INTRODUCTION

The Dominican Republic, which shares the island of Hispaniola with Haiti, has a land area of 48,671 km²—equivalent to 64% of the island. Population density is 203 inhabitants per km². The country is politically divided into 31 provinces and the National District, in which Santo Domingo (the capital city and seat of the central government) is located. It borders on the north with the Atlantic Ocean and on the south with the Caribbean Sea. The Mona Passage, Windward Passage, and Jamaica Passage separate the country from the islands of Puerto Rico, Cuba, and Jamaica, respectively (1). Because of its location, the Dominican Republic has a tropical climate, with high humidity and temperatures, and a mean annual precipitation of 2.098 meters (2).

The Dominican Republic enjoys democratic stability and during the last two electoral periods
(2004–2008 and 2008–2012) has been governed by the Dominican Liberation Party. Through the social security system, reforms have been implemented in the framework of social protection, to improve access to health services and pensions for 40% of the population.

According to the National Statistics Office (3), the country’s population in 2010 was estimated at 9,884,371 inhabitants, with an annual growth of 1.36%. The drop in birth and fertility rates in recent years has lowered the dependency ratio, which fell from 65.5 in 2000 to 62.8 in 2005 and 59.3 in 2010 (4) (Figure 1). This pattern has spawned the “demographic dividend,” a period in which development opportunities could thrive if the economic and social policies succeeded in reducing social inequities among the different population sectors (5).

Life expectancy at birth increased from 65.3 years in 1990 to 71.5 years in 2005, and it was estimated at 72.8 years in 2010 (70.1 for males and 75.8 for females). The population is predominantly young (with a mean age of 25 years), but with a trend toward aging. A process of rapid urbanization has also been underway. In a little over three decades (1970–2002), the proportion of the population living in urban areas rose from 35.0% to 63.6%, and it was estimated at 66.5% in 2010 (7).

The Dominican Republic is a tourist destination: approximately 3,342,106 persons visited the country in 2006 (6), and 3,992,303 in 2009 (7). In 2008, the tourism sector brought in US$ 4.176 billion in revenue, as well as providing employment (direct and indirect) for 195,519 workers (1). The downward trend in the net migration balance continues (estimated at –3.2 in 2009). An estimated 1 to 1.5 million Dominicans live outside the country, and the remittances sent back to their family members are the country’s second largest source of income. In 2010, remittances were estimated at US$ 3.4 billion and represented 7% of the gross domestic product (GDP). In 2000, remittances had totaled US$ 1.689 million (8).

There are three official crossings along the 382.8-km border with Haiti, but the countless number of informal crossings turns it into a border in name alone. Despite the different languages and cultures of the two peoples, trade between the two countries has historically been extremely active, and Haiti is the world’s second-largest importer of Dominican-made products. Trade (including informal

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**FIGURE 1. Population structure, by age and sex,\(^a\) Dominican Republic, 1990 and 2010.**

The population increased 38.7% between 1990 and 2010. In 1990, the population’s structure had a pyramidal shape in which groups younger than 20 years represented nearly one-half of the population. By 2010, the pyramid has narrowed as a result of fertility and mortality decreases, particularly in the intervening years.


* Each age group’s percentage represents its proportion of the total for each sex.
trade) generated around US$ 1 billion in 2010 (9). In addition, poverty levels in Haiti have forced thousands of men and women to migrate to the Dominican Republic to work in the fields, in construction, and in various informal trade activities. This flow of immigrants became more accentuated after the recent political crises and natural disasters (10), and it is estimated that over 1 million Haitians and Dominican–Haitians have moved to the country, most of them illegally, and are now actively participating in the labor market and sharing rural and urban spaces with the poorer Dominicans. Because of this group’s territorial mobility and social and economic vulnerability, it is the group with the greatest health needs.

HEALTH DETERMINANTS AND INEQUALITIES

Extreme poverty and general poverty increased substantially between 2002 and 2004 due to the 2003 national banking crisis. In 2004, poverty indicators reached their highest levels in two decades: extreme poverty was estimated at 15.9% and general poverty at 43%. Following that 2004 peak, general poverty declined. In 2010 it was estimated at 33.8%, which was still higher than in 2000, when it had been 27.7% (11). In 2010, extreme poverty was calculated at 10.4%, making it unlikely that the country will reach the Millennium Development Goal (MDG) of reducing extreme poverty to 5.4% by 2015 (12). In 2010, the Gini coefficient was estimated at 0.51; in 2006, it had been 0.53 (11).

In general, the poorer population’s share of the country’s income is extremely low, and progress toward more equitable distribution has not been seen. Over the 2000–2009 period, the share of national income received by the poorest 20% of the population ranged between 3.2% and 4.3%. In 2009, the provinces with the highest incidence of poverty were Elías Piña (69.7%) and Bahoruco (63.0%), and those with the lowest incidence were the National District (16.8%) and Santo Domingo (25.3%) (13). One key poverty-reducing strategy is based on the Solidarity Program, which consists of conditional cash transfers to encourage school attendance and improve nutritional consumption in extremely poor households. This program coexists with the School Feeding Program, which was established in 1992 (14).

