INTRODUCTION

Guatemala covers an area of 108,889 square kilometers. It borders on the north and northwest with Mexico; on the east with Honduras, El Salvador, and Belize; and on the southwest with the Pacific Ocean. The country has 22 departments and constitutionally is a democracy. The 14th anniversary of the signing of the Peace Accords, which marked the end of over 30 years of civil war, was celebrated in 2010.

In 2010, Guatemala’s population was estimated at 14,377,000 inhabitants. Figure 1 shows the country’s population structure for 1990 and 2010. Approximately 50% of the population is indigenous. In 2010, the birth rate was 31.9 per 1,000 population and life expectancy at birth was estimated at 70.8 years (67.3 years for men and 74.4 for women). These indicators vary according to geographical area, ethnicity, and education level (1).
The per capita gross domestic product (GDP) in 2010 was US$ 2,867.90, 6.7% less than in 2009. In 2010, 40% of the general population was economically active; it is estimated that half of this population lives in rural areas. Of the economically active population, 37% has full-time employment and 60% is underemployed. Unemployment increased from 2.47% in 2007 to 3.52% in 2010; visible underemployment decreased slightly from 21.87% in 2007 to 21.03% in 2010 (2).

In 2010, the government established the minimum monthly wage at US$ 250. Between 2006 and 2010, the average increase in minimum wage was 7.7%, and annual inflation was 6.3% during the same period (3).

For the same work, men’s wages are 12% higher than women’s wages in the urban area and 17% in rural areas. Wages in rural areas were 34% lower for indigenous workers than for non-indigenous workers and the gap was 37% in the metropolitan area (2). The effects of poverty and extreme poverty are greater in indigenous groups and rural populations.

HEALTH DETERMINANTS AND INEQUALITIES

In 2010, an assessment of the progress made toward attainment of the Millennium Development Goals determined that the goal to reduce the 1990 poverty level to half by 2015 most likely would not be reached, as a result of the economic slowdown and other factors. The goal of reducing extreme poverty from the 15.2% level registered in 2006 to 9.05% in 2015 would require an annual reduction in poverty of 0.69% (the efforts made during the 2000–2006 period, when the share of the population living in poverty dropped half a percentage point, would have to triple) (4). Guatemala is among the countries in the “medium human development” category (0.70), and is ranked 122 of 182 countries in the Human Development Index (5).

In 2006, the illiteracy rate was 24.0% and it dropped to 19.5% in 2009 and 18.5% in 2010. Illiteracy primarily affects women (19.9%) (6). The net schooling rate has increased steadily at all education levels. In 2009, 57.1% of the population
had preschool education, 98.7% primary education, 40.2% basic education, and 21.2% diversified (7). Although the average number of years of schooling nationwide is 5.3 years, in the indigenous population it is 2.1 years.

Guatemala has participated in different binding treaties, conventions, pacts, and protocols establishing specific measures designed to protect the right to enjoy the highest level of health possible. These instruments include the International Covenant on Civil and Political Rights, the Convention on the Rights of the Child, the Convention for the Elimination of All Forms of Discrimination against Women, the Convention of the Rights of Persons with Disabilities, and Agreement No. 169 on Indigenous and Tribal Populations in independent countries. Despite these commitments, unequal access to health care persists for different groups in the country (8).

The indigenous populations (Mayan, Garifuna, and Xincas) make up 58% of the poor sector and 72% of the extremely poor sector in Guatemala. More than three-quarters of the indigenous population lives in poverty, in comparison with 41% of the non-indigenous population. The national poverty map coincides with the ethnic map. It is not a surprise that the best conditions are found in the department of Guatemala, where 11.7% of the indigenous population is found; and the worst conditions in the departments of Alta Verapaz, Quiché, and Huehuetenango, where the populations are largely indigenous (92.5%, 88.3%, and 65.1%, respectively).

Almost 45% of women and girls have reportedly suffered some type of violence in their lives (48.8% in the urban area and 42.3% in rural areas) (9).

Guatemala has the highest level of chronic malnutrition in all Latin America and is fourth highest in the world. In 2009, an estimated 410,780 families (2.5 million individuals) were at risk of food shortage or insecurity. Geographically, the most affected areas have been those in the so-called Dry Corridor (Corredor Seco), which includes 9 of the country's 22 departments: Santa Rosa, Jutiapa, Jalapa, El Progreso, Zacapa, Chiquimula, Izabal, Baja Verapaz, and Quiché (10).

