

SURINAME



Sources: Second Administrative Level Boundaries Dataset (SALB), a dataset that forms part of the United Nations Geographic Database, available at: http://www.who.int/whosis/database/gis/salb/salb_home.htm, and the Digital Chart of the World (DCW) located at: <http://www.maproom.psu.edu/dcw>. The boundaries and names shown here are intended for illustration purposes only, and do not imply official endorsement or acceptance by the Pan American Health Organization.

Suriname is located on the northeast coast of South America, and covers 163,820 km². In the north, it borders the Atlantic Ocean; its neighbors to the east, south, and west are French Guiana, Brazil, and Guyana, respectively. The topography encompasses a narrow coastal plain that extends from east to west, consisting mainly of a savanna belt and a highland tropical rainforest.

GENERAL CONTEXT AND HEALTH DETERMINANTS

The land is divided into urban, rural, and interior areas. The urban area, comprising the capital city of Paramaribo, the city of Nieuw Nickerie in the west, and parts of the district of Wanica, covers 0.4% of the country's land surface and is inhabited by 59.4% of the total population. The coastal rural area is inhabited by 29.6% of the population. Both urban and rural areas are located along the coast, covering 10% of the land surface, with a population density of 526.5 inhabitants per km². The remote, heavily rainforested interior to the south, making up the remaining 90% of the country, is home to only 11% of the total population, with a density of 0.2 person per km². The interior's inhabitants are largely Maroons (descendants of runaway slaves) and indigenous tribal settlements of 100 to 4,000 persons, who have little or no basic sanitation, piped water, or electricity.

Social, Political, and Economic Determinants

The Government of Suriname accords high priority to sustainable development, poverty reduction, and improvement of the living conditions of its population within a framework of democracy and the preservation of human rights. Formerly a Dutch colony, Suriname gained independence in 1975. The political system (1) may be characterized as a constitutional democracy. The last elections were held in 2005. The present administration has majority support in the 51-seat National Assembly from a coalition of political parties that represent ethnic groups more than political platforms and ideologies. Below the national level there are 10 District Councils, and at the sub-district level there are 62 Resort Councils.

GDP growth for most of the 2001–2005 period remained high and reached 7.8% in 2004. Mining, agriculture, and manufacturing are the most important sectors in Suriname's economy, with good prospects for the construction and tourism sectors. Bauxite mining and oil extraction continue to account for more than 90% of total foreign exchange earnings while agriculture, forestry, and

fishing accounted for 7.5% of the GDP in 2002. The tourism industry is still in an early stage of development, yet shows encouraging signs of growth: in 2004, there were 137,000 tourist arrivals, compared to 85,000 in 2003.

National statistics indicate that there is a very large informal sector accounting for at least 20% of GDP and composed of remittances from family members living abroad, especially in the Netherlands, and various types of small-scale gold mining and logging operations. The Head of the Judicial Section of the Police Corps indicated in 2000 that narcotics trafficking had become a major challenge and estimated that approximately 26,000 kg of cocaine are shipped to Europe each year, with a street value of slightly over US\$ 1 billion. Of this, he estimated that some US\$ 300 million stayed in Suriname. The country's location and remote, sparsely populated interior contributed to its desirability as an international transit point for drug trafficking (2).

The country has experienced a significant loss of skilled labor due to emigration. The Netherlands is the country with the highest number of emigrants from Suriname, with 321,000 living there in 2004 (1) and an average migration of 3,300 Surinamese per year to the country (3). The external migration of skilled professionals affects several areas: in the health sector, there is a very high out-migration of nurses.

According to the local definition of poverty, a person or household is considered poor if there are insufficient means to provide for basic human needs, particularly as regards food. Figures for the average poverty lines for the second quarter of 2005 for Paramaribo and Wanica show that the poverty line for a household consisting of one adult would be US\$ 135 per month and that of one adult and two children, US\$ 281 per month. The General Bureau of Statistics estimates that in 2000, between 60% and 75% of the population lived below this poverty line. Women living in the interior, women without a partner, youth, and older adults are the groups most affected by poverty. Women overall are poorer than men (4), due to persistent gender inequality in the household and in society. A lack of access to employment in the formal sector forces women into informal economic activities, which are often characterized by poor working conditions, health risks, irregular

working hours, and low income (5). After the public sector, private sector agriculture is the second largest productive activity of women. The majority of rural families own and work small plots of land, with women and children usually working without pay. Poverty is also common among youth and children below 15 years of age, with 61.6% in this group living in poverty. The prevalence of poverty declines gradually with age, reaching 46.3% in the 45–60-year-old age group. However, of the population over 60 years of age, 52.1% live below the poverty line because the current pension system does not effectively meet the financial needs of retired persons. Although the majority of poor live in urban areas, the sectors living in the most extreme poverty are found in the country's interior (6). However, this latter sector is gradually migrating to Paramaribo; many are women and the majority are poorly educated and possess only minimal job skills (7).

The urban unemployment rate decreased from 14% in 2001 to 8% in 2004 (8). The national unemployment rate is 9.5%, with the unemployment rate for youth ages 15–24 standing at 15.8% for males and 33.4% for females in 2004. While women are disadvantaged by unequal political, social, and economic opportunities, males have poorer school performance and are more frequently involved in negative social and economic activities.

In 2000, the national average school attendance of children was 77.5%, ranging from a high of 80.9% for Paramaribo District to a low of 51.7% for Sipaliwini District in the interior. Low teacher salaries have led to a shortage of trained teachers in the schools, limiting access to a quality education. The overall literacy rate of the population age 15 years and older is 86%; the highest rate (92%) is found among the population aged 15–34. Literacy rates decline with age, dropping to 63% for the population age 65 years old and older. Differences in literacy between sexes increase with age, with an equal gender distribution in the age group 15–24 years, but with a difference of 19.3% higher for males than females at aged 65 and older. Overall literacy is 93% in urban areas (94% for males, 92% for females), 87% in the rural districts (89% for males and 85% for females), and 51% in the interior (66% for males and 44% for females) (9).

Despite institutionalized programs of the Government and initiatives promoted by nongovernmental organizations (NGOs), gender disparities persist. The proportion of seats held by women in National Parliament is 20% (10), and in general there are nearly twice as many men as women holding decision-making positions and other types of high level employment. Women's advancement in the academic world is not reflected in the levels of their participation in the nonpolitical public sector or private enterprise.

Violence against children and women is a major political and public health issue. In the first half of 2005, there were 139 cases of child sexual abuse and 59 cases of cruelty to children reported to police. Children of Creole and Maroon descent represent two-thirds of these cases. There is no formal national registration system for domestic violence. Suriname is both a transit and destination country for human trafficking, especially for the purpose

of sexual exploitation such as commercial sex work in the mining camps in the country's interior (1).

Policies and legal frameworks to ensure rights-based, sustainable human development are inadequate, obsolete, or absent, as is the systemic response to violence, particularly against women and children. Also, there are no appropriate measures to ensure equal access to a basic education and health and other social services that would thereby target social investments to those most in need and empower communities with multiple disadvantages. There is also a lack of data collection that would more clearly reveal the disparities and provide the evidence base for policy development and management.

The health sector in Suriname is currently confronted with a series of serious obstacles. These result from macroeconomic problems, the emigration of qualified personnel to other countries, shortages of essential drugs, physical deterioration of health services infrastructure, and health care deficiencies, particularly at the secondary level.

