

BERMUDA



Bermuda, the oldest self-governing British Overseas Territory, is a group of more than 100 small islands in the Atlantic Ocean, the largest seven being linked by bridges. It is located 943 km east of North Carolina, U.S.A. Together, the islands cover an area of approximately 54 km², making them about one-third the size of Washington, D.C., U.S.A. The maximum elevation is Town Hill, at approximately 79 m. The subtropical climate is mild, frost-free, and humid, with temperatures ranging from 65°F to 88°F and an average annual rainfall of 140 cm. Bermuda is famed the world over for its pink-sand beaches and turquoise waters. Hurricanes are the only potential cause of natural disasters, with hurricane season lasting from May to November. Hamilton is the capital city of Bermuda. The Territory has nine parishes: Sandys, Southampton, Warwick, Paget, Pembroke, Devonshire, Hamilton, Saint George's, and Smith's. Pembroke is the most populated parish.

GENERAL CONTEXT AND HEALTH DETERMINANTS

Social, Political, and Economic Determinants

The Bermuda government is based on the Westminster model of parliamentary democracy and consists of a Governor, appointed by and representing the British monarch; a Deputy Governor, appointed by the Governor; a Cabinet; and a Legislature. The Cabinet is responsible to the Legislature, which consists of a Senate and a House of Assembly. Bermuda is divided into 36 constituencies, each represented by one elected member in the House of Assembly. Members sit for a term of five years, unless the House is dissolved earlier. The Senate is composed of 11 members appointed by the Governor. According to Bermuda's Constitution, five members of the Senate are appointed on the recommendation of the head of the executive branch, the Premier, and represent the governing party. In 2005, there were 12 Ministers in the Cabinet. Within the Cabinet, the Minister of Health and Family Services is responsible for health policy, planning, and evaluation and reports to the Cabinet.

Bermuda has one of the highest GDP per capita in the world, estimated in 2004 to be above US\$ 65,500. The economy, primarily based on international business and tourism, has enjoyed steady growth in recent years. Approximately one-third of the workforce is employed in wholesale retail trade, one-third in restaurants and hotels, and one-third in community, social, and personal services.

Living standards in Bermuda are high, with good housing and well-developed transportation and communications systems. Roads are of good quality, and the public transportation system includes buses, taxis, and ferries. Private car ownership is high, though limited to one vehicle per household. All of the population has safe drinking water available in the home, as well as hygienic waste disposal.

The country generally showed a balance of payments surplus; the Bermuda dollar is pegged to the U.S. dollar on an equal basis. The consumer price index in 2004 was 127.8 (January 1995 = 100.0). Inflation was estimated at 2.7% per annum in 2000. The tourist industry, which accounts for an estimated 28% of GDP, attracts 84% of its business from North America. Bermuda has very few natural resources. The industrial and agricultural sectors are very small, and almost all consumable goods, including some 80% of foodstuffs, are imported. International business contributes more than 60% of Bermuda's economic output.

The 2000 census determined Bermuda's population to be 62,059, or 6% higher than in the previous (1991) census. While 11% of the population was 65 years of age and older, representing a 25% increase over 1991 figures, 6% was under the age of 5 years, a decrease of 2% from 1991. The racial composition of the population has not changed significantly over the past decade. In 2000, 60% of the population was Black or mixed Black, and 40% was White or of other racial background. Seventy-five percent of the Bermuda-born population was Black, while the foreign-born population was primarily White and other races (79%). The islands

have a small but growing Asian community. A significant segment of the population is also of Portuguese heritage, the result of immigration from Portuguese-held islands (particularly the Azores) over the past century. The external immigration community additionally includes several thousand residents engaged in specialized professions, such as accounting, finance, and insurance, principally from the United Kingdom, Canada, and the United States. During the period 2000–2004, more than half of the population belonged to one of three religions: Anglican (28%), Catholic (15%), and African Methodist Episcopalian (12%).

Regarding relative income, poor and near-poor households accounted for 19% and 11%, respectively, of all Bermudian households in 2000, remaining unchanged since the 1991 census; while middle class and upper class households constituted 42% and 27%, respectively, versus 46% and 24% in 1991. Black Bermudian households are overrepresented in low-income households and underrepresented among high-income ones.

Education is free in public schools and compulsory up to the age of 17. In 2005, the literacy rate was 98.5% (98% in males and 99% in females). Many Bermudians study abroad at the tertiary level. The highest enrollment figures were in hotel and business administration (50% of all students) and arts and sciences (35%). Established in 1974, Bermuda College is an internationally recognized community college based in Paget Parish that offers associate degrees, certificates, and diplomas in the applied sciences, liberal arts, business, technology, and hospitality. As the only post-secondary educational institution in Bermuda, the College has developed an extended academic structure linking it to other academic institutions overseas, thus enabling students to easily transfer credits elsewhere to continue their studies.

Economic expansion during the 2000–2004 period occurred primarily in the financial and tourism sectors. In 2004, the total workforce consisted of 38,363 workers. Women made up 50% of this number, and 30% of workers were non-Bermudian. A substantial number of contract personnel worked in the hotel industry and international business sector; by law this group is included in a health insurance scheme that assures equitable access to health care.

As a developed country, Bermuda faces problems associated with declining fertility rates and increasing longevity, such as a shrinking labor force, increasing demand for housing, and a growing elderly population, with consequent health and social needs. Increasing health costs have required the government to find cost-cutting measures while taking into consideration the needs of an increasingly aging population, particularly the elderly poor.

Demographics, Mortality, and Morbidity

The estimated population in 2004 was 63,955, representing a 0.7% increase over 2003 figures. The estimated 2004 male popu-

lation was 30,821 (48.2%), and the female population was 33,134 (51.8%). Population density was estimated at 1.16 persons per km² in 2000. The dependency ratio was estimated at 42 in 2000. In 2004, the crude birth rate was 13.2 per 1,000 population, and the annual population growth rate was 0.7%. Life expectancy in Bermuda in 2000 was 77.7 years (80.4 for women and 74.7 for men); disparities, however, can be observed between the Black and White population segments. Figure 1 presents the population distribution by age and sex for 1990 and 2005.

