INTRODUCTION

Canada occupies the second largest geographical area in the world, and is divided into 3 territories in the Northern region and 10 provinces in the Western, Central, Eastern, and Atlantic regions. Since confederation in 1867, Canada has evolved into a multicultural society with a richly diverse population that contributes to its unique national culture. Canada has the tenth largest economy in the world, fueled by abundant natural resources and trade. It is a member of the Organization for Economic Cooperation and Development (OECD) and the Group of Eight (G8). In 2008, Canada's gross domestic product (GDP) was US$ 1.501 trillion while the GDP per capita was US$ 45,070 (1).

In 2006, Canada's population reached 31,612,897, almost evenly divided between men and women, with an average life expectancy at birth of 83 years for women and 78.3 years for men (2). Based on
the 2006 Census, it is estimated that of Canada’s total population, 4.3 million are children under the age of 12, and of those, 2 million are under age 6. Approximately 5% of children under age 12 are immigrants and 6% are indigenous (3). The proportion of the elderly population (65 years and older) increased from 9% of the population in 1978 to 14% in 2008 (Figure 1). Canada’s total fertility rate in 2008 was 1.68; the country’s urban population in 2006 was 80%.

Most Canadians enjoy good to excellent physical and mental health. Due in part to public health efforts, such as the introduction of mass immunization, smoking cessation, and seat-belt awareness programs, Canadians are living longer (average life expectancy at birth of 80.7 years) and infant mortality rates have declined. In 2009, 62.2% of Canadians aged 12 years and older reported that their health was “excellent” or “very good,” an increase from 59.7% in 2003 (4).

HEALTH DETERMINANTS AND INEQUALITIES

Inequalities among Canadians are evident in key population health indicators, such as mortality and health-adjusted life expectancy, as well as through indicators of well-being such as income levels and household food security. In 2006, the prevalence of low income was 14.5%.

Indigenous Canadians experience much higher rates of poverty, chronic disease, and poor living conditions. For example, approximately 21% of off-reserve indigenous households experience food insecurity, compared to 7.7% of all Canadian households (5).

To respond to this, Canada’s social programs, including those that provide income support to the unemployed, pensioners, and families and individuals in need, contribute to ensuring the health and well-being of Canadians. An example is the federal government’s investment of CAD$ 1 billion in 2009 through Canada’s Economic Action Plan for the construction of social housing for low-income seniors, persons with disabilities, and for First Nations and other communities.

1 Low-income cut-off: the prevalence shows the proportion of people living below the low income cut-offs within a given group. Low income is defined as the income level at which families or persons not in economic families spend 20% more than average of their before tax income on food, shelter, and clothing.
THE ENVIRONMENT AND HUMAN SECURITY

VIOLENCE

In 2007, 75,800 incidents of family violence were reported to police in Canada. Of these cases, 40,200 were violent incidents perpetrated by a current spouse, common-law partner, or ex-spouse. Females accounted for 83% of victims of spousal abuse. In the same year, 1,938 incidents of family violence against seniors were reported to police. Of these, 17 resulted in death (1% of reported cases). Within Canada, the federal government works collaboratively to develop longer-term solutions to financial, physical, emotional, and sexual abuse and neglect through various measures, including addressing potential risk factors, increasing health promotion efforts, and developing strategies and interventions to reduce offending, amongst others.

CLIMATE CHANGE

Efforts to prepare Canadians for the expected impacts of climate change have focused on reducing risks from extreme heat events and climate-related infectious diseases, and taking actions to address special challenges faced by Canadians living in northern regions of the country. Guides for heat alert and response systems and for diagnosing and treating heat illness were developed for health sector and emergency management officials. The Pilot Infectious Disease Impact and Response Systems (PIDIRS) program focuses on water-borne (e.g., *E. coli*) and vector-borne infectious diseases (specifically West Nile virus and Lyme disease) attributed to or exacerbated by climate change.

FOOD SAFETY: LISTERIOSIS OUTBREAK

Although Canada has one of the best food-safety systems in the world, in the summer of 2008 the country experienced a rare listeriosis outbreak linked to consumption of commercially prepared, sliced meat products: there were 57 confirmed cases and 23 deaths. After this outbreak and its attendant public attention to the issue, Canada has worked to build greater capacity in health-risk assessment and lab-testing functions and to strengthen public communications about food safety.

HEALTH CONDITIONS AND TRENDS

HEALTH PROBLEMS OF SPECIFIC POPULATION GROUPS

Maternal and Reproductive Health

Several key, community-based programs in Canada address the health of vulnerable pregnant women, children, and their families, including the Canada Prenatal Nutrition Program, the Community Action Program for Children, the Maternal and Child Health Program, and the Aboriginal Head Start in Urban and Northern Communities program. An evaluation of the Canada Prenatal Nutrition Program (CPNP) carried out from 2004 to 2009 found that the more exposure women had to the program, the better the birth outcomes and the more positive the health behaviors (6). Women with a high level of exposure to CPNP services were more than twice as likely to use vitamin or mineral supplements as women with a lower overall exposure, for example, and higher program exposure also was associated with a 19% increased likelihood of smoking reduction and a 42% increased chance of discontinuing alcohol use. Moreover, women with the highest level of exposure to CPNP were 8% more likely to initiate breastfeeding, and women with high exposure to CPNP were 4.6 times more likely to extend the duration of breastfeeding than women with low exposure to the program.

Infants, Children, and Adolescents

In 2007, the infant mortality rate in Canada was 5.1 deaths per 1,000 live births (7). The most common cause of infant death in 2007 was congenital
anomalies (which include a range of conditions such as spina bifida and Down syndrome) (8). For children between the ages of 1 and 11 years, unintentional injuries, especially related to motor vehicle accidents, were the leading cause of death. After transport accidents, drowning, threats to breathing (suffocation, choking, and strangulation), and fire were the most common causes of unintentional injury deaths (3). Unintentional injuries were the leading causes of morbidity and disability for children and youth in Canada, accounting for 15% of the hospitalizations of children under the age of 12 in 2005.

