



**Title: HIV/AIDS SURVIVORSHIP IN LMICS: OPPORTUNITY AND
CHALLENGE FOR HEALTH SYSTEMS**

**Financing for AIDS and cancer in the context of the health system
reform of the Dominican Republic**

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Introduction

The Dominican Republic has undergone significant changes related to the gradual improvement of living conditions, changes in the economic and social model and demographic changes. In 1950 the population had a life expectancy at birth of 46 years and an infant mortality rate of 149 per thousand live births. Today, life expectancy at birth is estimated, on average, to be 72 years, rising to 75.2 years for women and 68.9 in men (2007). Infant mortality stands at 31 per thousand.³

The epidemiological transition is beginning in the country, with a strong weight given to communicable, noncommunicable diseases, and accidents, both in terms of the proportion of deaths in each group, as well as lost years of productive life.⁴ In terms of cause of death, cardiovascular diseases are the leading cause, followed by infectious diseases, among which AIDS is the principal. Additional leading causes of death are malignant neoplasms, perinatal conditions, and unintentional injuries.⁵

It is important to note that AIDS alone in 2004⁶ was the fourth leading cause of death and the second leading cause of healthy-life lost years (DALYS) for men; HIV/AIDS is closely followed by traffic accidents. The DR shares the same island with Haiti, which has the highest HIV prevalence in the Caribbean and throughout the Western Hemisphere, while also being the poorest country in the region. The migration from Haiti to the Dominican Republic increases the vulnerability of the country to the disease.

An editorial in BMJ⁷ points out that the introduction of antiretroviral therapy in the decade of the 90s transformed the lives of people with HIV and AIDS, indicating that prior to antiretroviral therapy, AIDS was a rapidly progressing disease with a life expectancy measured in months. Today it has become a chronic disease that can allow affected people to live relatively normal lives, provided they have treatment available and that it is well tolerated and well managed. The author makes an analogy between ARV therapy with the introduction of insulin, which allowed an increase in the median survival of diabetics of several decades and argues that a similar process would happen now with HIV + patients being adequately treated. At the same time, this signals a challenge for health systems and lack of research on the subject — "uncharted territory," in the author's words— referring to the lack of knowledge about the impacts of an aging population exposed to ARV treatment over the long term, which, at the same time, will have health problems typical of aging. The experience of several European countries and some developing countries show that treating HIV/AIDS as a chronic disease is feasible.⁸

³ Ministry of Public Health (2009), *Basic Health Indicators - 2009*, Santo Domingo, Dominican Republic.

⁴ Rathe, Magdalena y Moliné, Alejandro (2009), *Mapa del Sistema de Salud de la República Dominicana*, Fundación Plenitud / Observatorio Regional de la Salud de América Latina y el Caribe, Santo Domingo – México, 2010.

⁵ Rathe, Magdalena (2010), *"Protección Financiera en Salud en la República Dominicana"*, Fundación Plenitud / Observatorio Regional de la Salud de América Latina y el Caribe, Santo Domingo – México, 2010.

⁶ BMJ (2009); 338:b2165, Editorial, *Health systems and increased longevity in people with HIV and AIDS*, R A Atun, I Guroi-Urganci, and M McKee, (Published 18 June 2009).

⁷ BMJ (2009); 338:b2165, Editorial, opus cit.

⁸ BMJ 2009, Editorial, opus cit.

Consequently, further investigation of the challenge to health systems of HIV and AIDS as a complex chronic disease⁹ is needed, especially for countries where resources are scarce. This study represents a first contribution in this direction, in the case of the Dominican Republic, seeking to draw lessons from the way cancer is managed within the institutional and financial framework of the health care reform in the DR, which could be applied to HIV/AIDS as a chronic disease.

The Dominican case is of interest because these diseases are examples of completely different organizational approaches: AIDS has a vertical approach, as in most developing countries, with a high degree of external financing. This has allowed rapid growth of the coverage of antiretroviral (ARV) treatment in the short term to stop the spread of the epidemic. Cancer, on the other hand, has a horizontal approach, integrated into the regular mechanisms of provision and financing of the health system.

As discussed below, until very recently, the Dominican health system was open to everyone, offering all services, without explicit constraints, which can be considered "breadth" of financial coverage. Cancer was part of that approach, with the result that the protection of affected persons depended largely on ability to pay. Recently, the benefit package in general and for cancer in particular has been made reform of the health system made explicit the benefits package in general and for cancer in particular, reducing the "breadth" and increasing the "depth" of financial protection. As a result of this process, a significant proportion of the population that was previously excluded could be covered by the system¹⁰.

This discussion is even more relevant in the context of global efforts to achieve universal coverage as proposed by the World Health Report – 2010 recently published by the World Health Organization (WHO)¹¹.

