

## C. Expenditures on the treatment and prevention of HIV/AIDS in Mexico

By José-Antonio Izazola, Jorge Saavedra, Jeffrey Prottas, and Donald S. Shepard<sup>1</sup>

### Section One: Background

With 92 million inhabitants, Mexico is the second most populous country in Latin America, after Brazil. In 1994, Mexico was an upper-middle-income country, with a gross national product per capita of US\$4,180. However, the severe financial crisis that began in December 1994 has caused a significant deterioration in the country's economy.

This study presents estimates of the total public and private spending on AIDS prevention and treatment in Mexico and compares the level of subsidy for AIDS treatment with subsidies for curative care in general. The first section provides background on the AIDS epidemic in Mexico and the health care system. The second section discusses the methodology used to estimate costs. The third section presents the expenditure estimates, and we conclude with a discussion of the determinants of these spending patterns.

#### 1.1 AIDS in Mexico

The first AIDS case in Mexico was diagnosed in 1983. By April 1, 1996, there were 26,651 reported AIDS cases throughout Mexico (table 1) and an estimated 100,000 to 150,000 individuals living with HIV who had not been clinically diagnosed with AIDS.

The epidemiological pattern of AIDS in Latin America is different from that observed in other parts of the world, and within this region, the Mexican epidemic seems to have unique characteristics (Valdespino et al 1988; Mann et al 1992). Ninety-five per cent of the cases among men and 45 per cent among women are due to sexual transmission. Among men with sexually acquired AIDS, 60 per cent were classified as homosexuals, 25 per cent as bisexuals, and 15 per cent as heterosexuals. HIV transmission due to injection drug use is negligible in Mexico (2 per cent of reported AIDS cases). While most AIDS cases in Mexico are in gay and bisexual men, heterosexual HIV transmission is increasing. In 1986, there were several outbreaks of HIV infection among

**Table 1. Cumulative reported AIDS cases in Mexico, as of April 1, 1996**

<b>Mode of transmission</b>	<b>Cases</b>	<b>Per cent</b>
<i>Sexual, of which:</i>	15,782	59.3
Homosexual	6,213	23.3
Bisexual	4,383	16.5
Heterosexual	5,186	19.5
<i>Blood, of which:</i>	3,104	11.6
Transfusion	2,116	7.9
Haemophilia	250	0.9
Intravenous drug user	377	1.5
Former paid blood donor	353	1.3
Occupational transmission	8	0.0 <sup>a</sup>
<i>Perinatal</i>	349	1.3
<i>Undocumented mode</i>	7,416	27.8
<b>Total</b>	<b>26,651</b>	<b>100.0</b>

a. Rounded – exact rate is 0.03 per cent.

Source: The National Council for the Prevention and Control of AIDS (CONASIDA) 1996, unpublished data.

paid plasma donors in private plasmapheresis centers.<sup>2</sup> As a result, the commercialisation of blood was forbidden and universal HIV screening for blood donations has been mandatory in Mexico since 1986.

## 1.2 The Mexican health care system

The Mexican health care system is complex, as the major insurers are also direct providers of care. Forty-seven per cent of the population is covered by social security institutions, mainly the Mexican Institute of Social Security (IMSS), which provides direct care through a large system of hospitals and clinics. By law the IMSS is the institution in charge of insuring workers of private firms. It finances its facilities through taxes paid into its accounts by government, employers, and employees. The second largest social security institution is the Instituto de Seguridad Social al Servicio de los Trabajadores del Estado (ISSSTE) for federal government employees. Equivalent institutions serve state government employees. Some other health insurance institutions include the official oil monopoly (Pemex), which has its own hospitals, as well as the defense and marine ministries; however, they are just minor players in terms of the percentage of the population covered.

The Ministry of Health (SSA) is responsible for the uninsured poor, who constitute about one-quarter of the population. While operating its own facilities to provide medical care services to this uninsured population, the SSA also serves Mexico as the public health agency responsible for standard public health functions.

Private insurance covers only a small wealthy population and banking workers. In the large fee-for-service private sector, in which care is paid for directly by patients, overall domestic private funding represents 28 per cent of 1995 Mexican health expenditure (based on authors' compilations).