There is inequitable access to water and sanitation services. For every urban dweller without water service, there are two inhabitants in the country's interior without this service. The distribution of sanitation services is even more inequitable: for every one urban dweller without these services, there are four rural dwellers and 17 dwellers in the interior without access to them. The distribution patterns for drinking water quantity and quality are similar. Mercury pollution from small-scale gold mining activities in the interior, excessive pesticide use on agricultural lands in rural coastal areas, and the widespread practice of dumping sewage into street ditches and canals all pose a serious threat to drinking water quality. The only treatment for urban public water supplies consists of aeration and rapid filtration to remove iron and manganese. In the interior, piped drinking water is often sourced from rivers and distributed untreated. The distribution systems are compromised because of poor maintenance, water theft, and leakages, resulting in pump breakdowns, low pressure, intermittent supply, and high potential for contamination.

Surface water quality in urban as well as rural areas is under severe stress due to poor sanitary practices, a high groundwater table, and industrial and mining activities. The aquifer providing water to the population of Paramaribo is expected to be depleted in 15 to 20 years. The situation in the interior is considerably worse than in other regions. Improvements of the water system are under way that are expected to increase water service capacity to approximately 5,680 m³ per hour, while the demand when the improvements are complete is projected to be 4,430 m³ per hour.

Littering by the general public contributes to flooding during rainy periods. Polyethylene terephthalate (PET) bottles, household garbage, and even semi-industrial refuse are often thrown into ditches and canals, resulting in massive blockages of sewer and drainage systems.

Demographics, Mortality and Morbidity

According to the 2004 census (11), the total population of Suriname was 492,829 (50.3% men and 49.7% women), a small population for the country's geographical size. The ethnic composition is as follows: 27.4% Hindustani, 17.7% Creole, 14.7% Maroon, 14.6% Javanese, 12.5% mixed, 3.7% Amerindian, 1.8% Chinese, 0.6% Caucasian, and 7.2% other/not reported. The principal religions are Christianity (40.7%), Hinduism (19.9%), and Islam (13.5%).

In 1980, the population was 355,240 (11). With an absolute growth of 137,589, the population has grown by 38.7% in 24 years. The male-to-female ratio both in 1980 and 2004 was 1:1. In 2004, 10.5% of the population (51,837) was under age 5 and 39% was under age 20. The number of Maroons has more than doubled, from 35,838 in 1972 to 72,553 in 2005. The overall annual growth rate remained at 0.9% (12), based on the natural positive growth of the population (6,618 persons in 2001 and 5,773 persons in 2004), with a consistent negative growth migration balance between 2001 and 2004. The population structure of Suriname in 1990 and 2005, by age and sex, is presented in Figure 1.

Ninety-five percent of all births are registered (9). The total annual number of births ranged from 9,052 to 10,188 for the 2001–2004 period. Crude birth rates ranged from 19.4 to 22.3 births per 1,000 population annually during that same time. An ongoing problem exists regarding the underreporting of live births due to legal regulations of the Surinamese Civil Code, resulting in less accurate estimates of the infant and perinatal death rates (13).

Approximately 85% of all deaths that are registered on the Civil Registry are certified. The total number of registered deaths showed a minor increase from 3,099 in 2001 to 3,319 in 2004.

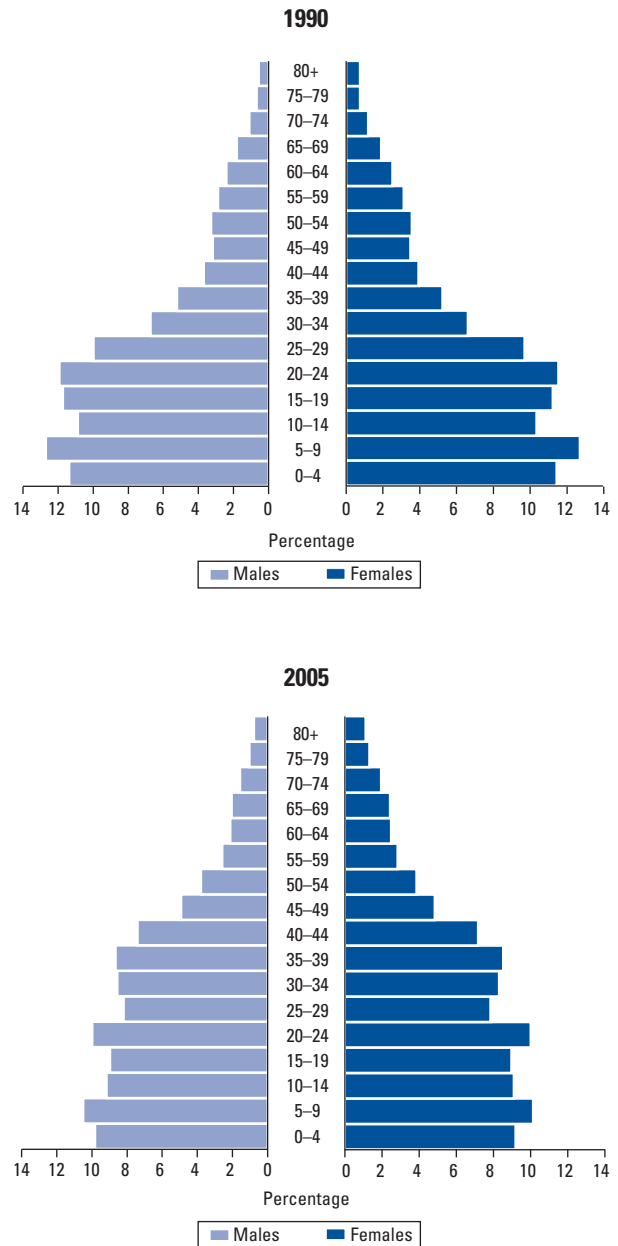
Crude death rates remained stable at approximately seven deaths per 1,000 population between 2001 and 2004. Life expectancy at birth was 69.7 years in 2005 (66.6 years for males and 73.0 for females). The total fertility rate was an average of 2.0 births per woman in 2004.

Officially registered external migration figures are 2.5 times higher than immigration figures. Immigrants arrived mainly from the Netherlands, China, Guyana, and French Guiana (63%, 13%, 6%, and 4%, respectively, in 2004). As the vast borders of rainforest do not permit reliable controls, there is also a considerable amount of illegal immigration from these countries. Emigration is also underreported. The principal destination country for external migration is the Netherlands; others included the Netherlands Antilles, French Guiana, and the United States (60%, 18%, 12%, and 4%, respectively, in 2004). Internal migration rates have remained fairly stable, with major migration to urban areas.

Table 1 presents the 10 leading causes of mortality in Suriname in rank order for 2004, based on 85% of certified deaths.

Between 2001 and 2004, the largest proportion of deaths occurred between the ages of 65 and 79 years, representing an average of 32% of all deaths. During this time period, the percentage

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



of deaths by gender remained constant at 57% for males and 43% for females (3). Until age 25, there is an almost equal percentage of mortality between the sexes. Between 25 and 39 years of age, the number of deaths among males is 2.5 times higher than among females. The principal cause of death for the population aged 1–29 years is external causes; for the 30–39-year-old age group, it is AIDS, and after age 40, it is cardiovascular diseases.

TABLE 1. Number of deaths, proportional mortality, and rates for leading causes of mortality, Suriname, 2004.

