INTRODUCTION

Trinidad and Tobago is a twin-island state and the southernmost territory of the West Indies, located off the north coast of Venezuela. Total land mass is 5,128 km$^2$; the island of Trinidad occupies 4,828 km$^2$ and is home to some 96% of the population, and Tobago spans across 300 km$^2$. The capital city of Port of Spain is located in northwestern Trinidad, on the Gulf of Paria. The climate is tropical, with distinct dry and rainy seasons.

The population reported by the 2000 census was 1,262,366, a 4% increase over the previous decade, and the mid-year population estimate for 2010 was 1,317,714, with a male-to-female ratio of 1:1 (1, 2). Figure 1 shows the population structure by age group and sex for 1990 and 2010. In 2008, 86.8% of the population lived in rural areas.
Population density in 2000 stood at 246 persons/km\(^2\) and the estimate for 2010 was 257 persons/km\(^2\). The population is ethnically diverse, with 40% of East Indian descent, 37.5% of African descent, 20.5% of mixed race, and 2% of other racial and ethnic groups (Chinese, European, and Middle Eastern).

The country gained independence from the United Kingdom in 1962 and became a democratic republic within the Commonwealth of Nations in 1976. It has a parliamentary form of government, with a President appointed as head of State. The country's first female Prime Minister was elected in 2010. Four of the appointed Ministers in 2010 were women, compared to 10 in the previous administration. Legislative power resides with the Parliament, which has an elected House of Representative and an appointed Senate. The local government system has 14 municipal corporations, and 9 regional corporations that have responsibility for, among other things, public health and sanitation services and development planning. Tobago has its own local government structure which is administered by the Tobago House of Assembly.

Over the past decade the demographic profile of the country has undergone a transition marked by a declining fertility rate (1.74 in 2006 to 1.72 in 2010), a decrease in the under-15 population, and an increase (doubling) of the over-60 age group. The crude birth rate increased from 12.9 in 2006 to 14.37 in 2010, and the crude death rate fell from 10.57 in 2006 to 8.21 in 2010. With the changing age structure of the population, human capacity in terms of labor supply to maintain the aging and non-working population declines, resulting in the need for increased government expenditure in support of the elderly. A number of measures have been initiated to address issues of the elderly, including the development of a national Policy on Aging and the establishment of a Division of Aging in the Ministry of Social Development (4). In 2000, overall life expectancy was 68.9 years (72.8 years for females and 65.2 years for males), and by 2009 life expectancy had increased to 70.3 years (74.5 years for females and 66.2 years for males) (5).

The country is also experiencing an epidemiological transition, with a decline in communicable diseases accompanied by an increase in chronic,
non-communicable diseases. However, there have been positive changes in some of the health indicators, in particular, declining infant and child mortality and decreased incidence of communicable diseases.

Trinidad and Tobago has maintained a high Human Development Index (0.758), and was ranked 59th out of 169 of the world’s countries in the 2010 Human Development Report (6).

**HEALTH DETERMINANTS AND INEQUALITIES**

Trinidad and Tobago has held on to a reasonably stable economic environment, but the country has been affected by the global economic crisis. There was significant economic growth from 2000 to 2007 (slightly over 8%), followed by declines in 2007 and 2008, −3.5% growth in 2009, and just over 2% growth noted in 2010 (7, 8). Protracted rises in the core inflation rate peaked in 2007 at 7.9%, but by August 2010 the rate was down to 4.1% (9).

The economy continues to be heavily dependent on the energy sector (oil and natural gas), but there are initiatives to diversify the economy by increasing the role of other important sectors, such as agriculture, manufacturing, and tourism. In 2007 it was estimated that the services sector employed 62.9% of the workforce; the construction and utilities sector employed 20.4%; the manufacturing, mining, and quarrying sector employed 12.8%; and the agriculture sector employed 3.8% (8). During the period under review, oil and gas contributed 40% to the gross domestic product (GDP), representing 80% of country exports and 5% of employment (6). GDP per capita fell from US$ 22,000 in 2008 to US$ 21,200 in 2009. The unemployment rate for 2009 was 5.3%, with the figures for males and females at 4.6% and 6.3%, respectively (9).

Despite Trinidad and Tobago’s relatively stable economy, there are pockets of poverty. The 2005 Survey of Living Conditions reported that 16.7% of the population was poor and 1.2% was indigent (10). This survey found that there was a tendency for poorer households to be headed by women. Poor women were more likely to have more children and to have started childbearing at an earlier age than women of higher income. Generally, educational attainment in Trinidad and Tobago parallels socioeconomic status (lower educational level equates with lower socioeconomic status).

The Government provides free education at the primary, secondary, and tertiary levels. Access and enrollment have been high, with levels above 97% reported for the primary level, and levels above 75% for the secondary level. The female-to-male ratio was 0.95 at the primary level and 1.06 at the secondary level in 2009 (9, 11). At the university level, females outnumber males. The 2009 literacy rate for adults was 99% (11, 12).