Health care services for HIV/AIDS patients are treated like all other health issues with a single exception: private insurance companies do not cover AIDS-related costs. The Ministry of Health did not, and as of 1998 still does not, fund antiviral therapy for uninsured patients. The social security institutions provide these drugs for a portion of the patients for whom they are responsible. In the course of its research on antiretrovirals (ARV), CONASIDA or the National AIDS Commission, an agency under the SSA, provides ARV treatment for about 100 individuals.

## Section Two: Methods

Estimates of AIDS prevention and treatment expenditures were made using official government budgets as well as by interviewing physicians, nongovernmental organisation (NGO) representatives, and top officials in the social security institutions, in major public hospitals, and at CONASIDA. A household survey (ENSA II) was used to estimate private, out-of-pocket expenditures.

Most of the documents used for this study contained 1994 expenditures, the latest available data at the time of this analysis (May 1996). These expenditures were then corrected based on 1995 planned spending increases and were converted to US dollars for comparability. Due to the severe economic crisis that erupted at the end of December 1994, these estimates may not fully reflect changes in public budgets.

### 2.1 Estimating AIDS prevention expenditures

AIDS prevention expenditures fall into two main areas: the costs associated with blood banks and screening and those with the prevention of the sexual transmission of HIV. For blood bank screening, costs are absorbed mainly by the social security institutions (IMSS and ISSSTE) and by the Ministry of Health. We examined their budgets as well as Red Cross expenditures. CONASIDA does most of the screening for AIDS in the public sector.

The public activities for blood testing involve protecting the blood supply with tests run prior to the use of transfusable blood. Employer expenditures reflect the costs of testing employees to detect HIV, often to terminate their employment. While employers may consider this expense 'preventive', in the sense that it could prevent some HIV transmission among coworkers, it is not a valid preventive expense, as HIV is not spread by casual contact.

Government expenditures for the prevention of sexually transmitted HIV were estimated using government budget figures in the CONASIDA budget. CONASIDA is the primary AIDS-related agency in Mexico, charged with oversight, coordination, and prevention. It granted exceptional access to its

official budget for the purpose of this study. No significant government programs in AIDS prevention operate in other parts of the Ministry of Health. We interviewed the director and key employees of CONASIDA to help ensure a clear understanding of the budget.

Nongovernment organisations also provide important AIDS prevention services in the larger cities. Estimating the costs of these services is difficult because volunteers are often used, the number of patients is hard to track, and patients may seek services from government sources while also getting services from NGOs. Because no official publication inventories the NGOs' contribution to AIDS prevention expenditures, we held a workshop with seven of the most active NGOs in order to estimate their expenditures. We distributed the workshop participants' data on total expenditures across spending categories and used the data to extrapolate to the eight other most active NGOs not present at the workshop. Together, these 15 NGOs represent the bulk of the funds NGOs spend in Mexico. Some NGOs also offer treatment services, and we estimated their expenditures in the same manner. International organisations' expenditures were estimated after a telephone survey of major donors.

Condom expenditure is based on a study of total condom sales nationwide. Condoms are not a significant part of the family planning effort in Mexico, so we assumed that all sales were essentially for disease prevention.

## 2.2 Estimating AIDS treatment expenditures

Expenditures on AIDS treatment are embedded in the health care budgets of all public provider and insurer systems. The following steps were taken to estimate AIDS treatment expenditures.

- 1 Clinicians who care for large proportions of AIDS patients developed typical treatment patterns for specific types of patients.
- 2 The cost of each treatment pattern was estimated using the average costs for each service, such as a hospital day, medications, a physician visit, laboratory tests, and so on.
- 3 The total cost for a typical treatment pattern was multiplied by the number of patients in that category.

*Physician workshop.* Through Delphi panels with clinicians, we obtained the standard treatment patterns for various kinds of AIDS patients in different public institutions as well as in the private sector. This research provided per case costs, which were then translated into total costs in those sectors for which direct budget information was not available. Six physicians who were very knowledgeable about and involved in AIDS treatment were invited to attend a workshop to discuss typical treatment patterns for their patients. Physicians from the major government health systems were chosen because more than half of all Mexican citizens receive health care in one of these systems. In addition, these physicians also care for 'private' patients who pay for their services. The tendency of physicians to describe ideal rather than actual treat-

ment patterns cannot be discounted, although repeated efforts were made to sensitise respondents to that danger. They were asked to provide information regarding the representativeness of the patterns they reported; however, they probably still somewhat overestimated the average quantity of care being provided nationwide. The most notable result may be in the high percentages of total costs that drugs represent.