All provinces and territories have publicly funded immunization programs, with the following routine vaccinations being free of charge to children 17 years old and under: diphtheria, tetanus, pertussis, polio, rubella, measles, mumps, hepatitis B, *Haemophilus influenzae* type b, varicella, meningitis, and pneumococcal (pneumo 13). By early 2010, all jurisdictions in Canada had succeeded in introducing the human papillomavirus (HPV) vaccine into their immunization programs, which is available to women aged 9 to 26. Table 1 presents infant immunization rates in 2010 (9).

Three important health conditions affecting Canadian children are asthma, diabetes, and cancer (10). Approximately 16% of Canadian children between the ages of 4 and 11 years were reported to have asthma in 2000. In 2005–2006, 0.3% of young people aged 1 to 19 years were considered diabetic. Although the vast majority have been diagnosed with type 1 diabetes, which is linked primarily to genetic factors, type 2 diabetes is increasing in Canada’s children due to poor dietary habits and rising rates of obesity. It is estimated that on average over 800 children aged 0 to 14 years (15.0 per 100,000) are diagnosed with cancer each year. The most commonly occurring cancer in this age group is leukemia, which accounts for roughly one-third of all new cases in this age group.

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

The three main causes of death for seniors (age 65 and older) in 2008 were cancers (28%), circulatory diseases (33%), and respiratory diseases (18%) (11). Falls are the most common cause of injuries among the elderly in Canada, and it is estimated that one in three seniors is likely to fall at least once each year. While injuries are not a leading cause of death among the elderly, 61% of injury-related deaths of seniors are due to falls. In 2009, chronic conditions were widespread among seniors, with 89% living with at least one chronic condition and many experiencing multiple chronic conditions. It is noteworthy that 29% of seniors were considered obese in 2008. It is estimated that 17% of Canadian seniors are underweight with the associated health risks including malnutrition, osteoporosis, and shortened life span.

Forms of dementia (including Alzheimer’s disease), depression, and delirium affect approximately 400,000 Canadian seniors, with numbers expected to double within 30 years. Seniors who live within the general community tend to have lower rates of diagnosed depression (1% to 5%), compared to seniors living in long-term care facilities (14% to 42%). For senior women, the prevalence of Alzheimer’s disease and related dementias and depression is higher than for senior men, although the reasons for this are not known.

### TABLE 1. Immunization coverage of children under 1 year old, Canada, 2010.

<table>
<thead>
<tr>
<th>Disease/vaccine</th>
<th>Percentage vaccinated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria, pertussis, and tetanus; corresponding vaccine: DPT1ß</td>
<td>92</td>
</tr>
<tr>
<td>Diphtheria, pertussis, and tetanus; corresponding vaccine: DPT3ß</td>
<td>80</td>
</tr>
<tr>
<td>Polio; corresponding vaccine: Polio 3</td>
<td>80</td>
</tr>
<tr>
<td>Measles; corresponding vaccine: measles</td>
<td>93</td>
</tr>
<tr>
<td>Hepatitis B; corresponding vaccine: HepB3</td>
<td>17</td>
</tr>
<tr>
<td><em>Haemophilus influenzae</em> type b (Hib); corresponding vaccine: Hib3</td>
<td>80</td>
</tr>
</tbody>
</table>

*Source: Reference (9).*
Ethnic or Racial Groups

Approximately 4% of Canada’s population is indigenous. In 2010, the First Nations population was 845,783 and the Inuit population was 50,485, with half the population under the age of 25 years. There are some 50 to 70 different cultural groups and over 50 distinct languages represented in the indigenous population. The majority of First Nations live on-reserve (58%) with limited road access, while 78% of Inuit live in the four regions that make up Inuit Nunangat, which is primarily accessed by airplane. Fifty-seven percent of First Nations communities and 38% of Inuit communities have less than 500 people.

The health status of First Nations and Inuit has steadily improved since 1980, but remains poor compared to other Canadians. Life expectancy has increased by approximately 15% for males and 12% for females, but the latest figures show that life expectancy is 72.9 years for First Nations and 66.9 years for the Inuit. In regions for which Canada has good quality data, First Nations infant mortality rates remain approximately twice as high compared to the infant mortality rate in the non-First Nations population. The Inuit infant mortality rate is approximately four times higher than for the general Canadian population. The prevalence of communicable and noncommunicable diseases is higher in indigenous peoples than in the general Canadian population. For example, in 2009, the incidence rate of tuberculosis in Canada overall was 4.7 per 100,000 population, but it climbed to 26.8 per 100,000 for the total registered Indian population and skyrocketed to 155.8 per 100,000 Inuit population; the incidence of diabetes is 3.8 times higher for First Nations living on-reserve than for the nation as a whole. The 1999–2003 cancer mortality rate among residents of Inuit Nunangat (the Inuit Homeland) was 119.3 per 100,000, which was almost twice as high as the rate for Canada overall (60.9 per 100,000). Mental health issues are prominent, translating into high suicide rates: the Inuit suicide rate (112 per 100,000 between 1999 and 2003) is 11 times higher than the overall national rate, and the First Nations youth suicide rate (28.2 per 100,000 in 2000) is 4.3 times higher than the youth suicide rate in the general Canadian population (6.56 per 100,000). The poor health status is widely attributed to a low socioeconomic status, low educational attainment, low income, high unemployment, and crowded housing with poor air and water quality.

Despite these challenges, successes in indigenous health include increased levels of awareness and knowledge of healthy behaviors, including physical activity, healthy eating, prenatal care, breastfeeding, and child nutrition. Indigenous mental wellness needs are addressed through mental health and suicide prevention programming and substance abuse prevention and treatment programs.