In 2011, Trinidad and Tobago ranked 53 out of 146 countries on the Gender-related Development Index, with a Gender Inequality Index of 0.331; in 2008, the country ranked 48 with an index value of 0.47 (6). This index reflects the disadvantages for women in three dimensions—reproductive health, empowerment, and the labor market—to expose differences in the distribution of achievements between males and females. These inequities persist despite increased female participation in government and greater educational advancement in the country. Males have lower participation in the education system, participate more in high-risk behaviors (e.g., early sexual activity, use of drugs and alcohol), and are more likely to be affected by violence and accidents (13).

According to the 2005 Survey of Living Conditions, 78% of households lived in owner-occupied homes and 14% rented accommodations (10). In 2009, 92% of households had electricity (94% urban, 87% rural); 55% had landline telephones (59% urban, 45% rural); 97% had electric or gas stoves (98% urban, 96% rural); 84% had refrigerators (87% urban, 76% rural); and 87% had televisions (89% urban, 81% rural).

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1 The exchange rate in the first quarter of 2011 was TT$ 6.4 to US $1.
THE ENVIRONMENT AND HUMAN SECURITY

Trinidad and Tobago is party to a number of international agreements on the environment, including the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change (including the Kyoto Protocol), the United Nations Convention on the Law of the Sea, the Convention on Fishing and Conservation of Living Resources of the High Seas, the Montreal Protocol on Substances that Deplete the Ozone Layer, and the International Convention for the Prevention of Pollution from Ships.

ACCESS TO CLEAN WATER AND SANITATION

In 2006, the population with access to improved water supply was estimated at 96.4%, with 75.4% having a water tap in their residence, 7.1% with water piped to their yard, 5.9% with access through a community tap, and 1.9% dependent on delivery from water trucks. Piped water supply is unreliable for most areas so over 50% of households have their own water storage tanks. Improved sanitation facilities are available to 98.7% of the population (6).

SOLID WASTE AND OTHER ENVIRONMENTAL ISSUES

Environmental health services are provided through the public health inspectorate of the Ministry of Health and the Ministry of Local Government. At present there are two government agencies with responsibility for enhancing and securing the environment: the Environmental Management Authority (14) and the Solid Waste Management Company Limited (15).

Current environmental concerns include water pollution caused by agricultural chemicals, industrial and hazardous waste, and raw sewage; oil pollution of beaches; deforestation; and soil erosion. Pollution and watershed destruction have contributed to an unreliable water service. Rapid industrialization and urbanization, in addition to changes in the patterns and levels of personal and household consumption, have generated a significant increase in the quantity of solid waste. Of particular concern for the health sector is the absence of a national solid waste management policy or program to deal with the growing volume of waste, including biomedical and other hazardous wastes. The country produces high levels of greenhouse gases due to its energy industries but the impact this has at the national level is not clear, and there are neither data nor studies regarding possible health effects.

THE WORK ENVIRONMENT AND WORKERS’ HEALTH

In 2004 the Occupational Safety and Health Act was passed, followed in 2007 by the establishment of the Occupational Safety and Health (OSH) Authority and Agency. The OSH Authority is responsible for policy formulation and the OSH Agency is responsible for the implementation and execution of policies, with a focus on compliance rather than sanctions or prosecution. Completion of a workers’ health surveillance system is considered critical in reducing workplace deaths and injuries.

ROAD SAFETY

Multiple strategies are in place to address road safety concerns in the country. National legislation covers speed limits, drunk driving (as of 2009), protective wear, and mobile phone use (as of 2010).

The number of road traffic deaths declined in the late 1990s but has increased steadily since then. There were 214 road traffic fatalities reported for 2007 (77% males and 23% females) and 2,718 non-fatal road traffic injuries. Deaths by road user category were: pedestrians, 32%; drivers of 4-wheel vehicles, 34%; passengers in 4-wheel vehicles, 28%; cyclists, 4%; and riders on motorized vehicles, 2% (16).
VIOLENCE

Violence in all areas, criminal and domestic, is a growing social problem. Crime has had a significant impact on mortality, morbidity, and hospital admissions. There was a 5% increase in reported serious crimes from 2006 (19,565) to 2008 (20,566). There was a 47% increase in murders and 35% increase in larceny over the same two-year period. Wounding and assaults have maintained a consistently high level (an estimated 24% of all crimes), and have contributed to increased hospital admissions, surgical interventions, and lengthy inpatient stays. The only reduction seen in serious crime was in forgery and crimes against currency (17).

Cases of domestic violence reported through the country’s domestic violence hotline have fluctuated over time, but steady increases were noted for all age groups and both genders for the period 2006 to 2008. The total numbers of reported cases of domestic violence for 2006 and 2008 were 1,949 and 2,565, respectively (18).