Rank	Disease category	Number	% total ^a	Cumulative %	Rate ^b
1	Cerebrovascular diseases	456	15.8	15.8	92.5
2	Certain conditions originating in the perinatal period	244	8.5	24.3	49.5
3	Ischemic heart diseases	209	7.3	31.6	42.4
4	HIV disease	152	5.3	36.8	30.8
5	Diabetes mellitus	133	4.6	41.4	27.0
6	Events of undetermined intent	111	3.9	45.3	22.5
7	Heart failure and complications	67	2.3	47.6	13.6
8	Intentional self-harm (suicide)	65	2.3	49.9	13.2
9	Neoplasms of the uterus	31	1.1	51.0	12.7
10	Neoplasms of the prostate	30	1.0	52.0	12.1

^aTotal deaths defined by cause.^bRate per 100,000 population.

External causes remain the principal cause of mortality among males until age 29, while for females external causes remain the principal cause until age 25. AIDS becomes the principal cause of death among females from the age of 25 to 39. For males in this age group, AIDS is the second leading cause, although the number of deaths caused by AIDS is 2.4 times higher among men. For the group aged 50 years and older, cardiovascular diseases ranked first, followed by malignant neoplasms.

In 2003, 68.1% of all deaths occurred among the 25–44-year-old age group. In 2004, this percentage declined to 53.4%, while for the 45–49-year-old age group, the percentage doubled from 8% in 2003 to 16.5% in 2004.

Among malignant neoplasms, those of the digestive organs ranked highest, accounting for 17.2% of all malignant neoplasms, followed by those of the cervix (9.8%), lung (6.1%), prostate (12.1%), and breast (9.0%). When considering malignant neoplasms of the reproductive organs as a whole, in 2004 these comprised 22.5% of all malignant neoplasms among females and 12.1% among males.

Mortality due to diabetes mellitus accounted for 5% of the 10 leading causes of death in 2004. Forty-eight percent of all deaths due to diabetes mellitus that year occurred among the population of Hindustani descent, and 35% of all deaths due to cardiovascular diseases were among this population group. Thirty-one percent of all cardiovascular deaths were among those of Creole descent, as were 25% of all deaths due to diabetes mellitus. The populations of Creole and Maroon descent accounted for 57% and 21%, respectively, of all HIV/AIDS-related deaths.

HEALTH OF POPULATION GROUPS

Children under 5 Years Old

According to the 2004 census, there were 9,872 children under 1 year of age, making up 2% of the total population. The number

of live births was 9,717 in 2001 and 9,062 in 2004. Approximately 90% of all births were attended by skilled health personnel, with the remaining 10% by traditional birth attendants in the interior. Of those births attended by skilled health personnel, about 90% occurred in hospitals and 10% in primary health care facilities. The number of stillbirths increased from 202 in 2001 to 243 in 2004. Most stillbirths are due to conditions originating in the perinatal period (48%), followed by obstetric complications (22%), short gestation and low birthweight (15%), complications of diseases of the mother (9%), and congenital malformations (4%). Although virtually all pregnant women receive some type of prenatal care and 91% of all pregnant women visit the prenatal clinics at least once (9), nearly 20% of these women do not have their first visit until the second trimester of their pregnancy.

The infant mortality rate averaged 19 deaths per 1,000 live births during the 2000–2004 period, but dropped as low as 16 deaths per 1,000 live births in 2001. During the years 1990 to 1994, the infant mortality rate was consistently around 21 deaths per 1,000 live births. The number of deaths in the under-1-year-old group increased from 154 in 2001 to 174 in 2004. Major causes of death in this group were intestinal infections, followed by respiratory diseases and congenital malformations. The perinatal mortality rate increased from 29.2 deaths per 1,000 deliveries in 2001 to 39.3 in 2004. There was also a noticeable increase in the early neonatal mortality rate from 9.2 deaths per 1,000 live births in 2001 to 13.6 in 2004. The late neonatal mortality rate was 1.6 deaths per 1,000 live births in 2001 and 1.1 in 2004. The postneonatal mortality rate was 5.0 deaths per 1,000 live births in 2001 and 4.5 in 2004. Most early neonatal deaths are due to complications of short gestation and low birthweight (47%), followed by intrauterine hypoxia and asphyxia (17%), complications of diseases of the mother (16%), congenital malformations (9%), and obstetric complications (6%). Only 13% of children under 4 months of age are exclusively breast-fed.

The major causes of death in children 1 to 4 years old were gastrointestinal infections, followed by respiratory infections and external causes.

About 13.0% of children under age 5 in Suriname are underweight, and 2.1% are severely underweight. Approximately 10% of children are stunted, and 6.5% are wasted. There are noticeable differences between the prevalence of malnutrition in urban, rural, and interior areas. Children in the interior are the group most at risk for chronic malnutrition. The disparity is mainly related to the geographical inaccessibility of the country's interior; many parts are reachable only via air or water, creating formidable obstacles for the availability and distribution of goods and services. More than half of the children hospitalized due to malnutrition are under age 1. Seventy-five percent of children ages 1–4 who are hospitalized for malnutrition are of Maroon and Creole descent. The majority of hospitalized children, equally boys and girls, are from Paramaribo South, an area known for its socially deprived living conditions and the migration of families from the interior, and from the interior Sipaliwini and Brokopondo districts (14).

The marked differences in living conditions found in the interior and the urban and rural regions are also reflected in child morbidity data. Clinic visits in the interior show that children aged 0–4 are the most frequently returning visitors (61%); the most frequently treated conditions among this age group are respiratory infections (59.9%), diarrhea (23.1%), and malaria (15%).

Malaria is a common cause of school absenteeism and one of the leading causes of mortality in the 0–5-year-old age group. Preventive measures, especially the use of mosquito nets treated with insecticide, continue to be implemented. Insecticide-impregnated mosquito nets are used by 72% of children between the ages of 0 and 4 when sleeping. Poor sanitary conditions and personal hygiene practices, as well as limited access to safe water sources, especially during dry season, are the leading contributors to the high incidence of diarrhea in Suriname's interior. The Suriname Multiple Indicator Cluster Survey (MICS) study conducted in 2000 (9) revealed that only 24.2% of children with diarrhea received oral rehydration therapy. In many cases, medical attendance is sought too late, resulting in preventable deaths.

Children 5–9 Years Old

According to the 2004 census, the population 5 to 9 years of age totaled 49,409 persons, representing 10% of the total population. The principal causes of death in this age group are external causes, cardiovascular diseases, and intestinal infections. All schoolchildren are required to have a vaccination card in order to enter elementary school, usually at the age of 6 years.

Adolescents 10–14 and 15–19 Years Old

According to the 2004 census, the population segment ages 10 to 14 years consisted of 45,143 persons, or 9.1% of the total pop-

ulation. Leading causes of death in this age group are external causes, followed by malignant neoplasms and cardiovascular diseases. In 2002, the average number of decayed, missing, or filled teeth at age 12 was 2.7.

The population aged 15 to 19 years in 2004 was 46,508 persons, or 9.4% of the total population. The leading cause of death in this age group is external causes. From 2002 to 2004, there were three deaths due to HIV/AIDS each year among this group.

The establishment of reproductive health services targeted to adolescents is a priority need. For the 2001–2004 period, an average of 16.7% of the total live births were to mothers between 15 and 17 years of age; 4.3% of all live births were to girls between the ages of 10 and 14. Most of these occurred in the Paramaribo and Wanica districts.

The prevalence of tobacco consumption among the population ages 13 to 15 years was 11% for girls and 20% for boys in 2004 (15).

Adults 20–59 Years Old

According to the 2004 census, the adult population between the ages of 20 and 59 stood at 253,039 persons, representing 51.3% of the total population. Within this broad age group, external causes are the leading cause of death, followed by HIV/AIDS, cardiovascular diseases, and neoplasms. Beginning at age 40, diabetes makes its first appearance on the list of the 10 leading causes of mortality; cardiovascular diseases also grow in importance as external causes descend in the rankings.