In the last two decades, unemployment has averaged 16.4%. It has affected women much more than men (28% versus 10%). In the second half of 2009, unemployment was 14.4% overall (23.0% for women and 9.8% for men) (7). Overall illiteracy in those 10 years and older dropped from 15% in 1996 to 10.7% in 2007 (and with it being 10.5% for females). Substantial progress has been made in universal primary education, with the annual percentage of children successfully completing elementary school rising from 23.2% in 1990 to 75.8% in 2009. Nevertheless, that rate is likely to reach only 86% by 2015, falling short of the MDG of 100%.

THE ENVIRONMENT AND HUMAN SECURITY

Access to Clean Water and Sanitation

According to the 2007 National Household Income and Expenditures Survey, 44.8% of dwellings had domestic water connections, another 28.4% had running water outside the house, and an additional 2.4% used public standpipes. Totaling 75.6%, that proportion of homes using the public water supply was substantially up from the 60.7% level of 2002 (15). Potable water service coverage in rural areas reached only 52.2%, while in urban areas coverage by networks (inside and outside of homes) was 81.3%. In the poorest quintile, coverage was 55%, while in the richest it was 87%.

The potable water supply system is made up of 640 water supply systems, of which 195 are urban and 445 are rural. Of the total, 69.5% have installed chlorination systems and 30.5% have a water quality surveillance system. Only 11% of the urban population has continuous drinking water service. Nationally, the potability index in 2009 was 28.3%, the average percentage for chlorination was 26.5%, and the average percentage of fecal coliforms was 48.1%.
SOLID WASTE

The final disposal of municipal solid waste is done using open-air dumps in 57% of the country’s municipalities. These dumps are often near populated areas, rivers, and streams, causing negative environmental and health impacts.

HEALTH CONDITIONS AND TRENDS

HEALTH PROBLEMS OF SPECIFIC POPULATION GROUPS

Maternal and Reproductive Health

The 2002 National Health Survey estimated the maternal mortality rate at 178 per 100,000 live births. The 2007 survey calculated the rate at 159 per 100,000 (16). If this trend continues, the rate by 2015 will be 141 per 100,000. Therefore, it is unlikely that the MDG of 46.9 maternal deaths per 100,000 live births will be reached (12). Despite efforts to improve detection of maternal mortality through surveillance, a comparison of the estimated rate and the reported rate indicates that underreporting was around 44% for the 2002–2005 period and 27.2% for the 2009–2010 period (17). In 2010, 79.5% of maternal deaths were the result of direct causes. Hypertensive disorders of pregnancy, childbirth, and postpartum were responsible for 26.5%, followed by hemorrhaging (16.1%), postpartum complications (16%), and pregnancy ended in abortion (9.6%). The percentage of adolescent women who have already been mothers or are pregnant for the first time was 20% (18). Of the maternal deaths, 19% of them were reported in women 15 to 19 years old. Those 20 to 39 years old accounted for 82.1% of the maternal deaths. In 2009 an estimated 42% of births in public facilities and 80% of those in private facilities were cesarean deliveries. In the Altagracia public maternity hospital in Santo Domingo, 10% of deliveries were by cesarean section in 1970, 14% in 1980, and 37.6% in 2009, increasing at an annual rate of 2% to 3%.

Children (under 5 years old)

In 2009, mortality in children under 5 was estimated at 32 per 1,000 live births (19). The National Statistics Office projects that infant mortality in 2015 will be 24.2 per 1,000 live births, far from compliance with the MDG of 21.7 per 1,000 live births. Infant mortality as a component of mortality in childhood was estimated at 27.8 per 1,000 live births for 2010. No downward trend in infant mortality has been observed in the last 10 years, given that it was 30 per 1,000 live births in 2000. In 2004, as a result of the economic crisis, the rate even increased to 35.4 per 1,000 live births. Underreporting of infant mortality has been high, and was estimated at 43.8% in 2010 (20). When infant mortality is disaggregated by time period, 67.5% corresponds to early neonatal mortality, 17% to late neonatal mortality, and 15.5% to post-neonatal mortality. Two of the leading causes of post-neonatal mortality are septicemia (35.1%) and pneumonia (17.2%).

Adolescents

The National Strategic Plan for Comprehensive Adolescent Health 2010–2015 was prepared and published in 2010; the plan defines lines of action for the comprehensive health of adolescents (18). In the 2004–2008 period, there were 81 adolescent comprehensive care facilities. In 2010, a pilot project in a group of institutions began applying the Computer Information System on Adolescents to improve the availability of strategic information and to correct existing gaps in the monitoring and evaluation of actions. However, serious deficiencies were identified in the delivery of sexual and reproductive health services for adolescents, as well as in educational programs and job opportunities for pregnant adolescents (21). According to data from several national health surveys, these shortcomings have led to decreased reported use of contraceptives among pregnant adolescents (84%, in comparison with 35% by non-adolescents). The percentage of 15-year-old adolescent mothers was 1.6% in 1991, 2.6% in 1996, 3.2% in 2002, and 4.4% in 2007.
Mortality

The country’s health information system has three components: epidemiological surveillance, statistics on services, and vital statistics. The epidemiological surveillance system is the only component coordinated in a national-level network, which utilizes the information for analysis, decision-making, and subsequent dissemination of public health notices. Neither the vital statistics system nor the services statistics system functions in a network. These two systems are characterized by fragmentation and poor consistency, and they provide little opportunity to apply the data (22). These inadequacies result in the underreporting of mortality, estimated to be 55% in 2006 and 61.5% in 2007 (23).

