THE COST OF HIV/AIDS IN CANADA

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Until the 1980s, it was almost universally assumed that medical science was winning the battle against the worst infectious diseases. The HIV/AIDS[1] epidemic shocked the world not only because of the virulence of the disease and its automatic "death sentence," but because it challenged that basic assumption and struck in the very centres of western science and learning.

Today, 20 years after the first Canadian AIDS death, that shock has been tempered not only by time but also by changing trends and by the changing profile of the epidemic:

- In Canada and in the developed world, the rate of HIV infections, AIDS diagnoses and AIDS deaths has dropped dramatically, particularly in the last five years.
- The "epidemic" nature of the disease now appears more distant to the well-off and educated, both abroad and at home: HIV/AIDS has afflicted one in twelve sub-Saharan Africans compared to 1 in 500 Canadians, and AIDS is now the main cause of death in Africa. The continued rapid spread of the disease has become a "Third World" issue.
- AIDS victims in Canada are now less likely to be middle-class gay men as in the 1980s, and much more likely to be vulnerable groups -- aboriginal, poor, unemployed, homeless, and intravenous drug users. Those most likely to be newly infected with AIDS are already marginalized.
- In Canada, the developed world, and globally, women are a growing proportion of HIV/AIDS sufferers. Globally, more women are now dying of AIDS than men.

The purpose of this paper is to find a meeting ground between these contradictory trends.

a) A cost analysis of HIV/AIDS in Canada shows clearly that prevention and education can markedly reduce HIV incidence. A parallel investment in other Commonwealth countries and among vulnerable groups would likely be highly cost effective. The observation by the Canadian Strategy on HIV/AIDS that "the dollar cost of preventing a case of HIV/AIDS is only a fraction of the cost of treating and caring for someone once he or she becomes infected" applies not only to Canada.[2]
b) While there is still no known cure for the virus and the disease is still fatal, HIV is also being much more successfully "managed" in Canada and the rich countries, and the lives of those with the infection is being significantly prolonged. The proven cost-effectiveness of these management techniques is also applicable where the need is greatest.

[1] HIV is "human immunodeficiency virus"; AIDS is "acquired immunodeficiency syndrome."
[2] Health Canada, www.hc-sc.gc.ca/hppb/...ids/can_strat_admin/can_strat2.html, December 4, 2000

1. Global and Canadian HIV/AIDS trends

AIDS killed 2.6 million people in 1999, including half a million children, an increase of more than 70% in just three years. It is now the fourth biggest killer in the world, after heart disease, stroke and respiratory disease, and it kills more people than any other infectious disease.. There are now 34 million adults and children in the world living with HIV/AIDS, nearly 70% of them in sub-Saharan Africa. Of those, 55% are women. The disease is spreading so rapidly that one in six of the 34 million AIDS victims became infected in 1999 alone.[3]

The social and economic burden of the illness in Africa is devastating: Children are orphaned and left without teachers. 25% of Ugandan households are providing for an orphan. HIV infection rates of up to 40% are reported among teachers in Malawi, Namibia and Zambia. 12% of all educators in South Africa are HIV positive, and one in 25 Botswana children have lost a teacher to AIDS.[4]

An HIV/AIDS sufferer in Rwanda is 36 times more likely to use hard-pressed outpatient health services than the general population, and annual health care expenditures for HIV/AIDS patients are 21 times greater than for the general population. Because AIDS claims its victims at a young age, the indirect economic costs of lost productivity are enormous. A World Bank analysis of 80 developing countries estimated that a 15% HIV prevalence rate reduced per capita GDP growth by 1%.[5]

By contrast, the rapid spread of HIV/AIDS in Canada and other rich countries in the late 1980s and early 1990s has been dramatically reversed. There were 25.4% fewer HIV positive tests in Canada in 1999 than in 1995, reflecting the marked success of education and prevention investments. There were also 80% fewer AIDS cases, and 92% fewer AIDS deaths, reflecting the success of HIV-management methods that delay the onset of AIDS and prolong the lives of those infected (Figure 1).[6]

Nevertheless, Health Canada reports that the bulk of the HIV and AIDS burden still lies ahead, even in this country.[7] That is because, even though new diagnoses are declining, the cumulative total of AIDS cases continues to rise as existing HIV cases turn into AIDS. As of June 30, 2000, there had been a cumulative total of 47,000 positive HIV

[3] Matlin, Stephen and Nancy Spence, "The Gender Aspects of the HIV/AIDS Pandemic," Expert Group Meeting on *The HIV/AIDS Pandemic and its Gender Implications,* World Health Organization, Windhoek, Namibia, November, 2000, pages 1, and 9-11

[4] Op. cit., page 11, and Alben, Anita and Lorna Guinness, *Socio-Economic Impact of HIV/AIDS in Africa,* ADF 2000, Joint United Nations Programme on HIV/AIDS (UNAIDS)

[5] Alben, op. cit.