Maternal mortality decreased from 15 deaths in 2001 to 8 in 2004. The main causes of maternal death during 2001–2004 were hemorrhage (31%), preeclampsia (29%), and sepsis (17%); in most cases the health facility was lacking the necessary supplies for a timely response to the complication (16). The cesarean section rate for 2001 was 12.7%, and for 2002 it was 13.3%. Abortion is illegal but widely practiced, particularly by women under the age of 24. Estimates of 8,000–10,000 abortions performed annually are based in part on sample surveys among adolescents (17). These outcomes indicate an unmet need in family planning. Abortions are performed upon request and are generally socially tolerated. The illegality yet tolerance for and frequent use of abortion are the result of a lack of official mechanisms and/or structures to regulate abortion practices and further increase the risks for unsafe practices and financial obstacles, particularly among poor women with a higher risk of unwanted pregnancies and more barriers to education (18).

The mortality rate due to external causes was 62 per 100,000 population in 2004. Of all external causes, events of undetermined intent had the highest percentage (23%), followed by intentional self-harm (13%). The 20–49-year-old age group accounted for nearly 55% of all deaths due to these causes (75% males and 25% females).

Older Adults 60 Years Old and Older

According to the 2004 census, the population segment aged 60 and older consisted of 42,060 persons, or 8.5% of the total population. The leading causes of death in this age group are cerebrovascular and cardiovascular diseases, followed by malignant neoplasms, diabetes mellitus, external causes, acute respiratory infections, and chronic lower respiratory infections.

The Family

An estimated 40% of all households consist of three to four members, with 62.2% of children living with both parents, 22% living with their mother only although their father is alive, and 7% living with neither parent although both are alive (9). The family structure in the interior is quite different from that found in urban and rural areas along the coast: less than 50% of children live with both parents, 34% live with their mother, and 12% live with neither parent. Cultural standards and expectations dominate decisions with regard to reproductive health issues in the interior. Generally, contraceptive use in rural areas and the interior is low, because producing children in these regions is highly valued. Contraceptive use among Maroon women is low (between 6% and 17%). On average, Maroon boys become sexually active between the ages of 10 and 13 and girls initiate sexual experiences between the ages of 13 and 15 (19).

The oral contraceptive pill is the most popular method of birth control, with 70% of couples practicing contraception choosing the pill. Past studies have found that around 40% of women with a partner use contraceptives (20). According to the 2000 MICS study, contraceptive use in urban areas was 51%, while in the coastal rural areas it was 45%, and in the interior it was 7.1% (9).

Workers

A rapid assessment of child labor conducted in 2002 by the International Labor Organization (21) indicates that 2% of all children between the ages of 4 and 14 years were economically active. Fifty-four percent of children in this group worked more than 15 hours a week and were involved in activities related to fishing, vending, agriculture, gold digging, construction, and boat transport. Some children, especially females, were involved in domestic work and trade (described in the study as “vending a variety of products”). None of the children interviewed reported being involved in commercial sexual activity, the production or sale of illicit drugs, or any form of human trafficking. However, the study notes sporadic reports by NGOs of children being involved in prostitution and becoming victims of sexual exploitation. There were no specific findings to suggest that children were exposed to violence in their work environment, although health concerns were raised related to their exposure to sand, dust, and mercury vapor and the carrying of heavy loads.

There are an increasing number of non-Surinamese workers in the gold mining and other natural exploitation sectors in the interior, including an estimated 30,000 *garimpeiros* (gold diggers from Brazil). Mercury poisoning and malaria and sylvatic yellow fever transmission, as well as HIV/AIDS and other sexually transmitted infections, are serious health threats for miners and local communities. Additionally, traditional community life has undergone sociocultural disruption due to the commercial sex industry, the gold economy, drug use and related crime, and degradation of the natural environment.

Border Groups

The border population along the eastern border, consisting mainly of Maroons, has frequent interaction with the population living in French Guiana across the Marowijne River. It is not uncommon for groups belonging to the same family to be living on both sides of the border, separated only by the river. Women on the Surinamese side prefer to deliver their children in French Guiana because health care there is perceived to be of higher quality. At the northwestern border with Guyana in Nickerie District, as with the French Guiana–Suriname border, related families often live on both sides of the Corentyne River and often cross over. However, the influx of Guyanese nationals into Suriname is much larger than that of French Guianese nationals.

HEALTH CONDITIONS AND PROBLEMS

COMMUNICABLE DISEASES

Vector-borne Diseases

The two most prominent communicable diseases are **dengue** in the coastal area and **malaria** in the interior. Morbidity data on dengue come principally from hospital surveillance. Suspected cases of dengue are also reported by telephone surveillance. The number of suspected cases decreased from 516 in 2001 (of which 64 cases were confirmed) to 309 suspected cases in 2004 (of which 56 were confirmed). As of 2001, dengue serology studies isolated all 4 subtypes. From 2001 to 2004, most hospitalized suspected cases of dengue were among individuals of Hindustani descent (30%), followed by those of Creole (20%) and Javanese descent (15%). The majority of cases came from the densely populated areas of Paramaribo and Wanica, and from less-populated Saramacca. Incidence was equally distributed among the various age groups. The male-to-female ratio of reported cases of dengue was 1:2.

Malaria is an important public health problem in Suriname's interior, where the natural habitat of the vector, *Anopheles darlingi*, is found. In 2000, 13,216 cases of malaria were reported. After the introduction of new treatment policies in 2004, case

numbers declined to 8,560 in 2004 and 9,000 (preliminary estimate) in 2005. Half of the new cases of malaria occurred in children under the age of 15 years. No transmission in the coastal area has been reported. Incidence is highest in the Suriname–French Guiana border area along the Marowijne River. Gold mining activities by Brazilian *garimpeiros* and frequent border-crossings by the population have contributed to the increase of malaria in that area. Gold mining activities have spread to new areas in the interior as well, leading to the emergence of malaria in regions where previous transmission seldom occurred. The incidence rate of malaria per 100,000 population was estimated at 3,500 in 2001 and 1,700 in 2004. The national incidence is most probably higher. There is underreporting due to patients receiving clinical treatment without laboratory confirmation and non-reporting by private physicians and traditional medicine practitioners. The number of hospitalized suspected malaria cases was 436 in 2001, with 50% of the cases being confirmed, and 248 in 2004, with 65% being confirmed. Of these confirmed cases, death occurred in 21 cases, or 9.7% in 2001, and 8 cases, or 4.9% in 2004. The male-to-female ratio of hospitalization was 1:2.1 in 2001 and 1:2.5 in 2004.

Chloroquine-resistant malaria due to *Plasmodium falciparum* is widespread, but quinine resistance has not yet been established. In 2003, Suriname introduced malaria treatment with Coartem, resulting in a less severe course of the disease and a decrease in the mortality rate. For several years now, the use of bed nets has been promoted throughout the interior. They are produced, treated with insecticide, and distributed by local women's groups.

Yellow fever has not been reported in Suriname over the past decades. But in view of the disease's reemergence on the South American continent, vaccination activities for yellow fever have been intensified. The mass yellow fever vaccination campaign that started in 2000 was finalized in 2002. Persons traveling to Brazil and French Guiana are vaccinated for yellow fever regularly, as this is mandatory for these countries. Yellow fever serology tests yielded a negative result for six suspected cases in 2003 and four in 2004.