In 2007, there were 22,699 deaths reported. The leading cause of death was cardiovascular disease (36.5%), which was followed by external causes (15.4%), neoplasms (15.3%), and communicable diseases (8.2%). From 2000 to 2004, mortality from homicides was 8.1 per 100,000, and suicides 3.0 per 100,000. In 2009, these rates were 22.6 and 4.7, respectively. Homicides increased considerably, due to the increase in violence and crime in the country. Analysis of mortality statistics showed that deaths from communicable diseases have declined proportionally (a reduction of 50% in deaths reported in 2007 as compared with 2000). No substantial changes have been seen over the last decade in mortality rates from neoplasms, circulatory system diseases, or external causes.

Morbidity

Communicable Diseases

Vector-borne Diseases

Dengue is endemic in the Dominican Republic and most commonly occurs during the rainy season (June to October). All serotypes from the dengue virus have been isolated. In 2007, there were 9,650 cases reported, of which 227 were serious. There were 43 deaths, with a case-fatality rate of 18.9%. In 2009, the number of serious cases increased to 976 and there were 52 deaths. The case-fatality rate was 5.3%, less than one third the rate reported between 2007 and 2008. In 2010, 12,166 cases were reported, 1,110 of which were serious. There were 49 deaths, with a case-fatality rate of 4.4% (24).

Malaria is endemic in the country. In all cases the agent responsible is *Plasmodium falciparum*, which is sensitive to treatment with chloroquine. Cases are most commonly found (75%) in marginal rural and urban populations. The annual increase in the number of cases has been related to climatic phenomena, such as Hurricane Georges (1998) and Hurricane Jeanne (2004). There were, 2,354 cases were reported, with an incidence of 27.5 per 100,000; the occurrence of cases among tourists caused estimated losses of US$ 90 million in the hotel sector. The number of malaria cases fell from 3,525 in 2006 to 1,838 in 2008. In 2010, 1,643 cases were detected; 200,670 slides were examined, of which 0.58% were positive. Of all the cases, 65% were in males, and the age group most affected were persons aged 10–49 (74%). Outbreaks are associated with movements of groups of migrant workers following temporary work in agriculture and construction. The national malaria control program reports that since 2009 there has been a rise in imported cases of malaria among people coming from Haiti.

Vaccine-preventable Diseases

The transmission of wild poliovirus was interrupted in the Dominican Republic in 1986, as it was for measles in 2001 and rubella in 2006. A national campaign against measles and rubella was conducted in 2006, and 96% coverage was achieved in persons 7 to 39 years old. In 2010, in a follow-up campaign, a vaccine against measles, mumps, and rubella was administered to those under 9 years old. The campaign attained 97% coverage, thus strengthening the elimination of measles and rubella and the control of mumps. This was confirmed with rapid monitoring of coverage through surveys conducted on more than 40,000 households in all the municipalities. Each year children under 3 are vaccinated in order to strengthen the immunological
barrier against poliomyelitis. In 2010, 94% coverage was attained.

Neonatal tetanus is no longer a public health problem. However, since 2006, two to four cases have been reported annually. Diphtheria continues to be endemic, with two to three cases (some in migrants) reported each year. Since 2009, national vaccination coverage has been stable at the national level. The BCG vaccine is the only vaccine with sustained coverage over 95%. Coverage is unequal among the country’s municipalities. It is less than 80% in 40% of the municipalities, from 80% to 94% in 30% of the municipalities, and above 95% in the remaining 30%. The influenza vaccine has been added to the official vaccination plan for older adults with chronic diseases.

Zoonoses

From 2006–2010, nine cases of rabies were reported in human beings; none received treatment. There were 315 cases of animal rabies reported in 2008 and 390 in 2009, due to an outbreak originating in Santo Domingo Este municipality. In 2010, the incidence of confirmed cases in dogs fell 52% compared with the previous year thanks to the national vaccination campaign against canine rabies. The cases of canine rabies occurred in two locations: in the Dajabón area, which is along the border with Haiti, and in the eastern region of the country, mainly in San Pedro de Macoris, where there is a thriving population of wild mongooses, which act as a reservoir for the disease.

Outbreaks of leptospirosis are associated with floods caused by heavy rains and tropical storms. In 2007, following Hurricane Noel and then Hurricane Olga, 2,355 cases of leptospirosis were reported, with a morbidity of 24.8 per 100,000. In 2010, the morbidity rate was 2.3 per 100,000. Mortality from leptospirosis also declined, from 1.3 per 100,000 in 2007 to 0.3 per 100,000 in 2010.