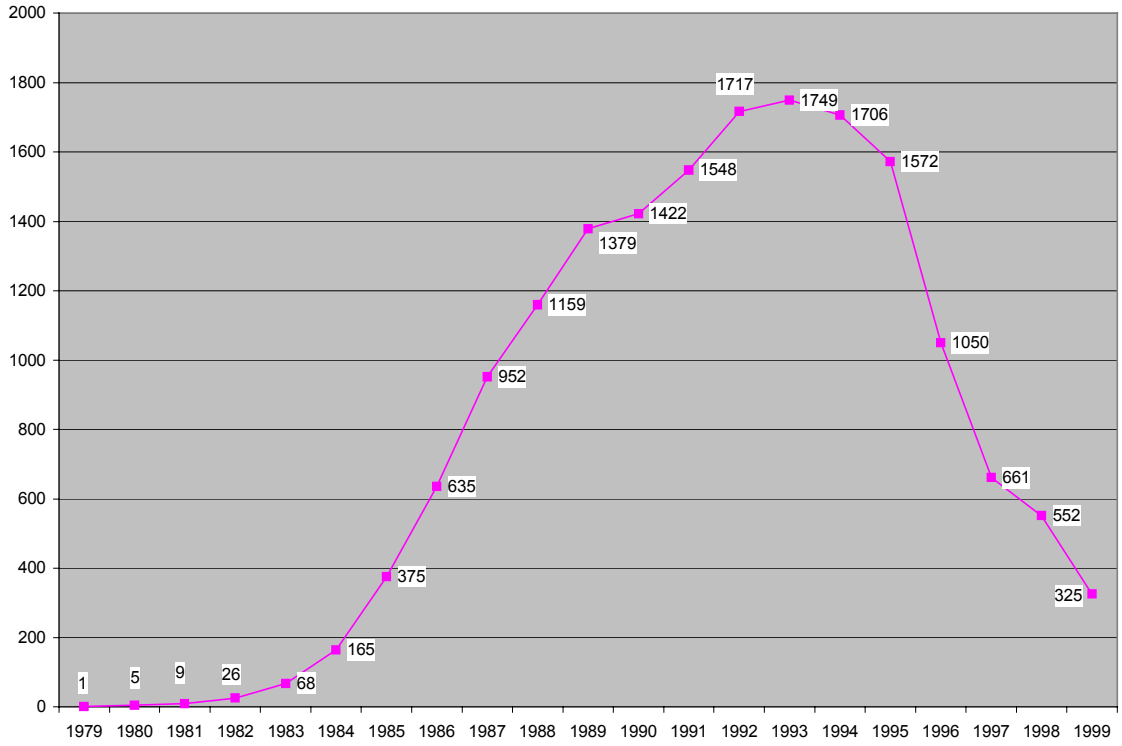
[6] Health Canada, *HIV/AIDS EPI Update,* April 2000, www.hc-sc.ca/hpb/lcdc/bah/epi/ahcan_e.html, Health Canada, *HIV and AIDS in Canada: Surveillance Report to June 30, 2000,* November, 2000, Table 16, page 29.

[7] Health Canada, www.hc-sc.gc.ca/hppb/...ids/can_strat/strat_admin/can_strat2.html, December 4, 2000

tests in Canada.[8] Of those, 17,165 have turned into AIDS, 20% more than the cumulative 1995 total. Of those 17,165, 70%, or 12,088 Canadians, have died of the disease.[9]

According to these figures, there are currently about 35,000 Canadians living with HIV/AIDS. These figures are certainly an underestimate because they are based only on actual documented HIV positive tests. Health Canada estimates that there are an additional 15,000 Canadians who are HIV positive, but who have not been tested and who are unaware of their infection.[10] This means that about one in 500 Canadians has been infected with the virus.