This case study begins with a description of the Dominican health system, where reforms are currently being implemented, and includes an outline of the institutional organization, financial flows, and challenges of achieving universal coverage of public health insurance. These issues are briefly outlined in the case of AIDS and cancer, in order to draw some lessons from the experience of cancer coverage within the family health insurance, which could be applied to AIDS as a chronic disease.

The health system in the Dominican Republic

The pre-reform system

"The health system in the Dominican Republic, until recently, was segmented without functional

⁹ A study that reviewed the history of adherence to treatment of 2094 patients between 2004 and 2006, shows that 90% of them had survived the first year of treatment, which in this initial stage of the national HIV-AIDS care program was considered high (see Eddy Perez-Then and Rosa Sánchez Caldera, *Rates of Compliance and Abandonment to Antiretroviral Therapy in HIV Positive People in the Dominican Republic*, COPRESIDA, Santo Domingo, 2008). The author is not aware of more recent similar studies, that could show the trend that has been noted internationally.

¹⁰ This topic was part of a session organized by Julio Frenk at the First Global Symposium on Health Systems Research, organized by the Alliance for Health Policy and Systems Research in Montreux, Switzerland. The participants were the authors of this paper and Ramiro Guerrero, Rocio Sáenz and Thomas Bossert.

¹¹ World Health Organization (WHO), *World Health Report – 2010: The path to universal coverage*, Geneva, Switzerland, 2010.

separation. The bulk of the population was theoretically covered by an open public system funded through general taxation. The shortcomings of this service promoted the growth of private sector financing through direct payment, voluntary insurance reimbursement and pre-paid voluntary plans. Out-of-pocket spending has always been the main source of financing of the health system in the country. ¹²

For decades, the Dominican population was clearly segmented into three subsystems. The lower income strata in terms, which include most of the population, were served by public services run by the Ministry of Health (formerly called the SESPAS). The Dominican Social Security Institute (IDSS), an entity also lacking functional separation, barely covered 6% of low-income working population. The upper strata and a large portion of formal-sector employees were served by private providers through direct payments or pre-paid voluntary plans, which obviously covered the "cream of the market." In all cases, patients had to pay out-of-pocket for an important part of the services received. About half of national health spending was funded by direct payment. In 2007, for example, although public services were supposedly free, 36% of users had to pay all expenses. In the lower income quintiles, lack of money to utilize services, either to cover the costs of care or to pay for transportation, constituted an explicit barrier. Women, rural dwellers and the elderly were the most affected¹³.

The extent of financial inequity is illustrated by the high share of out-of-pocket expenditures and low government contributions (which were in 2007 some of the lowest in Latin America, around 30% of total health expenditures in 2007, compared to an average of 55%)¹⁴. The low priority assigned by the government to the health sector is confirmed by the Ministry of Health's budget as a proportion of central government spending, which declined from 10% in 2000 to 5.8% in 2007¹⁵.

Another important feature of the system was its limited financial protection, since insurance coverage in 2007 reached only 27% of the population, concentrated in higher income strata¹⁶. In addition, between 10 and 17% of Dominican households experienced in 2004 catastrophic health expenditures (the latter were defined as exceeding 20% of household income).¹⁷

21st Century Health Reform

The situation explained before lead to the decision to implement a structural reform to the health system which, after decades of negotiations, was approved in 2001. The difficulties of the political and institutional environment repeatedly delayed implementation of the reform, which

¹² Rathe, Magdalena y Alejandro Moliné (2009) opus cit.

¹³ CESDEM / Macro International (2007), *Encuesta Demográfica y de Salud (ENDESA)*, Santo Domingo, Dominican Republic, 2007.

¹⁴ www.who.int/nha

¹⁵ Rathe, Magdalena (2010), "Protección Financiera en Salud en la República Dominicana", Fundación Plenitud / Observatorio Regional de la Salud de América Latina y el Caribe, Santo Domingo – México, 2010, as part of the study on Financial Protection on Health in the Dominican Republic, done within the Financial Protection on Health in Latin America project, coordinated by Felicia Knaul and financed by the International Development Research Centre (IDRC).

¹⁶ ENDESA, 2007.

¹⁷ Rathe, Magdalena y Santana, María Isabel (2009), *Catastrophic health expenditures in the Dominican Republic: analysis of determinants and linkages to impoverishment*, as part of the study on Financial Protection on Health in the Dominican Republic, done within the Financial Protection on Health in Latin America project, coordinated by Felicia Knaul and financed by the International Development Research Centre (IDRC).

was initiated in 2002, and only fully implemented in late 2007, after a government decision to put into effect the contributory scheme.

The fundamental legal basis of the health protection system in the country is Law 87/01, which created the Family Health Plan (SFS) to offer comprehensive protection for the physical and mental health of the member and his/her family, and to achieve universal coverage without exclusion based on age, sex, or social, occupational, or territorial status. System stewardship is the responsibility of the National Social Security Fund (CNSS), chaired by the Minister of Labor, which administers the SFS and decides the form of financing, the contents of the package of services required to be delivered to citizens and the operating mechanisms of the system. The Ministry of Public Health (MSP) has stewardship of the health system in other aspects than family health insurance, being also part of the CNSS.