Vaccine-preventable Diseases

During the review period there were five reported **tetanus** cases (excluding neonatal tetanus): two cases each in 2001 and 2002, and one in 2003. There were no reported cases of **measles**, **diphtheria**, or **congenital rubella syndrome** between 2001 and 2005.

The geographic disparities between the urban, rural, and interior regions are also reflected in the immunization status of children. The frequent movement of migrant groups between the interior and Paramaribo and between Suriname and French Guiana places an additional burden on monitoring the vaccination status of children in these groups.

National coverage increased from 82% for measles, mumps, and rubella vaccine (MMR); 68% for the final dose of diphtheria, pertussis, and tetanus vaccine (DPT3); and 65% for three doses of the live oral poliovirus (OPV3) in 2001 to 86.4% for MMR, 84.9% for DPT3, and 83.5% for OPV3 in 2004. In 2005, Suriname introduced the pentavalent vaccine (diphtheria, pertussis, tetanus, hepatitis B, and *Haemophilus influenzae* type B) in the national vaccination schedule for infants. Routine tetanus vaccination of pregnant women was also initiated in 2005, together with yellow fever vaccination for children ages 12–23 months who live in the country's interior.

Intestinal Infectious Diseases

The number of laboratory-confirmed **salmonella** infections was 48 cases in 2001 and 104 in 2004. Of these cases, 7 persons (15%) died in 2001, and 14 persons (13%) died in 2004. Children under age 5 (and especially those under age 1) represent the highest percentage of deaths due to **salmonella** infection. Adults aged 60 and older are the group most frequently hospitalized for diarrheal diseases. Creoles had the highest laboratory-confirmed incidence of **salmonella** infection in 2001 and 2003 among ethnic groups, while Hindustanis had the highest incidence in 2002 and 2004. The number of laboratory-confirmed **shigella** infections increased from 91 cases in 2001 to 114 cases in 2003, then dropped to 92 cases in 2004. Of the 398 cases of laboratory-confirmed shigellosis during the 2001–2004 period, 7.3% died. Of those who died, 41% were 60 years old or older and 38% were younger than 5 years.

Between 2001 and 2004, there were 25 foodborne outbreaks. In two of these outbreaks **salmonella** infection was laboratory-confirmed, in another outbreak **shigella** infection was laboratory-confirmed, while in the rest, laboratory analyses were unable to identify the responsible microorganism.

Chronic Communicable Diseases

Between 2001 and 2004, the annual incidence of leprosy averaged 1.1 new cases per 10,000 population. The number of new cases of **tuberculosis** (TB) ranged from 80 to 101 annually between 2001 and 2004, equal to annual incidence rates ranging from 18 to 21 new cases per 100,000 population. Pulmonary or respiratory TB is the most frequent type reported, comprising 84% of all TB cases. The indigenous population experienced the highest TB incidence rate.

HIV/TB coinfection ranged from nine out of 80 new TB cases, or 11% of all new TB cases in 2001, to 17 coinfections out of 101 new TB cases, or 17%, in 2004. By far the highest HIV/TB coinfection rate was among the 25–44-year-old age group. Sixty-six percent of treatment outcomes for TB were successful. The Directly Observed Treatment, Short Course (DOTS) strategy has not yet been adopted.

HIV/AIDS and Other Sexually Transmitted Infections

The first case of HIV/AIDS was reported in Suriname in 1983; by 2004 the cumulative number of reported HIV/AIDS cases was 3,032. Newly reported HIV-positive tested cases increased from 255 in 2001 to 524 in 2004. Since 2003, HIV testing has been included in routine prenatal care.

In 2001, persons who were tested for HIV in the 30–34-year-old age group had the highest count of first-time HIV-positive tests of any five-year age group, with 19 positives. In 2002 and 2004, those who were tested for HIV in the 34–39-year-old age group had the highest count of first-time HIV-positive tests of any five-year age group, with 37 and 41 positives, respectively. In 2003, the highest counts of HIV-positive tests occurred among the 20–24-year-old age group, with 42 positives. In 2004, there were 28 HIV-positive tests among children in the 0–4-year-old age group.

In 2005, the HIV prevalence rate among the population aged 15–49 years was estimated at 1.9% (22). In the same year, 610 persons testing HIV-positive for the first time were reported. The gender distribution of new HIV-positive tested cases has shifted from more males than females prior to 2004 to more females than males since 2004 (18). Of newly reported HIV-positive cases, 60% to 80% are between the ages of 15 and 49 years. Transmission of HIV occurs principally through heterosexual contacts. In 2005, there was one case of HIV-positive transmission through donated blood. Prevention of mother-to-child-transmission services began in 2003. Each year there are approximately 10,000 pregnancies, and in 2005 almost 70% of all pregnant women were screened. Between 2001 and 2004, a total of 2,456 persons with suspected HIV/AIDS cases were hospitalized; of these 1,400 (57%) were confirmed as being HIV-positive.

The increase of HIV-positive cases with a coinfection of *salmonella* also contributes to the overall increase of salmonellosis and the increase of death due to HIV and *salmonella* coinfection.

In 2001, 14% of deaths due to *salmonella* infections occurred among individuals who were HIV-positive; in 2004, 50% of *salmonella* infection-related deaths were among individuals with HIV-positive status. There has also been an annual increase in the number of shigellosis patients with HIV-positive status, but coinfectivity with *shigella* has led to a lower case fatality than *salmonella*-HIV coinfections.

Zoonoses

No cases of **plague** and **human rabies** were reported during the 2001–2005 review period.

The incidence of **leptospirosis** can be linked to the incidence of rainfall, with the majority of cases occurring during the rainy season (May to August) and in the country's most densely populated districts. From 2001 to 2004, the average number of hospitalized suspected leptospirosis cases was 149.5 per year, or 12.5 per month, and the average number of confirmed leptospirosis

cases was 13.8 per year, or one per month. The male-to-female ratio for hospitalization for leptospirosis is 1:1.95, with the Hindustani and Creole population groups being the ones most frequently hospitalized for this disease.

Meningitis

During the reporting period, the number of hospitalizations for meningitis was 69 cases in 2001 and 72 cases in 2004. The reported incidence rate was 15.2 new cases of hospitalized meningitis per 100,000 population in 2001 and 14.6 per 100,000 population in 2004. The male-to-female ratio for cases of hospitalizations for meningitis was 1:2.1 in 2001 and 1:2.3 in 2004. Fifty-five percent of all cases of hospitalized meningitis were among children under age 5, with the greatest proportion of these under-5 cases being younger than 1 year of age.

NONCOMMUNICABLE DISEASES

Metabolic and Nutritional Diseases

Counts of hospitalizations for malnutrition were 138 in 2001 and 125 in 2004. Of these cases, six (4.4%) resulted in death in 2001, and 11 (8.8%) died in 2004. Children aged 0–4 years accounted for 96% of hospitalizations. The male-to-female ratio was 1:1. Maroons and Creoles were the ethnic groups most frequently hospitalized for malnutrition, followed by those of Amerindian and mixed descent.

Cardiovascular Diseases

Recent studies show that approximately 50% of all persons aged 60 years or older suffer from a chronic disease. The leading condition is hypertensive diseases, followed by diabetes mellitus and a combination of both conditions.

Diseases of the circulatory system, including cardiovascular, hypertensive, and cerebrovascular diseases, have held their position as the leading cause of mortality for a number of years; during the 2001–2004 period, they accounted for 29% of all deaths in Suriname.

Malignant Neoplasms

The highest mortality rates due to neoplasms were caused by neoplasms of the uterus for females, with a rate of 12.7 deaths per 100,000 females, and neoplasms of the prostate for males, with a rate of 12.1 deaths per 100,000 males.