THE ENVIRONMENT AND HUMAN SECURITY

Access to Clean Water and Sanitation

Access to basic indoor sanitation services has improved in recent years, although marked differences persist between urban and rural areas, and much of the population still does not have a water supply that is safe for human consumption. Of the nation’s water resources, 57% is surface water and 43% groundwater. While approximately 65% of the total water volume is available, 40% of it cannot be used due to high contamination levels (11). Approximately 78.7% of the population has sustainable access to an improved water supply. However, the share of urban households with access to water is 95%, compared with 82% in rural areas (12). Not all households with access to piped water have safe drinking water. Of the 18,800 piped water supply systems sampled in 2008 as part of a water quality survey, more than half had insufficient chlorine levels, and one-quarter presented bacterial contamination (13).

In 2006, the share of households with appropriate wastewater disposal was estimated at 55%, indicating inadequate access to sanitation, especially in rural areas where coverage reaches only 23% of households, in contrast with 82% in urban areas (14). A household with proper waste disposal has access to the sewerage system, but since not all the waste entering that system is treated, a large amount of sewage flows into rivers and bodies of surface water, potentially contaminating other water resources (15). Approximately 54.5% of the population has uninterrupted access to improved sanitation (4).

Solid Waste

In 2006, more than 98% of the solid waste originated from productive activities, such as the meat industry (35%), the chemical industry (15%), manufacturing of non-metallic mineral products (10%), nontraditional crops (10%), and traditional crops (5%). Households nationwide generated a little more than
1% of solid waste, primarily from food remains (21%); wood and plant matter (19%); paper, cardboard, soils, and other materials (17%); and rubber, plastic, leather, cloth, glass, and metals (13%) (16).

The quantity of biological infectious waste generated in health institutions is relatively small and the country has regulations in effect to control and manage such waste. Technical centers specialized in the transport, management, treatment, and disposal of this type of waste can be found in the major cities (15).

Almost 85% of the solid waste generated is disposed of without any treatment or modernized disposal methods (15). Only 35% of households nationwide have refuse collection services (municipal or private), 35% burn it, 16% dispose of it randomly, 5% bury it, 7% use it for fertilizer or recycle it, and 2% dispose of it in some other way (12). Excluding the department of Guatemala, an estimated 84% of the country’s refuse dumps are unauthorized; the remaining 16% are authorized by municipalities but have not necessarily undergone environmental impact assessments (15).

**Deforestation and Soil Degradation**

The most severely deforested department is Petén, with 306,169 cleared hectares, followed by Izabal with 53,278 hectares. A net annual loss of 48,084 hectares of forest is estimated. Although 52% of the country’s forests are in protected areas, an annual loss of 26,287 hectares of forest is reported within these areas, especially in the Maya Biosphere Reserve (17).

**Air Pollution**

The data confirm deteriorating air quality in Guatemala City due to the increase in total suspended particles, sulfur dioxide, and nitrogen dioxide, as the majority of annual averages have exceeded the established maximum limits. Between 2009 and 2010, the annual average of PM$_{10}$ (i.e., levels of breathable particulates smaller than 10 $\mu$m) increased by approximately 26% (18) in contrast to the downward trend observed since 2006 (15). From 2009 to 2010, the annual nitrogen dioxide average increased 19%. Although the annual average does not exceed the established limit, it poses a health risk, as even short-term exposure to this gas can be dangerous (18). Sulfur dioxide levels surpassed the established limit in several instances, which may be an indicator of deteriorating air quality in the sector sampled.

The main sources of particle emissions in Guatemala City are vehicles, industrial emissions, unpaved roads, and eruptions of the nearby volcano (Pacaya), as well as erosion and forest fires at certain times of the year (18).

**Pesticides**

The National Pesticide Control Commission, formed by several state institutions and the University of San Carlos of Guatemala, designed a national pesticide control plan. Through this commission, pesticides unused by the Ministry of Public Health for vector control were packed and stored safely.

**Housing**

Approximately 71% of the urban population lives in solidly constructed dwellings, but in rural and peri-urban areas where poverty levels are rampant, more than half of the population resides in unhealthful, unhygienic, overcrowded, and flimsy dwellings with dirt floors and few barriers to vectors. All of these factors increase the risk of disease transmission (4).

**Health Conditions and Trends**

**Health Problems of Specific Population Groups**

**Maternal and Reproductive Health**

Although Guatemala’s total fertility rate dropped from 4.3 children per woman in 2006 to 3.6 children
In 2009, it is still the highest in Central America (9). The average age of onset of sexual activity is 19.4 years, and the lower the educational level, the younger the age of onset of sexual relations or life as a couple. Approximately 20% of women of childbearing age do not have any formal education. There is a low percentage of deliveries in health facilities nationwide (51.2%); traditional midwives attend to those in the community who do not use health facilities. The system of transferring patients with obstetric emergencies or complications is limited and poorly structured.