*Estimations of the number of AIDS patients by category.* Because AIDS patients in Mexico are not identified as such until they experience a 'precipitating medical event', this number is an underestimate. These official numbers were therefore corrected for the delay in reporting AIDS deaths and for underreporting, based on an examination of hospital records in a small sample. These corrections raised the number of estimated AIDS sufferers living in Mexico during 1995 to about 15,808, the figure used in this study. The larger cumulative number in table 1 – 26,651 – includes deceased patients as well. More sophisticated ongoing work now, with the correction of death certificates and backward calculation methods, suggests that this estimate is reasonable.

Each of these data elements was obtained separately for different categories of patients – those in the social security system, those served by the Ministry of Health, and those who are treated privately, either the wealthy, who seek supplemental care, or the poor, who obtain care on a charity basis. The number of IMSS and ISSSTE systems' AIDS patients was estimated using Ministry of Health sources. Data on the number of AIDS patients being served by social insurance institutions were accepted as accurate, and the difference between that total and the total number of AIDS cases was assumed to be the uninsured and those in the care of private providers. Fifty-nine per cent of AIDS patients received publicly provided care (30 per cent directly and 29 per cent through social security), 27 per cent received private care, and 14 per cent received care from NGOs.

*Drug expenditure.* Drug expenditure was estimated differently for the uninsured based on the assumption that those poor patients not covered by a public provider system purchased only a portion of the drugs prescribed. This assumption is sound, although the actual percentage of drugs purchased has little empirical support. The figures for ARV drugs were cross-checked with data on the amount and cost of these medications that were purchased by the IMSS system, and the match was close. However, we can not assume that the same is true for the uninsured population, because private providers do not offer free drugs; their patients must pay for them.

### 2.3 Total health treatment expenditures

Total public expenditures on health care (treatment) were derived from previous studies of FUNSALUD (Fundación para la Salud, or Foundation for Health), using household surveys and budget allocations (Hernandez-Peña et al 1998). We used the federal budget, which divides most expenditures among pre-

vention, treatment, and mitigation. Other expense categories were treated as indirect costs and allocated to the former categories according to their most likely orientation. State governments' contributions were estimated, based on prior year data, to be 16 per cent of federal expenditures, and the government's total expenditures were increased by this percentage in all categories. Overall, Mexican health expenditure in 1995 was US\$8.4 billion at market exchange rates (table 2), the equivalent of about 5 per cent of GNP and US\$200 per capita.

**Table 2. Total health expenditure by type and source of funding, Mexico, 1995 (millions of US dollars)**

Use of funds	Source of funds			Total	
	Public	Private	International	Amount	Per cent
Prevention	579	175	58	812	9.7
Treatment	5,331	1,730	29	7,090	84.5
Mitigation	485	0	0	485	5.8
Total	6,394	1,905	87	8,387	100.0
(Per cent)	(76.2)	(22.7)	(1.0)	(100.0)	

Note: Rows and columns may not sum to totals due to rounding.

Source: Hernandez-Peña et al 1998; authors' calculations.

### Section Three: Results

Mexico spent US\$79.1 million on AIDS-related health care and prevention in 1995, or about 1 per cent of its total (private and public) health expenditures (table 3). For an estimated 15,800 people with AIDS, this expenditure seems a very heavy burden. About 63 per cent of total AIDS costs went directly to treatment.

**Table 3. Estimated HIV/AIDS expenditures by use and source of funding, Mexico, 1995 (millions of US dollars)**

Use of funds	Source of funds			Total	
	Public	Private	International	Amount	Per cent
Prevention	16.6	11.9	0.9	29.4	37.2
Treatment	24.0	25.4	0.0	49.4	62.5
Mitigation	0.2	0.0	0.0	0.2	0.2
Total	40.8	37.3	0.9	79.0	100.0
(Per cent)	(51.6)	(47.2)	(1.1)	(100.0)	

Note: Rows and columns may not sum to totals due to rounding.

Source: Hernandez-Peña et al 1998; authors' calculations.