OTHER HEALTH PROBLEMS OR ISSUES

Disasters

Suriname did not experience any major natural disaster during the 2001–2005 period.

Environmental Pollution

The impact of gold mining activities in Suriname's interior, including persistent mercury contamination of the soil, water, and air, as well as other disturbances to the terrestrial and aquatic ecosystems, are recognized by environment authorities as being substantial and difficult to reverse (23).

RESPONSE OF THE HEALTH SYSTEM

Health Policies and Plans

The health sector occupies a key position in the Suriname Government's overall social program. Article 36 of the national Constitution (24) specifies that health is the right of every citizen and that the Government's role is to promote general health care through systematic improvement of living and work conditions and the provision of information to protect health. Availability of and accessibility to health care for the entire population is therefore of crucial importance.

The first phase (1998–2003) of the project "Support for Health Sector Reform" consisted of a series of studies on health sector supply and demand, with the goal of introducing a sector-wide approach as part of the national macroeconomic development strategy. Based on the results, in May 2004, the Sector Plan for Health Care 2004–2008 was approved by the President's Cabinet of Ministers and implementation began. The second phase embodies the principles of efficiency, equity, and quality and focuses on the improvement of primary health care performance, increased access to medicines, and strengthening of the Ministry of Health. The strategies over the 2004–2008 period are: (1) strengthening primary health care and prevention, (2) improving hospital care efficiency and quality, (3) promoting financial access to health care, (4) controlling health care costs, (5) strengthening health support systems, (6) human resources development, and (7) improving and safeguarding quality throughout the health system.

With its stated goal as being "to achieve an integrated and sustainable health care system of good quality and effectiveness, accessible for everyone, and a continuous improvement of health for the whole population," the Plan serves as a guiding document in the development of the national health system. Within this context, the 2004 census provides crucial data and information for assessing the population health status and providing input for health planning over the four-year period.

Suriname signed the Stockholm Convention on Persistent Organic Pollutants (POPs) in 2002, but had already started banning the use of POPs, particularly polychlorinated biphenyls, as long ago as 1971. At present, there is no national policy to ensure the environmentally sound management of persistent toxic substances and wastes. There is little awareness on the part of the private sector and general public of the dangers posed by the un-

safe use and disposal of chemicals, whether household, automotive, or industrial.

Health Strategies and Programs

The Government priority of poverty reduction has been translated into several programs managed by the Ministry of Social Affairs and Housing. One target group is the elderly. Various provisions have been implemented that especially support older adults living in poverty, including a subsidy to long-term living facilities, financial support to the needy to cover the cost of living, free medical services to the poor and near-poor, and monthly payments to those with a free medical service card.

The Ministry of Social Affairs and Housing is the institution responsible for certifying those living in poverty or near-poverty and ensuring that the economically disadvantaged population has access to subsidized health care. Approximately 30% of the population qualifies for government-subsidized health care services that are mostly provided by government hospitals and clinics.

Organization of the Health System

The principal tasks of the Ministry of Health are policy-making, evaluation, coordination, setting of standards and protocols, and quality assurance, with overall responsibility for ensuring the availability, accessibility, and affordability of health care.

The health care system's core institutions are the Ministry of Health's Central Office, the Bureau of Public Health, and the Inspectorate. The Central Office and the Inspectorate function at the level of global health planning and standard-setting, inspection, and monitoring, while the Bureau of Public Health is responsible for program development.

The public providers of primary health care are the Regional Health Services (RGD), a state foundation, and the Medical Mission (MM), an NGO. Both institutions are subsidized by the Government. The RGD provides services to the poor and near-poor in the coastal area through 50 clinics, serving approximately 100,000 patients of generally lower socioeconomic means. The MM provides curative and preventive health services to the interior Maroon and Amerindian population through 50 health centers and health posts, serving around 50,000 patients.

The Government also runs vertical programs targeting special populations or conditions, such as sexually transmitted infections, leprosy, youth dental care, malaria, and immunizations.

The private providers of primary health care are the general practitioners (GPs) and some NGOs permitted by the Government to provide specific health care services, such as the Foundation for Family Planning (*Stichting Lobi*), an affiliate of the International Planned Parenthood Federation specializing in reproductive health issues. Large private-sector firms provide health care for their employees and families through their own

clinics. Secondary care is provided through five general hospitals, all located in the coastal area. There are three public and two private hospitals and one psychiatric center. The private Diakonessen Hospital, through an agreement with the MM, provides care to patients from the interior.

Medical specialists provide both outpatient and inpatient care. Private physicians are highly centralized in the capital. Secondary care is likewise centralized, since four of the general hospitals and the psychiatric center are located in the capital and one in the rural coastal district of Nickerie.

The contribution of the private sector is at the level of service provider; the majority of its activities are curative, while the government-subsidized RGD and MM provide both preventive and curative health care services. Private participation in the health system is also through larger companies, which employ their own general practitioners. Others have a list of contracted general practitioners from which the employee may select one. Consultation of GPs is required for referral to a specialist or hospital.

Health care is financed through public and private sources: the Government provides the largest share (44%), followed by households (20%), donors (18%), and companies (2%). Distribution of these payments by level of care is primary health care (34%), secondary care (55%), and other (11%).

Approximately 315,000 persons (64% of the total population) are covered by health insurance; another 177,000 persons (36%) are not insured, or do not know if they are.

The distribution of health insurance coverage includes the State Health Insurance Fund, known as SZF (21%), the Ministry of Social Affairs and Housing (24%), the Medical Mission (6%), company medical plans (10%), private health insurance companies (3%), out-of-pocket (19%), other (1%), and no insurance/not known (16%).

Public Health Services

Control of vaccine-preventable diseases is coordinated by the Bureau of Public Health's National Immunization Program that collaborates with the Epidemiology Unit in case investigations.

The RGD's school health program includes growth development monitoring, visual screening, and vaccination of all primary-level schoolchildren in the coastal area. Cases of suspected health problems or special conditions are referred to a physician. The Bureau of Public Health's health education department provides public health information related to the prevention of communicable diseases and the promotion of breast-feeding practices and healthy lifestyles.

Malaria control activities are supervised by the Malaria Board, which developed a multisectoral Roll Back Malaria strategy supported by international donors. Vector control activities, including spraying and promotion of the use of bed nets treated with insecticide, are carried out by the Bureau of Public Health and MM.

The Ministry of Health's National Health Information System (NHIS) Unit is responsible for official national health data. Most of the health information reaches the NHIS Unit through hospital registrations and reports of the Bureau of Public Health, RGD, MM, and professional health associations.

Communicable diseases surveillance is conducted through weekly hospital and sentinel surveillance, and, occasionally, through physicians and outbreak reporting. Hospital surveillance focuses on dengue, leptospirosis, shigellosis, *salmonella* infection, and malnutrition, while the telephone sentinel system reports on gastroenteritis, rash and fever, upper respiratory tract infections, and sexually transmitted diseases. Serotyping is done at the Ministry of Health's Central Laboratory. Data on malignant neoplasms is provided by the Pathology Laboratory.

The Bureau of Public Health's Epidemiology Unit also requests data for known communicable diseases of public health importance from such institutions as the Dermatology Clinic, the TB Clinic, and the National Blood Bank, and presents this information on a regular basis to the Caribbean Epidemiology Center (CAREC). Currently, there is no noncommunicable diseases surveillance system in the country.