The 2007 national maternal mortality study (19) identified 537 maternal deaths, with a maternal mortality rate of 139.7 per 100,000 live births; among the social impacts of these deaths were 1,716 orphaned children. The results of the study made it possible to estimate the underreporting of maternal mortality (40.7%). Of the maternal deaths in the study, 70% were indigenous women, 46% were illiterate, 56% were multiparous, and 46% died giving birth at home. In approximately 41% of maternal deaths, the health services did not have the conditions necessary to identify, prevent, or handle the emergency appropriately. Differences in maternal mortality still persist in the country; the rural departments with the largest indigenous populations (and scant health care service coverage) present the highest maternal mortality rates. The same study revealed several barriers of access to health services, such as lack of transportation or money to pay for it (47%), or the lack of decision-making power to seek care on the part of the woman or her family (33%).

In order to attain the fifth goal of the Millennium Development Goals by 2015 (a maternal mortality rate of 55 per 100,000 live births), a drop of 84.7 deaths per 100,000 would have to be achieved, which appears to be improbable (4). In 2009, priority programs were put into practice to promote attainment of the Millennium Development Goals. For example, the conditional cash transfer program (Mi Familia Progresa, or “My Family Advances”) was implemented, as were the policies of free public health services and education. These programs saw positive results in prenatal care coverage, growth monitoring, and treatment of childhood illnesses, particularly in rural areas. The impact of payments to pregnant women on maternal and neonatal mortality and morbidity or changes in fertility rates has not been evaluated. Approximately 54% of women use some method of birth control, and use of modern methods is associated with education level. Only 39.9% of women with no formal education use birth control, compared with 53.9% who finished primary school, 69.2% who finished secondary school, and 74.4% of women who have higher education (9).

Children (under 5 years old)

In 2006, the infant mortality rate was 39 deaths per 1,000 live births (20); in 2010 it dropped to 34 per 1,000 (9). The leading causes of death in children under 5 are pneumonia (34.4%) and diarrhea (18.4%). Child health and survival are also related to the presence of several risk factors concerned with the health and survival of the mothers, such as cases of adolescent mothers, pregnant women over 40, and multiparous women who began to procreate at an extremely young age and whose inter-pregnancy periods are under 24 months. It is also necessary to consider unwanted pregnancies and the complex economic and social situation of the single mother, who is the sole provider of the household’s basic needs.

Most indigenous children in Guatemala live in rural areas and present significant developmental delay compared with non-indigenous children. Patterns of child and infant mortality continue to reveal the inequality between indigenous and non-indigenous children. This inequality between ethnic groups has persisted over time. Some of the reasons are the scant availability and difficult access to health facilities, and the lack of cultural and linguistic relevance in the existing services, as well as the lack of economic resources for health care mobilization and treatment.

Adolescents (10–19 years old)

Adolescents (10–19 years old) comprise 23% of the country’s total population. In 2008, only 58% had completed primary school, which places Guatemala
among the least-developed countries in Latin America and the Caribbean (21).

The specific fertility rate for 15–19-year-old adolescents was estimated at 98 births per 1,000 adolescents, with persistent differences between rural (114 births) and urban (78 births) adolescent mothers. In the case of indigenous adolescents, the specific fertility rate was 94 per 1,000, compared with 100 per 1,000 for non-indigenous adolescents (9). About 13.1% of 15–17-year-olds and 35.3% of 18–19-year-olds have been pregnant. Of women 15–24 years old who have been pregnant, 44.8% in urban areas and 50.7% in rural areas first became pregnant between 15 and 17 years of age.

In 2009, the hospital network reported 11,000 cases of sexual aggression against children and adolescents by people they knew (25% by family members, friends, or neighbors) and 7,000 cases of child abuse. That same year, the Public Ministry announced a total of 392,126 crimes, 13.3% of which directly involved children and adolescents. According to the Human Rights Office in a 2009–2010 report on children and adolescents in Guatemala, 95% of sexual crime cases affected adolescents 12–17 years old. The main cause of death of minors under 18 was gunshot wounds (22).

Approximately 33% of the AIDS cases reported between January 1984 and December 2009 were in the 20–29-year age group, suggesting that they acquired HIV in adolescence. Approximately 88% of sexually active females who are 15–19 years old and who had more than one sexual partner did not use a condom in their most recent sexual relations (9).

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

There is no available information on the health conditions of people 65 and older.

**Mortality**

Table 1 presents the 10 leading causes of death in Guatemala in 2009, accounting for 75% of total deaths. Poorly defined and unknown causes were estimated at 5.3% and underreported mortality at 10.7% (23).