Neglected Diseases and Other Infections Related to Poverty

Leprosy has been eliminated as a national public health problem in the Dominican Republic; in the 2005–2009 period, 1.71 cases per 100,000 were detected. The cases were concentrated, with 70% of them in just four of the provinces. In 2009, 167 new cases were detected, and 144 were in 2010. The cumulative total up to 2010 was 321 cases (25).

A lymphatic filariasis focus located in the province of Santo Domingo has been analyzed and no active transmission has been found. The affected population received massive treatment in two annual cycles between 2003 and 2006. The three existing foci in the province of Barahona have shown a substantial reduction of antigenemia and microfilaremia. For example, in Pueblo Nuevo, between 2002 and 2006, antigenemia dropped from 21.5% to 0.2% and microfilaremia from 4.4% to 0.0%. In a new evaluation in 2009, no children tested positive for antigenemia. Six adults tested positive for antigenemia, but there were no confirmed cases of microfilaremia. The filariasis control program will reevaluate old foci of transmission due to the increasingly mobile Haitian population (26).

HIV/AIDS and Other Sexually-transmitted Infections

The HIV epidemic has remained stable. In 2010, the prevalence of HIV in those 15 to 49 years old was estimated at 0.85%. That is, there were 48,550 people living with HIV/AIDS, of whom 62% were women. In 2006, the prevalence was 0.86%. In 2009 12,912 people received antiretroviral treatment. An estimated 442 children were infected with HIV in 2009. Since antiretroviral treatment started in 2004, mortality in those 15 to 49 fell from 3.22 per 100,000 in 2005 to 2.13 per 100,000 in 2009. The current annual incidence rate is estimated at 0.06 cases per 100,000, which would represent 3,580 new cases in 2010 (27). The prevalence in pregnant women is over 1%. In 2010, pregnant women received an estimated 1,980 preventive antiretroviral treatments. Although the percentage of HIV-positive pregnant women who received antiretroviral treatment increased from 37.2% in 2006 to 47.0% in 2009, more than half still did not receive treatment (28). Data from the first survey on HIV prevalence in vulnerable populations (conducted in 2008) (29) indicated that in homosexuals, transsexuals, and men who have sex with other men, the overall prevalence of HIV infection was 6.1%; syphilis 5.3%;
hepatitis B 2.3%; and hepatitis C 2.0%. HIV prevalence was estimated at 17.2% among transsexuals, 8% for intravenous drug users, and 4.8% in female sex workers. In the population living in the country’s bateyes (communities of sugar workers), HIV prevalence was estimated at 3.2%. There was no significant difference between the genders, but prevalence increased with age, with it being 8.7% in men 40–44 years old and 7.9% in women 45–49 years old (30).

**Tuberculosis**

The prevalence of tuberculosis has declined since 2000, when it was estimated at 162.9 per 100,000; in 2006 it was calculated to be 118.2 per 100,000. There has been a similar trend with TB mortality, which fell from 21.8 per 100,000 in 2000 to 15.0 in 2006. The annual incidence rate for all forms of TB fell from 104.9 per 100,000 in 2000 to 88.8 in 2006; in 2010, this indicator declined to 40.9 per 100,000. That year, 3,990 cases of TB (all types) were diagnosed, 3,375 of which were pulmonary (2,441 laboratory confirmed). The highest incidence of all types of TB occurred in the National District, with 60.8 per 100,000, while the lowest was reported in the province of Valverde, with 12.8 per 100,000 (4). In 2010, the incidence in males aged 25–34 was 8.96 per 100,000, while females of the same age group presented 4.97 per 100,000. Thanks to control activities, the detection rate of TB cases under directly observed treatment increased from 5.9% in 2000 to 66.0% in 2006. During this same period, the percentage of the cases cured with this treatment strategy rose from 78.6% to 84.7% (1). Despite its downward trend, TB continues to be a high-priority public health problem requiring bilateral coordination, due to the constant flow of people moving across the border with Haiti.

**Emerging Diseases**

In 2010, there were 1,159,861 cases of acute respiratory disease reported. Both the seasonal influenza (H3N2) virus and the influenza A(H1N1) virus circulated; the latter was low intensity and limited to a few provinces.

On the island of Hispaniola, no cases of cholera were reported for more than 100 years, until October 2010, when an outbreak in Haiti was confirmed. The first case of cholera in the Dominican Republic was detected on 15 November 2010 in the province of Higuey, when the presence of *Vibrio cholerae* O1 Ogawa serotype was confirmed. The initial cases occurred in family or community outbreaks, especially in the border provinces, which are predominantly agricultural. Epidemic activity grew in the rainy season, affecting marginal urban populations, for example, in Greater Santo Domingo. The highest peak was reached in the 24th week of 2011, when around 1,600 suspected cases were reported. By June 2011, 10,760 cases had been reported. There were 153 deaths, with an attack rate of 0.1% and a case-fatality rate of 1.4% (31). In response to the cholera epidemic, the International Health Regulations (IHR) provisions (as revised in 2005) were implemented. An alert was put out and epidemiological information shared with countries in the region, through the National IHR Focal Points. That action was taken after cholera cases presented in Chile, Mexico, Puerto Rico, Spain, and Venezuela among travelers coming from the Dominican Republic.

