versus 42.1%). Among those surveyed 23.9% of those with diabetes were not aware of their condition (22).

In 2008, diabetes accounted for 12.6% of hospital discharges from government hospitals in patients under 65 years of age, with an average length of stay of 11.9 days (23).

**Nutritional Diseases**

**Malnutrition**

In 2009, 7% of children were found to be above normal weight for age, 3.7% had grade II malnutrition, and 0.1% had grade III malnutrition. These results are comparable to those on the nutritional status of children in 2002.

**Obesity**

Jamaica has the fourth highest prevalence of overweight and obesity in the population over 30 years old of 14 Caribbean countries and territories (preceded by Barbados, Trinidad and Tobago, and Dominica) (24). In 2011, 7% of males and 46% of females under the age of 30 years were overweight.

**Mental Disorders**

The growing demand for child and adolescent mental health services has resulted in an increase in the number of client visits (a measure of the actual workload) from approximately 1,500 client visits in 2000 to 8,000 client visits in 2011. The main diagnoses include major depression, anxiety disorders, learning disorders, child abuse, and disruptive behavior disorders such as attention deficit/hyperactivity disorder and conduct disorder (25).
The total number of patient visits (adults) in 2010 to Jamaica’s Community Mental Health Service was 110,040, an increase of 5% (5,667) over 2009; there were 74,617 visits in 2007 and 74,425 in 2008. Mental health teams make monthly visits to homes of patients who are unable or refuse to attend clinics. The mental health teams made 18,751 visits to patients’ homes in 2010, 22% (4,082) more than in 2009. The numbers of home visits made in 2007 and 2008 were 11,609 and 12,919, respectively (25).

**Risk and Protection Factors**

A comparison of the Jamaica Health and Lifestyle Surveys of 2000 and 2008 shows that there were few changes in the way respondents behaved regarding their health. For example, in the 15–74-year age group surveyed, the proportion reporting they had their blood pressure checked in the last six months remained at just under 50%. Almost twice as many persons reported being inactive in 2008 compared to 2000 (30% vs. 17%) and the proportion of persons engaging in a high level of activity decreased significantly, from 47% in 2000 to 33% in 2008 (22). There was no significant change in the proportion of underweight persons in the period between the two surveys, but the proportion of people with normal weight declined. There was an increase in the number of both overweight and obese persons, with the latter showing an increase of over 5%. Waist circumference had increased by 15% and the waist-hip ratio increased by 5% between 2000 and 2008. Those stating that they currently used alcohol increased slightly between the two surveys (61.5% in 2000 and 64.4% in 2008), but there was a decrease in the prevalence of people who stated they currently smoked cigarettes (18.5% in 2000 and 14.5% in 2008) (22).

Food labeling to help consumers select nutritious food items is not mandatory in Jamaica, but many producers do follow nutrition labeling standards. A supermarket survey of nutrition fact panels on foods in 2008 indicated that a range of products were labeled. While less than half (46.2%) of meat, fish, poultry, and eggs had nutrition labeling, it was present on products in the following categories: fats and oils (93%), snack items (92.1%), beverages (91.1%), cereals (88.2%), legumes (87.4%), fruits and vegetables (83.3%), dairy products (83.3%), sugars (75%), and baked goods (53.7%).

The Global Youth Tobacco Survey and School Health Survey of 13–15-year-olds in 2010 indicated that 6.0% of students were obese and 21.7% of students were overweight. Surveys conducted in 2001 indicated that 15.2% of student respondents stated they were current smokers (19.0% males and 12% females), and smoking prevalence increased to 20.2% in those responding to the 2010 survey (22.5% of males and 17.7% of females). Fifty percent of students reported drinking at least one drink containing alcohol over the past 30 days, and 80% stated they had their first drink before age 14.

Changes in health and safety behaviors reveal that serious injuries were reported by similar proportions of persons in 2000 and 2008 (13.6% and 12.2%). Seatbelt use by drivers declined substantially, with 51% reporting use most times or always in 2008 compared to 69% in 2000; the proportion reporting that they never used seatbelts almost doubled over that period (13.1% vs. 22.1%). The proportion of persons reporting involvement in violence in the past month increased from 7.5% in 2000 to 10.5% in 2008, but this increase was not found to be statistically significant (22).

**HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION**

**Health Policies**

In 2001 and again in 2010, the Ministry of Health collaborated with PAHO/WHO to evaluate how well specific essential public health functions were being carried out. Jamaica’s performance was assessed as “above average” in both years with a slightly higher overall score (0.74) in 2010 than in 2001 (0.72). For 8 of the 11
functions\textsuperscript{1} scores from the 2010 assessments were, on average, 10 points higher than in 2001. The exception was “Human resources development and training in public health” (EPHF 8) in which the country scored 25 points higher in 2010 (0.82 compared to 0.57). Functions with lower scores in 2010 were: “Monitoring, evaluation, and analysis of health status” (EPHF 1), which scored 0.62 in 2010 and 0.85 in 2001; “Development of policies and institutional capacity for public health planning and management” (EPHF 5), which scored 0.73 in 2010 and 0.81 in 2001; and “Strengthening of public health regulation and enforcement capacity” (EPHF 6), which scored 0.29 in 2010 and 0.68 in 2001 (26).

**The Health System’s Stewardship Role**

The central government has traditionally provided most medical services in Jamaica through the Ministry of Health. The National Health Services Act of 1997 authorized the decentralization of the health care system through the creation of Regional Health Authorities (RHAs) and the restructuring of the Ministry of Health. This gave the Ministry a policy-making, steering, and regulatory role while the RHAs have the leading responsibility for managing the public health care networks and the delivery of services.

1 The 11 essential public health functions are: EPHF 1: Monitoring, evaluation, and analysis of health status; EPHF 2: Surveillance, research and control of the risks and threats to public health; EPHF 3: Health promotion; EPHF 4: Social participation in health; EPHF 5: Development of policies and institutional capacity for public health planning and management; EPHF 6: Strengthening of public health regulation and enforcement capacity; EPHF 7: Evaluation and promotion of equitable access to necessary health services; EPHF 8: Human resources development and training in public health; EPHF 9: Quality assurance in personal and population-based health services; EPHF 10: Research in public health; and EPHF 11: Reduction of the impact of emergencies and disasters on health.

Vision 2030 Jamaica, the country’s National Development Plan, outlines approaches to restructuring the health system with an emphasis on stakeholder involvement both within and outside of the Ministry of Health. Beyond participation in specific programs (such as maternal and child health, HIV/AIDS, sexual and reproductive health, etc.), international partners, as well as the for-profit private sector and academic institutions, can support the Ministry in comprehensive reform in delivery of health services (27).

**The Health System’s Performance**

In 2008, the Government abolished user fees for services in all public facilities with the aim of making health care more accessible. User fees charged in the public facilities were previously thought to be the main reason for high levels of out-of-pocket expenditure. This measure led to increased utilization of health services, but also generated problems. The existing public health system found it increasingly difficult to cope with the increased patient demand and experienced a shortage of funds, despite subsidies to compensate for loss of user fee revenues. The loss of revenue resulting from elimination of user fees was estimated to be US$ 24 million between 2008 and 2009 (28).

Private health insurance programs have shown a marked decrease in their share of the country’s total health expenditure, from 16% in 2005 to 14% in 2006, and to 12% in both 2007 and 2008.

According to the Jamaica 2009 Survey of Living Conditions, 19.4% of persons who reported an illness/injury and did not seek care indicated they could not afford treatment; 21.9% gave this reason in the 2008 survey. The percentage that indicated a preference for home remedies increased to 49.0% from 46.8% in 2008. There was a noticeable decline in those who indicated they could not afford care in both the Kingston metropolitan area and other towns (8). Approximately 77.1% of persons who reported an illness/injury in 2009 sought medical care for that illness compared to 72.9% in 2008, which is indicative of an upward trend observed since
More persons sought care in the Kingston metropolitan area and other towns compared with rural areas. Despite the removal of user fees for public facilities, more Jamaicans sought care from the private sector in 2009 (50.8%), a reversal of what was observed in 2008. In Kingston and other urban areas, use of private health services increased by 15.0% between 2008 and 2009. However, there was a 4.8% increase from 2008 to 2009 of persons seeking care in public facilities in rural areas. Sex disaggregation revealed little difference between males and females seeking care from each sector. When examined by age group, a greater proportion of children 0–9 years and persons 40–59 years sought care from the public sector only, while the majority for all other age groups sought care from the private sector only. When examined by income quintile, there was increased utilization of private health facilities by all quintiles. The factors leading to this shift must be examined as the initiative to remove user fees undertaken in 2008 was intended to increase access to the public sector, particularly for the poorest.

**Health Expenditures and Financing**

Jamaica’s total expenditure on health was 5% of GDP in 2009. This amount is much less than corresponding averages for the Latin American and Caribbean region (7.7% and US$ 788, respectively) and “upper middle income” countries (7% and US$ 851) (27).

External resources for HIV exceed any other investment in the health system, and as a result, requirements for HIV projects and grants are largely driving the health system agenda.