DISASTERS

Trinidad and Tobago’s natural disaster hazards are primarily flooding, earthquakes, and hurricanes. Major earthquakes, measuring 5.0 to 5.8, were recorded during 2006 and 2010, with minor damage to property and no reported deaths or injury. Hurricane activity in the region did not have a significant impact on the islands during this reporting period. With climate change, there have been more adverse weather events resulting in increased frequency of flooding across the country.

FOOD SAFETY

The Food Safety Committee, overseen jointly by the Ministries of Health and Agriculture, has responsibility for food safety in the country and recognizes its importance both for nationals and tourists. Programs for training food workers and licensing food outlets, including issues surrounding the Hazard Analysis and Critical Control Point approach to food safety, are organized jointly through the Ministries of Health and Local Government.

At the regional level, the Caribbean Community (CARICOM) has designated the Caribbean Agricultural Health and Food Safety Agency (CAHFSA) to coordinate, implement, and monitor national programs.

HEALTH CONDITIONS AND TRENDS

Trinidad and Tobago has prioritized and made significant progress in improving the health of its population. The major challenges facing specific population groups and the major causes of mortality and morbidity are described in the following sections.

Maternal and Reproductive Health

Although over 95% of women attend antenatal clinics at least once during their pregnancy and are attended by skilled health professionals at delivery, there are avoidable deaths due to pre-eclampsia, diabetes, premature labor, and infections. The provisional maternal mortality rate for 2009 was 16.1 per 100,000 live births (Table 1) (19), a significant reduction from previous years.

The accuracy of maternal mortality rates is a matter of concern, and it is been acknowledged that variations relate to the methodologies used. A

<table>
<thead>
<tr>
<th>Year</th>
<th>Maternal deathsa</th>
<th>Live births</th>
<th>Rateb</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>6</td>
<td>17,264</td>
<td>34.8</td>
</tr>
<tr>
<td>2006</td>
<td>12</td>
<td>18,090</td>
<td>66.3</td>
</tr>
<tr>
<td>2007</td>
<td>6</td>
<td>18,889</td>
<td>29.4</td>
</tr>
<tr>
<td>2008</td>
<td>6</td>
<td>20,685</td>
<td>29.0</td>
</tr>
<tr>
<td>2009</td>
<td>3</td>
<td>18,676</td>
<td>16.1</td>
</tr>
</tbody>
</table>

a Maternal deaths due to complications of pregnancy and childbirth.
b Maternal deaths per 100,000 live births.
Source: Reference (19).
national study on maternal mortality was set to begin in 2011. Attempts are underway to standardize the approach used for establishing these and other rates.

Family planning services are offered across the country through the public health care service, the Family Planning Association (a local nongovernmental organization [NGO] affiliated with the International Planned Parenthood Federation), and private practitioners. The Ministry of Health programs for family planning are implemented through the maternal and child health programs in health centers, postnatal wards, and hospital clinics. There was a decline in the rate of teenage pregnancies from 15% in 2000 to 11% in 2005.

**Children (under 5 years old)**

Infectious diseases and acute respiratory infections are the leading causes of morbidity in children under 1 year old. Infant mortality rates have shown a relative decline over the period 2005–2009 with a rate of 13.2 per 1,000 live births in 2009 (see Table 2). As with maternal mortality rates, concerns have been expressed on the consistency of the methodologies used to calculate infant mortality rates.

Stillbirths accounted for 19% of infant deaths in 2009 and in that year low birthweight was recorded for 19% of all births. According to UNICEF data for 2011, less than 20% of infants are breastfed exclusively for at least six months, despite a rate of 41% for early initiation of breastfeeding. This indicates that the practice is not sustained at home after discharge. There is a national breast-feeding policy which should be operational at all public institutions, but it is not having the desired impact. UNICEF data also indicate that over 40% of infants are introduced to solid, semi-solid, or soft foods between 6 and 8 months of age (12).

**Children and Adolescents (5–17 years old)**

The under-5 mortality rate for the last two decades (1990–2009) has consistently exceeded 30 deaths per 1,000 live births. As with infants, the leading causes of morbidity for children in the under-5 age group are infectious diseases and acute respiratory infections. In contrast, for 5–14-year-olds, injuries are the leading cause of morbidity.

The country has an excellent Expanded Program of Immunization (EPI), tied to entry to free primary school education, and starting from birth, there is a free “extended” immunization program, organized through the Ministry of Health. In 2009, coverage rates for 1-year-olds were 90% for polio; 94% for diphtheria, pertussis, and tetanus; and 88%–90% for measles, mumps, and rubella.

In 2009, approximately 6% of children under age 5 were underweight. There has also been a trend toward overweight in children. The Diabetes Education Research and Prevention Institute’s (DERPI) 2009 cross-sectional survey of schoolchildren (20, 21) estimates that 10 in every 100,000 children aged 5–17 have type 2 diabetes, and 19 per 100,000 are pre-diabetic. Given the dearth of published material in this area, additional research will be beneficial.