**Chronic, Noncommunicable Diseases**

The Ministry of Public Health established the National Chronic, Non-communicable Disease Prevention and Control Program in 2009. The program’s main objectives are to promote health and help prevent and control chronic, noncommunicable diseases and their risk factors, and also to establish a surveillance system to generate and compile reliable data. An information system to help assess the extent of these diseases has not yet been developed, making it necessary to draw on studies from previous years and data from national reference hospitals.

**Cardiovascular Diseases**

Cardiovascular diseases accounted for 10% of medical consultations and more than 6% of the emergencies in the country’s health facilities. These
diseases also led among major groups of causes of death, accounting for 32.8% of all deaths reported in 2004 and 33.7% in 2005. In 2007, the prevalence of hypertension in adults in the national population was estimated at 16.8%. A study of cardiovascular risk factors that was conducted on a sample of 6,400 people showed that 75% of individuals with hypertension did not follow any treatment, 55% had a family history of hypertension, 24% had high cholesterol (above 200 mg/dl), and 9% had hypercholesterolemia.

**Malignant Neoplasms**

According to data from the hospital tumor registry of the Oncology Institute (32), the total number of cases of neoplasms reported was 1,927 in 2006, 1,801 in 2007, and 2,017 in 2008. Breast cancer was the most common, followed by cervical cancer; together, these two made up 877 cases (45%) in 2006, 752 (42%) in 2007, and 841 (42%) in 2008 (Table 1).

**Diabetes**

The prevalence of diabetes in the country had been estimated at 5.5%, using indicators and basic data from 2007. However, preliminary results from the second survey on cardiovascular risk factors (EFRICARD II-2011) have shown that the prevalence of diabetes is a much higher 15.5%, indicating that more than 1 million Dominicans could be diabetic, with half of them unaware of that fact.

**Nutritional Diseases**

Between 2006 and 2010, the prevalence of low birthweight fell from 10.8% to 7.0%. According to data from the 2007 Demographic and Health Survey, 11% of live births had low birthweight; also, among children under 5 years old, 9.8% exhibited stunting, 2% wasting, and 3% low weight-for-age. Only 8% of newborns were exclusively breastfed at 6 months of age. According to a 2009 national survey on micronutrients, the prevalence of anemia (less than 12 g/dl)

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**TABLE 1. Absolute and relative frequency of malignant neoplasms, by gender, Dominican Republic, 2006, 2007, and 2008.**

<table>
<thead>
<tr>
<th>Primary site</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Males</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Breast</td>
<td>5</td>
<td>0.9</td>
<td>529</td>
</tr>
<tr>
<td>Cervix</td>
<td>110</td>
<td>19.1</td>
<td>67</td>
</tr>
<tr>
<td>Lip, oral cavity, pharynx, and larynx</td>
<td>143</td>
<td>24.3</td>
<td>78</td>
</tr>
<tr>
<td>Prostate</td>
<td>97</td>
<td>16.9</td>
<td>134</td>
</tr>
<tr>
<td>Colon and rectum</td>
<td>54</td>
<td>9.1</td>
<td>47</td>
</tr>
<tr>
<td>Skin</td>
<td>41</td>
<td>7.1</td>
<td>45</td>
</tr>
<tr>
<td>Lymph nodes</td>
<td>41</td>
<td>7.1</td>
<td>27</td>
</tr>
<tr>
<td>Bronchia and lung</td>
<td>37</td>
<td>6.4</td>
<td>30</td>
</tr>
<tr>
<td>Esophagus and stomach</td>
<td>37</td>
<td>6.4</td>
<td>27</td>
</tr>
<tr>
<td>Other sites</td>
<td>156</td>
<td>27.1</td>
<td>232</td>
</tr>
<tr>
<td>General total</td>
<td>575</td>
<td>100.0</td>
<td>1,352</td>
</tr>
</tbody>
</table>

*Source: Reference* (33).
in nonpregnant women was 34%, with no difference found between women living in urban areas and those in rural areas. The prevalence of anemia in children 6 to 59 months old was 28%. An estimated 45% of the population is overweight and 17% obese.

**Accidents and Violence**

In 2006, 1,380 deaths from traffic accidents were reported. In 2010, there were 1,921, 58% of which involved motorcyclists, 24% pedestrians, and 18% passengers in four-wheel vehicles. Approximately 85% of the deaths were in males, and 39% were in those 15 to 29 years old. The majority of accidents occurred on a Sunday (33).