**Morbidity**

**Communicable Diseases**

**Vector-borne Diseases**

Malaria is endemic in approximately 70% of the country. Although the number of cases reported

### TABLE 1. Leading causes of death and mortality rate per 100,000 population, Guatemala, 2009.

<table>
<thead>
<tr>
<th>Causes</th>
<th>Male deaths</th>
<th>Female deaths</th>
<th>Total deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Rate</td>
<td>No.</td>
</tr>
<tr>
<td>Pneumonia and bronchopneumonia</td>
<td>4,038.00</td>
<td>30.41</td>
<td>2,900.00</td>
</tr>
<tr>
<td>Gunshot wound</td>
<td>1,738.00</td>
<td>13.09</td>
<td>213.00</td>
</tr>
<tr>
<td>Acute myocardial infarction</td>
<td>1,582.00</td>
<td>11.92</td>
<td>1,395.00</td>
</tr>
<tr>
<td>Injury and multiple trauma</td>
<td>761.00</td>
<td>5.73</td>
<td>146.00</td>
</tr>
<tr>
<td>Stroke</td>
<td>646.00</td>
<td>4.87</td>
<td>670.00</td>
</tr>
<tr>
<td>Acute diarrheal syndrome</td>
<td>600.00</td>
<td>4.52</td>
<td>595.00</td>
</tr>
<tr>
<td>Cirrhosis</td>
<td>553.00</td>
<td>4.17</td>
<td>245.00</td>
</tr>
<tr>
<td>Cardiac insufficiency</td>
<td>499.00</td>
<td>3.76</td>
<td>499.00</td>
</tr>
<tr>
<td>Diabetes</td>
<td>482.00</td>
<td>3.63</td>
<td>664.00</td>
</tr>
<tr>
<td>Malignant neoplasms (liver and stomach)</td>
<td>448.00</td>
<td>3.37</td>
<td>546.00</td>
</tr>
<tr>
<td>Total</td>
<td>11,347.00</td>
<td>85.47</td>
<td>7,873.00</td>
</tr>
</tbody>
</table>

Source: Reference (23).
dropped from 31,093 in 2006 to 7,080 in 2009, transmission continues in many municipalities in over 10 departments (24). The disease affects the indigenous population in particular: nearly 65% of the cases reported in 2008 occurred in this population group.

Epidemics of dengue were reported in 2009 and 2010. The disease is hyperendemic in several regions of the country where all four dengue serotypes are known to circulate. A major dengue epidemic occurred in 2009, when 10,438 cases were reported. At least 71.2% of the cases occurred in five departments (in the north, east, and coastal areas). Cases of dengue hemorrhagic fever rose from an annual average of 12 (in 2006–2008) to 417 (in 2009); 86.8% of the cases were reported in two departments: Izabal and Zacapa (25).

According to preliminary estimates, in 2010 some 1.4 million inhabitants were exposed to Chagas’ disease and 166,667 individuals were infected, 32,759 of them women. About 1,275 new cases of vector-borne transmission are reported annually. Two vectors have been identified: *Triatoma dimidiata* (reported in 21 of the 22 departments) and *Rhodnius prolixus* (reported in 241 communities, although this vector has not been reported since 2008).

Onchocerciasis transmission was interrupted in three foci (Huehuetenango, Escuintla, and Santa Rosa, with 105,037 inhabitants) and a monitoring phase has been established to certify its elimination. Active transmission exists in the central focus (which includes 111,341 inhabitants in Suchitepéquez, Sololá, and Chimaltenango). The focus has been evaluated for pre-certification of elimination.

Cutaneous leishmaniasis was the most commonly reported form of this disease, accounting for 95% of leishmaniasis cases. According to epidemiological records, the number of cases has dropped from about 1,000 in 2006 to 400 in 2008; the numbers of cases are probably underreported.

**Vaccine-preventable Diseases**

The country has been free from the circulation of the wild poliovirus, has made advances in the process of eliminating measles, rubella, and congenital rubella syndrome, and has maintained the elimination of neonatal tetanus. Control continues of diphtheria, tubercular meningitis, whooping cough, hepatitis B, and invasive infections from type b *Haemophilus influenzae*. Immunization coverage is reported to be above 90% for all vaccines administered to children under age 2 in accordance with the national immunization plan. In 2010 the rotavirus vaccine was added to the plan. That same year more than 1.2 million doses were administered against the pandemic H1N1 influenza virus.

**Zoonoses**

From 2006–2008, five deaths due to human rabies were confirmed; all cases were transmitted by dogs. The situation has been associated with low canine vaccination coverage.

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

In 2009, an estimated 67,701 people in Guatemala were living with HIV, and an average of 7,557 new cases occurred annually. The epidemic has continued spreading; 75% of the cases are reported in six departments (Izabal, Suchitepéquez, Escuintla, Guatemala, Retalhuleu, and Quetzaltenango), which together encompass about 30% of Guatemalan territory. Available seroprevalence figures suggest that the HIV/AIDS epidemic is not distributed uniformly throughout the country. Cases are concentrated in the urban areas, the regions with major commercial routes and economically important ports.