The leading cause of morbidity among adolescents is injuries. Data from the Global School-based Health Survey (GSHS), which were collected for 2,969 secondary school students (13–15 years) at 32 schools in 2007, show that violence and unintentional injuries are common among secondary school students. It was also shown that students initiated sexual activity early, around the age of puberty, and male students were reported as more sexually active than female students (13). Associated with these behaviors are increased risk for HIV and other

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**TABLE 2. Infant mortality rate, Trinidad and Tobago, 2005–2009.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Infant deaths</th>
<th>Live births</th>
<th>Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>266</td>
<td>17,264</td>
<td>15.4</td>
</tr>
<tr>
<td>2006</td>
<td>237</td>
<td>18,090</td>
<td>13.1</td>
</tr>
<tr>
<td>2007</td>
<td>221</td>
<td>18,889</td>
<td>11.9</td>
</tr>
<tr>
<td>2008</td>
<td>243</td>
<td>19,850</td>
<td>12.2</td>
</tr>
<tr>
<td>2009</td>
<td>247</td>
<td>18,676</td>
<td>13.2</td>
</tr>
</tbody>
</table>

* The number of deaths of infants under 1 year of age in a given year per 1,000 live births in that year.

Source: Reference (19).
sexually-transmitted infections and unplanned teenage pregnancy.

**Adults (18–60 years old)**

Injuries are the leading cause of morbidity for younger adults (18–40 years old) while in older adults (41–60 years old) heart disease is the leading cause. Younger adults continue to suffer from an increasing incidence of HIV, with higher rates among females.

**The Elderly (older than 60 years)**

In 2010, 12% of the population was over the age of 60. The leading causes of morbidity in this group are chronic, noncommunicable diseases. Studies over the past two decades point to arthritis, eye problems, hypertension, diabetes mellitus, and heart disease as the major health issues faced by the elderly (22, 23). Loneliness, reflected in low levels of interaction, is an area of concern, although only 16% of the elderly live alone. Another issue affecting the elderly is the need for primary health care programs that promote their health and well-being.

**The Family**

The latest Survey of Living Conditions conducted in 2005 reported the average household size at 3.7 persons, with 30% headed by females; more than half of the households headed by females were single-parent households.

**Workers**

Data were not routinely collected on work-related injuries and deaths.

**Mortality**

The five leading causes of death for both sexes in the period 1997–2007 were cardiovascular diseases, malignant neoplasms, diabetes mellitus, cerebrovascular disease, and external causes of injuries.

The Ministry of Health indicates that 60% of all deaths are due to chronic, noncommunicable diseases (24). These conditions are responsible for significant suffering, as they cause dysfunction and reduce quality of life over extended periods of time. Deaths from external causes of injuries are significantly more prevalent in young males, contributing significantly to morbidity and hospital admissions. The leading causes of death by gender are listed in Table 3.

**Morbidity**

The five leading health conditions causing morbidity requiring care at the nation’s hospitals and other health institutions are, in order of prevalence: external causes of injury and poisoning, diseases of the genitourinary system, diseases of the heart, ill-defined or unknown causes, and diseases of the digestive system.

<table>
<thead>
<tr>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>Cause of death</td>
</tr>
<tr>
<td>1</td>
<td>Diseases of the heart</td>
</tr>
<tr>
<td>2</td>
<td>Accidents and injuries</td>
</tr>
<tr>
<td>3</td>
<td>Cancer</td>
</tr>
<tr>
<td>4</td>
<td>Diabetes mellitus</td>
</tr>
<tr>
<td>5</td>
<td>Cerebrovascular disease</td>
</tr>
</tbody>
</table>

*Source: Reference (19).*
Communicable Diseases

Vector-borne Diseases

Dengue has been endemic in Trinidad and Tobago since the 1980s, with all four serotypes circulating in the population. Incidence fluctuates from year to year, and has become cyclical, with confirmed outbreaks in 2002, 2005, and 2008. Suspected cases for the period were: 477 cases in 2006, 885 in 2007, 3,617 in 2008, 2,313 in 2009, and 4,735 in 2010. In 2009 the Ministry of Health initiated an integrated management approach to deal with dengue. The Ministry’s Insect Vector Control Division uses a combination of source reduction, insecticides, and public education to control the mosquito population.

Trinidad and Tobago was declared malaria-free in 1965, but residual cases (mostly imported) were reported up to 2004. No malaria cases were reported between 2004 and 2008 and one imported case was reported in 2010.

The yellow fever vaccine was introduced in the immunization schedule in 1979, and there have been no reported cases of yellow fever in humans. Epizootic yellow fever was identified in monkeys in 2008 and 2009.

Vaccine-preventable Diseases

Trinidad and Tobago has a well-organized and successful immunization program, with rates of coverage exceeding 90%. There have been no cases of poliomyelitis or measles in the reporting period, but 13 cases of mumps were reported in 2006. There have been a significant number of cases and outbreaks of chickenpox (varicella), which is not included in the national immunization schedule. Between 2006 and 2008 vaccination coverage for measles increased from 89% to 94%, DPT vaccination coverage fell from 92% to 90%, and polio had a marginal increase from 89% to 90%.