Figure 1: The Steep Decline in New AIDS cases in Canada



Source: Health Canada, *HIV and AIDS in Canada: Surveillance Report to June 30, 2000*

These trends have implications for the cost assessments in the following section. They indicate that while the preventive and management investments of the last 15 years have stemmed the steep rise in health care and treatment costs that would certainly have occurred without these investments, the continuing *cumulative* increase in AIDS cases has not yet produced a significant decline in these costs. In terms of "return on

[8] Health Canada, *HIV and AIDS in Canada: Surveillance Report to June 30, 2000,* November, 2000, Table 2, page 4.
[9] Op. cit. Tables 13A and 13B, pages 20 and 21. These numbers have been rounded because 2000 Ontario data for HIV+ tests to June 30, 2000, were not available at the time of publication. The actual number of reported HIV+ tests reported in this document is 46,651 excluding the most recent Ontario data.
[10] Health Canada, *HIV/AIDS EPI Update,* April, 2000.

investment," however, this "payoff" will soon occur. While cumulative AIDS cases in 2000 were still 20% higher than in 1995, they were only 10% higher than 1996, 7% higher than 1997, 4% higher than 1998, and 2% higher than 1999. In short, we are fast approaching the point in Canada where it will be possible to report an absolute decline in cumulative AIDS cases and consequent dramatic savings in health care costs.

2. The Changing Profile and Gender Dimension of HIV/AIDS in Canada

It has already been noted that 55% of AIDS sufferers in sub-Saharan Africa are women, and that, globally, more women died of AIDS in 1999 than men. Gender-based studies of HIV/AIDS have noted that "women are more susceptible to HIV infection on each sexual encounter because of the biological nature of the process and the vulnerability of the reproductive tract tissues to the virus, especially in young women."[11] Similarly one study notes that "young women are biologically at higher risk for infection, because male to female HIV transmission...is estimated to be several times more efficient than female to male."[12]

These studies have also pointed to social, economic and cultural factors that increase women's vulnerability to HIV/AIDS. These include sexual coercion and less ability to negotiate for safer sex, as well as greater likelihood of rejection, expulsion from the family home, and denial of care and treatment once the disease is diagnosed. Women also bear the main burden of caring for sick family members and often have less care and support when they themselves are infected.[13]

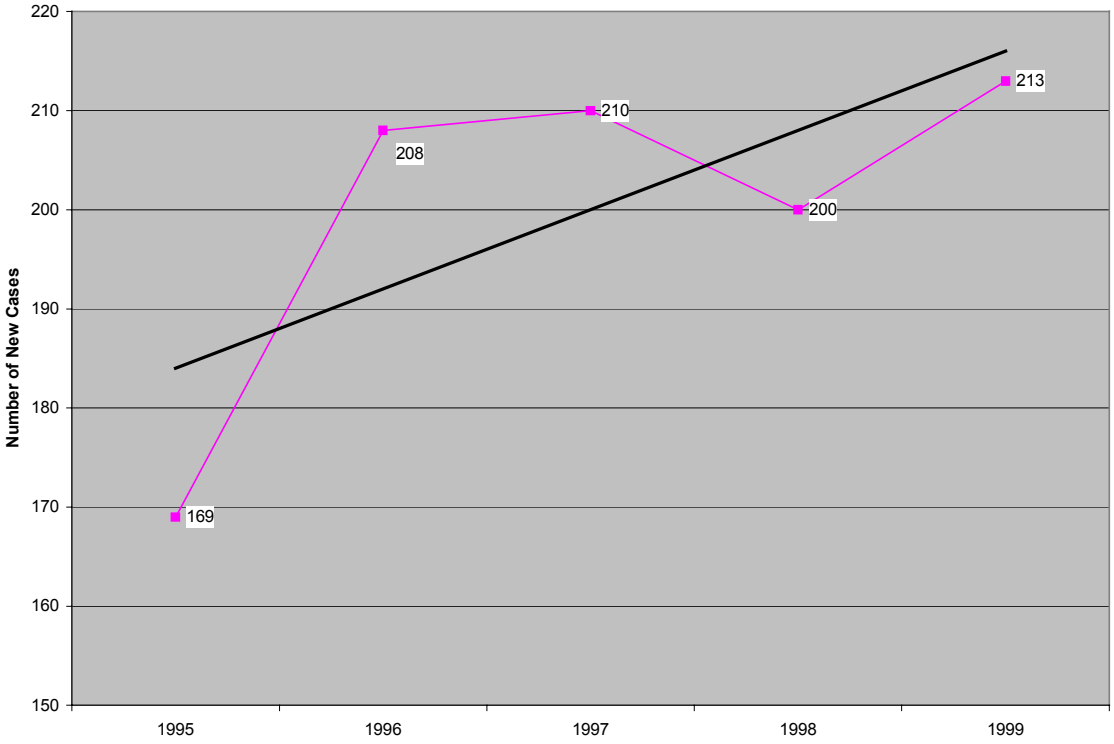
While many of those studies have focused on Africa, gender-based analysis is also critical in assessing the impact of HIV/AIDS in Canada. Indeed, without such analysis, the encouraging overall trends described above can be very misleading. While there has been an overall drop of 25% in the number of new HIV+ infections since 1995, the 1999 female infection rate is *higher* than it was in 1995, and has increased by 20% since 1997 alone.[14]