Mortality

Cancer and heart disease, the two leading causes of death in Canada, were responsible for just over one-half (51%) of the 238,617 deaths in 2008 (12). Cancer accounted for 30% of all deaths in 2008, followed by heart disease (21%) and stroke (6%). Ranked in order, the other seven leading causes of death were chronic lower respiratory diseases (the majority were chronic obstructive pulmonary disease), accidents (unintentional injuries), diabetes, Alzheimer’s disease, influenza and pneumonia, kidney disease, and suicide (Table 2) (13). These 10 leading causes accounted for 77% of all deaths in 2008, compared with 80% in 2000. By age group, there were differences in the leading causes of death. Congenital abnormalities were the leading cause of death for infants under 1 year of age, accidents (unintentional injuries) for people aged 1 to 34, cancer for those aged 35 to 84, and heart disease for those aged 85 and over. For young adults aged 15 to 24, the top three causes of death, in rank order, were accidents, suicide, and homicide. Between 2000 and 2008, age-standardized mortality rates were on a downward trend in general for all 10 leading causes of death. In 2008, however, age-standardized mortality rates for Alzheimer’s disease increased 8% from 2007. In 2008, 6,573 people died of Alzheimer’s disease, up 11% from 2007. A total of 4,606 women died of Alzheimer’s disease, more than twice the total for men (1,967).
Communicable Diseases

HIV/AIDS and Other Sexually-transmitted Infections

At the end of 2008, an estimated 22,300 HIV-infected Canadians were reported to have died of AIDS since 1980, and an estimated 65,000 were living with HIV and AIDS, up from 57,000 at the end of 2005 (see Table 3). Of these 65,000, an estimated 16,900 (12,800–21,000) persons were unaware of their HIV infection. Approximately 2,300 to 4,300 new infections were estimated to have occurred in 2008, compared to an estimated 2,200–4,200 new cases in 2005 (14).

At the end of 2008, men who have sex with men were the population most affected by HIV in Canada, accounting for an estimated 48% of all HIV infections. An estimated 31% of people were infected through heterosexual contact, and people injecting drugs followed at 17%. Women accounted for an estimated 26% of new HIV infections in 2008, where heterosexual contact and injection drug use

### TABLE 2. Ten leading causes of death, by rank, Canada, 2008.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malignant neoplasms (cancer)</td>
<td>70,558</td>
<td>29.6</td>
</tr>
<tr>
<td>2</td>
<td>Heart disease</td>
<td>50,722</td>
<td>21.3</td>
</tr>
<tr>
<td>3</td>
<td>Cerebrovascular diseases (stroke)</td>
<td>13,870</td>
<td>5.9</td>
</tr>
<tr>
<td>4</td>
<td>Chronic lower respiratory diseases</td>
<td>10,923</td>
<td>5.8</td>
</tr>
<tr>
<td>5</td>
<td>Accidents (unintentional injuries)</td>
<td>10,234</td>
<td>4.3</td>
</tr>
<tr>
<td>6</td>
<td>Diabetes mellitus</td>
<td>7,521</td>
<td>3.2</td>
</tr>
<tr>
<td>7</td>
<td>Alzheimer's disease</td>
<td>6,573</td>
<td>2.8</td>
</tr>
<tr>
<td>8</td>
<td>Influenza and pneumonia</td>
<td>5,386</td>
<td>2.3</td>
</tr>
<tr>
<td>9</td>
<td>Nephritis, nephrotic syndrome, and nephrosis (kidney disease)</td>
<td>3,846</td>
<td>1.6</td>
</tr>
<tr>
<td>10</td>
<td>Intentional self-harm (suicide)</td>
<td>3,705</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**Note:** Causes of death are coded to the 10th revision of the World Health Organization’s International Statistical Classification of Diseases and Related Health Problems (ICD-10).

**Source:** Reference (13).

### MORBIDITY

#### Communicable Diseases

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

**TABLE 3. Estimated number of prevalent HIV infections and associated ranges of uncertainty, Canada, at the end of 2008 and 2005.**

<table>
<thead>
<tr>
<th></th>
<th>MSM</th>
<th>MSM-IDU</th>
<th>IDU</th>
<th>Heterosexual/ non-endemic</th>
<th>Heterosexual/ endemic</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>31,330 (25,400–37,200)</td>
<td>2,030 (1,400–2,700)</td>
<td>11,180 (9,000–13,400)</td>
<td>10,710 (8,300–13,100)</td>
<td>9,250 (6,800–11,700)</td>
<td>500 (300–700)</td>
<td>65,000 (54,000–76,000)</td>
</tr>
<tr>
<td>%</td>
<td>48</td>
<td>3</td>
<td>17</td>
<td>17</td>
<td>14</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2005</td>
<td>27,700 (22,400–33,000)</td>
<td>1,820 (1,200–2,400)</td>
<td>10,100 (8,100–12,100)</td>
<td>9,050 (7,000–11,000)</td>
<td>7,860 (5,800–9,900)</td>
<td>470 (280–660)</td>
<td>57,000 (47,000–67,000)</td>
</tr>
<tr>
<td>%</td>
<td>48</td>
<td>3</td>
<td>18</td>
<td>16</td>
<td>14</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Notes:** MSM: men who have sex with men; IDU: people who inject drugs; Heterosexual/non-endemic: heterosexual contact with a person who is either HIV-infected or at risk of HIV or heterosexual contact as the only identified risk; Heterosexual/endemic: origin from a country where HIV is endemic; Other: recipients of blood transfusion or clotting factor, perinatal and occupational transmission. Point estimates, ranges, and percentages are rounded. Ranges of uncertainty (figures in parentheses) for HIV estimates were developed on the basis of a consideration of results from a variety of scenarios.