#### 3.1 AIDS prevention expenditures

The largest component of prevention, about US\$16.4 million, is dedicated to preventing AIDS through blood transfusions (table 4). Although it is clearly an

**Table 4. Estimated HIV/AIDS prevention expenditures by use and source of funding, Mexico, 1995 (millions of US dollars)**

Source of funds	Use of funds			Total	
	IEC <sup>a</sup>	Blood bank	Condoms	Amount	Per cent
<i>Public</i>					
Direct government	2.3	5.5	0.0	7.8	26
Social security	3.2	5.5	0.0	8.8	30
<i>Private</i>					
Employers	3.2 <sup>b</sup>	0.0	0.0	3.2	11
Households	0.3	0.0	2.6	2.9	10
Private insurance	0.0	0.0	0.0	0.0	0
NGOs	0.5	5.3	0.0	5.8	20
International	0.8	0.0	0.1	0.9	3
Total	10.3	16.3	2.7	29.4	100
(Per cent)	(35)	(56)	(9)	(100)	

a. IEC: information, education, communication.

b. Primarily employers' screening of workers and job applicants for HIV.

Source: Authors' compilations.

AIDS-driven cost, it is unlikely to be effective in stemming Mexico's epidemic, which is largely based on sexual transmission.

The amount spent on screening by blood banks is partly related to a Mexican law that requires every blood donor be tested for HIV. On 'national blood donor days' organized by the Red Cross, large amounts of blood are collected and also tested for HIV. However, due to expiration and a variety of other reasons, large proportions of these packages are never used for transfusion. Therefore, the blood screening costs in Mexico exceed those strictly imposed by the necessity to ensure a safe blood supply.

When blood screening costs are excluded, very few public resources are dedicated to prevention efforts aimed at changing sexual behavior in Mexico – US\$5.5 million, or only 13 per cent of total public AIDS expenditure for prevention and treatment (US\$40.8 million, as shown in table 3). This amount represents just 1 per cent of total public expenditures on prevention overall (see table 2). In addition, international agencies and Mexican NGOs provide US\$1.3 million toward AIDS prevention.

Family planning programs with condom distribution also may have an AIDS prevention component. However, the Mexican family planning program's strategies make it very difficult to assign any part of its costs to AIDS prevention, especially as the government did not buy condoms specifically for AIDS prevention during 1995. Based on information on condom sales, we conclude that most of the condom-based prevention measures are funded either

by out-of-pocket expenditures by households or private sources and by international donors.

### 3.2 AIDS treatment expenditures

There are two striking features concerning the data on treatment costs (table 5). First is the importance of drugs, which represent two-thirds of total treatment costs. Forty-one per cent of treatment costs are attributable to ARV drugs (primarily mono- and bi-therapy) and an additional 26 per cent are spent on other drugs. These facts reflect both the importance of medication in AIDS treatment and the relatively high cost of drugs when compared to the costs of other clinical inputs in Mexico. AIDS treatment is increasingly being conducted on an ambulatory basis in Mexico, resulting in the relatively low percentage of treatment costs in the hospitalisation column in table 5. In general, this trend can be seen as desirable, although it may raise some quality-of-care issues.

**Table 5. Estimated treatment expenditures for HIV/AIDS by type of treatment and source of funding, Mexico, 1995 (millions of US dollars)**

Source of funds	Use of funds					Total	
	Hospitalisation	Clinic visits	Anti-retroviral drugs	Other drugs	Laboratory tests	Amount	Per cent
<i>Public</i>							
Government	0.5	0.2	0.2	1.2	1.8	3.9	8
Social security	4.3	0.4	9.7	4.2	1.5	20.1	41
<i>Private</i>							
Households	1.5	0.9	10.6	7.3	4.8	25.2	51
NGOs	0.0	0.2	0.0	0.0	0.0	0.2	<1
<b>Total</b>	<b>6.3</b>	<b>1.7</b>	<b>20.5</b>	<b>12.7</b>	<b>8.1</b>	<b>49.4</b>	<b>100</b>
(Per cent)	(13)	(3)	(41)	(26)	(16)	(100)	

Source: Authors' compilations.

The second striking point is the large burden of treatment costs being borne by individuals. Only about one-third (35 per cent) of AIDS sufferers are being cared for by public institutions. The 65 per cent who must partially or totally pay for their own care actually spend, in aggregate, more money than does the public sector. NGO contributions to paid treatment costs are negligible. (Their contribution via voluntary services is much greater and is not, we recognise, quite reflected in these numbers.) The per person costs of care for the out-of-pocket (private, NGO, or uninsured) group are much lower than those in the public system, primarily reflecting less care.