There were 836 live births recorded in 2004. The birth rate and sex ratio have remained stable over the period under review. Of the total live births recorded in 2004, 445 were male and 391 were female, with a male-female ratio of 1:1.1. There were 287 out-of-wedlock births in 2004, representing 34.3% of the total number of births for that year. Between 2000 and 2004, the cumulative total of live births was 4,168. The percentage of these births to unmarried women over the same period ranged from a low of 34.3% in 2004 to a high of 37.7% in 2001. On average, there were 833 births per year between 2000 and 2004, with approximately 36% occurring out of wedlock; this situation indicated possible financial dependency problems for an estimated 1,500 women on the islands.

The fertility rate was estimated at 1.9 children per woman. Although life expectancy at birth has continued to increase, the difference between the sexes has widened.

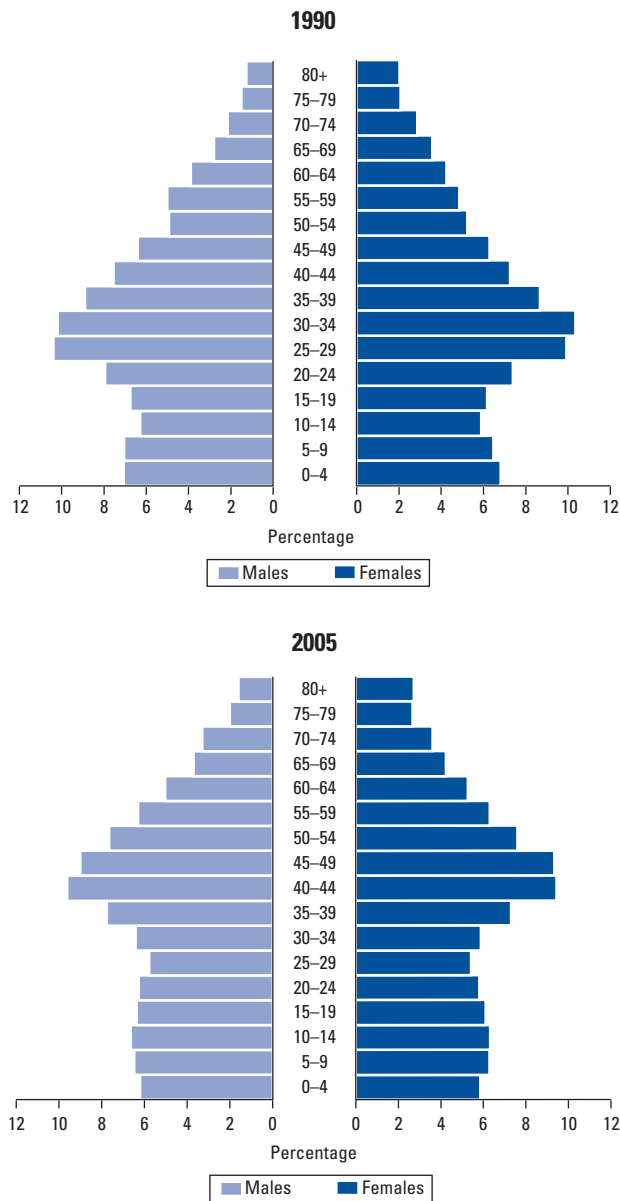
There were 25,148 households in 2000, with household size continuing to decrease. In 2000, it was estimated that 36% of households were headed by females.

The number of deaths for the 2000–2004 period totaled 2,156, with an annual range of 404–470 deaths. Stillbirths registered during this period ranged from 0 to 2 per year, with a total of four. An average of 215 males and 216 females died annually during the period.

Of known causes of death for the 2001–2002 period, diseases of the circulatory system accounted for 313 deaths (36.2%), while malignant neoplasms accounted for 246 deaths (28.4%), diabetes mellitus for 48 deaths (5.5%), and influenza and pneumonia for 18 deaths (2.1%). Among males 20–59 years of age, ischemic heart diseases and HIV/AIDS were the two leading causes of death, while among females in this age group, the leading causes were malignant neoplasms of the breast and HIV/AIDS.

According to the Ministry of Health and Family Services, diseases of the circulatory system and malignant neoplasms were the first and second leading causes of death for every year between 1990 and 2003. Between mid-2000 and mid-2004, discharge data from King Edward VII Memorial Hospital (Bermuda's general hospital) showed asthma to be the principal diagnosis, followed by pneumonia and gallbladder calculus. The major health problems, as reflected in mortality data, included cancer, ischemic heart diseases, fatal cerebrovascular disease (stroke), HIV/AIDS, and motor vehicle accidents.

FIGURE 1. Population structure, by age and sex, Bermuda, 1990 and 2005.



HEALTH OF POPULATION GROUPS

Children under 5 Years Old

All births in Bermuda are hospital births. There were nine deaths in the 0–4 age group, five infant deaths, and four stillbirths during the 2001–2004 period. The prevalence of low-birthweight infants (< 2,500 g) was 7% in 2004, an increase from 4.1% in 2000. During the 2000–2003 period, respiratory diseases were the

leading cause of hospitalization among children under age 5 and totaled 1,629 cases. During the same period, there were 668 cases of gastroenteritis reported among children in this age group.

Children 5–9 Years Old

There were 559 cases of gastroenteritis in this age group during the 2000–2003 period.

No deaths were registered for this group in 2004.

Adolescents 10–14 and 15–19 Years Old

There were no deaths in either of these two age groups in 2003 and 2004. In the 15–19-year-old age group, there was one death each in 2001 and 2002. Accidents were the leading cause of death among youths 15–19 years of age and one of the major causes of hospital admissions in this age group, along with pregnancy and respiratory diseases.