**Source:** Reference (14).
were identified as the two main exposure categories. Indigenous peoples, who make up only 3.8% of the country’s population, represented a disproportionately high number of HIV infections, with an estimated 12.5% of new infections in 2008 and 8% of all prevalent infections at the end of 2008. Disproportionate rates of infection have also been noted among people living in Canada who were born in countries where HIV is endemic. This group makes up approximately 2.2% of the Canadian population, but accounted for an estimated 16% of new infections and 14% of prevalent infections at the end of 2008 (14).

The burden of HIV and AIDS cases in Canada has been concentrated in the four largest provinces—Alberta, British Columbia, Ontario, and Quebec—which, as of the end of 2008, accounted for 94% of all HIV-positive test reports since 1985 (15).

**Tuberculosis**

Between 2006 and 2010, the total number of reported cases of active tuberculosis (TB) disease remained relatively stable at an average of 1,622 cases per year (16). From 2009 to 2010, the overall annual incidence rate decreased from 4.9 per 100,000 population to 4.7 per 100,000 population. The highest incidence rate was reported from the territory of Nunavut (304.0 per 100,000 population in 2010).

For 2010, the overall Canadian TB rate was 4.6 per 100,000 population. Foreign-born individuals accounted for 66% of all reported TB cases in Canada. Canadian-born non-Aboriginal cases made up 15% while Canadian-born Aboriginal cases made up 21% of all reported cases. The TB rate in the Canadian-born Aboriginal group continues to be the highest of the three groups, approximately six times that of the overall 2010 Canadian TB rate.

**Emerging Diseases**

The first reported cases of patients displaying symptoms of H1N1 influenza in Canada were confirmed on 23 April 2009, and by 11 June 2009, H1N1 had spread to all provinces and territories (17). Two distinct waves of infection were observed: the first occurred in the spring and peaked in early June 2009 and the second wave occurred in the autumn and peaked in early November 2009. There were 40,185 laboratory-confirmed cases of H1N1 reported during the pandemic; 8,678 persons were hospitalized, with 1,473 (16.9%) treated in intensive care units. Some 60% of those admitted to intensive care required ventilation. Unlike seasonal influenza, younger age groups, including those who were otherwise healthy, were most affected. A total of 428 Canadians died with H1N1, a mortality rate of approximately 1.3 per 100,000 population.

The Canadian Pandemic Influenza Plan for the Health Sector guided the national response to the 2009 pandemic, providing for equitable access to antivirals via national stockpiles; the targeting of vulnerable populations such as children, pregnant women, and Aboriginal people, among others; and national public awareness and advertising campaigns.

**Chronic, Noncommunicable Diseases**

Chronic, noncommunicable diseases (NCDs) pose the greatest threat to the health of Canadians. Currently, two out of five Canadians age 12 years and older live with one or more chronic diseases (18). Aboriginal populations in Canada experience a greater burden from NCDs compared to the rest of the Canadian population, suffering from higher rates of heart disease, diabetes, and asthma as well as suicide (19).

**Cardiovascular Diseases**

In 2007, 1.3 million Canadians over the age of 12 (4.8% of Canadians, 4.2% females and 5.3% males) reported having heart disease diagnosed by a health professional, and 317,500 Canadians (1.1% of females and 1.2% of males) reported living with the effects of a stroke (see Table 4) (20). In 2005/2006, cardiovascular diseases (CVD) were the primary reasons for 17% of all hospitalizations (20% for men and 14% for women). This proportion doubled when hospitalizations with CVD as a related condition were included. CVD also
accounted for the highest number of days in the hospital compared to other health problems (17% of all days; 19% for males and 15% for females).

Malignant Neoplasms

Cancer is one of the leading causes of mortality in Canada (Table 2), with increases in the number of new cancer cases due mainly to a growing and aging population. Between 1997 and 2006, mortality rates declined, on average, by at least 2% per year for lung, oral, prostate, and larynx cancers in males; breast and cervical cancer in females; and stomach cancer and non-Hodgkin lymphoma in both sexes (27). However, between 1998 and 2007, thyroid cancer incidence rates rose an average of 7% per year for males and 9% for females. Liver cancer rates rose an average of 4% per year for males and just over 2% per year for females. Between 1998 and 2007, incidence rates declined, on average, by at least 2% per year for stomach cancer in males and for larynx cancer in both sexes. Cancers of the breast, prostate, colon/rectum, and lung that were diagnosed between 1997 and the end of 2006 accounted for nearly 60% of 10-year prevalent cases. As the number of Canadians diagnosed with cancer continues to grow and cancer survival increases, cancer prevalence rises.

### Table 4. Prevalence of heart disease, stroke, and associated risk behaviors, by sex, Canada, 2004 and 2007.

<table>
<thead>
<tr>
<th>Risk behaviors</th>
<th>Female</th>
<th></th>
<th>Male</th>
<th></th>
<th>Both sexes*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Physical inactivity during leisure time</td>
<td>7,259,300</td>
<td>52.5</td>
<td>6,153,200</td>
<td>46.5</td>
<td>13,412,600</td>
<td>49.5</td>
</tr>
<tr>
<td>Inadequate consumption of vegetables and fruit</td>
<td>6,652,600</td>
<td>49.4</td>
<td>8,103,600</td>
<td>63.3</td>
<td>14,756,200</td>
<td>56.2</td>
</tr>
<tr>
<td>Excess sodium consumption</td>
<td>...</td>
<td>60.0</td>
<td>...</td>
<td>85.0</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Life stress: “quite a bit” or “extreme”</td>
<td>3,150,800</td>
<td>23.4</td>
<td>2,812,200</td>
<td>21.7</td>
<td>5,963,000</td>
<td>22.6</td>
</tr>
</tbody>
</table>