Zoonoses

There was an increase in the number of reported cases of leptospirosis from 30 in 2005 to 124 in 2008. This is of concern given the large number of households utilizing stored water, and the need for increased rodent control measures.

HIV/AIDS and Other Sexually-transmitted Infections

The HIV/AIDS epidemic is generalized in the country, with HIV/AIDS falling within the top 10 leading causes of death during 1997–2007. The national HIV seroprevalence rate was estimated at 1.5% for 2008/2009. Records from the beginning of the epidemic in 1983 to December 2008 put the cumulative total of HIV cases for the country at 20,176. For the same 25-year period there were 6,042 cases of AIDS and 3,717 AIDS-related deaths. The male-to-female ratio for HIV is 1.1:1, but there appears to be a disproportional increase in newly reported cases in females. In 2006 there were 80 reported cases of AIDS in males, and 57 cases in females; in 2008, there were 71 cases of AIDS reported in males and 33 cases in females. In 2008, the largest increase in newly reported HIV cases occurred in the 20–49-year age group, followed by adolescents (15–19 years).

Progress in managing the epidemic has been made through the multidimensional National HIV/AIDS Prevention and Control Program which includes youth empowerment programs, voluntary counseling and testing, prevention of mother-to-child transmission of HIV (PMTCT), and free antiretroviral treatment.

There were 258 newly diagnosed cases of syphilis in 2007, 194 in 2008, and 131 in 2009. New cases of gonorrhea increased from 370 in 2007 to 578 in 2008, and 605 in 2009. Trichomoniasis decreased from 83 cases in 2007 to 46 in 2008 but rose to 121 cases in 2009.

Tuberculosis

The incidence of tuberculosis increased between 1997 and 2007 and was estimated to stand at 24.1 per 100,000 in 2008. Comorbidity with HIV/AIDS has increased and all persons with TB are tested for HIV. Multi-drug resistance has been rare. The directly observed treatments, short-course (DOTS)
approach for treating TB has not yet been fully implemented in the country, but the Ministry of Health has established two pilot areas for implementing DOTS. Efforts are being made to strengthen the management of the tuberculosis program, with a national strategic plan developed for the 2006–2009 period and a mechanism for national interagency coordination established in 2008.

**Emerging Diseases**

There have been no reported cases of severe acute respiratory syndrome (SARS) or avian influenza in the country. Surveillance systems have been strengthened to support the early identification of emerging diseases. These systems were tested when the country hosted two major international conferences in 2009 (the Summit of the Americas and the meeting of the Commonwealth Heads of Government), which took place at the height of the H1N1 pandemic. There were 817 suspected cases of H1N1 in 2009; 270 were laboratory confirmed and there were 6 deaths.

Trinidad and Tobago is working toward full compliance with requirements of the International Health Regulations (2005), which require countries to prevent and control the international spread of disease. An assessment of the country’s readiness for implementation was conducted. At the end of 2010 the country was at level 1 or 2 in most of the domains (except the radionuclear domain).²

**Chronic, Noncommunicable Diseases**

Chronic, noncommunicable diseases are collectively the leading cause of death, and contribute to significant morbidity and health sector expenditures. In 2006, a national symposium was held, and it was followed by the 2007 CARICOM summit, where Heads of Government expressed their commitment to reduce the burden of chronic, noncommunicable diseases in the Caribbean region through comprehensive and integrated preventive and control strategies. In 2008, a multisectoral technical advisory committee was established to advise on issues related to prevention and control of chronic, noncommunicable diseases in the Region (25, 26).

Free medications and other pharmaceutical items for chronic conditions are provided for citizens under the Chronic Disease Assistance Programme. A number of studies have been initiated locally to address early detection, and it is hoped that these will be integrated into comprehensive primary health care programs.

**Cardiovascular Diseases**

Heart disease is the highest ranking cause of death in Trinidad and Tobago, accounting for 25% of all deaths annually. High prevalence rates of diabetes mellitus and hypertension (each accounting for approximately 12% of deaths) are contributing factors, along with overweight/obesity and lack of regular exercise. Heart disease, cancer, diabetes, and cerebrovascular disease account for 60% of all deaths.

**Malignant Neoplasms**

Table 4 shows the leading sites of cancer reported for the population between 1997 and 2006. Data from the National Cancer Registry (27) indicate that for males the most prevalent site is the prostate; for females, the most common sites are the breast, cervix, ovary, and uterus. The National Oncology Programme (NOP) is a major component of the Government’s commitment to address this public health challenge.

**Nutritional Diseases**

Undernutrition and micronutrient deficiencies are not commonplace. The major micronutrient deficiency of concern in the past, iron deficiency anemia, has been addressed through the Ministry of Health’s anemia control strategy, supported by the Caribbean

² Level 1 means that the country has the “inputs and processes” to maintain International Health Regulations core capacities. Level 2 means that there is a “strong” technical capacity and a high level of performance with defined public health outputs and outcomes.
Food and Nutrition Institute (28). The nutritional disease of greatest concern across the population is that of obesity. A number of surveys have shown a trend of increasing levels of obesity in primary and secondary school children. Obesity and weight reduction are addressed in all of the Ministry’s population-based programs aimed at addressing chronic, noncommunicable diseases.