Obesity is a public health concern in Bermuda. The weight-for-age of approximately 10% of children and adolescents between the ages of 5 and 15 is above the recommended level, and some are obese.

Decreases in the incidence of dental decay have been maintained in the period under review, and oral health in children is generally excellent. This is in large part attributable to a preventive dental care program for infants and children that includes teaching mothers best practices regarding bottle-feeding, as well as the importance of regular teeth-brushing and limiting access to foods high in sugar, and providing free fluoride treatments. The voluntary school-based health program maintained high participation levels during the study period.

Between 2000 and 2004, 12.7% of all deliveries were to teenagers, with 23 deliveries to females under 16 years of age. There were 315 deliveries reported in the 16–19-year-old age group.

Adults 20–59 Years Old

There were 360 deaths among adults in this age group during the 2000–2004 period. Of these, 221 (61.4%) were males; the male-female ratio was 1.6:1. Only 42 (11.6%) of these deaths occurred among those aged 20–34; malignant neoplasms and diseases of the circulatory system were the major causes of mortality.

Accidents were a major cause of hospital admission among adults aged 25–44 years, and diseases of the circulatory and digestive systems and cancers were the leading causes of admission among the population aged 50–64 years old.

Older Adults 60 Years Old and Older

In 2004, the average age of death was 73.6 (79.6 years for females and 67.9 years for males). Those 60 years old and older rep-

resent the fastest growing segment of Bermuda's population. Ischemic heart diseases, diabetes, cerebrovascular diseases, and cancer are among the leading causes of mortality in this group.

There were 1,774 deaths between 2000 and 2004, accounting for 82.6% of total deaths. The most common causes of hospitalization among persons aged 65–74 included diseases of the circulatory system, cancer, and diseases of the digestive system. Among those aged 75 years or older, the major causes of hospitalization were diseases of the circulatory and respiratory systems.

The Family

A health and behavioral survey carried out in Bermuda in 2005 showed that 55% of Bermudian adults were married and that the separation and divorce rates were low when compared to other countries in the Caribbean region. Only 9.7% of households were headed by a single parent. The survey examined the population in terms of marital status in 2005 and revealed that 55% were married, 15.8% were separated or divorced, 10% were widowed, and 17% had never married.

Workers

There is no child labor in Bermuda as school attendance is mandatory up to age 17.

The Office of Health and Safety oversees the enforcement of health regulations in the workplace. No-smoking policies are in place in all government offices and virtually all other institutions. There were no industrial site fatalities during the 2000–2004 period.

Persons with Disabilities

In 2000, there were 2,832 individuals (1,265 males and 1,567 females, or 4.5% of the population) with a long-term condition that affected their daily lives. This figure was lower than that of 1991, even though the total population with disabilities remained constant at 5%. Blacks accounted for 60% of all those with disabilities, as opposed to 55% of the total population; Whites, on the other hand, constituted 30% of the population with disabilities, compared to 34% of the total population. The median age in 2000 for this group was 53 years.

HEALTH CONDITIONS AND PROBLEMS

COMMUNICABLE DISEASES

Vector-borne Diseases

In 2005, one imported case of **malaria** was reported and subsequently confirmed. There were also two cases of suspected **dengue** reported and investigated, but not confirmed.

Vaccine-preventable Diseases

The incidence of diseases preventable by immunization is zero or very low, and there were no reported cases of **pertussis, rubella, tetanus, neonatal tetanus, or diphtheria** during the 2001–2005 period. Measles has not been reported since 1991, and poliomyelitis has not been reported for more than 25 years. Vaccination coverage against diphtheria, measles, mumps, pertussis, polio, rubella, and tetanus was maintained at levels of over 85% during the 2001–2005 period. The following vaccines are part of the national immunization program: injectable polio, diphtheria, acellular pertussis, tetanus, *Haemophilus influenzae* type b, hepatitis B, pneumococcal disease, measles-mumps-rubella (MMR), varicella, and seasonal influenza. For 2005, the vaccination coverage for MMR was 96%, completion of the third dose for hepatitis B reached 82%, and D'TaP/IPV/Hib coverage was 85%.

Chronic Communicable Diseases

There was one case of tuberculosis in 2003, and one imported and confirmed case in 2005.

HIV/AIDS and Other Sexually Transmitted Infections

In 1982, the first case of HIV/AIDS was reported in Bermuda. Since then, the Epidemiology and Surveillance Unit of the Ministry of Health and Family Services has received reports of 555 new HIV infections. Of these, 498 have progressed to AIDS, and 392 persons have died (Figure 2). At the end of 2005, it was estimated that 163 persons were living with HIV/AIDS in Bermuda, with a prevalence of 26 persons per 10,000 population. Males accounted for 75% of all cases, giving an overall male-female ratio of 3:1. Since 1982, less than 3% of all reported HIV infections have been among persons under the age of 20. The 20–29-year-old age group represented 17% of reported HIV infections, while the 30–39- and 40–49-year-old age groups represented 44% and 25%, respectively, thereby yielding a combined total of 69% of all new reported HIV infections. The age group of those 50 years old and older represented 12% of all new reported HIV infections. Eighty-eight percent of reported HIV cases were among those identifying themselves as Black, and 12% were among those identifying themselves as White. From 1982 to 1986, injection drug use was the most commonly reported transmission category among individuals with HIV, accounting for 74% of all HIV cases reported during that time period. While injection drug use continued to be a major route of transmission until 1990, sexual contact has been the most commonly reported transmission category since 1987. Overall, persons exposed through sexual contact account for 62% of all reported HIV cases, with exposure through injection drug use and other routes accounting for 31% and 7%, respectively.

After several years with a consistent declining trend (1989–2002), the number of new HIV infections reported annually stabilized at 11 new cases per year for 2004 and 2005 (Figure 3).