The most frequent transmission mode is sexual contact (93.8%), followed by mother-to-child transmission (5.1%). A trend toward the feminization of the epidemic has been observed and, in general, most new cases occur among 25–39-year-olds. There is an estimated HIV and tuberculosis co-infection rate of 19.7%.

**Tuberculosis**

From 2006 to 2008, the incidence of tuberculosis increased from 22 to 24 per 100,000 population,
while the mortality rate dropped from 2.5 to 1.5 per 100,000 (see Figure 2). The success rate (patients cured plus treatments completed) in new cases with positive sputum-smear microscopy was 85% in 2007 and 83% in both 2008 and 2009. These figures are complemented with high dropout rates in the same years (8%, 9%, and 9%, respectively). In 2009, the success rate in retreatment cases was 64%, while 20% of the cases abandoned treatment.

**Chronic, Noncommunicable Diseases**

Table 2 shows the basic indicators of chronic, noncommunicable diseases and their risk factors. Almost half the deaths from chronic diseases occur in people under age 70 and one-quarter in people under 60 (26).


<table>
<thead>
<tr>
<th>Indicator</th>
<th>Total</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic heart disease (ICD-10 codes 120–125): mortality under age 70 per 100,000 population</td>
<td>16.2</td>
<td>19.8</td>
<td>13.0</td>
</tr>
<tr>
<td>Ischemic heart disease (ICD-10 codes 120–125): potential years of life lost (PYLL) per 10,000 population</td>
<td>23.5</td>
<td>29.8</td>
<td>18.0</td>
</tr>
<tr>
<td>Ischemic heart disease (ICD-10 codes 120–125): expected years of life lost</td>
<td>0.8</td>
<td>…</td>
<td>…</td>
</tr>
<tr>
<td>Diabetes mellitus (ICD-10 codes E-10–E-14): mortality rate under age 70 per 100,000 population</td>
<td>28.1</td>
<td>25.3</td>
<td>30.7</td>
</tr>
<tr>
<td>Diabetes mellitus (ICD-10 codes E-10–E-14): potential years of life lost (PYLL) per 10,000 population</td>
<td>36.2</td>
<td>34.6</td>
<td>37.8</td>
</tr>
<tr>
<td>Diabetes mellitus (ICD-10 codes E-10–E-14): expected years of life lost</td>
<td>0.9</td>
<td>…</td>
<td>…</td>
</tr>
<tr>
<td>Prevalence (% of overweight (BMI=25.0–29.9) in adults</td>
<td>38.5</td>
<td>38.8</td>
<td>38.2</td>
</tr>
<tr>
<td>Prevalence (% of obesity (BMI&gt;30) in adults</td>
<td>21.3</td>
<td>16.0</td>
<td>25.8</td>
</tr>
<tr>
<td>Prevalence (% of overweight in children under age 5</td>
<td>5.6</td>
<td>…</td>
<td>…</td>
</tr>
<tr>
<td>Prevalence (% of adults with diabetes mellitus</td>
<td>8.2</td>
<td>8.8</td>
<td>7.7</td>
</tr>
<tr>
<td>Prevalence (% of adults with hypertension (systolic BP&gt;140 or diastolic&gt;90)</td>
<td>13.6</td>
<td>12.7</td>
<td>14.4</td>
</tr>
<tr>
<td>Prevalence (% of current tobacco smokers</td>
<td>19.5</td>
<td>35.2</td>
<td>4.4</td>
</tr>
<tr>
<td>Prevalence (% of excessive alcohol consumption in adults (four or more drinks for women; five or more drinks for men per occasion)</td>
<td>6.9</td>
<td>13.1</td>
<td>1.2</td>
</tr>
<tr>
<td>Percentage of population who consume five or more servings of fruits and vegetables per day</td>
<td>19.0</td>
<td>20.4</td>
<td>18.1</td>
</tr>
<tr>
<td>Prevalence (% of adults who are physically active</td>
<td>50.4</td>
<td>56.0</td>
<td>45.0</td>
</tr>
</tbody>
</table>

**Source:** Reference (23).
Nutritional Diseases

Malnutrition

In 2007, 485 children under age 5 reportedly died from malnutrition in Guatemala, including 203 infants under 6 months old. The infant mortality rate from malnutrition was 62.7 per 100,000 children under age 1, and the mortality rate from malnutrition in children under 5 was 22.9 per 100,000 children.

According to the third national height census of first-graders in 2008, 45.6% of the students presented low height-for-age or chronic malnutrition. Reducing the prevalence of chronic malnutrition has been slow; it dropped only 5.1 percentage points in two decades.