| Underlying health conditions | | | | | | |
|---|---|---|---|---|---|
| | Female | | Male | | Both sexes* | |
| | No. | % | No. | % | No. | % |
| Current high blood pressure/using medication for high blood pressure | 2,475,500 | 19.8 | 2,222,400 | 18.6 | 4,698,000 | 19.2 |
| Overweight | 3,284,300 | 27.3 | 4,849,300 | 40.8 | 8,133,700 | 34.0 |
| Obese | 1,899,000 | 15.8 | 2,135,600 | 18.0 | 4,034,600 | 16.9 |
| Overweight or obese | 5,183,400 | 43.1 | 6,984,900 | 58.8 | 12,168,200 | 50.9 |
| Diabetes | 852,100 | 6.6 | 931,800 | 7.6 | 1,783,800 | 7.1 |

| Cardiovascular disease | | | | | | |
|---|---|---|---|---|---|
| | Female | | Male | | Both sexes* | |
| | No. | % | No. | % | No. | % |
| Heart disease (includes heart attack, angina, and congestive heart failure) | 598,400 | 4.2 | 724,100 | 5.3 | 1,322,500 | 4.8 |
| Suffers effects of stroke | 157,100 | 1.1 | 160,400 | 1.2 | 317,500 | 1.1 |

---

* Data are all self-reported except for diabetes data, which are based on health administrative records of a diagnosis by a physician.

* Reported in Statistics Canada, Canadian Community Health Survey (CCHS), 2007.

* Reported in Statistics Canada, Canadian Community Health Survey (CCHS), 2004.


* Totals for both sexes may not add up due to rounding.

Source: Adapted from Reference (20).
Diabetes

The 2009 report from the National Diabetes Surveillance System (22) reports a 21% increase in the age-standardized prevalence of diagnosed diabetes between 2002 and 2007. Approximately 2 million (6.2%) Canadians 1 year old and older (5.9% of females and 6.6% of males) were living with diagnosed diabetes in 2007. The prevalence of diagnosed diabetes was significantly lower among children and adolescents (0.3%) than adults (6.4%) and among adults, prevalence increased with age from about 2% among individuals in their 30s to about 23% in adults aged 75 to 79 years (22). It is estimated that by 2012 almost 2.8 million Canadians will have the disease, an overall increase of about 25% from 2007. The age-standardized incidence rates of new diagnoses of diabetes increased almost 9% between 2002 and 2007, and likely reflect both the rise in overweight and obesity in the population and increased screening for diabetes. The rate of diabetes among on-reserve First Nations populations (19.7%) is approximately four times that of the Canadian average (5.3%) (23). Adults aged 20–64 years old with diabetes had a life expectancy 5 to 10 years lower than their counterparts without diabetes.

Mental Disorders

Mental illness and addictions rank first and second in terms of causing disability in Canada and it is expected that one in five Canadians will experience mental illness in their lifetime (24). Approximately 12% of adults will experience depression at some time in their lives and approximately 2% will experience bipolar disorder (25). Schizophrenia affects 1% of the Canadian population and onset is usually in early adulthood. Anxiety disorders affect 11.5% of the population, causing mild to severe impairment. Only about one-third of Canadians reported that they were able to access mental health services when they needed them. It is estimated that costs to the Canadian economy resulting from mental health and substance abuse issues, including absenteeism and loss of productivity at work, range from US$ 15 to US$ 33 billion annually.

Risk and Protection Factors

Smoking

Canada has one of the lowest smoking rates in the world, with 13% of the population classified as daily smokers and 4% as occasional smokers. The smoking rate for both daily and occasional smokers in Canada continued a downward trend in 2010; 17% of the population smoked, compared to 19% in 2005 and 25% in 1999 (26). Smoking rates have significantly declined for certain age groups. For example, in 2010 smoking among 15- to 17- year-olds fell to 9%, which was the lowest recorded rate for an age group seen as key in the fight against smoking. In 2010, the proportion of youth aged 15 to 19 who reported smoking small cigars in the past 30 days was 6%, down from 8% reported in 2009.

Nearly 100% of Canadians are protected from exposure to second-hand smoke in enclosed public spaces as a result of efforts made by provincial, territorial, and municipal governments. Canada severely limits marketing of tobacco to youth and has banned the use of certain flavors in cigarettes that are particularly appealing to adolescents.

Alcoholism

Among Canadians 15 years and older, the prevalence of past-year alcohol use was 77.0% in 2010, not statistically different from previous years (27). Nearly three-quarters of those in the 15–24-year age group (71.5%) reported consuming alcohol in the last 12 months, a decrease from 2004, when 82.9% of those in this age group reported past-year use of alcohol. The prevalence of heavy, frequent drinking among young adults (15 to 24 years of age) was approximately three times higher than the rate for adults 25 years and older (9.4% versus 3.3%).

Illegal Drugs

A general trend of decreased past-year illicit drug use is evident in Canada. According to the Canadian Alcohol and Drug Use Monitoring Survey for 2010, the prevalence of past-year cannabis use by those 15
years and older decreased from 14.1% in 2004 to 10.7% in 2010. In the 15–24-year age group, prevalence of past-year cannabis use decreased from 37.0% in 2004 to 25.1% in 2010 (27). Among Canadians 15 years and older, the prevalence of past-year cocaine or crack use decreased from 1.9% in 2004 to 0.7% in 2010, while past-year use of hallucinogens (0.9%), ecstasy (0.7%), and speed (0.5%) was comparable to the rates of use reported in 2004. In the 15–24-year age group past-year use of at least one of five illicit drugs (cocaine or crack, speed, hallucinogens, ecstasy, and heroin) decreased from 11.3% in 2004 to 7.0% in 2010.

While rates of past-year drug use have declined, in 2010, drug use by those in the 15–24-year age group remained much higher than that reported by adults 25 years and older: 3 times higher for past-year cannabis use (25.1% versus 7.9%), and nearly 10 times higher for past-year use of at least one of five illicit drugs (cocaine or crack, speed, hallucinogens, ecstasy, and heroin) (7.9% versus 0.8%).