FIGURE 2. HIV/AIDS prevalence and mortality, Bermuda, 1982–2005.

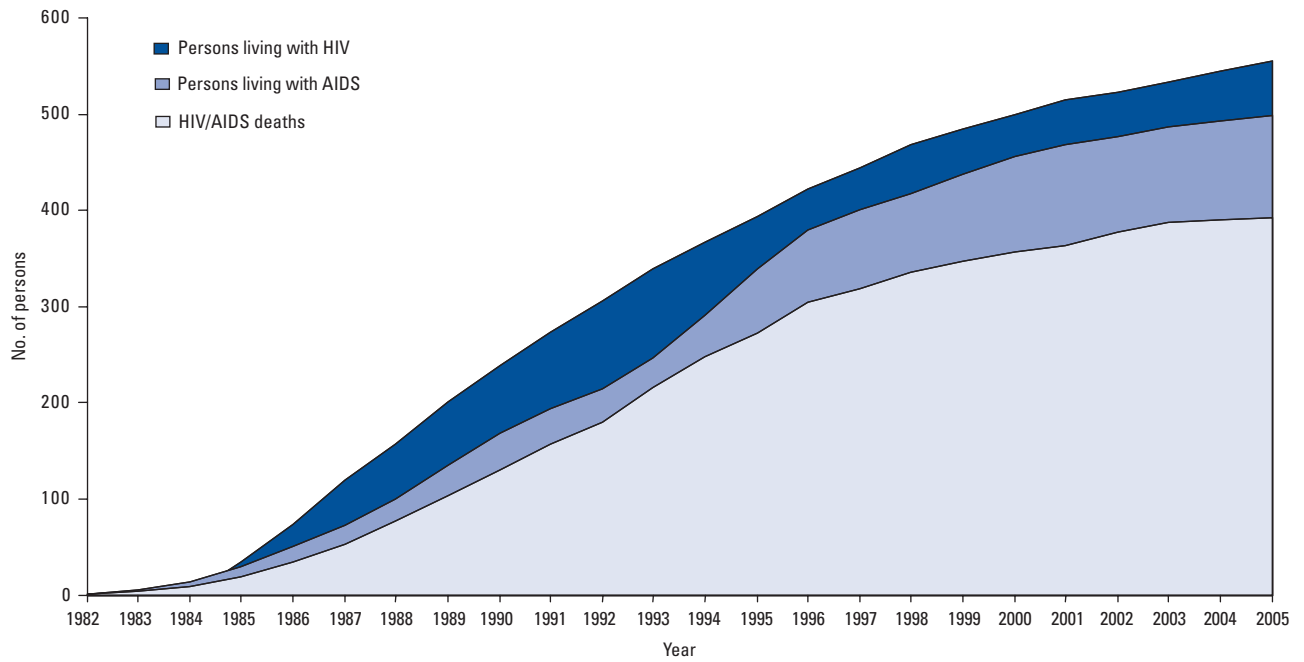
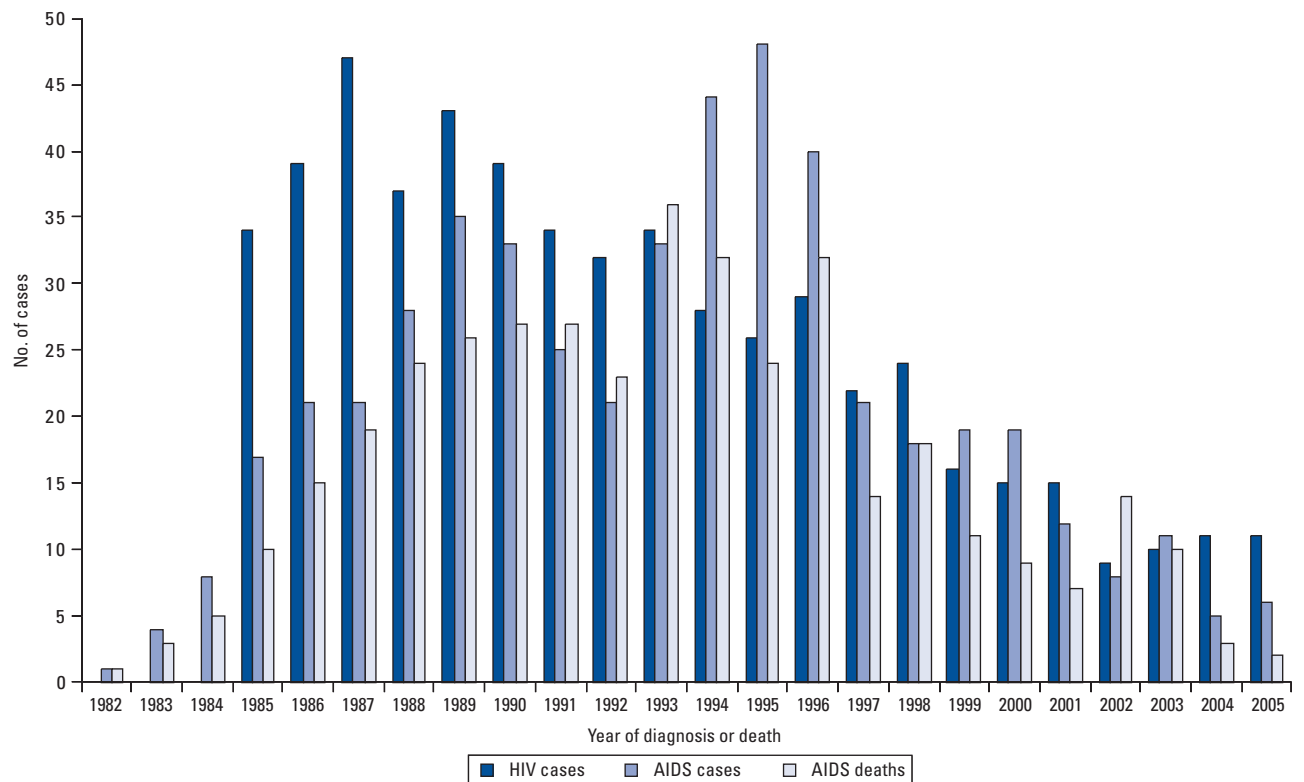


FIGURE 3. Annual reported HIV/AIDS cases and deaths, Bermuda, 1982–2005.