According to the law, all salary earners must pay a mandatory contribution into the SFS. These funds— retained by corporations and the state as an employer — are collected by a single entity, the Social Security Treasury (TSS) under the CNSS. This TSS is also responsible for making monthly payments per capita to the Health Risk Administrators (ARS) according to their covered population. These entities affiliate de population, manage their health risk problems and contract the providers (hospitals, clinics, diagnostic services, pharmacies and others). They can be private, self-administered and/or public. The most important public one is SENASA, which is in charge of administering the subsidized population.

The regulation and supervision of the ARS is conducted by the Superintendent of Health and Labor Risks (SISALRIL), which is an autonomous public entity. The SFS has the following funding schemes, with its corresponding recipients:

Contributory Scheme: for public and private employees and employers. It is funded by them, including the State as employer, with a contribution of 10% of salary (up to a maximum of 10 times the minimum wage). The contributory scheme started operations in 2007 and now covers about 23% of the Dominican population. Employees are affiliated to the ARS of their choice and they can change each year, selecting the provider (usually private), within the offering that delivers the selected ARS. In 2009, the contributory scheme managed about \$ 439 million, equivalent to around 17% of health system resources.

Subsidized Scheme: for employed persons with unstable income below the national minimum wage, as well as the unemployed, disabled and indigent persons. It is funded by the Dominican government. The subsidized scheme has been gradually implemented since 2002 through a public ARS, SENASA, which covered in 2010 about 17% of the total population. Providers are predominantly public and private nonprofit (in the DR there are private nonprofit hospitals that manage complex diseases like cancer, diabetes, cardiovascular and other diseases). SENASA also pays private for profit providers when the latter do not have a specific specialized service. The network of public provision is in the process of transformation in order to receive subsidies on the demand side (billing systems, etc.). The entitlement to participate in the scheme requires that an individual is properly identified with a card showing membership in the social security system. This requirement has complicated implementation of the subsidized scheme, since a significant proportion of low-income people do not have identity documents, denying them access to social benefits in general. The subsidized regime in 2009 managed an estimated \$ 76 million, equivalent to 3% of funds financing the health system.

Subsidized contributive scheme: covers professional and independent technical and self-

employed persons with average incomes equal to or higher than the national minimum wage. This scheme should be funded by contributions from workers and a government subsidy to compensate for the lack of employer. This regime has not yet come into effect, but there is pressure from certain groups to start in 2011. Its implementation has been difficult due to the fragmentation of these potential beneficiaries and the difficulty of collecting contributions from this population, leading to concerns with the potential for adverse selection.

Total health expenditures in 2009 amounted to about U.S. \$2,600 million dollars¹⁸, which represents a 6% of GDP. This proportion is similar to that of the end of the nineties, but less than 2000-2003, when total health expenditures were around 6.2% of GDP. The ratio of public spending relative to GDP remains extremely low, around 2.6% on average in 2009, including social security funds. This is a substantial increase with the average of the period 2002-2007, which was 1.8%¹⁹; however, the figures are still very low in the Latin American context²⁰.

Nationally, per-capita spending has increased in recent years, from US \$191 in 2002 to US \$266 in dollars (average rate) in 2009. A high proportion remains household spending, but per capita spending public financial agents has grown in recent years as a result of the implementation of the SFS.

In 2009, 60% of the population was not yet affiliated to the SFS and, consequently, was served either by public (mainly, the MSP) or private services, paying out of pocket. The MSP - which has always been the main public financing agent and which remains the main provider, managing a network of 14 national hospitals, 30 regional and provincial hospitals, and nearly 600 establishments within municipal hospitals, health centers and clinics - administered around US\$ 525 million in 2009, which implies 20% of total resources. Importantly, in 2009 social security funds almost equaled those of the MSP, which is a sign of significant progress in the system and a fundamental change to the financial structure of the health system. However, if the SFS continues to increase insurance coverage, this achievement could translate into a lack of funding and protection for the poor.

Consequently, the major challenges to achieving universal coverage start now, once the extension of coverage to the population groups easiest to reach, has been completed. This issue is outlined in the next section.

The challenge of universal insurance coverage²¹

As noted in the previous section, the SFS has expanded significantly, raising public insurance coverage to nearly 40% of the population in 2010. This is an important achievement and it seems that the country moves firmly towards universal coverage. However, health reform is a complex process in which numerous factors may intervene, many of them difficult to quantify and linked to issues of governance and political will.

The high degree of informality in the Dominican economy is one of the factors that make achieving universal coverage difficult. It is estimated that half of existing jobs in the country are

¹⁸ These are preliminary estimates (at average exchange rate) from the Plenitud Foundation, as there are not official data yet. See "National Health Expenditures, 1995-2009", Santo Domingo, 2010. www.fundacionplenitud.org

¹⁹ UCNS-MSP (2008).