Men still represent 87% of the cumulative total of positive HIV tests in Canada, but the balance is changing dramatically. Between the period 1985-1994 and 1999, the female proportion of HIV+ tests increased from 10% to 25% of the total. Though the number of AIDS diagnoses has fallen for both sexes, women also represent an increasing proportion of AIDS cases diagnosed each year, from 9% of the total in 1995 to 21% in 1999.

[11] Matlin and Spence, op. cit., page 11.
[12] Albert, Terry and Gregory Williams, with the collaboration of Barbara Legowski and Dr. Robert Remis, *The Economic Burden of HIV/AIDS in Canada,* CPRN Study No. H02, Renouf Publishing, 1998, page 13.
[13] Matlin and Spence, op. cit., and Gupta, Geeta Rao, "Approaches for Empowering Women in the HIV/AIDS Pandemic: A Gender Perspective," paper presented at the expert group meeting on *The HIV/AIDS Pandemic and its Gender Implications,* Windhoek, Namibia, November, 2000.
[14] Gender breakdowns and homosexual/heterosexual attribution are from Health Canada, *HIV and AIDS in Canada: Surveillance Report to June 30, 2000,* November, 2000, Tables 3A, 3B and 4C, pages 5 and 9.

The proportion of new HIV infections due to male homosexual activity has dropped sharply from 75% of total infections in the period 1985-1994 to 38% today. Since 1995 alone, there has been a 38% decline in the number of new infections attributable to male homosexual activity. By contrast, the number of new HIV infections due to heterosexual activity has more than doubled since the late 1980s and risen by 26% since 1995 alone (Figure 2). As a percentage of total cases, new infections attributable to heterosexual activity rose from 6% in the period 1985-1994 to 19% today.

Figure 2: Number of HIV+ Tests Due to Heterosexual Activity



Source: Health Canada, *HIV/AIDS in Canada: Surveillance Report to June 30, 2000;* trend line added to indicate percentage increase since 1995.

However, a U.S. study has linked HIV infection through heterosexual contact to injection drug use, based on indications that 80% of HIV+ heterosexual men or women who never used injection drugs became infected through contact with someone who did.[15] That indicates that intravenous drug use may be responsible for more infections than the official Canadian data indicate. Even without that apparent link to heterosexual infection, the percentage of new HIV infections attributable directly to intravenous drug use has risen from 9% of all cases during 1985-1994 to 28% in 1999.[16]

[15] Gould, Michelle and Amiram Gafni, "Needle Exchange Programme and Economic Evaluation of a Local Experience," *Canadian Medical Association Journal,* 1997, no. 157, pages 255-262.
[16] Health Canada, *HIV and AIDS in Canada: Surveillance Report to June 30, 2000,* November, 2000, Table 4C, page 9.

Interestingly, studies show that Canadian female prostitutes are no more likely to be infected with HIV or other sexually transmitted diseases than other women, *unless* they are also intravenous drug users.[17] Other studies also show that in their sexual relations, sex-trade workers use condoms more consistently than other populations similar in age, race, and sex.[18]

No cause of infection exists in isolation, and it is increasingly apparent that social exclusion and marginalization are underlying causes of the disease. There has been a marked shift in rates of infection from middle class gay men to vulnerable populations, including the poor, unemployed, minorities, poorly educated, aboriginals, and those involved in "street activity."[19] Since 1984, the number of AIDS cases among Aboriginal Canadians has risen steadily, particularly among women and those under 30, and rates of infection in the Canadian prison population are estimated to be at least ten times greater than in the general population.[20]