The annual number of cases of sexually transmitted infections during the 2001–2005 period was **chlamydia**, 356; **nonspecific urethritis**, 87; **gonorrhea**, 69; **herpes**, 33; and **syphilis**, 7. During this time, the number of annually reported cases of chlamydia increased by 91%. Reported cases of gonococcal infections and nonspecific urethritis decreased, while the rates of reported syphilis cases increased slightly and the rate of reported herpes cases remained about the same.

Zoonoses

There were no reports of bovine spongiform encephalopathy (mad cow disease), foot-and-mouth disease, or zoonoses, including rabies, during the period under review.

NONCOMMUNICABLE DISEASES

Metabolic and Nutritional Diseases

Obesity is an important risk factor for a number of major health problems in Bermuda, including diabetes. The health and behavior survey conducted in Bermuda in 2005 showed that one in every three adults is obese, one in every two adults is above a healthy body weight, and one in every two adults is also attempting to lose weight.

Cardiovascular Diseases

Cardiovascular diseases are the leading cause of death among females and males and affect the older adult population at much higher rates. For the 2001–2002 period, 162 deaths, or 35.4% of all male deaths, were due to cardiovascular diseases. For the same period, 151 deaths, or 37.0% of all female deaths, were caused by cardiovascular diseases.

Malignant Neoplasms

The number of deaths due to malignant neoplasms is surpassed only by that for cardiovascular diseases. For the 2001–2002 period, malignant neoplasms accounted for 125 deaths, or 27.4% of all male deaths, and 121 deaths, or 29.7% of all female deaths. For males, the malignant neoplasms that caused the most deaths were those of the prostate (24.1%) and trachea, bronchus, and lung (21.6%). For women the most common malignant neoplasms were those of the breast (19.8%) and trachea, bronchus, and lung (12.4%).

OTHER HEALTH PROBLEMS OR ISSUES

Disasters

Hurricane Fabian, a Category Three storm, hit Bermuda in September 2003, causing 5 deaths and extensive infrastructural damage. During the period under review, there were no other natural disasters.

Addictions

Reports from Bermuda's police services and the Epidemiology and Surveillance Unit of the Ministry of Health and Family Services showed that 22 deaths occurred during the 2002–2005 period due to a drug or alcohol overdose. The health and behavior survey conducted in 2005 found that of the adult interviewees who drank alcohol, 67% reported drinking one or more drinks in the past month, and 21% said that they had had less than 1 drink in the past month or that they no longer drink at all. On drinking days, 77% of alcohol consumers said they drank three or more drinks at one time.

The same survey revealed that 12% of the population are abusers of alcohol, 11% of the population is strongly indicated as being abusers of alcohol, and 44% of the adults who were strongly indicated as being abusers of alcohol had moderate to high stress overload scores, compared to 21% of adults with no indication of alcohol abuse having moderate to high stress overload scores.

Binge drinking, which is defined as the consumption of five or more drinks per occasion, was seen in 56% of adults who had consumed alcohol at least once in the past month; 21% of the adults who drank alcohol in the past month binged two or more times. Six percent of adults reported using mood-altering or sleep-enhancing drugs daily, and 11% of adults reported using these drugs several days a week; 69% of this group also had high stress overload scores.

The 2005 survey additionally found that 17% of adults smoked cigarettes, and another 28% reported being exposed to second-hand smoke on a daily basis. According to research conducted by the National Drug Commission (NDC) of the Ministry of Health and Family Services in 2001, 54% of the adult population reported using alcohol during the previous month; 18% used tobacco and 7% marijuana. Reported use of cocaine, crack, and hard drugs, including heroin, was less than 1%.

In 2003, the NDC carried out behavioral studies on middle school and senior high school students. Marijuana use was found to be as low as 1% in middle schools and as high as 21% in senior high schools. Ten percent of those studied reported using marijuana within the previous 30 days; this was 3% less than in 2002. These findings indicate a decline in marijuana use since 1997. Cigarette use also declined from 10% in 2000 to 7% in 2003. Alcohol use stayed more or less stable at 27%.

RESPONSE OF THE HEALTH SECTOR

Health Policies and Plans

Bermuda's health policy emphasizes several key areas, including maternal and child health, health of schoolchildren, community nursing for the elderly, oral health, mental health, and prevention and control of communicable diseases and alcohol and drug abuse. Population groups designated for special attention include mothers and infants, school-age children, and the elderly.

Child health programs and services focus on the following areas: immunizations, periodic growth and development assessments, parental support in the child health and development process, addressing behavioral and nutrition problems, injury prevention, and disease management. Health care services for the 5–9-year-old age group focus on health promotion and prevention activities and screening for early detection of hearing and vision problems and scoliosis.

During the 2001–2005 period, the Bermuda Health Council, a government-appointed entity responsible for regulating, coordinating, and maximizing the effectiveness of the country's health services, focused on the development of an integrated health care delivery system within a general framework that shifted from a disease-focused model to one that incorporates community participation in improving the public health infrastructure. Health education, core public health functions, and professional training were also emphasized.

Legislation governing the formation of the Bermuda Health Council was approved in 2005 mandating the Council to oversee the integration of health services. In 2005, the Medical Practitioners Amendment Act was developed and in 2006 was approved by the Legislature; it calls for periodic registration by this group and continuing medical education training once every two years. Among the Act's provisions is one specifying the responsibility of health professionals to report drug misuse. This Act also revised disciplinary procedures in the medical profession, an activity that is overseen by a subcommittee of the Bermuda Medical Council.