Suriname's environmental institutional framework is based on three entities utilizing intersectoral coordinating mechanisms. The National Environmental Council (*Nationale Milieuraad*) is a policy-making body in the Office of the President. It is charged with developing overall environmental policies for the President's consideration, as well as advising and guiding the National Institute for the Environment and Development in Suriname (*Nationaal Instituut voor Milieu en Ontwikkeling*, or NIMOS) in setting priorities for environmental action. NIMOS functions as the Council's operational arm. NIMOS and the Council work together with the Inter-ministerial Advisory Commission (IMAC), which disseminates environmental information among other key government ministries and sectors with responsibilities and activities in this area.

Regulations to control the quality of the environment have been mandated to NIMOS, while the Bureau of Public Health oversees environmental health quality control activities.

Approximately 73% of the population has access to safe drinking water: 92.6% in urban areas, 66.6% in coastal rural areas, and 20% in the interior (9). Coverage of piped water supply varies significantly by region. Ninety-one percent of the urban population uses drinking water that is piped into their dwelling or yard. In the rural areas, 65% use piped water, whereas in the interior only 18% have access to this type of source. In rural areas, the second-most important source of drinking water is rainwater, while in the interior some 60% of residents use river or stream water and the rest collect rainwater. Drinking water is provided by two state-owned water suppliers. Five private companies provide drinking water to village populations near their operations. The piped water is treated and thus potable.

Addressing Inequities in the Interior

One in ten Surinamese, most of them indigenous peoples and Maroons (descendants of African slaves), live in the country's interior. A lack of electricity, difficulties in transportation, and scanty communications infrastructure make it difficult to supply goods and services to those living in this inaccessible region. Grievous inequities in terms of socio-economic development, health status, and access to health care exist between the inhabitants of the interior and those living on the coast, including:

- only 18% of households in the interior have piped water in their homes, and only 31% have sanitary excreta disposal services;
- women in the interior are among the poorest groups in the country;
- one in five Maroon deaths are HIV/AIDS-related;
- children there are at the highest risk for chronic malnutrition; and
- fewer than half of all children in the interior live with both their parents and one in eight live with neither parent.

The Ministry of Health, working through the Medical Mission, provides curative and preventive health care services free of charge to residents of the interior, operating 57 health centers and health posts serving some 60,000 people.

Eighty-eight percent of households have sanitary excreta disposal facilities (99.1% in urban areas, 98.3% in coastal rural areas, and 30.5% in the interior). The most common facilities in urban and rural areas are flush toilets connected to a septic tank.

Responsibility for sewage management and wastewater disposal is shared by the Ministry of Public Works' Sewer and Drain Division, the Bureau of Public Health's Environmental Control Division, and the Ministry of Regional Development, which provides logistical support.

The Ministry of Public Works is responsible for collecting and disposing of garbage and other wastes. Indiscriminate dumping sites are very common in Paramaribo and throughout the coastal and rural areas. Since 2002, a medical waste incinerator has served the hospitals in Paramaribo, while clinics in the coastal area and the interior use low-cost drum incinerators.

Limited waste recycling activities are carried out. Polyethylene terephthalate (PET) bottles are recycled, and the shredded materials are added to reinforce bricks used in the construction industry.

The Bureau of Public Health has a mandate to control air quality. Its inspection activities focus on small-scale entrepreneurs such as backyard industries and automotive paint and repair shops. However, inspection technicians require more training in these activities. All gasoline sold in Suriname is lead-free. Multi-national mining companies in Suriname adhere, for the most part, to dust emission policies and guidelines set at their corporate headquarters.

The Bureau of Public Health is responsible for food protection and control, including quality analysis through its laboratory, as well as the inspection of restaurants, food processing plants, and

public and private sanitary systems, including the disposal of solid waste and sewage. A food safety program, focusing on the development of food handling and processing protocols, is being implemented. Food aid programs for children of low resource households are carried out by the Ministry of Social Affairs and Housing and by NGOs in selected elementary schools in the coastal area.

Although the Labor Inspectorate of the Ministry of Labor, Technology, and the Environment performs occupational health inspections, these are limited to registered entities; economic activities in the informal sector are beyond the scope of these inspections. Recent studies indicate that low radioactive waste handling and storage do not pose significant public health problems.

A draft national disaster plan addressing both natural and human-made disasters has been recently prepared; the health sector has not yet developed its own plan.

In 2001, the completion of the National Strategic Plan on HIV/AIDS and the availability of two grants from the Global Fund to Fight AIDS, Tuberculosis, and Malaria significantly enhanced Suriname's capacity to develop a comprehensive response to HIV/AIDS during the review period. The Plan outlines the targets, strategies, and activities for the 2004–2008 period. Specific targets toward achieving the Millennium Development Goals include a 25% reduction in the number of new HIV infections in the 15–24-year-old age group and a 25% reduction in the number of HIV-positive pregnant women. Measures currently being implemented are the expansion of the prevention of mother-to-child transmission program and intensified prevention programs based on the ABC strategy, which promotes abstinence, faithfulness to partner, and the consistent and correct use of condoms.

Condom availability was increased as part of the strategy. Through the “3 by 5” initiative of the World Health Organization and Joint United Nations Program on HIV/AIDS, whose goal was to provide antiretroviral therapy to three million people in developing countries by the end of 2005, 486 individuals in Suriname, or 15%–20% of the estimated total HIV-positive population, received much-needed medications and treatment. In December 2005, the “Know Your Status” campaign was launched to raise public awareness regarding the importance of HIV testing.

Individual Care Services

Inpatient and ambulatory services are provided by all five hospitals in a variety of specialty services. The public Academic Hospital, which is also a training institution, employs the majority of medical specialists and offers nearly all types of specialty care, some of which are exclusively available at this facility, such as open heart surgery, laparoscopic surgery, orthodontic surgery, pulmonology, and ophthalmology.

There are two emergency medical care units, one in Paramaribo and one in a remote district in the west. The Military Hospital functions as an ambulatory facility for army personnel and their families.

In addition to the laboratories at each of the five hospitals, there are three private laboratories (MyLab, Health Control, and Medilab). The laboratories also offer decentralized services through sample-taking sites.

The National Blood Bank, supervised by the Red Cross, operates exclusively through voluntary blood donations. With 4,844 registered blood donors, 70% of the national demand for 7,000 blood donors is covered. The National Blood Bank supplies all blood for open heart surgery sessions at Academic Hospital, which are now performed on a regular basis.

The National Blood Bank supplies blood products to the country’s five hospitals and the Foundation for Renal Dialysis. All blood donations are screened for HIV, HTLV, hepatitis B and C, malaria, and syphilis. Quality control mechanisms for the screening of blood donations for HTLV and HIV have been established through collaboration with the Bureau of Public Health’s National Reference Laboratory, CAREC, and the U.S. Centers for Disease Control and Prevention.

Special programs for persons with disabilities are under the coordination of the Ministry of Social Affairs and Housing. Several NGOs have programs for special target groups, including the blind, individuals with hearing impairments, former leprosy patients, children with combined physical and mental disabilities, and older adults diagnosed with Alzheimer’s disease.

The Rehabilitation Center, as a subdivision of the Academic Hospital in Paramaribo, provides services to referral patients for the construction of artificial limbs, and physical, occupational, and speech therapy. With a staff of 14 paramedics and medical professionals, the Center registers approximately 6,000 patient

visits each year. In 2004, the Center opened a special children’s unit under the care of a specialized physiotherapist. The 25 children of the school for the handicapped (*Mytyschool*) have daily access to this unit. The majority received treatment for conditions related to cerebral palsy and muscular dystrophy. The adult patients received treatment principally for conditions related to hemiplegia or amputations.