**Accidents and Violence**

Accidents and injuries have ranked among the top five causes of death since the 1990s. These include motor vehicle accidents, violence, poisoning, and suicides. In addition to fatalities, accidents and injuries (including poisoning) have consistently contributed to hospital admissions, and were listed as the first cause of hospital discharges in 2006 and 2007.

**Disasters**

Flooding, hurricanes, and earthquakes are the major natural hazards that pose a risk to Trinidad and Tobago. Also, the energy and other industries pose increased risk of industrial disasters. The Office of Disaster Preparedness and Management (ODPM) (29) is moving toward a more proactive and comprehensive approach, addressing preparedness, prevention, and mitigation activities along with recovery and rehabilitation after disasters. The Ministry of Health launched an Emergency Services and Disaster Preparedness Unit, and has completed the safety assessment of four main hospitals under the Safe Hospitals Initiative (SHI).

**Mental Disorders**

In addition to inpatient services at one major psychiatric facility and acute care at the other major hospitals, community-based mental health services are provided through the Regional Health Authorities (RHAs). Mental illness accounts for approximately 5% of discharges from public hospitals. Although the data on mental illness are not comprehensive, the country’s main mental health issues have been identified as schizophrenia, mood/affective disorders (e.g., depression), mental and behavioral disorders (e.g., suicides), and substance abuse. High rates of depression have been reported in studies on adolescents and some communities (30, 31). The 2007 Global School-based Health Survey study showed that female students were more likely than males to be affected by mental health issues, with 21.5% of females and 14.1% of males reporting that they seriously considered committing suicide during the 12 months before the survey.

When the WHO Assessment Instrument for Mental Health Systems (WHO-AIMS) was applied in 2008 in Trinidad and Tobago, it was reported that the ratio of mental hospital beds was high when compared with the low rate of community-based inpatient units. Thus far, Tobago’s Regional Health Authority is the only one that is working on the development of a comprehensive mental health service that is integrated into primary health care services (31).

**Other Health Problems**

**Oral Health**

The Ministry of Health has a vertical program to provide oral health care for children up to the age of...
18, and emergency and palliative care to the adult population. Most of the population’s oral health care is financed from private sources paid through private insurance and out-of-pocket payments, and as a result, persons who lack resources have limited access to oral health services. The lack of data on oral health makes strategic planning for improvements in the population’s oral health difficult. However, a National Oral Health Policy and Plan was developed in 2010 and the Ministry is in the process of implementing this plan.

**Risk and Protection Factors**

**Smoking**

Trinidad and Tobago has the highest population of smokers in the English-speaking Caribbean (27%), with second-hand smoke posing a threat to public health. The 2007 Global School-based Health Survey of 2,969 students (10–18 years old) at 32 secondary schools in Trinidad and Tobago revealed that 9.9% of students (11.2% of males and 8.5% of females) had smoked cigarettes on one or more days during the previous 30 days. Of students who smoked, 80.9% had tried their first cigarette at age 13 years or younger. The rate in the 16- to 18-year age group was 17.9% (22.5% males and 13.4% females).

Trinidad and Tobago is a signatory to the WHO Framework Convention on Tobacco Control and has taken a number of steps to implement its recommendations, including the establishment of a multisectoral Tobacco Prevention and Control Committee. The comprehensive Tobacco Control Act was passed in both Houses of Parliament in 2009 with the aims of preventing tobacco use by children, increasing public awareness of the hazards of tobacco use, protecting individuals from exposure to tobacco smoke, and regulating tobacco use. The Tobacco Control Act’s ban on smoking in public places has been in effect since 2009.

**Alcoholism**

The most recent figures on alcohol consumption by the adult population (over age 15) showed an increase in consumption over the period 2001 to 2005. Female deaths from cirrhosis of the liver increased from 3.9 per 100,000 in 2000 to 7.5 per 100,000 in 2005 and for men from 12.8 to 19.5 over the same period. The 2007 Global School-based Health Survey reported that 40.9% of the 10–18-year-old students surveyed consumed alcohol. The prevalence of alcohol use was higher in male students than female students (42.8% for males and 39.2% for females) (13).

**Illegal Drugs**

The abuse of both illicit and legal substances has a direct and indirect impact on the health of the population as it is associated with motor vehicle accidents, violence, and stress (32). The 2007 Global School-based Health Survey showed the prevalence of lifetime drug use (reported use of marijuana or cocaine one or more times during the life of the survey respondents) was 13.6%. Male students more often reported having used illicit drugs in their lifetime than female students (17.4% of males and 9.7% of females) (13).