²⁰ www.who.int/nha

²¹ This section comes from Rathe, Magdalena, *Dominican Republic: Can universal coverage be achieved*, background paper No. 10 for 2010 WHO World Health Report (www.who.int).

located in the informal sector²², suggesting that the contributory scheme could not compromise more than four million people (around 40% of total population). A significant portion of jobs in the country have incomes at or below minimum wage, increasing pressure on public funds, since this great mass of people must be part of the contributive-subsidized scheme, which is difficult to implement.

According to some estimates, in July 2010, some 2.2 million people were protected by the contributory scheme and 1.6 million by the subsidized regime. This implies that there remained an estimated 1.6 million to be protected by the first regime and around 1.4 million in the second; at the same time, nearly 3 million people were assumed to be included in the subsidized contributory regime²³.

If today the government decided to cover the entire population it would have to disburse about RD \$ 41 billion, equivalent to US\$ 1.1 billion²⁴. This figure is equivalent to the public health expenditures corresponding to year 2009, and consequently, the fiscal cost estimates is not unviable, representing a matter of reorganization and priority setting.

These are simple quantifications carried out based on per-capita values currently existing in the system, assuming that the corresponding studies on the use and costs of services within the basic package of SFS are adequate. Neither says anything about other considerations, such as the difficulties of governance involving the transformation of the network of public provision and the serious problems of quality throughout the whole health system.

Even focusing on the issue of funding, it is clear that additional studies are needed, both in general and specifically on more detailed analyses on the financing of certain high cost diseases, such as AIDS and cancer. The impact on total numbers of health system financing depends not only on cost, but also on frequency of service utilization, which can make these diseases less critical in terms of total spending, but essential for the financial protection of the people affected. The situation in AIDS and cancer, according to information available today, is considered in the following sections.

AIDS coverage and funding

HIV prevalence nationally is estimated at 1% of the population between 15 and 49 years, which implies about 57,000 people living with HIV. The age range of 30-39 years is at the highest risk, with a prevalence of 1.5%. This percentage is higher among low income and less educated populations, as the prevalence rises to 2.6% among those without formal education. Although the Dominican Republic has a generalized epidemic, some groups have a higher risk, generally, linked to poverty, overcrowding and temporary work such as construction workers in tourist areas and the sugar cane industry called "bateyes", where the prevalence rises to 3.2%. Migrant workers from Haiti tend to dominate in these vulnerable groups²⁵.

Since 2003, the Dominican Republic began ARV treatment for HIV positive patients, covering

²² Encuesta Nacional de Fuerza de Trabajo (ENFT), Banco Central de la República Dominicana, Santo Domingo, Rep. Dominicana, 2010.

²³ PNUD – Oficina de Desarrollo Humano (ODH) / Ministerio de Economía, Planificación y Desarrollo, *Política Social: Capacidades y Derechos*, Volumen II, Santo Domingo, Rep. Dominicana, 2010.

²⁴ PNUD – ODH / MEPyD, opus cit, 2010, (Average Exchange rate from the Central Bank of the DR).

²⁵ COPRESIDA/ ONUSIDA / Fondo Mundial (2010). *Informe de Estimaciones y Proyecciones de Prevalencia de VIH y Carga de Enfermedad*, año 2009. Marzo 2010.

13,566 people in 2009²⁶, or 70% of the population in need²⁷. According to international evidence, the spread of ARV treatment is prolonging the lives of patients, to the point that, depending on the age of infection, treatment adherence, tolerance and other factors, AIDS is becoming a chronic disease. Thus, people living with HIV will likely begin to be affected and even die from ailments that affect the general population, not just HIV/AIDS itself.

According to information from the National Assessment of AIDS Spending (NASA) held in the DR, national AIDS spending in 2008 amounted to about \$ 31.3 million, representing 1.2% of total health expenditure (THE) for the year 2008; 49% of the national AIDS spending was financed with international funds, 26% of public funds and 25% with private funds. The Global Fund provided 95% of international funds received from donors during that year. Only 16% of total HIV/AIDS expenditures were from the Dominican government, financed by tax sources²⁸.

Most public and international resources are channeled through the Presidential AIDS Council (COPRESIDA), which acts as a coordinating mechanism in the country and manages grants provided by the Global Fund. 41% of resources are devoted to care and treatment, while 25% go toward prevention, and 29% is dedicated to management.

ARV therapy is the main item of expenditure, accounting for 20% of total spending on AIDS. The second most important item corresponds to the planning, coordination and program management and the third one is the purchase of condoms, done by provider organizations and the population in general.