**Obesity**

Approximately one in four Canadian adults is obese, according to measured height and weight data from 2007–2009. Of children and youth aged 6–17, 8.6% are obese (28). Between 1981 and 2007–2009, obesity rates roughly doubled among both males and females in most age groups. Research has shown that multiple factors influence obesity, including physical activity, diet, socioeconomic status, ethnicity, immigration, and environmental factors (28).

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

**Health Policies**

Canada’s publicly funded health care system, known to Canadians as “Medicare,” provides universal access to comprehensive coverage for medically necessary hospital and physician services. The provincial and territorial governments have primary responsibility for the administration and delivery of health services to Canadians. The federal government provides additional services for First Nations and Inuit peoples and serves members of the Canadian Forces and the Royal Canadian Mounted Police, eligible veterans, inmates in federal penitentiaries, and refugee claimants. The federal government is also responsible for health protection and regulation (e.g., regulation of pharmaceuticals, biologics, food and medical devices) and consumer safety. It plays an important role in health promotion, including the prevention and control of infectious and chronic diseases, disease surveillance, preparing for and responding to public health emergencies and disease outbreaks, and health research.

Collaboration among all jurisdictions in Canada is critical to addressing health issues in a coordinated manner, and the Pan-Canadian Public Health Network was established in 2005 to advance those objectives. This network serves as a key intergovernmental mechanism to strengthen Canada’s public health capacity to anticipate, prepare for, and respond to Canadian public health emergencies and to deal with chronic health issues.

**Health Legislation**

The Canada Health Act (CHA) is Canada’s federal legislation for publicly funded health care insurance. Approved in 1984, the CHA sets out the primary objective of Canadian health care policy, which is “to protect, promote and restore the physical and mental well-being of residents of Canada and to facilitate reasonable access to health services without financial or other barriers.” The CHA establishes criteria and conditions related to insured health services and extended health care services that the provinces and territories must fulfill in order to receive the full federal cash contribution under the Canada Health Transfer (CHT) program. The aim of the CHA is to ensure that all eligible residents of Canada have reasonable access to insured health services on a prepaid basis, without direct charges at the point of service for such services. Box 1 summarizes Canada’s salient health legislation and initiatives.

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<th>Health issue</th>
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<tr>
<td><strong>Addressing health inequality</strong></td>
<td>• The Canadian Reference Group on Social Determinants of Health is an intersectoral body of leaders from government, academia, civil society, labor, and Aboriginal groups established to reduce health inequalities in Canada by addressing the social determinants of health. It has directly influenced global knowledge and action in many areas, including the need for a distinct approach to the determinants of health for indigenous populations.</td>
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| **Protecting health and the environment** | • The Canada Consumer Product Safety Act (2010) prohibits the manufacture, importation, advertisement, or sale of consumer products that pose a danger to human health and safety. Regulations strictly restrict lead content and use of certain phthalates in consumer products, particularly in children’s toys and child-care articles.  
  • The Chemicals Management Plan (2006) assesses about 4,300 existing substances categorized as possibly harmful to the environment and/or human health. Risks, when identified, are appropriately managed.  
  • The Human Pathogens and Toxins Act (2009) addresses public health safety and security risks associated with activities involving human pathogens or toxins, such as production, possession, storage, transfer, and disposal, whether imported or domestically acquired (37). |
| **Assisting elderly Canadians** | • The Age-Friendly Rural and Remote Communities Initiative, endorsed in 2006, focuses on health and social services for seniors in communities with populations under 5,000.  
  • The National Seniors Council, established in 2007, advises the Government on issues of concern for the elderly population, including elder abuse, low income, and labor force participation. |
| **Combating HIV/AIDS** | • The Federal Initiative to Address HIV/AIDS in Canada is key to the nation’s comprehensive response to HIV/AIDS. It leads in providing funding for the prevention of the spread of HIV and other blood-borne and sexually transmitted infections; promotes education and awareness; and facilitates access to diagnosis, care, treatment, and support for those living with the disease.  
  • Canada and the Bill & Melinda Gates Foundation are collaborating to develop a safe, effective, and accessible HIV vaccine through the Canadian HIV Vaccine Initiative, building on Canada’s commitment to a comprehensive approach to combating HIV/AIDS both domestically and globally. |
| **Preventing chronic, noncommunicable diseases** | • The Canadian Heart Health Strategy and Action Plan, announced in 2009, is a comprehensive strategy to reduce the growing burden and loss due to cardiovascular and cerebrovascular disease in Canada.  
  • In 2006, Canada launched the Canadian Partnership against Cancer to provide all Canadians with state-of-the-art knowledge about cancer prevention, diagnosis, and treatment. It tracks up to 300,000 Canadians over their lifetimes to better understand the role played by genetics, environment, and lifestyle in developing cancer and other chronic diseases.  
  • The Government of Canada allocates CAD$ 18 million annually for the Canadian Diabetes Strategy, which focuses on prevention, early detection, and management of diabetes. It has committed CAD$ 275 million for 2010–2015 for the Aboriginal Diabetes Initiative, which aims to reduce the burden of type 2 diabetes in more than 600 First Nations and Inuit communities. |
| **Curbing illicit drug use** | • In 2007, Canada launched the National Anti-Drug Strategy (NADS) to develop drug prevention, treatment, and enforcement action plans. The comprehensive strategy aims to fund health promotion and prevention community-based projects to reduce illicit drug use among youth ages 10 to 24 and covers a range of initiatives, such as public awareness campaigns, social media, school-based programs, and community-focused projects. NADS also aims to strengthen treatment systems and provide support to increase the accessibility and availability of treatment services. |
| **Promoting nutritional health** | • **Curbing Childhood Obesity: A Federal, Provincial and Territorial Framework for Action to Promote Healthy Weights** was endorsed by Canada’s Federal, Provincial, and Territorial Ministers of Health (except Quebec) in 2010. Promoting and supporting healthy eating is a key component of this framework.  
  • Nutrition labeling became mandatory for most pre-packaged foods in 2005, and a number of public education efforts have been undertaken to increase awareness and education about using nutrition labeling information, including the Nutrition Facts table, to make informed food choices.  
  • Canada’s healthy eating policy, Eating Well with Canada’s Food Guide (2007), provides Canadians with information on the amount and types of food recommended for their age, gender, and level of physical activity. |
| **Preventing mental disorders** | • In 2007, the federal government established the Mental Health Commission of Canada (MHCC) to act as a focal point for mental health, including reducing stigma associated with mental illness and addressing the national burden of mental illness and homelessness. In 2008, an allocation of CAD$ 110 million was made to the MHCC to undertake research demonstration projects in the area of mental health and homelessness to provide evidence on ways to help the growing number of homeless people who live with a mental illness, such as through the At Home/Chez Soi project. |
HEALTH EXPENDITURES AND FINANCING