**Disasters**

The Dominican Republic has a rugged topography, with high exposure to landslides on unstable slopes, areas vulnerable to floods, and coastal areas likely to be battered by strong surf generated by tropical storms and hurricanes. The 2007 hurricane season was severe and affected 80% of the country’s territory. Hurricane Noel left 87 dead and 43 more were missing. In addition, 64,096 persons were evacuated and 1,526 were rescued. Later that year, Hurricane Olga caused 33 deaths, affected 61,605 people and 9,944 homes, and left 189 communities cut off. The earthquake that devastated Haiti in January 2010 measured 7.0 on the Richter scale, and it also caused minor damage in 20 educational centers and two hospitals in the Dominican Republic. The collective response of the Dominican people took the form of immediate attention in hospitals along the border for half a million injured, as well as care for thousands of displaced persons who arrived in the border area of Jimani. The cost of that assistance was estimated at US$ 27.7 million (34).

**Mental Disorders**

In 2006 the national mental health care standards were updated. In addition Law No. 12 was enacted, with the objective of regulating the right to the best care available and guaranteeing the fundamental rights and freedoms of people with mental disorders. The resources allocated to treat these disorders are scant (0.38% of the health budget), and 50% of that sum goes to the Father Billini Psychiatric Hospital. Psychotropic drugs are available in the three care levels, but only 7% of the population has free access to essential psychotropic drugs. While 4% of outpatient health services are dedicated exclusively to mental health care for children and adolescents, there are no hospitalization units or forensic psychiatric facilities for this population group (35).

**Other Health Problems**

**Ocular Health**

The Ministry of Public Health is the State agency responsible for the area of eye health, including overseeing the National Blindness Prevention Council. The country has one ophthalmologist per every 40,000 inhabitants. In 2008, a rapid evaluation of preventable blindness in people over 50 was conducted, and it found that the leading cause of blindness was untreated cataracts (50.9% of cases) (36).

**Risk and Protection Factors**

According to the 2007 National Health Survey, 73% of females and 89% of males reported they had consumed alcoholic beverages, and consumption was greater in urban areas than in rural areas. Tobacco consumption was reported by 6.3% of females and 12% of males aged 15–49. Substantial differences were found among the smokers, with people with lower levels of education and income smoking more than people with higher levels of education and income. Without specifying the type of drugs, 1% of females and 5% of males ages 15 to 49 admitted that they had used drugs at some point in life.
public sector consists of the Ministry of Public Health and Social Welfare, the National Health Council, the Social Security Treasury, and the National Health Insurance program (which is the principal public insurer). The private sector includes health risk administrators, private health services providers, and nongovernmental organizations (37).

The Ministry of Public Health, the principal public-service provider, has a three-tiered organizational structure: central, regional, and provincial. The central level includes the office of the minister, which is supported by six vice-ministries: Administration and Finance, Planning and Development, Public Health, Quality Assurance (established in 2008), the Directorate for Strengthening Regional Health Services, and Social Welfare. The Directorate for Strategic Institutional Development, reorganized in 2008, is in charge of the strengthening, modernization, and institutional development of the Ministry of Public Health, within the framework of health-sector reform. The Ministry network has 1,853 facilities, composed of 1,703 primary care units and 150 specialized second- and third-level treatment centers (in turn, consisting of 15 specialized hospitals, 11 regional hospitals, 20 provincial hospitals, and 104 municipal hospitals) (38).

General Health Law 42-01, which was approved in 2001, has separated the functions of care delivery, leadership, and financing. The nine regional health services are the health care service providers for the public, connected by a network of complexity levels with the capacity to provide at least minimum, cost-efficient care as stipulated in the Basic Health Plan. In 2009, management agreements were drafted and implemented, establishing commitments and obligations to guide the treatment provided by the regional health services. The steering role has been strengthened with the creation of the Vice-Ministry of Quality Assurance and the establishment of a cabinet meeting that brings together all the vice ministers and program directors to discuss and recommend proposals for policies and laws on various issues. The steering role still needs to be strengthened, especially in the context of decentralization. Clinical or administrative problems on the part of providers can affect the quality of care, and so can the lack of control and supervision of personnel and the extremely low skills levels at the institutions. In August 2008, after the first Dominican primary health care forum, the Directorate for Primary Care was revitalized, under the Directorate for Developing and Strengthening the Regional Health Services (DDF-SRS), which formulated a strategic plan and updated the database on the primary care network. Various health programs are integrated together in the primary health care model, including programs on chronic diseases and mental health. However, the care model has not been reviewed, and there is no professional health degree program nor the human resources with the needed skills.

**Health Expenditures and Financing**

In 2008, national health expenditures were some US$ 560 million, or 5.5% of the GDP (37). That percentage was similar to the one of the late 1990s, but lower than the percentage over the 2000–2003 period, when it was almost 6.2% (37). According to 2008 financial indicators for health, public expenditures on health were US$ 104.4 per capita, which was 33.9% of total expenditures on health. In 2004 that percentage had been 28.7%. Out-of-pocket expenditures remained high, although they were reduced somewhat by the increase in the number of insurance-program participants. For example, with respect to total spending on pharmaceuticals, 67% of that amount (approximately US$ 400 million) comes from out-of-pocket household expenditures (37). Public expenditure on health as a percentage of GDP was 2.1% in 2006 and 2.4% in 2008 (37), showing the low priority given to the sector.