**Physical Activity**

The 2007 Global School-based Health Survey reported that 74.3% of the students surveyed did not engage in physical activity in their leisure time. Girls (81.6%) were significantly more inactive than boys (66.7%) (13).

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

**Health Policies**

The initial health sector reform program recognized the need for an integrated health management information system as the basis for effective and evidence-based planning and decision making in the sector.

The National Surveillance Unit (NSU) in the Ministry of Health is responsible for health surveillance. In addition to monitoring, reporting, alerting, and investigating trends and outbreaks of
disease, the Unit is responsible for disease prevention
and coordination of responses to outbreaks (and
potential outbreaks) of communicable disease in the
national community.

The Health System’s Leadership Role

The Ministry of Health has oversight of the entire
health system in Trinidad and Tobago. The
Ministry’s main roles are policy formulation, plan-
ing, standards setting, legislation, regulation, finan-
cing, and monitoring and evaluation.

Health Legislation

Legislation enacted in recent years includes the
Tobacco Control Act, RHA Regulations, and the
National Ambulance and Medical Personnel Act.

The Occupational Health and Safety Act is in
place to address issues of worker vulnerability and
health and the National Insurance Board processes
claims related to workplace accidents and death.

Health Expenditures and Financing

The Government of Trinidad and Tobago increased
its expenditure on health during 2006–2010. Based
on available data, the percentage of government
expenditure on health increased from 6.3% in 2006
to 8.1% in 2009. Over this period, total public-sector
expenditure on health also increased from TT$ 2.35
billion to TT$ 3.56 billion, an overall increase of
51.0%. Table 5 shows that the expenditure by the
Ministry of Health alone was TT$ 3.8 billion, which
is TT $286 million more than the total health
expenditure for 2009. Additionally, for the period
2006 to 2010 the Ministry of Health expenditure
increased by 80%, moving from TT$ 2.1 billion in
2006 to TT$ 3.8 billion in 2010.

In the review period, public-sector health
expenditure and private-sector health expenditure
each contributed approximately 50% to total health
expenditure.

Human Resource Development Policies

The Ministry of Health has identified the need to
strengthen planning for the effective management of
the sector’s human resources. Two major projects in
this area were initiated in 2010: the development of a
human resource strategic plan and the development
of an Observatory of Human Resources for Health.

Legislation is in place for the regulation of
professionals in the health sector.

The Health Services

There are five Regional Health Authorities with
responsibility for the provision of health services to

<table>
<thead>
<tr>
<th>Year</th>
<th>Ministry of Health expenditure on health: Trinidad (US$)</th>
<th>Other government ministries and Tobago House of Assembly expenditures on health (US$)</th>
<th>Total public-sector expenditure (US$)</th>
<th>Government expenditure on health as a percentage of general government expenditure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>341,627,330</td>
<td>35,178,956</td>
<td>376,806,286</td>
<td>6.3</td>
</tr>
<tr>
<td>2007</td>
<td>429,265,960</td>
<td>41,906,661</td>
<td>471,172,621</td>
<td>7.5</td>
</tr>
<tr>
<td>2008</td>
<td>505,190,089</td>
<td>49,150,173</td>
<td>554,340,363</td>
<td>8.2</td>
</tr>
<tr>
<td>2009</td>
<td>512,791,902</td>
<td>55,375,764</td>
<td>568,167,667</td>
<td>8.1</td>
</tr>
<tr>
<td>2010</td>
<td>608,990,080</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Source: Reference (19).
the population. However, a number of vertical programs are still managed by the Ministry, including the Chemistry, Food, and Drugs Division; veterinary public health; oral health; and the National Blood Transfusion Service.

Under the RHA structure, health services continue to be free to the general public at the point of use. Strategies to improve health care delivery include partnering with the private sector and arrangements with international professionals and organizations.

The country has a comprehensive and integrated network of health facilities. Each RHA has at least one hospital with a number of polyclinics or District Health Facilities (DHF) and health centers; a referral system operates between the levels. The private health sector provides a range of services and facilities, from primary care to tertiary care.

Medicines are free at all public health facilities. Additionally, in effect since 2005, the Chronic Disease Assistance Programme (CDAP) provides citizens with free prescription drugs and other pharmaceutical items for treatment of the following chronic conditions: diabetes, asthma, cardiac diseases, arthritis, glaucoma, mental depression, high blood pressure, benign prostatic hyperplasia, epilepsy, Parkinson's disease, and thyroid diseases. These drugs, presently numbering 47, are dispensed through over 250 pharmacies (public and private) across the country. Free blood glucose testing supplies (meters and strips) are available at no charge to insulin-dependent diabetics.

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

**Human Resources**

Trinidad and Tobago continued to face a shortage of qualified health care professionals during the reporting period. In terms of the overall distribution of workers in the public health sector, the main occupational categories in 2009 were nursing (44.0%), ancillary (20.0%), clerical (15.0%), senior supervisory staff (12.0%), and physicians (7.0%).