Accidents and Violence

The number of traffic accidents reported by the National Statistics Institute rose from 2,781 in 2006 to 3,187 in 2010; the highest number of accidents (3,528) was reported in 2009. According to a recent evaluation, even though there are national regulations on speed limits, blood alcohol level, and helmet and seat belt use, only 30% of motorists comply with these regulations (27). There still are no specific regulations for the safety of children, such as passenger seat restrictions and the use of special car seats, among other factors.

The homicide rate was 41.5 per 100,000 population. Most of the problem is linked to gangs (known as maras), organized crime, and drug trafficking (28).

In 2010, 2,305 cases of domestic violence were reported; the direct victims included 182 children and adolescents. Approximately 86.5% of these incidents affected females. The registries indicate that in 2010, 695 women died from domestic violence. Physical assaults against women in 2010 increased 7.0% over 2009, and in most cases no perpetrators were detained or brought to court to be tried for these crimes (28).

Disasters

More than 10% of the territory is threatened to some degree by drought, occurring mainly in the Dry Corridor, which extends from the department of San Marcos in the west across to the departments of Zacapa and Chiquimul in the east. An area of 7,622 hectares (7% of the territory) in the Sierra Madres and Cuchumatanes mountains, at 2,200 meters above sea level, has a greater than 50% probability of suffering the effects of frost. The departments most affected by this phenomenon are Quetzaltenango, San Marcos, Huehuetenango, Totonicapán, Sololá, Quiché, Chimaltenango, and Sacatepéquez (15). A study of hurricanes shows that the magnitude of these storms has increased over the last 50 years. Tropical Storm Agatha, which hit Guatemala in 2010, caused damages and losses surpassing US$ 1.53 million (15).

Mental Disorders

The prevalence of mental disorders in the 18–65-year age group in Guatemala is 27.8%; anxiety disorders are the most frequent (20.6%). Psychiatric hospital care is centralized in Guatemala City, where three national psychiatric hospitals provide 2.6 beds per 100,000 population. Only 1% of the national health budget is allocated to mental health, and of this, 94% is allocated to the National Mental Health Hospital. The country has two psychiatric units in general hospitals with a total of 0.06 beds per 100,000 population. The mental health facilities available in the country provide outpatient care to approximately 363 users per 100,000 population. Of those using outpatient care, it is estimated that 58% are women and 14% are children/adolescents. Guatemala does not have public policies or legislation designed specifically to protect people who suffer from mental disorders, which means these people’s right to health is extremely vulnerable.

Risk and Protection Factors

Smoking

In 2007, the risk factors and frequency of chronic diseases were measured and it was determined that 16% of residents over age 20 in the municipality of Villa Nueva smoke (29). In 2008, 32.8% of
13–15-year-old male and female students had smoked cigarettes at some time and 8.0% had consumed some form of tobacco (30). In 2008, the smoke-free environment law entered into effect in the country. In 2010, an assessment of the country’s progress toward compliance with the WHO Framework Convention on Tobacco Control concluded that a review was needed of the packaging and labeling of tobacco products; publicity, promotion, and sponsorship of tobacco products; regulation of the content of tobacco products; and dissemination of information on all these issues. The Constitutional Court of the Republic of Guatemala ruled to reduce taxes on tobacco products in 2010 due to the allegations presented by the tobacco industry of double taxation.

Alcoholism

The share of disease burden due to alcohol consumption is significant. The prevalence of alcohol use and abuse is 5.2%; of those interviewed in the 18–25-year age group, 12.0% reported problems of alcohol dependence and abuse (31). The 2009 school health survey showed that 27.8% of the adolescents interviewed reported the onset of alcohol consumption at age 13 or younger (29).

HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Health System’s Stewardship Role

The Health Code of Guatemala establishes the Ministry of Public Health and Social Welfare as the governing entity for health in the country, but the legal instruments to exercise this role are limited. To promote and exercise its stewardship role in policies affecting the health system, the Ministry promoted the National Health Agenda 2015, which is not well known by other actors in the health sector. Efforts such as the “Country Vision Plan” and the 2007 Health Framework Law, which have been promoted by the private sector and political parties, have had more visibility (32).

Through an agreement of the Ministry of Public Health, partnerships were forged with local governments to facilitate public policy and management in favor of “health for all.” In April 2010, an agreement was reached with the National Association of Municipalities and 12 city halls to adhere to a healthy municipalities strategy and participants made the commitment to promote social participation, local investment, and intersectoral coordination in order to affect the social determinants of health. As part of the agreement the Inter-institutional Technical Committee was set up to apply the strategy, giving priority to 40 municipalities.

The Health System’s Performance

Starting in May 2010, the Ministry of Public Health undertook actions to improve the quality of patient care and safety in hospitals, and in September 2010, 12 public hospitals began to apply the safe surgical practices checklist. The Ministry also prepared guidelines to standardize the use of the checklist in all hospitals nationwide.