Approximately 70% of total health expenditures in Canada are financed from public sources, including general revenue raised through federal, provincial, and territorial taxation such as personal income, corporate, and sales taxes. Some provinces also charge a dedicated premium or tax on their residents to help pay for publicly funded health care services, but non-payment of a premium or tax does not limit access to medically necessary health services.

Total health expenditure in Canada was 10.8% of gross domestic product (GDP) (CAD$ 172.2 billion) in 2008, 11.9% in 2009, and forecast to be 11.9% in 2010. Health expenditure per capita was CAD$ 5,169 in 2008, CAD$ 5,401 in 2009, and forecast to be CAD$ 5,654 in 2010. When adjusted for inflation, real per capita rates of increase were 1.8% in 2009 and forecast to be 2.0% in 2010 (29).

Between 2006 and 2010, federal support to the provinces and territories through the Canada Health Transfer increased from CAD$ 20.1 billion to CAD$ 25.4 billion (30). The public-sector share of total health expenditure has remained relatively stable since 1997, at around 70%.

Hospitals and physicians are mainly financed by the public sector, while drugs and other health professionals (not including nurses) are primarily financed by the private sector. In 2010, hospitals, which make up the largest component of health care spending, were forecast to cost CAD$ 56.3 billion, or 29.2% of total health expenditure.

Outlays for drugs, which account for the second-largest category of expense, were expected to grow by 4.2% from 2009 to reach CAD$ 30.8 billion in 2010, amounting to 16.0% of total health care spending. In 2010, spending on physicians was forecast to increase by 7.2% compared to 2009, reaching CAD$ 26.6 billion, or 13.8% of total health care spending.

THE HEALTH SERVICES

While the traditional primary health care model has served Canadians well, gaps in providing care to the aging population and addressing the rising incidence and prevalence of chronic conditions are emerging. There is a need to increase access to primary health care services for Canadians, to increase emphasis on health promotion, disease and injury prevention, and chronic disease management, and to expand 24/7 access to essential services.

Various models of health care teams are emerging across Canada. Some teams work through teleconferencing and are spread across large distances, while others are in the same setting. Teams may be led by physicians or nurse practitioners and may or may not include a wide variety of other providers such as dietitians, psychologists, physiotherapists, occupational therapists, and social workers. Many jurisdictions have chosen to target specific chronic diseases (e.g., diabetes and heart disease) when establishing care teams in order to develop expertise around prevalent chronic diseases, enhance the quality of life of those affected, and shift the burden from the more costly acute care sector.

The 10-Year Plan to Strengthen Health Care (adopted in 2004) (31) targeted five priority treatment areas (cancer, cardiac bypass surgery, diagnostic imaging, joint replacements, and sight restoration) for

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| Building the health workforce             | • In 2007, the Foreign Credentials Referral Office was established to ensure that the skills, training, and credentials of internationally trained and educated health professionals are recognized in Canada (38).
|                                           | • The Aboriginal Health Human Resources Initiative (AHHRI), introduced in 2004, has supported training for 450 First Nation health managers in one or more competencies and enabled 570 community-based workers to obtain certification each year. By 2011, there were 2,200 indigenous students supported in various health careers (nursing, medicine, dentistry). Between 1996 and 2006, Canada saw a 246% increase in the number of Aboriginal health care professionals. |
reduction in wait times for non-urgent procedures and more timely access to health care services. Provinces and territories undertook a range of activities to reduce wait times and have established pan-Canadian evidence-based benchmarks to measure and report on performance. In 2011, the Canadian Institute for Health Information (CIHI) reported that 8 out of 10 Canadians receive priority area procedures within medically recommended timeframes.

The 10-Year Plan to Strengthen Health Care included a commitment to provide public coverage, based on assessed need, for certain services for short-term acute home care, acute community mental health home care, and end-of-life care. Most provinces and territories have enhanced their home care programs to respond to increasing demand from seniors who require care over longer durations and also to provide an alternative to admission to long-term care facilities.

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

**Research Priorities and Technological Innovation**

The federal government supports a comprehensive health research agenda across disciplines, sectors, and regions that reflects the emerging health needs of Canadians, the evolution of the health care system, and the information needs of health policy decision makers. In 2009, the Canadian Institutes of Health Research (CIHR) laid out its vision for the next five years in the *Health Research Roadmap: Creating Innovative Research for Better Health and Health Care*. CIHR launched a process to develop research on inflammation in chronic disease, community-based primary health care, evidence-informed health care renewal, and health equity for Aboriginal peoples, among others.

In 2008–2009, Canada prioritized the adoption of new technologies for surveillance case management data and information in order to improve the coordination of federal, provincial, and territorial responses to disease outbreaks, including foodborne illnesses. For example, the Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS) monitors trends in antibacterial use and antimicrobial resistance in selected bacterial organisms from human, animal, and food sources (32). Another important tool is the Public Health Map Generator, a GIS-based system that can assist health professionals to monitor disease outbreaks and map health issues in specific population groups. The Public Health Information System, an integrated public health case management tool, is available to all public health jurisdictions in Canada.