The growing association of HIV/AIDS with social exclusion indicates that continued future reductions in HIV/AIDS incidence in Canada will increasingly depend on alleviation of underlying social and economic causes. Disease-specific prevention and management have limited effectiveness in reaching marginalised groups. One analysis notes:

> *New therapies should mean an improved quality of life for those living with HIV who have access to the therapies and sufficient income to procure adequate housing and nutrition to provide a healthy basis from which to manage the infection. It is not clear how helpful the therapies will be to marginalised populations, particularly street-involved people and injection drug users, who have difficulty complying with the stringent guidelines required to make the new therapies effective.*[21]

3. The Economic Cost of HIV/AIDS in Canada

Economic cost analyses are certainly not intended to reduce the immense human suffering of illness simply to dollar figures. On the contrary, they demonstrate that the burden of illness is not borne by individual sufferers alone, but is shared by society at large. They also motivate policy actors to invest in cost-effective prevention and management that can reduce the immense social costs of illness treatment and productivity losses.

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[17] Bastow, Karen, "Prostitution and HIV/AIDS," in *HIV/AIDS Policy & Law Newsletter 1995: 2(2),* citing Darrow, W, "Prostitution, Intravenous Drug Use and HIV-1 in the United States."
[18] Bastow, op. cit., citing P. Alexander. "Prostitutes and AIDS: Women as Alleged Vectors," *National Now Times*, February/March 1991.
[19] Albert, Terry and Gregory Williams, with the collaboration of Barbara Legowski and Dr. Robert Remis, *The Economic Burden of HIV/AIDS in Canada,* CPRN Study No. H02, Renouf Publishing, 1998, pages 9, 12 and 14.
[20] Health Canada, www.hc-sc.gc.ca/hppb/...ids/can_strat/strat_admin/can_strat2.html, December 4, 2000.
[21] Albert and Williams, op. cit., page 15.

a) Direct Costs

Estimating the direct cost of HIV/AIDS is complex because the distribution of health care costs shifts dramatically as the disease advances. Early stages of the illness are characterized by a relatively high proportion of drug costs, primary and community care, and outpatient visits, while later stages are marked by longer in-patient hospital stays. Despite the high cost of drug treatments to manage the disease even in its early stages, Table 1 clearly illustrates steadily increasing treatment costs as the disease progresses. The 44% of HIV/AIDS victims in the last two stages of the illness account for 59% of total health care costs, and the 25% with full-blown AIDS account for 38% of costs.

Table 1: Distribution of Annual Health Care Costs of HIV/AIDS in Canada, 1999[22]
(CD-4 ranges in Row 1 refer to T-cell counts. The fewer T-cells, the more compromised the immune system; Total cost figures are in millions of 1999 dollars)

	HIV+ >500	**HIV+ 499-200**	**HIV+ 199-75**	**AIDS <75**
# at each HIV/AIDS stage	5,204	13,345	6,506	8,307
% by HIV/AIDS stage	15.6%	40%	19.5%	24.9%
Health Care Costs (%)				
In-patient	19%	28%	46%	68%
Out-patient visits	54%	44%	35%	14%
Home Health	4%	5%	8%	6%
Drug Costs	24%	23%	11%	10%
Long-term Care	0	0	0	2%
Health Costs per person	$9,165	$12,270	$15,901	$23,464
Total Direct Health Cost	$47.7 mill.	$163.7 mill.	$103.4 mill.	$194.9 m.
Out-of-pocket expense p/p	$1,269	$1,333	$1,579	$1,867
Total Out-of-Pocket Exp	$6.6 mill.	$17.8 mill.	$10.3 mill.	$15.5 m.
TOTAL DIRECT COST	**$54.3 mill.**	**$181.5 mill.**	**$113.7 mill.**	**$210.4 m.**

Sources: Hellinger, Albert and Williams, Health Canada, Statistics Canada (see footnote below for details).