**The Health Services**

Health service delivery in the public sector is provided through a network of primary, secondary, and tertiary care facilities. The primary level represents the first point of contact between the client and the health care delivery system. There are 348 primary care health centers distributed across the island, which are managed by the Regional Health Authorities. Clients may be referred to secondary or tertiary levels, which consist of 24 hospitals that provide inpatient care and a range of surgical procedures and 5 hospitals that provide specialized treatment. The secondary and tertiary facilities have a bed complement of 4,736. The hospitals providing specialized care also serve for training medical professionals.

The use of public facilities has increased significantly since 2007, but the sector has not seen a corresponding expansion of facility capacity. For example, the average number of beds available in acute secondary facilities declined from 4,207 in 2007 to 3,896 in 2008 but treatment of casualties rose from 627,578 to 864,044 over the same period (an increase of approximately 38%). The number of discharges also increased by 29% (from 147,775 to 190,505) which helped to offset the increased intake (27).

Despite the broad availability of health care in the public sector, there is a large private health sector that includes private physicians, hospitals, laboratories, radiologists, and specialty care. Data about the private health sector in Jamaica are lacking, and while the Medical Council of Jamaica licenses all private physicians, it does not distinguish between providers working in the public and private sectors. Many providers work in both the public and private sectors and referrals between public and private sectors are fairly common. In most cases, private doctors refer patients to public facilities for laboratory work and specialized or emergency care.

The assessment of the pharmaceutical situation undertaken in Jamaica from July 2009 to May 2010 collected information on access, affordability, and availability of key medicines; geographical accessibility of dispensing facilities; rational use of quality medicines; and the quality of medicines at health facilities and pharmacies (29). The survey included public health facilities, private pharmacies, and households. Most private pharmacies were shown to be in compliance with the legal provisions...
set by the Government, since pharmacists were present in most of them and qualifications of personnel dispensing medicines were adequate. On the other hand, in 35% of public dispensaries no pharmacist was present at the time of the visit. Physicians were most frequently the prescriber. Few prescribers reported they had been trained recently in rational use of medicines. There was high availability of medicines, but stock-outs were still a problem.

While there is high geographic accessibility and the perception of availability of medicines in the public health facilities, affordability is a challenge. The household survey showed that 26% of people with chronic conditions and 11% of people with acute conditions reported not taking prescribed medicines because they could not afford them. The survey showed that public perceptions regarding the quality of service at public health facilities and the quality of generic medicines need to be improved.

The National Health Fund/Jamaica Drugs for the Elderly Programme (NHF/JADEP) provides benefits and services for individuals, institutions, and for public information. Individual benefits are in the form of direct assistance. The NHF subsidizes over 800 prescription drugs and JADEP provides 72 drugs, free of charge, to persons over 60 years of age who suffer from any of 10 chronic illnesses. The NHF gives financial support to both public- and private-sector projects aimed at improving the delivery of health care services (30).

**Public Health Workforce**

Staffing for the Regional Health Authorities (RHAs) is significantly below requirements in most categories of health care, except for physicians. The report of the Caribbean Commission on Health (31) indicates that there is an oversupply of staff in some RHAs, while other RHAs experience shortages of similar skills. Because there is an inadequate staffing at primary health centers for diagnostic, treatment, and pharmaceutical services, demand is shifted to other facilities, resulting in an increased workload in hospitals. When compared to urban areas, facilities in rural areas are understaffed (27). The total vacancy for registered nurses, enrolled assistant nurses, and public health nurses increased over the reporting period. Shortages also exist among registered pharmacists, radiographers, community mental health workers, health educators, and public health inspectors.

Health providers in the private sector are reportedly better compensated and more motivated than in the public sector, and the private sector has fewer retention problems for its staff. Many public-sector providers take second jobs in the private sector to complement their public-sector salaries, which are considered insufficient. A policy officially sanctioning dual employment was instituted in 2008, with the sole requirement being a certain number of hours dedicated to public-sector work. There seem to be no restrictions on providers referring their public-sector patients to their private practices.

**Knowledge, Technology, Information, and Human Resource Management**

**Human Resources**

According to the Medical Association of Jamaica, there were 1,558 physicians registered in Jamaica in 2009. Registration data by Jamaica’s Nursing Council for 2007 indicated there were 3,542 professional nurses and 198 single-trained midwives.