The Tobacco Products (Public Health) Amendment Act was approved by the Legislature in December 2005 and entered into effect on 1 April 2006. The Act bans smoking in enclosed public places and bars, restaurants, hotels, and business vehicles. It also bans cigarette vending machines, limits tobacco advertising, and prohibits the sale of tobacco products to those under age 18. To facilitate transition into the new law, a six-month grace period was allowed for the affected premises, with prosecution for violations beginning in October 2006.

The Nursing Act of 2000 established requirements for nursing categories and continuing education. The rules and regulations needed to implement these changes were modified during the current review period and now allow for nurse practitioners and nurse specialists to be registered.

Under review currently are a pharmacy act and dental practitioners act. The Professions Supplementary to Medicine Amendment Act is being updated to include a code of ethics and improved disciplinary procedures.

Organization of the Health System

The public and private health care systems collaborate closely in the provision of health care. Responsibility for public health care lies with the Ministry of Health and Family Services. The

Ministry is mandated to promote and protect the health and well-being of Bermuda's residents and is charged with assuring the provision of health care services, setting standards, and coordinating the health care system. As a Cabinet-level official, the Minister of Health and Family Services reports to this body on all issues related to health policy, planning, and evaluation.

This Ministry is composed of several departments and agencies, including the Department of Health, Department of Child and Family Services, Department of Financial Assistance, and Department of Court Services. Each department is responsible for its own operation, under the authority of the Permanent Secretary, and the direction of the department head or director.

The Ministry is also responsible for Bermuda's two hospitals, the King Edward VII Memorial Hospital (the general hospital) and the Mid-Atlantic Wellness Institute (formerly Saint Brendan's Hospital, the country's psychiatric facility). The King Edward VII Memorial Hospital has 327 beds in private, semiprivate, and public wards. Services are organized into five multidisciplinary programs: continuous care, critical care, maternal and child care, medical care, and surgical care. The culturally diverse nursing and medical staff is recruited locally and worldwide, and provides quality nursing and medical care within the community using up-to-date procedures and technological equipment.

There is a large private health care sector utilizing fee-for-service practices, as well as an increasing number of informal groups and corporations of specialist physicians and allied health professionals; part of their focus is on primary care. Currently, the reimbursement system for physicians is being revised to ensure standardization in the delivery of services.

Bermuda has no universal, publicly funded health insurance system. Health insurance plans are provided through private companies, public agencies, and employers. Public sector workers are insured through the Government Employees Health Insurance Scheme, while several major employers operate their own approved coverage plans for employees. The Bermuda Health Council has a committee that oversees the health insurance plan. This plan has an annual open enrollment period designed to ensure access to hospitalization insurance for all residents of Bermuda. Hospitalization insurance is mandatory for all employed and self-employed persons. Both employers and employees contribute to hospitalization insurance, with employers contributing 50% of the premium costs. Insurance coverage is nearly universal, and some individuals are over-insured. Insurance sold by private companies and public agencies is regulated through the Bermuda Health Council and must include a provision for minimum benefits known as the Standard Hospital Benefit.

A Mutual Reinsurance Fund, also administered by the Bermuda Health Council, covers dialysis, anti-rejection drugs, and hospice care. Hospitalization is provided free of charge to children and the elderly; costs are covered through a government subsidy to the Bermuda Hospitals Board.

Government Deals with Fewer Births, Longer Lives

As its crude birth rate drops and life expectancy rises, Bermuda is transitioning toward an older population—11% of the population is 65 years old and older, while only 6% of the population is under 5 years of age. As a result, the active labor force can be expected to decrease in the years to come, while an aging population will make increasing demands on the health care system. The Government is addressing this situation by providing special attention to the elderly, including free-of-charge hospitalization. The 11 residential care facilities for the elderly include nursing and domiciliary homes that provide care and personal services.

Responsibility for providing public health services rests with the Ministry of Health and Family Services, which is mandated to provide health promotion and disease prevention and control services as well as personal health and dental health care. In its role as a regulatory agency, the Ministry monitors food safety and water and air quality.

The Public Health Service plays a significant role in the provision of personal health services and also administers a number of traditional public health programs, including maternal and child health, school health, immunizations, health promotion and education, communicable diseases control, rehabilitation, and home health care, including health visiting, district nursing, and selected specialized care for conditions such as HIV/AIDS.

Bermuda is divided into three health regions to facilitate the delivery of public health services. In each region, the Ministry of Health and Family Services operates a health center that offers prenatal and child health care, family planning services, immunizations, and other primary care services, as well as dental clinics for children.

Private voluntary agencies provide some specialized services with governmental assistance, such as community-based oncology nursing and personal services for HIV-infected persons, among others.

King Edward VII Memorial Hospital and the Mid-Atlantic Wellness Institute are administered by the Bermuda Hospitals Board, a statutory body appointed by the Minister of Health and Family Services. The Board delegates day-to-day responsibilities for the running of the two facilities to a Chief Executive Officer who is assisted by several senior managers, including a Chief of Staff and a Director of Nursing and Patient Services. Medical staff committees representing the physicians are involved in the administration of the facilities. Both hospitals undergo periodic accreditation reviews by the Canadian Council on Hospital Accreditation. There are no private hospitals in Bermuda.

Public Health Services

As part of its disease prevention and control activities and functions, the Ministry of Health and Family Services provides

health analysis and epidemiology services. Routine laboratory tests are conducted within the country; formal arrangements with various overseas laboratories exist for certain types of specialized laboratory testing.

Potable water and sanitary excreta disposal are handled on an individual household basis; hotels and other commercial establishments have their own systems. Since Bermuda has few natural water supplies, water is obtained principally through a roof cistern collection system. Desalination through a reverse osmosis process and water treatment at the Wellington Water Works supplements hotel and residential water needs. By law, well water is to be utilized only for non-drinking purposes. However, there are some private licensed wells that supplement the tank supply; these are monitored by a team of environmental health inspectors maintained by the Ministry of Health and Family Services.