According to official figures, HIV/AIDS mortality had a turning point in the year 2006 when it amounted to 4,379 people and began to descend gradually, with an estimated mortality rate of reported cases, from 23% in 2006, to 17% in 2008. This is attributed to the expansion of access to ARV therapy.²⁹

The provision of HIV/AIDS treatment services in the Dominican Republic consists of 68 comprehensive care units, located in 47 public and 17 nonprofit organizations, distributed nationwide. In 2008, the first group cared for 7,289 patients in ARV therapy and 8,945 in clinical follow-up, while non-profit private sector institutions catered to 3,783 patients on ART and 2,908 in clinical monitoring. Funding for staff for these units comes from national funding sources; the government also covers the monitoring of laboratories.³⁰

The resources that fund ARV come, in their entirety, from Global Fund grants. USAID also covers a major expense of carrying out CD4 testing. Viral load testing was covered in 2008 with funds from a loan to be repaid with the World Bank. In total, the resources to fund treatment in the program of comprehensive care in 2008 amounted to US\$ 7.8 million, out of which ARV represented 33%³¹.

However, resources are not sufficient to cover all the costs of treatment. A rough estimate made by the Plenitud Foundation for in 2009 suggests that a patient that is treated adequately must

²⁶ COPRESIDA (2010), *Memoirs 2009*, Santo Domingo, Dominican Republic.

²⁷ COPRESIDA / ONUSIDA / Fondo Mundial (2010), opus cit.

²⁸ COPRESIDA/ONUSIDA/PLENITUD, *National Aids Spending Assessment (NASA) – 2008*, Santo Domingo, Dominican Republic, July 2010.

²⁹ National Estimates Report, Santo Domingo, DR, 2010.

³⁰ NASA, opus cit., 2010.

³¹ NASA, opus cit., 2010.

pay out of pocket a minimum of US\$ 300 a year (this estimate includes covering 30% of tests and images in the public sector, transportation to the health center to access treatment and a monthly nutritional supplement). This figure, although low by international standards, is not negligible in a country where around 15% of the population lives on two dollars a day. Globally, it amounts to US\$4.1 million, which is equivalent to 80% of the estimated costs of universal ARV coverage (using 2008 public sector prices).

Reports from key informants suggest that an estimated 1,100 high-income patients do not use the public service but seek private care for reasons of confidentiality, at an estimated cost of about US\$ 2 million per year. This group may include those patients for whom the government program does not provide treatment options, such as cases requiring third-line or salvage regimens³².

Treatment coverage, begun in 2003, has increased substantially from the first 90 people attended this year, reaching 2,385 people in 2005 (10% of patients that required ARV) and covering 13,566 people in 2009³³, which represent 70% of the population requiring treatment³⁴.

If universal ARV coverage could be achieved today³⁵, this would require an estimated expenditure of \$5 million³⁶ for ARV treatment only, for a total of \$15 million for the whole treatment component of the public program³⁷. In financial terms, although these figures are relatively low compared to national spending on health, this vision implies a major challenge when compared with the current funding structure of AIDS -- which has minimal public funding and total dependence on resources from abroad, specifically, the Global Fund.

Other issues must also be taken into account, such as the role that adherence to treatment has in terms of survivorship, prolongation of life of patients and in the overall costs due to change in the composition of drugs to be used when resistance to treatment appears. A study using data from 2006 showed that 30% of patients studied did not meet the criteria of adherence and 13% discontinued treatment at some point. The study identifies factors associated to the adequate follow-up of treatment as well as the potential ARV reception (including having a permanent home, a good understanding of how drugs are used, and adequate family support)³⁸. Although the paper did not mention socio-economic status, it is probable that people who meet the above criteria are also located further up the social ladder.

People living with HIV face high vulnerability by relying for their medications on outside donations, with very small contributions from tax sources. Adherence to will often depend on resources that patients can generate themselves or from their families. This endangers long-term adherence to treatment and potentially makes it less effective and more expensive, due to delays in stopping and re-starting medication.

³² NASA, opus cit., 2010.

³³ COPRESIDA, Memoria Anual 2009, Santo Domingo, Rep. Dominicana, 2010.

³⁴ COPRESIDA / ONUSIDA / Fondo Mundial, opus cit., 2010.

³⁵ To achieve ARV universal coverage is one of the goals for 2015 (see ONUSIDA / COPRESIDA, UNGASS Report 2010).

³⁶ An estimate by the Plenitud Foundation, assuming average prices of ARVs in 2008 (based on Valdez and Barillas, opus cit) and a composition of 70% of patients in first line treatment and the remaining 30% in second line (based on information from the MOH).

³⁷ Estimate by Plenitud Foundation based on the proportions of 2008 for NASA on the costs of opportunistic infections, patients in monitoring costs and other diagnostic laboratory tests. Administrative costs are not covered, nor are prevention costs or out-of-pocket costs for patients.

³⁸ Pérez-Then, Eddy y Rosa Sánchez, opus cit, 2008.