The Youth Dental Service Foundation is available in the coastal area through dental clinics located in primary schools and RGD clinics with a staff of 70 youth dental care professionals. Children access these services through payment of an annual membership fee. The Foundation also offers private services to adults. After the primary school age, dental care is available only through private firm health insurance or out-of-pocket payment.

The Suriname Psychiatric Center is the only institution providing mental health care in the country. With a staff of 430 (including 270 nursing staff, 6 psychiatrists, and 3 psychologists) and a capacity of 300 beds, the Center currently houses 245 patients. There are 15,000 polyclinic visits per year. The Bed, Bath, and Bread Center serves approximately 50 persons, mostly the homeless population with problems related to drug addiction. There is an association for patients with Alzheimer’s disease and their families. The NGO Ypsilon provides support to families of those affected by schizophrenia. Since 2001, there has been a national mental health plan.

The Foundation for Family Planning promotes responsible parenthood and offers family planning methods, fertility counseling, basic infertility testing, and cervical cancer screening. In 2003, the Ministry of Health initiated a United Nations Population Fund/European Union-funded reproductive health project utilizing a rights- and gender-based framework, with the objective of achieving the targets set at the International Conference on Population and Development (Cairo, Egypt, 1994) and the Millennium Development Goals related to sexual and reproductive health.

All Surinamese nationals over the age of 60 are entitled to a monthly financial compensation from the Government under the coordination of the Ministry of Social Affairs and Housing. The gerontology unit at the Bureau of Public Health aims at improving care for the elderly at all levels, including institutional and home care.

Health Promotion

During the period under review, a variety of health promotion activities in the areas of environmental, reproductive, and community health; disease prevention and control; and public health education were initiated and implemented by government entities and NGOs with the support of international development partners. NGOs have played an active role in attaining targeted health outcomes. Examples include the Community Health Development Program implemented by ProHealth and the envi-

ronmental health activities undertaken by the Foundation for a Clean Suriname. The national health-promoting schools committee is a Government-led initiative. The Bureau of Public Health's health education department provides information to the public on the prevention of malaria, dengue, leptospirosis, yellow fever, and other communicable as well as noncommunicable diseases and breast-feeding practices.

In general, there is a growing recognition of the need for intersectoral cooperation. This is best demonstrated in the National Strategic Plan on HIV/AIDS approved by the Government in 2004. Priority areas include coordination; policy formulation; legislation and advocacy; prevention; reduction of stigma and discrimination; treatment, care, and support; and monitoring and evaluation.

Human Resources

The availability of health personnel by category in 2004 is presented in Table 2. General physicians receive training at the University of Suriname's Faculty of Medical Sciences, which has a limited admission of 30 students per year. Registered nurses and nursing assistants are trained at the Central Training Institute for Nurses and Allied Professions (Foundation COVAB). Two hospitals (AZP and St. Vincentius) have internal training courses for nurses. Midwives are trained at one public hospital ('s Lands). The Medical Mission and Youth Dental Services provide internal training for their respective medical and dental assistants. The Skills-lab is a training facility for medical and paramedical students.

Registration and certification of physicians, midwives, and pharmacists are regulated and supervised by the Ministry of Health. Physicians are licensed through the Ministry and require permission from the Director of Health for clinical practice. Regional licensing and accreditation are currently under review. There are currently no regulations or statutes for official registration or certification of paramedical professionals.

Health Supplies

The state-owned Drug Supply Company of Suriname (BGVS) is the central purchaser, importer, and producer of drugs and medical supplies for local consumption. Ninety percent of all drugs are imported, and 10% are manufactured internally. BGVS distributes medications on the National Essential Drug List to private and public pharmacies and hospitals and also oversees marketing and quality control. All immunobiologicals and nearly all reagents are imported. All vaccines are obtained through the PAHO Revolving Fund for Vaccine Procurement.

Availability of the medications on the National Essential Drug List is not guaranteed. To compensate for scarcities, hospitals and pharmacies may turn to private importers, resulting in extremely high costs. This negatively affects the accessibility of drugs for those with health insurance through the Ministry of

TABLE 2. Number and ratio of health personnel, by category, per 10,000 population, Suriname, 2004.

Category	Number	Number/ 10,000 population
General practitioners	295	6.0
Family physicians	225	4.6
General practitioners in hospitals	70	1.4
Medical specialists	105	2.1
Total number of physicians	400	8.2
Dentists	42	0.9
Non-university trained nursing personnel	1,745	35.4
Registered nurses	778	15.8
Midwives	57	1.2

Social Affairs and Housing or SZF. Many drugs are also accessed directly through personal connections outside of Suriname, by-passing proper customs and quality inspection, or through private pharmacies.

All drugs must be approved by the Governmental Committee on Drug Registration, while the Pharmaceutical Inspectorate oversees inspection of pharmaceutical manufacturing and pharmacies.

There are one CT scan unit and two CD4 count units in the country.

There are a total of 1,378 beds (excluding 60 psychiatric care beds) in Suriname, or 2.7 beds per 1,000 population. The average bed occupancy rate is 70%. In 2002, the average length of hospitalization was 7.2 days, including the longer hospitalization stays of social security patients.

Research and Technological Development in Health

Research projects are funded by international organizations and conducted by the Ministry of Health or other governmental institutions. Most research is limited to conducting surveys on specific health issues, such as malnutrition and mortality, for which current data are required for policy or project development. Training in new technologies and skills for medical and paramedical personnel is also usually sponsored by international entities.

Publications and research reports regarding health and development issues in Suriname are available through the Ministry of Health and the various agencies funding public health projects, including the Pan American Health Organization/World Health Organization (PAHO/WHO).

Health Sector Expenditures and Financing

In 2002, the gross domestic product (GDP) was US\$ 879.9 million. GDP per capita was US\$ 1,925. The latest available figures on total health expenditure are from 2000, when it was US\$ 78,763,778. Total per capita health expenditure was

US\$ 180.33, or 9.42% of GDP. In 2002, public health expenditure was US\$ 31.7 million and per capita expenditure was US\$ 69.40, or 4.97% of GDP. Public and private health care expenditures are nearly equal, with the Government spending about 44% and the private sector (company cost coverage and household out-of-pocket health expenditures) approximately 42%. The remaining 14% comes from external sources (donors). The contribution of the private sector to health care is significant. Out-of-pocket household expenditures are an area of particular concern.

Of total health expenditure for 2000, 55% went to secondary care (public and private hospitals, medical specialists, hospital laboratory and x-ray services, hospital drugs), 34% went to preventive and primary care (Bureau of Public Health, RHS, Medical Mission, private GPs, etc.), while the remaining 11% went to administration, training, and other areas.

The Community Development Fund, United Nations Development Fund GEF (Global Environment Facility) Small Grants Program, Suriname Conservation Foundation, Cordaid, and other NGOs have played a leading role in financially supporting and implementing poverty reduction initiatives. The National Women's Movement is actively involved in initiatives to improve the well-being and living conditions of women in the interior.

Technical Cooperation and External Financing

The principal international development partners working in the health sector are PAHO; the United Nations Development Program; United Nations Population Fund; United Nations Children's Fund; Global Fund to Fight AIDS, Tuberculosis, and Malaria; Inter-American Development Bank; Islamic Development Bank; International Planned Parenthood Foundation; and the European Union. Bilateral donors include the Netherlands, United States, Japan, France, and Germany. Of these, the Dutch Development Cooperation provides by far the largest amount of funding and covers the broadest scope of health-related activities. There is also strong cooperation between local NGOs and Dutch private institutions for development assistance, such as Cordaid.

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