**Human Resource Development Policies**

In November 2010, the Ministry of Public Health had a staff of 56,240 employees, 71.5% of whom were women. The country’s geographical distribution of
doctors and nurses is quite unequal: they are concentrated in the cities with greater economic development. For example, in the National District there are 37.1 doctors per 10,000 inhabitants, while in the province of La Romana there are only 8.3 doctors per 10,000 inhabitants (39). The differences among the regions and the provinces can impair access, equity, and efficiency of health care. The total number of doctors increased 19.2% between 2006 and 2010, from 13,262 to 16,419 (40).

In 2008, the Dominican Physicians Association had 20,000 members, 40% of whom were specialists. Professional associations essentially function as unions. There are no systems to certify or recertify health professionals’ and technicians’ skills, nor is there any continuing education system. There are 17 institutes of higher learning in the country that offer degrees in health, with programs for all levels: technician, graduate, and postgraduate. However, greater coordination is needed between the institutions that provide care and the institutions that prepare future health workers, in order to improve planning and move the training toward those professions that are more needed, according to the health care model. A bill was drafted in 2009 to authorize a degree program in health that would prepare personnel to address such issues as wage policies, the classification of job positions, incentives, and performance evaluation for health workers.

**The Health Services**

In 2001, Law 87-01 established the Dominican Social Security System (SDSS) and set up sources and mechanisms to fund medical care in the national health system. Three financing methods were established: contributory, subsidized, and contributory-subsidized. (Not yet operational, the contributory-subsidized mechanism will serve clients who are affiliated with the SDSS, but without a contractual relationship.) Family Health Insurance is mandatory and universal. It puts forward a Basic Health Plan for the subsidized regime as well as a Health Services Plan (2006) that is considered to be a first stage in applying the Basic Health Plan to the contributory regime. Fees in the contributory regime total 10.13% of the applicable wages (the employee contributes 3.04% and the employer 7.09%).

In March 2011, there were 4,424,519 persons affiliated with the Family Health Insurance program. Of that total, 45.5% were in the subsidized regime and 54.5% in the contributory regime. As a proportion of the country’s population, participation in Family Health Insurance increased 166% between August 2007 and March 2011. In March 2011, an estimated 63.9% of the population categorized as being moderately poor or extremely poor was participating in the subsidized Family Health Insurance regime (41). Despite the higher absolute number of participants, basic health indicators did not reveal any improvement in the quality of care. The principal public insurer, the National Health Insurance program covers the population in the subsidized regime. There are 27 other insurance providers, most of them private. With this large number of insurance providers, the system displays a high degree of fragmentation and cost inefficiency.

The Ministry of Public Health receives tax revenues to fund the provider network that serves the uninsured population. Individuals in this group make a payment after receiving services. The social security funds come from the Government (a per-capita contribution to cover those in the subsidized regime and an employer contribution) as well as from the contributions from employees and private employers. These funds are collected by the Social Security Treasury, which is overseen by the National Health Council. The Social Security Treasury transfers to each health risk administrator a total payment corresponding to its number of members multiplied by a set per-capita amount; the insurers are in charge of contracting health service providers.

The National Health Insurance program serves the subsidized poor population and pays the providers (mainly the Ministry of Public Health network) for the agreed-upon services. National Health Insurance uses two payment methods: a per-capita method at the primary care level and a for-services-provided approach at the other levels. In order to make all the benefits included in the Basic Health Plan available to the population group in the
subsidized system, National Health Insurance also pays nonprofit private suppliers. Some public workers can also participate in National Health Insurance, and so can contributory private-sector workers who select it as their health insurance provider. Private insurance companies can only enroll contributory groups and sell private health insurance plans. These insurance companies contract private nonprofit providers to deliver services to their clients. Finally, there is a population that is able to make out-of-pocket payments and purchase health services in private facilities (37).

Pharmaceuticals and Health Technology

The 2005 Basic List of Essential Drugs includes 468 drugs and 871 therapeutic formulas. The pharmaceuticals system encompasses approximately 12,934 legally authorized brand-name drugs (42); 4,075 outpatient pharmacies; 417 public pharmacies that sell low-cost government-subsidized drugs; 51 hospital pharmacies; 119 pharmaceutical laboratories; and 318 distributors. The public drug procurement system is centralized and is carried out through the Essential Medicines Program/Logistical Support Center (PROMESE/CAL). The Dominican Republic participates in joint procurement processes for drugs (including antiretrovirals) and other strategic supplies through an agreement that was signed between the Government and the PAHO Strategic Fund in 2005. The country is also involved in joint purchases done within the context of the Meeting of the Health Sector of Central America and the Dominican Republic (RESSCAD). The free-market price-setting system for pharmaceutical products continues to operate with State surveillance, and there are substantial differences among the private pharmacy prices, public pharmacy prices, and the international reference prices. There is a serious problem with illicit trade in drugs, but an interinstitutional commission was set up in 2009 to address this issue.