Sanitary excreta are handled through individual septic tanks, as the islands' limestone formation provides a natural filtering system. Beaches and harbors are monitored to control sewage disposal or dumping into the ocean. Ships hook into a main sewerage line for disposal in the ports at Hamilton and the Royal Navy Dockyard. In the town of St. George's, ship sewage is disposed of in a holding tank. In general, sewage is treated and only then channeled out to sea. Monitoring has been conducted to assure that sewerage is treated prior to disposal into the sea, and although no serious health problems have been reported to date, the process is of ongoing concern and thus warrants permanent vigilance.

The Ministry of Health and Family Services monitors the safety of workers in the areas of pesticide use and those working in the mass burning incinerator; the Ministry also carries out occupational safety assessments for government employees and provides occupational health advice to all government departments.

The Ministry of Health and Family Services also oversees matters relating to food safety and control, including monitoring of food handlers and itinerant food vendors. During the 2001–2005 period, the Ministry initiated continuing health education training for all hotel restaurant personnel, including chefs, in collaboration with Bermuda College.

The Emergency Measures Organization, an entity under the responsibility of the Bermuda Police Commissioner, monitored and instituted preventive measures in preparation for Hurricane Fabian in September 2003 and also offered post-disaster assistance. A preparedness plan for avian and other serious pandemic influenzas has been developed that details operational plans for implementation in the event of an outbreak.

Individual Care Services

Primary health care services, which are generally available on demand, are delivered at government health centers, hospital outpatient clinics, and private physicians' offices. Additional ambulatory care services are provided through specialty clinics and the Emergency Department of King Edward VII Memorial Hospital. A substantial proportion of primary health care is delivered through the private sector. The majority of physicians and dentists are independent, private practitioners. Most other health care providers are employed on a salaried basis by the two hospitals, the Public Health Service, or private physicians.

There are no health maintenance organizations, independent practice associations, or preferred provider organizations in Bermuda. Nor are there provisions for prepaid medical care. There are a small number of multi-specialty group practices and a limited number of partnerships involving specialists. Primary health care physicians, including internists and pediatricians, account for half of all practicing physicians. General practitioners (i.e., family physicians) and other primary health care physicians generally coordinate care and control access to other specialists. Office visits represent the largest portion of physician-patient contact. Almost all physicians have hospital admission privileges.

In addition to its specialty, ambulatory care clinics, King Edward VII Memorial Hospital operates a primary health care clinic for indigent patients. The average length of stay at this facility was 8.2 days during 2003–2004, 7.9 days in 2004–2005, and 8.5 days in 2005–2006. The occupancy rate was 71% in 2003–2004, 69% in 2004–2005, and 73% in 2005–2006. Emergency and outpatient surgery services are only provided at King Edward VII Memorial Hospital. There were over 33,600 patient visits to the Emergency Department in 2005. Between April 2004 and March 2005, surgical procedures were carried out on 2,413 inpatients and on 5,775 outpatients. Other services delivered during this period included 18,710 physiotherapy treatment sessions, 31,584 x-ray examinations, 9,773 cardiac investigations, 9,901 ultrasound scans, 1,397 nuclear medicine investigations, 893 outpatient chemotherapy treatments, 4,851 CAT scans, and 5,112 occupational therapy treatment sessions.

There are no secondary or tertiary care hospitals in Bermuda. However, tertiary care is provided through links with institutions in Canada, the United Kingdom, and the United States.

Bermuda has three special education facilities for children with disabilities and impairments. In addition, a specially

equipped housing complex, Summerhaven, is available for adolescents and adults with physical impairments. Students with disabilities are being mainstreamed from special schools into the regular school system, where paraprofessionals are assigned to facilitate the process; a government post has been established to coordinate this activity.

King Edward VII Memorial Hospital provides diagnostic and treatment services for patients with a variety of health conditions. Services include medicine, surgery, obstetrics and gynecology, rehabilitation, and geriatrics. The hospital also provides such specialized services as oncology, renal dialysis, and medical and surgical intensive care.

Mental health services are provided by psychiatrists, psychologists, a psychiatric social worker, mental health welfare officers attached to the Mid-Atlantic Wellness Institute, and the Employee Assistance Program. The Mid-Atlantic Wellness Institute is Bermuda's only psychiatric hospital and provides comprehensive mental health care and treatment. Accredited by the Canadian Council on Health Services Accreditation and recognized by the Royal College of Psychiatry as a training site for psychiatric resident doctors, the Institute covers all areas of psychiatry including acute general adult, adolescent, and child psychiatry; rehabilitation; community care; extended care; and the subspecialties of learning disabilities and substance misuse. Forensic psychiatric services are provided to prison facilities, and consulting services are available to King Edward VII Memorial Hospital and social services agencies. The 120-bed facility, which serves approximately 600 outpatients per year, has undergone a process of deinstitutionalization over the past two decades, and today maintains several community group homes as well as a halfway house.

The Board and the government also operate various long-term care facilities. Skilled nursing care facilities include Lefroy House, with 57 beds, and the Extended Care Unit at the King Edward VII Memorial Hospital, with 90 beds. A new residential hospice care facility with 43 beds provides a range of services, including assisted care and skilled nursing care, and it has an Alzheimer's unit. This integration of care facilitates changes in patients' care as their condition alters without the need to transfer them to other facilities. Plans are currently under way to develop a single unit to cover all long-term care for older adults. Agape House, also operated by the Bermuda Hospitals Board and partially subsidized by public funds, provides hospice care for clients with terminal conditions. There are 11 residential care facilities for the elderly, including nursing homes that provide limited nursing care and personal services, as well as domiciliary care homes that provide room and board and limited assistance with personal services. Most of these facilities are partially funded through public monies.