In fact, there is a significant stigma attached to AIDS which reinforces the vulnerability of patients. Despite the existence of a regulatory framework that protects AIDS patients, people living with HIV/AIDS are discriminated against, even by health workers. Some private sector companies require testing without informing the new applicant and a positive result is a reason for not hiring. And usually the results are not communicated to the affected person. There is also evidence that patients themselves self-exclude when they know their HIV positive status³⁹.

The NASA recommends a substantial increase in public funding as well as to carry out relevant studies for ARV inclusion in the SFS⁴⁰. The experience of other chronic diseases, such as cancer, within the implementation of the health reform, can offer lessons in this regard.

Cancer coverage and funding

The number of new cancer cases in the Dominican Republic, according to recent figures from the International Agency for Research on Cancer (IARC) and WHO for 2008, amount to 13,000, half women half men. The more common cancer overall is prostate cancer, in terms of both incidence and mortality, followed by breast cancer. Mortality is estimated at 8,000 people a year, higher among men than among women (4,200 and 3,800, respectively). The risk of getting cancer before age 75 is 17% in men and 15.3% in women, while the risk of dying from the disease before that age is similar in both sexes (9.5 %).⁴¹

National data, corresponding to hospital records for cancer from the main provider institutions in the country, show a somewhat different composition. Partial data indicate that the incidence of cancer is twice as common in women as in men, which primarily due to breast cancer. For women, the greatest burden of disease is in the age group 40-49 years, remaining high until 59 years. For men, the highest proportion occurs in the group of 60-69 years of age. Breast cancer accounts for 35% of cancer cases in women and 24% of all cancers for both sexes. In women, breast cancer is followed by cervical cancer, at 26% of cancer case in women; whereas the main cancer for men is prostate, 23%, followed by skin, 9%⁴².

An analysis by Peña et al of death certificates, found that neoplasms or tumors accounted for 14% of all deaths to cases registered in 2005, representing the third leading cause of death in the Dominican population, after cardiovascular diseases and injuries. The causes of the most common cancer deaths in 2005 were malignant prostate tumor (7.7 deaths per 100,000 population), malignant neoplasm of digestive organs and the perineum (6 deaths per 100,000 population), female breast tumor (3 deaths per 100,000 people), malignant stomach tumor (2.8 deaths per 100,000 people) and malignant colon tumor (2 deaths per 100,000 people)⁴³.

³⁹ Rathe, Magdalena, Lora, Dayana, Rathe, Laura (2003), *Impacto del VIH-SIDA en el Sector Turismo*, Fundación Plenitud / COPRESIDA / Banco Mundial, Santo Domingo, 2003.

⁴⁰ AIDS was explicitly excluded from the SFS, the resolution pointing out that its financing corresponds to COPRESIDA. However, it now includes mother-to-child and opportunistic infections' treatment.

⁴¹ International Agency for Research on Cancer (IARC), WHO, Globocan 2008, DR Fact Sheet. According to their methodology, estimates were made using statistics from similar countries, in the absence of a national cancer registry in the DR.

⁴² Peña, Emiliana, Muñoz, L. González Pons, C. y Gil, G., *Situación y tendencia de las Neoplasias en República Dominicana al 2007*, Epidemiología, Vol. 17, No.2, abril-junio 2009. The source of the data in this article comes from records of the two institutions providing cancer services plus data from a review of death certificates from the Directorate General of Statistics and Information of the Ministry of Public Health and Social Care (for the period 2001 - 2005).

⁴³ Peña, Emiliana, et al, opus cit, 2009.

Hospital records from the primary sites for treating cancer indicate 2,740 new cases in 2007, which would represent 21% of all new cases estimated by the IARC.

The leading provider of services for cancer patients is the Dr. Heriberto Pieter Institute of Oncology (IOHP) in Santo Domingo, a nonprofit private hospital owned by the Dominican League against Cancer. It is the only one hospital providing the whole spectrum of standard treatment (surgery, chemotherapy, radiotherapy, hormone therapy, nuclear medicine), as well as prevention and palliative care. Other establishments in the private nonprofit sector offering treatment are: the Oncology Institute of Cibao (IOC), the General Maternal and Child Hospital – Plaza de la Salud, the Marcelino Véllez Santana Hospital and the Nordestano Cancer Center.

Additionally, the Ministry of Health provides partial services (diagnosis and surgery) in sixteen of its hospitals; these services are also offered in four centers in the Armed Forces and National Police Institute and in the SEMMA Medical Center, for public sector teachers. Radiation services are offered exclusively in: the IOPH, the IOC and in two private for profit specialized hospitals, Radonic and Oncoserv. Only IOPH and the Health Plaza offer nuclear medicine. Partial services (diagnosis, surgery and chemotherapy) are offered in about 87 private for profit establishments⁴⁴. There is no data regarding production and/or costs of services.

Existing data on morbidity, mortality, coverage of prevention and treatment of cancer in the country, as well as financing is extremely scarce and scattered, making it impossible to estimate with any degree of confidence indicators for effective coverage and financial protection for people affected. Nor are there reproductive health accounts, as in other countries, which could provide some information on expenditure and financing i. However, we bring forward some indications to contribute in that direction.