**Health Personnel Training**

Local training of health care professionals was conducted at the University of the West Indies (UWI); the University of Trinidad and Tobago (UTT); the College of Science, Technology and Applied Arts of Trinidad and Tobago (COSTAATT); the National Institute of Higher Education, Research, Science and Technology (NIHERST); the University of the Southern Caribbean (USC); and the Ministry of Health School of Nursing and Dental Nurses Training School. The annual student intake in the pharmacy program increased from 39 in 2005 to 54 by 2008. USC started a BSc in nursing program during this period, doubling its student intake to 50 students by 2009. COSTAATT increased its graduate output from 96 in 2005 to 175 by 2008, an increase of 82%. Despite decreasing numbers of annual enrollees into its basic and post-basic nursing programs during the period 2006–2009, the Ministry of Health’s School of Nursing expanded its post-basic training into several specialty areas. The UWI School of Advanced Nursing Education (SANE) also saw a decrease in its annual enrollees during this period, from 72 in 2005 down to 12 by 2008. This decrease had implications for the stock of aging district nurses throughout the country, with dwindling supplies of upcoming nurses to replace them on retirement.

**Labor Market for Health Professionals**

In 2009, the human resources in health were inadequate to meet the needs of the population. There were approximately 3,000 medical and allied health vacancies throughout the public health sector, with nurses accounting for 80.0% and doctors accounting for 13.0% of those vacancies. However, an examination of specific categories of staff showed vacancy rates of 39.0%, 52.0%, and 56.0% for
pharmacists, laboratory technicians, and medical social workers, respectively. The high vacancy rate was expected to increase, given the aging of the nurse population, the high levels of emigration of medical personnel, and the internal migration of health personnel from the public sector to the private clinical and allied health institutions. The majority of health care workers were employed in the public sector; therefore, this movement of health care professionals affected the operations of the Ministry of Health and the Regional Health Authorities.

**HEALTH AND INTERNATIONAL COOPERATION**

International funding has been associated primarily with HIV/AIDS programs and projects and the health sector reform program. PAHO/WHO’s work in the country has focused on the following areas: chronic, noncommunicable disease prevention and control; promotion of healthy lifestyles, quality of care, and family and community health; strengthening health systems, communicable disease prevention and control, and disease surveillance; and evidence-based decision making; and developing the health information system.

An area of assistance in the health sector is the United Nations Volunteer program, administered by UNDP. UNDP has supported the establishment of a national development information database and assists the Office of Disaster Preparedness and Management with institutional strengthening in disaster management.

Other multilateral agencies supporting work in the health sector include the International Labour Organization (ILO), the Food and Agriculture Organization (FAO), the United Nations Children’s Fund (UNICEF), the Joint United Nations Program on HIV/AIDS (UNAIDS), the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC), the Inter-American Development Bank (IDB), the World Bank, and the European Union (EU).

Bilateral development agencies which have contributed to the health sector over this period include the Canadian International Development Agency (CIDA), Netherlands Development Agency (SNV), and French Development Agency (AFD). The United States Centers for Disease Control and Prevention (CDC), CIDA, and France provided funding through the Caribbean Epidemiology Centre (CAREC) for HIV/AIDS programs.

The Ministry of Health has made the proper coordination and management of international collaboration a priority and created an International Cooperation Desk for this purpose. The Desk acts as a liaison with different stakeholders (ministries, foreign governments, NGOs, funding agencies, etc.) on international policy issues that impact the management of the health sector.

**SYNTHESIS AND PROSPECTS**

The foregoing review reveals significant improvements in the health profile of the Trinidad and Tobago population, reflected in favorable trends in many of the health indicators, in particular infant and child mortality and communicable diseases. The country is experiencing an epidemiological transition with a decline in communicable diseases accompanied by increasing morbidity and mortality from chronic, noncommunicable diseases. The country is also in demographic transition, characterized by declining fertility rates and slow population growth.

Trinidad and Tobago’s health system faces several challenges. More than 15 years after the health sector reforms began, for example, the Ministry of Health has yet to fully assume its leadership role, and the RHAs have not been able to deliver the health services the population needs. Moreover, planning for the health workforce is not in place yet to ensure that there will be adequate numbers of competent health workers in the future. Progress is being made, however, in bolstering the Ministry’s capacity to develop its policy, planning, and regulatory mandates.

The country’s main health challenges relate to the high incidence and prevalence of chronic, noncommunicable diseases and their risk factors. Regional and local strategies have been developed to
effectively address their prevention and to promote healthy lifestyles. However, proper data collection and analysis is needed to assess the impact of these interventions and to establish appropriate strategies and forge strong partnerships into the future. The country needs to build on its strengths in minimizing the risks associated with emerging communicable diseases and enhance the management of tuberculosis and the HIV epidemic.

Trinidad and Tobago, in collaboration with PAHO, continued to address the following key health and development challenges: organization and management of health sector systems and services; enhanced performance of the health care delivery system; prevention of priority diseases and assisting populations impacted by these diseases; and improved socioeconomic and environmental determinants of health.

REFERENCES