**Health Personnel Training**

Within the context of health sector reform, the Ministry of Education plays a major role in the development and training of human resources for health. The University Hospital at the University of the West Indies (UWI) is the main institution for training physicians and UWI’s School of Nursing at Mona is the main nursing school, but the University of Technology (UTech) and Northern Caribbean University also train nurses at the university level.
UTech has added a dental school and introduced a Master’s in Public Health. The Ministry of Health cooperates with training institutions to offer both pre-service and in-service training. In particular, collaboration with UWI, UTech, Northern Caribbean University, the Caribbean HIV/AIDS Regional Training Network (CHART), and other institutions has made it possible to provide continuing medical education and in-service training opportunities and to expand the number of spaces for prospective students in the health field.

All medical, midwifery, registered nursing, enrolled nursing, pharmacy, public health inspection, radiography, medical technology, physiotherapy, nutrition, and dietitian training programs in Jamaica are accredited both by their respective regulatory bodies and/or accreditation councils and by the University Council of Jamaica (UCJ). The Nurses Council of Jamaica requires that all nurses and midwives (public and private) complete continuing nursing education every two years to qualify for recertification.

**Labor Market for Health Professionals**

Recruitment for some health care positions is difficult, resulting in high vacancy rates. Retention of health workers is also challenging, with staff migrating outside the country (especially nurses and physicians) and internally (for example, pharmacists moving to the private sector) (32).

Obstacles to recruitment and retention efforts appear to be related primarily to working conditions and compensation packages, although for positions such as psychiatrists and radiologists, there are insufficient numbers of available trained personnel. Staffing for health facilities in remote or difficult locations is challenging, even with financial incentives for health workers who accept positions at those sites. Jamaica has bilateral agreements with certain countries, such as Cuba, which includes exchange programs for health workers as well as mutual support for providing priority services such as maintenance of biomedical equipment. This approach does not cover all health needs, nor is it sustainable in the long term.

Medical graduates from Australia, Canada, the United Kingdom, and the United States, as well as graduates of the University of Guyana, are automatically accredited in Jamaica, but graduates from other countries must do an internship and pass the Caribbean Association of Medical Councils (CAMC) exam before practicing in Jamaica. Nursing graduates from other countries can qualify for practice with transcripts proving adequate training, but in the future an exam will be administered. Jamaica is a member of the Caribbean Single Market and Economy, which allows the free movement of persons with selected categories of skills/labor between Member States.

Planned and existing staffing levels and distribution are not always based on real epidemiological and demographic needs or on an up-to-date, accurate accounting of existing human resources in both the public and private sectors. While there is a national human resources database (33), it is not used sufficiently throughout the country and needs to improve analyses of the workforce (e.g., report on the level of staffing by specialty and location), plan for future human resource needs, and identify training needs.

All health workers currently in the health system have job descriptions, but many are outdated and may not reflect skills and competencies required, current service delivery protocols, and actual duties.

Activities to identify strengths and weaknesses and/or to recommend improvements in human resource management in Jamaica include a 2006 evaluation of human resource needs of the National HIV/STI Program; a Health Sector Task Force Review (2007); development of a Human Resources for Health database (33) funded by PAHO/WHO; a needs-based planning exercise for a selected number of health cadres, supported by PAHO/WHO and Health Canada; and baseline measurement of regional goals in human resources for health.

**Synthesis and Prospects**

The Jamaican public health sector provides primary-, secondary-, and tertiary-level services at a highly subsidized cost; the country has a large private health
sector that also provides services. There are no significant barriers preventing physical access to basic public health services. The country has a well-developed network of health centers and hospitals and obstacles because of cost have, in principle, been eliminated by the abolition of user fees by the Government.

Jamaica’s disease profile has changed rapidly from one that was characterized principally by infectious diseases to one that is dominated by chronic illnesses that are largely brought about by behaviors and lifestyle.

In light of the importance of health to well-being, the Health Sector Plan under the Vision 2030 Jamaica National Development Plan seeks to recognize the principles underlying the Government’s responsibility for fulfilling health needs by emphasizing health determinants and the cost-effectiveness of health services.

Vision 2030 Jamaica ultimately aims to improve the quality of life of the country’s population by integrating such issues as gender, youth, working age, the elderly, and persons with disabilities into its development planning. The plan will build on the health sector’s achievements, while ensuring that those aspects where health outcomes are weak (such as the maternal mortality and infant mortality rates) will be brought to acceptable levels. The life expectancy (at birth) is expected to increase to more than 76 years by 2030. Given that, the country will implement a health promotion approach and will encourage the pursuit of healthy lifestyles. Primary health care delivery will be strengthened and secondary and tertiary care will be improved. Partnerships among the public and private sectors and civil society will be built up further to improve governance and management. The resources for the health sector will be increased.

REFERENCES