Cancer treatment in the SFS

Family Health Insurance provides an explicit and comprehensive package of health goods and services, including health promotion and disease prevention, primary health care, including emergencies, outpatient services and home care, specialist care, complex treatments, hospitalization and surgical care, screening, diagnostic, and preventive pediatric dental care, physiotherapy and rehabilitation and additional benefits, including appliances, prosthetics and technical assistance to individuals with disabilities. For users of the contributory scheme, the SFS provides outpatient drug coverage up to RD \$3,000 per year (\approx US\$84) per person, within an established list of essential drugs. There are no explicit limitations for the subsidized regime.

There is also coverage for expensive illnesses, amounting to one million Dominican pesos per person (US\$ 28,000 at 2010 exchange rates) per year (plus a 20% co-payment), in order to cover diagnosis and treatment explicitly included for the following health problems: procedures on heart, pericardium, heart vessels (coronary arteries) and heart valves, cornea transplant, renal dialysis, peritoneal dialysis and renal transplantation, joint replacement hip and knee shoulder, spine, scoliosis and total spondylolisthesis surgery, premature care, care in intensive care unit, cancer treatment in adults and pediatric treatment of multiple trauma (major trauma) and treatment for severe burns.

In the case of cancer, this coverage includes diagnostic procedures, surgery, hospitalization

⁴⁴ Frías, Natalia, *Matriz de Recursos Oncológicos*, Instituto de Oncología Dr. Heriberto Pieter (unpublished).

with all their expenses, chemotherapy, radiotherapy and other proceedings. For outpatients, there is additional coverage of RD \$ 90,000 (US\$ 2,500) per year for cancer drugs from a special list, in addition to other outpatient prescription drugs.

In the subsidized scheme, there are no explicit limits to cover high cost treatments and the list of drugs is much broader. As mentioned previously, the “breadth” of coverage is usually at the expense of “depth”, putting the system at risk, as it has been suggested in other contexts⁴⁵.

There are also differences in the rates paid per procedure, which is justified because public providers generally have staff paid by the MSP (but this is not the case for leading cancer treatment providers, which are non-profit private entities serving the poor).

A study on the national financing for cancer in the Dominican Republic has never been done. SENASA paid in 2010, about US\$6 million within the contributory scheme and US\$3 million in the subsidized scheme to protect 1,559 persons⁴⁶. It was not possible to obtain figures from other ARS. There are no estimates of the funds the state provides directly through their services in neither public hospitals nor the resources that people pay out of pocket whether in public or private providers. Institutions such as the Dominican League against Cancer mobilize funds to cover treatments for the poor and uninsured, and it is estimated that this organization channels about US\$ 2.5 million annually, primarily to finance the IOHP. There are also social assistance funds, such as the Office of the First Lady and others, to mobilize resources for these purposes.

Estimates by The Economist Intelligence Unit place the treatment cost for 2009 of new cases of cancer in the DR at US\$ 63.2 million⁴⁷. If instead of assuming 16,896 new cases, which is the projection used in this study based on Globocan 2002, we assume the figures of Globocan 2008, using their own parameters, the total estimate would be US\$ 48.6 million.

For purposes of this study, we made a rough estimate of the costs of treatment to achieve universal coverage, based on payments made by SENASA in the last year for all cancer patients affiliated both to the contributory and the subsidized regime (the aforementioned 1,559 persons). The average cost of caring for these people was US \$ 5,500 per person per year, bringing the estimated cost to cover the 13,000 new cases for the 2009, to a total of US \$ 71.5 million. This figure is equivalent to 2.8% of total health expenditures in 2009 and seems a viable on considering cancer is the third leading death cause in the country. This estimate is a minimum because it has been estimated using the SENASA rates which are well below the private ones. It was not possible to obtain from SISALRIL relevant information regarding neither the other ARS nor private out-of-pocket expenditures from higher income population. Consequently, it seems that the figures of The Economist Intelligence Unit are underestimated.

There is a great need for studies to fill information gaps on cancer. However, this preliminary analysis reveals that although there are weaknesses in the coverage of prevention, early detection, treatment and financing, the implementation of the SFS represents a major breakthrough in terms of financial protection for people living with cancer.

⁴⁵ Guerrero, Ramiro (presentation on the Colombian case at the Global Symposium on Health System Research, Montreaux, Switzerland, October 2010).

⁴⁶ Estimation based on SENASA database for six months from May to November, 2010.

⁴⁷ The Economist, Breakaway: *The global burden of cancer – challenges and opportunities*, Economist Intelligence Unit / Livestrong, United Kingdom, 2009. The use and cost parameters used in this exercise are databases from other countries, primarily a study of the costs of cancer in South Korea for 2002.

The funds to accomplish these goals come from the public system itself, and the delivery of services is also integrated into the structural performance of the health system. This is not what happens in the case of AIDS, so it is possible to derive some lessons for this disease.