Health Expenditures and Financing

In Guatemala taxation and tax revenues have been low (10.4% of GDP in 2009), which limits available resources to implement public policies on expanding basic service coverage. The expenditure on health as a percentage of GDP has held steady at an average of 1.2% between 2006 and 2010 and accounted for 18.6% of social spending in 2008. Approximately 88% of the health budget is allocated to operating expenses, including wages and procurement of supplies for service delivery; investment in health infrastructure accounts for about 12% of the budget. The excessive financial burden of the system on households (more than 60%) and a family’s out-of-pocket expense on purchasing services is relatively higher for poorer families. This exposes the at-risk population to incurring catastrophic expenses as a result of acute and chronic diseases or in the event of
an accident (3,3). Given that insurance coverage (Guatemalan Social Security Institute and private insurers) does not protect more than 23% of the total population, most people lack social protection in health and focus their spending on direct consumption of health products and services (34). The increased out-of-pocket spending financed by family remittances has helped fill the gap left by the reduction in public spending on health. The 2006 family remittance survey showed that 10% of all remittances received are spent on health services. Of these expenditures, 98% was spent on drugs, diagnostic tests, medical fees, and hospitalization, and only 2% on paying for insurance coverage. In 2006, the total amount of remittances spent on health was more than US$ 283 million, exceeding the total health expenditure made by the Ministry of Public Health and Social Welfare that year (3,3).

The Ministry’s 2010 budget rose to US$ 462.5 million (approximately US$ 40.21 per capita). Of that amount, 18.9% was allocated to payments for the nongovernmental organization (NGO) service providers in the Extension of Coverage Program. Of the remainder, 55% was allocated to hospitals and 45% to primary- and secondary-level health facilities.

**The Health Services**

There are several forms of insurance in the country: public, social security, and private. Private insurance and social security cover less than 25% of the population; 17% is covered by the Guatemalan Social Security Institute. Participation in social security is through enrollment of companies and public institutions; employees and beneficiaries are subsequently enrolled.

The service delivery system is fragmented and segmented and there are no functional liaisons or separation of functions between subsystems. The Ministry of Public Health delivers services through three care levels of differing complexity that are linked through the delivery and response system. The operation of this system showed weaknesses, especially between the second and third levels. The first level consists of institutional services (health posts, primary health care centers, and the Extension of Coverage Program). Primary care services provided by the Extension of Coverage Program consist of a basic health care package that includes 26 services, of which 8 target care of women, 8 are pediatric services, 6 are for emergencies and prevalent diseases, and 4 are for environmental services.

As a part of the Extension of Coverage Program, health service providers are certified before being contracted by the Ministry of Public Health. The per-capita service plan cost is predefined so that the transfer of resources to the NGO service providers corresponds to the assigned population (according to data from 2000, this amounts to US$ 5.33 per inhabitant per year for populations of 10,000 inhabitants).

The Extension of Coverage Program has provided treatment in 425 jurisdictions (each with 10,000 inhabitants) in 206 municipalities. Outpatient care by a doctor or nurse is scheduled once a month and, in accordance with production indicators, priorities have included maternal care and immunization, nutritional supplementation, and growth monitoring of children under age 5. The Extension of Coverage Program also incorporated epidemiological surveillance for tuberculosis.

The second care level provides services in health centers and comprehensive maternal-infant care centers. The third level includes district, departmental, regional, and national referral hospitals.

In 2006, the components of the service network included 43 hospitals, 279 health centers, 903 health posts, 46 health posts staffed with physicians, and 4,163 “convergence centers” (clinics held periodically and served by visiting medical staff).

The Guatemalan Social Security Institute provides its members with service programs for accidents, disease, maternity, disability, old age, and survivor benefits, as well as preventive and curative care for children under age 5.

Six out of every 10 people above the poverty line seek health services, compared to only 3 out of 10 people below the poverty line. Of the population living below the poverty line, 46% use public services and 25% use private services.
Pharmaceuticals and Health Technology

In December 2008, pharmaceuticals in Guatemala could be purchased at 5,151 pharmacies and 1,786 points of sale. The public sector dispenses 25% of the drugs to patients, the private sector 74%, and “others” dispense 1%.

The Department of Registration and Control of Medicines and Pharmaceutical Products of the Ministry of Public Health and the National Health Laboratory have the authority for regulating pharmaceuticals. They receive funding from the national budget and also receive payments for registration services and health authorizations, according to the standard. The amount of US$ 280 per product has been established to register a medication, which includes administrative costs and product quality assessment. In 2010, the Department of Registration and Control reported 15,228 registered pharmaceutical products.

There are no legal provisions to ensure transparency, accountability, and promotion of a code of conduct in the execution of regulatory actions.