The country has a directorate responsible for blood banks and transfusion services. In 2010 it had 63 legally registered collection and processing centers, which collected 94,884 units of blood; of these, 18% were from volunteer donors, 58% from family donors or replenishment, 0.04% from autologous donors, and 1.72% from paid donors.

KNOWLEDGE, TECHNOLOGY, INFORMATION, AND HUMAN RESOURCE MANAGEMENT

In 2002 an interinstitutional agreement was signed to establish the Virtual Health Library (VHL) for the Dominican Republic. In 2005, the 19 member institutions of the VHL national advisory committee renewed their joint commitment to consolidate and develop the VHL. One important result has been the database of health science literature produced in the Dominican Republic (43).

Several initiatives are in effect to facilitate health workers’ access to national and international biomedical information, such as subscriptions to the HINARI program, which is sponsored by the WHO and major international publishing houses. HINARI’s purpose is to provide institutions in developing countries with free (or nearly free) electronic access to the greatest possible number of journals on biomedicine and related subjects. Other initiatives include developing institutional websites; producing technical bulletins and national indicators; and creating specialized health libraries in universities, hospitals, research centers, and other health institutions. Internet rooms have been set up in hospitals, provincial bureaus, health-field directorates, and health-sector institutions. These Internet facilities are supported by the Dominican Telecommunications Institute (INDOTEL) through an agreement with the Ministry of Health. Also thanks to a joint project between INDOTEL and the Ministry of Health, video conference rooms have been set up in a network of hospitals in the northern region of the country, as well as in universities and other public and private health institutions. The PAHO Knowledge Management and Information Center has compiled a comprehensive collection on public health topics, which functions as a technical memory on public health in the country, often providing support for the continuity of processes and initiatives in the sector.
Scientific production has faced major obstacles due to limited and sometimes shoddy research and the lack of allocated resources. Information is not used in decision-making, further discouraging scientific production.

HEALTH AND INTERNATIONAL COOPERATION

The Dominican Republic belongs to the Central American Integration System (SICA), which holds periodic meetings of the presidents from the member countries to define and approve actions on priority issues, including health. The health focus is organized by the Council of Ministers of Health of Central America and the Dominican Republic (COMISCA), which performs a steering role in the sector. COMISCA prepared the Health Agenda for Central America and Dominican Republic 2009–2018 and the Health Plan for Central America and Dominican Republic 2010–2015, instruments for implementing the health ministers’ work agreements, which are coordinated by COMISCA’s executive secretariat. One important regional venue for discussions on health issues is the Meeting of the Health Sector of Central America and the Dominican Republic (RESSCAD), a meeting in which various health institutions in the region participate; PAHO acts as the technical secretariat.

SYNTHESIS AND PROSPECTS

The 10-Year Health Plan 2006–2015 (44) was developed between 2003 and 2006 after broad national participation and consultation, through the National Health Council. The plan addresses the principal challenges and necessary strategies to transform the country’s health situation. As a result, it is a reference document used to prepare operational plans for each component in the sector, guiding the activities within the context of the MDGs, sustainable human development, human rights, and gender equity. The 10-Year Health Plan addresses two major challenges: (1) overcoming the accumulated social debt and social and gender inequities in health, while ensuring the prevention and control of priority health problems and risks, and (2) expanding the various functions and components of the national health system, based on rights, social and gender equity, and citizen participation.

Preceding the 10-Year Health Plan, the Strategic Agenda for Health Sector Reform 2004–2008 (45) presented four strategic lines: (1) strengthening the steering role, (2) organizing regional public service networks, (3) providing equitable access to medicines, and (4) guaranteeing access to insurance, especially for low-income populations. The two cross-cutting areas are data systems (including epidemiological surveillance) and human resource management.

Noteworthy efforts have been made to deal with the priority health problems, including through the “zero tolerance” strategy. However, challenges still remain to strengthening the steering role and leadership, in terms of implementing gender-equitable social promotion and protection policies and health strategies, as well as generating and applying health information in the decision-making process. This last issue is crucial. While the epidemiological surveillance system is working well, the vital statistics system and the services information system are lagging. The underreporting of mortality continues to be over 50%, and delays in conducting analyses mean that the information loses its usefulness and strategic value for managing health programs and services.

Everything possible should be done to improve the quality of health services. Even though the country has a service network that allows geographical access in minutes, various problems affect the quality of care. Such is the case of maternal mortality, which remains high, and far from the corresponding MDG for 2015. Problems also exist in resource organization and management for a fully functioning health services network.

The needed transformation of the health services and the institutions in the national health system is underway, to adapt to the new functions under the General Health Law and the Dominican Social Security System Law, both enacted in 2002, in order to ensure social protection in health.
According to the 10-Year Health Plan, during 2006, foreigners had 182,843 outpatient visits and were hospitalized 12,085 times. In addition, 7,031 foreigners received childbirth care. Around 20% of the reported cases of malaria were among Haitians, and similar percentages were seen in various health programs. Dealing with this situation requires greater binational coordination. In spite of the efforts that have been made, this issue continues to challenge the health system of the Dominican Republic.

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