Conclusions and recommendations

The most important lesson to be drawn from this analysis on AIDS and cancer in the Dominican Republic regards the financing mechanisms for these diseases. Cancer is embedded within the country's health system, as part of the package covered by the social security regime through the Family Health Insurance. Thus, at least part of cancer diagnosis and treatment at current levels is guaranteed by the state. It is possible that for many people, these funds are not sufficient, given the high cost of some interventions. It is also true that there is a significant challenge to extend coverage, since the bulk of the population is not insured yet. But at least the current legal, financial and institutional framework allows this process to take place.

That does not happen in the case of AIDS, where treatment is financed 64% from external funds, and specifically, with 58% of funds from a Global Fund grant, making this funding unsustainable in the long term. The availability of external resources may have encouraged the government to not take charge of its responsibility and, therefore, not conduct the studies needed to assess the feasibility of including AIDS treatment in the package of the family health insurance. But then again, if these funds did not exist, it would be difficult to predict the situation that the country would have faced in terms of prevalence and incidence of the disease, because in the case of AIDS, treatment is also a form of prevention.

Today there are 13,599 people on ARV treatment due to these external sources and, without those funds, would be totally unprotected, relying on public charity or discontinuing treatment, with all the risks involved. For these people, obviously, there would not be "AIDS as a chronic disease."

Consequently, the best use of the Global Fund resources in support of the Dominican Republic would be to apply those resources to strengthen the process of long-term sustainability of financing for AIDS. This could be achieved through conditioning future disbursements to the gradual inclusion of ARV and treatment of people living with HIV/AIDS within the family health insurance in each of financing schemes, depending on their employment status and income.

In the case of the subsidized scheme, the external resources that currently finance treatment could be transferred in per-capita terms to the treasury of the social security system (TSS) with a clearing plan, in which the Dominican government becomes responsible, progressively, for its financing. In the contributory scheme, a monetary limit could be established, to cover comprehensive treatment and medicines, as well as the costs for treating opportunistic infections – and this could receive some temporary external funding. A financial strategy of this nature would, in turn, foster the integration of AIDS services within the continuum of health care, rather than exist as a foreign entity within the health system. And it would also contribute strongly to strengthening the health system.

It is important to mention that donors' requirements push the system to produce better data in the case of AIDS, which does not happen in the case of cancer or other chronic illnesses. As it has been seen in this document, there is a huge lack of reliable data concerning mortality,

morbidity, prevention, use of services, costs, financing. International funding can help filling that gap and, at the same time, it is important the achievements reached in AIDS should not be lost once it's financing passes to the State.

Another difference worth highlighting is that cancer care services are integrated with the rest of the health system, making case management and referral more effective. This helps reduce barriers to entry, which in turn enables a gradual extension of coverage while prevention and early detection programs require improvement.

In the case of AIDS, there are specialized care units, which only treat patients with this disease. Even when they are located in public hospitals, these units are staffed and financed separately from the rest of the public service. This has likely been the result of the establishment of these units as part of externally funded projects and makes integration into the structure of the health system more difficult. This situation does not contribute to reducing the stigma that exists in relation to this disease, which is not common among cancer patients - although it existed in the past - and relative lack of stigma allows patients to access to treatment and to remain in their workplaces with their productivity and sources of income intact.

In terms of prevention, it is obvious that AIDS presents major advances because HIV infection is eminently preventable and unlike cancer prevention programs, includes an important component of health promotion that has contributes to disease control and the possibility of reducing incidence. Additionally, international resources are available to carry out HIV/AIDS prevention programs, which do not happen in the case of cancer. Consequently, the country needs to strengthen programs in education, prevention and early detection in certain types of cancer that are preventable, such as cervical cancer, also of infectious origin. However, screening tests for cervical cancer are available from the primary care level, while HIV services are only available at the secondary or tertiary level. Both programs face challenges to their information systems, but the HIV program has specific forms and information flows from local to central levels on additional reports which can handle data with higher quality. These are areas which would benefit from more international financing, both in the case of AIDS but particularly, for cancer. Strengthening of the information system will clearly support the performance of the health system as a whole.

It is worth noting that in the treatment of both diseases, there is a healthy public-private partnership in the provision of services. Cancer has been treated for decades by the private nonprofit sector, which has sought ways to serve poor people with little public assistance. The government programs were concentrated in infectious diseases but now priorities are beginning to change in the country, as chronic diseases have a progressively heavier burden. In the case of IOHP, the government is currently building a new cancer hospital with public funds, ensuring that these specialized services continue to be borne by the organizations that have the skills to handle them. The start of social security is now a source of funding for those affected and, in turn, may allow these institutions to improve the supply of services and ease their waiting lists. With regard to AIDS, an important part of service delivery is done by the private nonprofit sector with international financing, an experience which should be encouraged as has proved to be effective in the Dominican Republic.

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