The quality of the medicine is evaluated during the registration process, and there is a surveillance program in the health services network of the Ministry of Public Health after the medicine enters the market.

The bylaws for the control of medications and related products contain legal provisions regulating the prescribing of these products. The public sector must use generic names when prescribing drugs.

The provision of drugs in the public health sector is carried out in accordance with stipulations contained in the state procurement law (centralized price negotiations and decentralized purchase), which favors economies of scale. For competitive bidding, a document is prepared with technical and administrative specifications, the list of the drugs, and estimated requirements per unit or health service. The providers commit to delivering the drugs to the health areas or health units and to the hospital network; responsibility for distribution of the drugs in health centers and posts rests with the respective health area directorate.

The public sector allows competitive pricing in the context of the open contract. In the private sector, prices are set within the free supply-and-demand policy established in 1987 by the Ministry of Economy. A margin of 20% has been established over the factory or import cost for the distributors (drug stores) who, in turn, can charge an additional 25% when selling medications to the public.

Knowledge, Technology, Information, and Human Resource Management

Human Resources

In 2010, there were 16,043 registered doctors, 9,447 of whom were active. Although 71% were men, in recent years the number of female physicians has been steadily growing. Based on population estimates, there were 11 doctors per 10,000 population. However, 71% were concentrated in the department of Guatemala (36.1 per 10,000 population), while departments such as Quiché only had 1.4 per 10,000 population. The Cuban Medical Brigade has 235 doctors working in support of the country.

In 2010, the country had 6,584 professional nurses (4.5 per 10,000 population), for a ratio of approximately 2.4 doctors per nurse. As in the case of doctors, nurses (professional and nursing aides) are concentrated in the department of Guatemala.

In 2007 there were 2,376 dentists (1.8 per 10,000 population) throughout the country; 78.1% were concentrated in the department of Guatemala (6.5 per 10,000 population).

The public university and four private universities provide the medical training programs for doctors. Four programs are in the capital city, three recently created programs are in Alta Verapaz, two are in Quetzaltenango, and one is in Chiquimula. The Latin American Medical School in Cuba also offers training for Guatemalan students. In general, the preparation of health professionals in Guatemala is the responsibility of the universities.
In 2007, the Ministry of Public Health and Social Welfare had 23,850 employees, not including personnel hired by nongovernmental organizations in the Extension of Coverage Program. Between 1988 and 2007 the number grew by 23%, or 4,468 new employees in less than 20 years. In 2009, the number of employees rose to 26,200, an increase of 10% (2,350) in a two-year period. In 2009, 57% of doctors were working under contract and did not enjoy job security.

The Ministry of Public Health has struggled to fill temporary positions in rural areas, particularly in departments such as Quiché and Sololá. Given the difficulties in finding doctors to provide ambulatory services in the Extension of Coverage Program, the Ministry began to contract nurses for these positions. In some jurisdictions, the basic health team includes a health/nutrition educator and a provider of basic maternal/neonatal care. Such personnel are responsible for the health care of 4.5 million Guatemalans.

HEALTH AND INTERNATIONAL COOPERATION

International and subregional cooperation has been guided by the strategic objectives included in the Health Agenda for Central America and the Dominican Republic (35). The objectives include social and political integration of countries; strengthening the stewardship role of the national authority; social protection; reduction of inequalities, inequities, and social exclusion; the struggle against social diseases and gender violence; human resource management for health personnel; the development of science, technology, and knowledge; reduction of malnutrition and increased food security in the subregion; safe drinking water supply; and reduction of vulnerability to natural disasters. Compliance with the revised International Health Regulations has been a priority activity since the regulations went into effect in 2007.

As part of its cooperation strategy with the country, PAHO/WHO in Guatemala undertook joint actions with different participants from the international community. Voluntary contributions totaled US$ 12,168,541 in the biennium 2006–2007 and US$ 9,517,469 in 2008–2009.

SYNTHESIS AND PROSPECTS

The country has seen positive results in institution building, child health, and disease prevention, mainly of communicable diseases. Challenges still remain, however, in overcoming problems related to environmental and social determinants, economic development, food insecurity, and social violence. In addition to maintaining the achievements made thus far, improvements in universal health depend on reducing the inequities, increasing the most vulnerable groups' access to services, preventing and controlling chronic, noncommunicable diseases, and promoting health as a social value through strategies that emphasize the central role of the family and community. This approach implies adherence to the best practices in technology use, information dissemination, and generation of knowledge with support from technical cooperation. Going forward, efforts must focus on attaining the Millennium Development Goals, integrating the health system, and strengthening the Ministry of Public Health's stewardship role, as well as meeting the challenges of intersectoral work that considers intercultural and gender-based approaches.

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