Health Promotion

The Ministry of Health and Family Services' Health Promotion Office develops and coordinates programs that promote healthy

lifestyles, environments, and policies and seeks to raise public awareness regarding healthy options, risk reduction, and the availability of professional support and services in the community. It works with a range of partners, both within and outside the Ministry.

One example of interagency collaboration is a comprehensive school health initiative developed jointly by the Ministries of Education and Health and Family Services in cooperation with 12 different government entities. The health-promoting schools initiative operates around a framework of policies, programs, activities, and services designed to enhance students' educational achievement and wellness through 12 different components. It provides practical and strategic opportunities for students, parents and families, educators, health workers, community organizations, and policymakers to interact in a variety of activities that stimulate the creation of healthy behaviors and enhance learning. All of Bermuda's public schools and three private schools are taking part in the initiative. A nutrition policy, food and nutrition handbook, and other health promotion brochures and materials have been distributed to all government schools. Twelve schools have implemented a program to address overweight and obesity issues as part of the health-promoting schools initiative.

Human Resources

In general terms, Bermuda had sufficient human resources to meet its health needs during 2001–2005. During this time, the number of physicians increased, as did the number of visiting specialist physicians. In 2004, there were 161 physicians, or 26 physicians per 10,000 population.

Nurses continue to represent the largest group of health care providers in the country, with a total of 423 in 2004, or 67 per 10,000 population. However, this figure represents a significant reduction from the more than 800 licensed nurses, including registered nurses and psychiatric nurses, who were employed in Bermuda in 1999. Registered nurses accounted for 75% of nurses. Most nurses were hospital-based, and a significant proportion of these were non-Bermudian. There is an ongoing shortage in some nursing specialties.

There were 11 dentists/dental hygienists per 10,000 population in 2004. Seventy dentists/dental hygienists were practicing in Bermuda; most private dentists have independent practices. Specialized forms of dentistry, such as periodontics and orthodontics, are also available. In 2004, there was one optometrist per 10,000 population.

There was a variety of allied health personnel in 2004, including medical laboratory technologists, radiographers, occupational therapists, physiotherapists, 12 nutritionists/dietitians, and speech-language pathologists. There were 44 pharmacists, who provided services ranging from retail pharmacy to clinical pharmacology. Most pharmacists were employed on a salaried

basis. Nurse midwives are registered, but do not provide independent care.

Despite the increase in the number of practicing physicians, shortages persisted in some specialty areas. Physician specialties included general, family practice, internal medicine, anesthesiology, emergency medicine, public health/preventive medicine, pediatrics, psychiatry, general surgery, obstetrics/gynecology, orthopedics, sports medicine, otolaryngology, radiology, cardiology, dermatology, ophthalmology, pathology, geriatrics, and urology.

Bermuda continues to experience difficulties with the retention of nurses and has responded by recruiting from a wider range of countries and by increasing the country's own training capacity.

Even though Bermuda has no medical schools or graduate medical education programs, it nonetheless requires continuing medical education for hospital-based physicians. Refresher courses and a degree program for nurses have been developed at Bermuda College in conjunction with overseas institutions. Training programs for emergency medical technicians have been established by both the Bermuda Fire Service and the Bermuda Hospitals Board.

Health Supplies

There is no local production of pharmaceuticals, drugs, or medical equipment.

Research and Technological Development in Health

In 2004, the Bermuda Hospitals Board formed an Ethics Committee whose objective is to promote greater awareness of moral, ethical, and legal issues at its hospital facilities, endorse medical ethics education, develop an ethics consultation service, and provide guidance to health care professionals when circumstances call upon them to make controversial decisions.

In 2005, a scientific research trial on diabetes was conducted.

Health Sector Expenditures and Financing

In 2004, the Bermudian health system consumed over US\$ 376 million, representing 9.05% of GDP, or nearly US\$ 6,000 per capita. The largest two sources of funding were private insurers, with over US\$ 191 million (51%), followed by the government, with US\$ 110 million (29%), which is 15% of the total government expenditure. Household financing, or out-of-pocket expenses paid by Bermuda residents when purchasing health care (such as co-payments on services and products covered by health insurance, or full payments, if not covered by insurance), constituted the third source of financing of Bermuda's health sector, with over US\$ 57 million (15%). Finally, the nonprofit sector contributed US\$ 12.9 million, or 4% of the total share in 2004. Over

the past decade, there has been an increase in the share of private sector financing (from 61% in 1993 to 70% in 2004) and a decrease in the share of public sector financing (from 39% in 1993 to 30% in 2004). Regarding 2004 health expenditure, the Bermuda Hospitals Board represented the largest share, at more than US\$ 140 million, or 38% of all expenditure; it was followed by local providers, including care for the elderly, with US\$ 107 million (28%); overseas care, with US\$ 40 million (11%); and spending on drugs, with US\$ 36 million (10%). The latter has experienced the steepest increase over the past five years, rising from 6% in 2000 to 10% in 2004. The Ministry of Health and Family Services accounts for 7% of all expenses, or US\$ 26.9 million. Health system costs have outpaced the economy's in the past 15 years: 8.7% and 5.0% per year, respectively, in 1990–2004.

Bermuda's health system delivers high quality levels of care. The distribution of care and financing, however, shows some in-

equities. The very high life expectancy, extremely low infant and maternal mortality, and excellent record on HIV/AIDS prevention, detection, and treatment are examples of the quality and effectiveness of the country's health care. However, disparities in life expectancy, insurance coverage, and distribution of health financing, in particular affecting low-income, Black, and older adult-headed households, indicate the persistence of pockets of inequity. The Bermuda Health Council has been mandated to address these and other equity-related issues affecting Bermuda's health services and systems.

Technical Cooperation and External Financing

During the 2001–2005 period, the Pan American Health Organization and the Caribbean Epidemiology Center provided technical cooperation in health to Bermuda.