### 3.3 Expenditure on mitigating the impact of AIDS

Mitigation costs, narrowly defined, are virtually zero because of the structure of the disability system and the short post-diagnosis life expectancy of AIDS patients. Disability payments under social security in Mexico are very low (about US\$100 per month) and not available for the first six months of disability. Only 47 per cent of the population are covered by this social security system and only a smaller proportion of AIDS patients are so covered (about 35 per cent). Average post-diagnosis survival is estimated at about 18 months. Even if disability status and diagnosis occur at the same time this benefit would mean only about US\$900 paid to an individual. In addition, it should be noted that private life insurance does not pay if the insured's cause of death was AIDS.

#### Section Four: Determinants of expenditure patterns

The public sector dominates expenditure on AIDS prevention in Mexico. At first glance, public expenditure on prevention seems relatively high in relation to total public expenditure on AIDS – 41 per cent. However, more than two-thirds of public expenditure on prevention was for screening of blood banks; protecting the health system against AIDS is essential but not likely to be effective in stemming the sexual transmission of AIDS, which is fueling the epidemic in Mexico. Furthermore, even the small remainder of public funds devoted to the prevention of sexual transmission – only US\$0.06 per capita – probably overstates what is actually spent by the public sector, since screening could not be separately identified in the CONASIDA budget and these expenditures were attributed to IEC.

The predominance of blood screening costs reflects the unit cost of testing blood and the immense scale of the medical use of blood in Mexico, as contrasted to the relatively tiny scale of the AIDS epidemic in Mexico. The nonpublic blood screening costs are the result of certain large employers testing their work force. As mentioned, employers think of this activity as preventive, but it has little or no public health utility.

The cost of condoms is solely in the private sector as condoms are little used in family planning in Mexico, and such family planning efforts are not aimed at the population at high risk for HIV. The large increase in these purchases coincident with the public's awareness of AIDS suggests that fear of AIDS is, at least, a factor in their rising sales.

The treatment costs and their distribution are primarily functions of the numbers of people living with AIDS and the structure of the Mexican health system. The level of public subsidy for AIDS treatment (49 per cent) is substantially lower than the overall subsidy for curative care in Mexico (75 per cent). The reasons for this difference are the social security systems, a major funder for AIDS treatment, have sought to minimise their payments for AIDS care. For example, one social security institute delayed the government's

approval of AZT in Mexico to postpone its obligation to pay for the treatment. Another example is that ARV treatment was and still is not generally available for asymptomatic individuals but only for those with full-blown AIDS. Third, in 1995, for a patient to get ARV treatment, he or she had to be publicly identified as HIV-positive. Even then, there was no assurance a patient would receive ARV treatment. These conditions reduced the desire of patients with HIV to seek treatment in the public sector. (By 1998, however, this discrimination has abated.) A final reason for low public coverage is the generally limited public coverage of expensive drug treatments for AIDS compared to other serious conditions, such as cancer.

### Notes

- 1 The authors are grateful to Lisa Leroy for assistance in planning the workshops, to the participants at all workshops, and to others who supplied data and advice for this study.
- 2 There were centers in which individuals were paid for providing a package of blood. This package was centrifuged, cells were extracted from it, and plasma was returned to the paid donors. It is assumed that these centres reused needles and other materials that enhanced HIV, hepatitis B, and hepatitis C transmission from one donor to the other.

### References

- Hernandez-Peña, Patricia, B. Zurita, T.J. Ramirez, O. Mendez, C. Cruz, A. Gamble, and M. Recio. 1998. 'Las cuentas nacionales de salud: El gasto en salud de México 1992-1995'. Final project report (unpublished). Fundación para la Salud (FUNSALUD), Mexico City.
- Mann, Jonathan M., Daniel J.M. Tarantola, and T.W. Netter, eds. 1992. 'AIDS in the World: A Global Report'. Cambridge, MA: Harvard University Press.
- Valdespino-Gomez, J.L., José-Antonio Izazola-Licea, and B. Rico. 1988. AIDS in Mexico: Trends and projections. In Pan American Health Organisation (PAHO). 'AIDS: Profile of an Epidemic', PAHO Scientific Publication 512. Washington, D.C.: PAHO, pp. 31-36.