Electronic health (e-Health) technologies play an important role in promoting an accessible, efficient, and sustainable health care system and in improving the safety and quality of care for patients. Electronic health record (EHR) systems are being built as secure digital repositories of individual medical histories (including medication profiles, lab results, diagnostic imaging results, etc.). Over 50% of Canadians now have their EHR available to their authorized health care providers. Since 2010, there has been an expansion in the deployment and clinical adoption of electronic medical records (EMRs) at points of service (e.g., physicians’ offices) and the connection to the electronic health record system. Between 2006 and 2010, the federal government allocated some CAD$ 900 million to Canada Health Infoway for its collaboration with provincial and territorial governments on establishing electronic medical and health records (33).

TeleHealth services are the longest-established electronic health activities in Canada, providing videoconferencing between patients and health care providers, physician consults, transfer of diagnostic materials, and telemonitoring of patients. These services are used by some 70 specialties, primarily to attend the nearly 7 million Canadians living in rural and often remote communities.

**Human Resources**

Between 2005 and 2009, the number of physicians grew by 10.5%, the number of international medical
graduates in the physician workforce increased by 14.3%, and the number of regulated nurses increased by 8.5%. While the number of health professionals practicing across Canada has increased, some jurisdictions continue to report shortages of qualified health care providers, particularly in rural and remote communities. Territories and provinces, with the support of the federal government, are increasing the number of family medicine residency training positions in underserved communities and providing enhanced training to physicians in rural communities to better address local health needs.

In most provinces and territories, nurse practitioners are authorized to diagnose a disease, disorder, or condition; order and interpret diagnostic and screening tests; and prescribe medications. Collaboration between nurse practitioners and physicians in primary care settings has been found to significantly lower wait times and improve patient access to care. The number of nurse practitioners working in primary health care in Canada has increased at a rapid pace, more than doubling from 976 in 2005 to 2,048 in 2009.

In 2009, the proportion of regulated nurses that was female was high, at 93.3% of the total workforce. A total of 93.8% of RNs, 92.7% of LPNs, and 77.5% of RPNs were women. This ratio has not changed substantially in the reporting period.

In 2009, there were 68,101 active physicians in Canada (35). This number reflects an increase of 4.1% over the previous year, representing the largest annual growth rate in Canada’s physician supply since the late 1980s. Currently the number of active physicians in Canada is increasing at a faster rate than that of the population. The physician-to-population ratio (per 100,000 Canadians) grew from 190 in 2005 to 201 in 2009.

Over the past 30 years, the number of female physicians increased dramatically. In 1979, 11.8% of physicians were women and by 2009, 35.6% were women.

**HEALTH AND INTERNATIONAL COOPERATION**

The Government of Canada participates in large-scale, multi-donor programs based on developing country priorities that use local institutions and systems for their implementation. As of 2010–2011, Canada focused 88% of bilateral resources in 20 countries, 5 of which are in the Region of the Americas, as part of its Aid Effectiveness Agenda.

In 2006/2007 Canada’s voluntary contributions to the Pan American Health Organization totaled US$ 21.7 million, with additional contributions to natural disaster relief efforts and to the PAHO/WHO Collaborating Centers totaling US$ 24.65 million. Examples of specific funding initiatives and in-kind technical support between 2007 and 2010 include the Canadian International Development Agency’s (CIDA) four-year commitment of CAD$ 18 million to support PAHO programs in the region for pandemic influenza, HIV/AIDS, health human resources, and institutional strengthening. The Canadian International Immunization Initiative provided support to national immunization programs in the Region of the Americas (CAD$ 8.5 million over 4.5 years, ending in 2010). The Public Health Agency of Canada provided CAD$ 961,630 to PAHO for a project to control chronic diseases in Central and South America. Another example of Canada’s support was the CAD$ 2 million committed to assist the hemisphere with its response to the 2009 H1N1 influenza pandemic, focusing on immediate response capacity.

Beginning in 2008, the Public Health Agency of Canada supported the Caribbean Community (CARICOM) in the creation of the Caribbean Public Health Agency (CARPHA), which became a
legal entity in July 2011 and integrates five existing regional health institutions into a single, self-administered health agency. CARPHA works to address existing gaps in responding to common public health challenges (e.g., influenza pandemics) and to strengthen public health capacity in its Member States.

In 2010, Canada championed the G-8 Muskoka Initiative on Maternal, Newborn, and Child Health, which mobilized G-8 and non-G-8 members to support country-led and global efforts to reduce maternal and child mortality and improve the health of mothers and children in the world’s poorest countries. Canada’s approach to the Muskoka Initiative consists of three paths: strengthening countries’ health systems, reducing the burden of diseases that constitute the main causes of maternal and child mortality, and improving nutritional status. The Muskoka Initiative focuses on 10 countries, including Haiti, and builds partnerships with multilateral, global, and Canadian organizations. In tandem with the Muskoka Initiative, Canada supports the Improved Health for Women, Children, and Marginalized Populations project, which focuses on activities in 11 Latin American and Caribbean countries where maternal, newborn, and child health needs and gaps are greatest.

SYNTHESIS AND PROSPECTS

Between 2006 and 2010, fiscal constraints, along with the high cost of new technology and the aging of the baby boom generation, added to the challenges faced by the Canadian health care system. Improving access to health care services and delivery was a major priority during this time and has resulted in reduced wait times for priority services across the country and an increase in the supply of health care providers. Between 2006 and 2010 advances in population health occurred across the country at the federal, provincial/territorial, and community levels. For example, Canada’s survival rates for breast and colorectal cancer are among the highest in the OECD countries (36). Canada also performs well in preventing costly hospital admissions from chronic conditions such as asthma and uncontrolled diabetes, which suggests that appropriate care and treatment for these conditions is being provided through primary care. Reducing health inequalities continues to be a national concern, with various levels of government working together to better understand how social and economic structures, systems, and policy approaches affect health, and how health and social gains can be better addressed collaboratively.

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