In sum, the direct health costs of HIV/AIDS in Canada in 1999 were $560 million. To this must be added another $40 million, mostly from the Canadian Strategy on HIV/AIDS, for prevention, research, support to national AIDS coalitions, aboriginal

[22] Percentage distribution of health care costs by stage of illness from Fred J. Hellinger, "Lifetime Cost of Treating a Person with HIV," *Journal of the American Medical Association,* 1993, volume 270, no. 4, P.480. Changes in treatments since that time have certainly altered this distribution, but do not affect cost totals in this table which are separately calculated from the monthly health and out-of-pocket costs per person estimated by Albert and Williams, op. cit., Tables III-6 and III-7, page 32, and which do take into account the new HAART treatments. 1999 HIV and AIDS patient numbers are estimated from Health Canada's *HIV and AIDS in Canada: Surveillance Report to June 30, 2000,* November 2000. Monthly per capita costs from Albert and Williams, op. cit., are annualized and converted to 1999 Canadian dollars using the Consumer Price Index, Statistics Canada, *CANSIM* Database, Matrix 9957, Table P200000.

communities, correctional services and other supports to HIV/AIDS victims that are not included in the direct cost figures cited in Table 1.[23] **Total direct costs of HIV/AIDS are therefore about $600 million a year.**

The shift to expensive HAART treatments (high activity antiretroviral therapies) in 1996, that delay the onset of AIDS and prolong the lives of HIV patients, has increased direct patient costs. Average monthly health care costs per person for the four HIV/AIDS stages described in Table 1 increased by 120% for the >500 stage, by 85% for the 499-200 stage, by 51% for the 199-75 stage, and by only 21% for AIDS victims (<75) following the introduction of HAART treatments.[24] The HAART treatments have significantly shifted the episodic resource consumption profile of the illness, with drug costs now outstripping inpatient hospital costs.[25] Nevertheless, per capita monthly costs for the >500 stage are still less than 40% of those for the <75 stage largely because in-patient hospital costs in the terminal stages still far exceed those in earlier stages.

A 1993 U.S. study estimated that the direct health care cost per person from HIV infection until the development of AIDS was $US50,000, and from AIDS development to death about $69,000, for a total lifetime cost from time of infection to death of $119,000.[26] That study also noted that these costs have climbed steadily over time, and the introduction of HAART treatments since that time has increased direct costs further. However, the enhanced quality of life, longevity and increased productivity of HIV patients due to HAART will be reflected in *indirect* cost savings (below), so that management techniques that delay AIDS and prolong life are still clearly cost-effective.

b) Indirect Costs

The economic cost profile of HIV/AIDS differs most markedly from that of other illnesses in the very high proportion of indirect economic costs attributable to the illness. As the immune systems of HIV/AIDS sufferers become increasingly compromised, they fall victim to more infections, take more sick days and longer disability leaves, and are increasingly unable to work. These indirect losses to the economy are amplified by the relative youth of AIDS victims, whose premature deaths are reflected in further production losses to the economy.

Indeed, the loss in "human capital stock" is greater for HIV/AIDS than for any other cause of death, including car accidents, suicide, stroke and heart attack, because it claims its victims at a younger age.[27] For all illnesses, Health Canada has estimated that indirect costs are 54.3% of total disease costs in Canada.[28] By contrast, using conservative

[23] Health Canada, www.hc-sc.gc.ca/hppb/...ids/can_strat/strat_admin/can_strat2.html, December 4, 2000.
[24] Albert and Williams, Table III-6, page 32.
[25] Health Canada, www.hc-sc.gc.ca/hppb/...ids/can_strat/strat_admin/can_strat2.html, December 4, 2000, and Albert and Williams, page 25.
[26] Hellinger, Fred, "The Lifetime Cost of Treating a Person with HIV," *Journal of the American Medical Association,* July 28, 1993, volume 270, no. 4, pages 474-478.
[27] Hanvelt, Robin A., et. al., "Indirect Costs of HIV/AIDS Mortality in Canada," *AIDS* 8 (10), 1994.
[28] Health Canada, *Economic Burden of Illness in Canada 1993,* Ottawa, 1997, Table 1, page 9.

production loss figures, this study estimates indirect costs at 2.4 times the direct costs of HIV/AIDS in Canada.

This high ratio of indirect to direct costs exists despite the high direct costs of HAART treatments, and despite the gradual increase in longevity of AIDS victims, from an average age of death of 36 years in 1990 to 41 years in 1999.[29] If Transport Canada's estimate of $1.56 million for the average life value lost in each road fatality were used in this study, then the ratio of indirect to direct costs would be much higher, or about 5:1.

The proportion of indirect to direct costs is also greater in estimates of total cumulative illness costs, because indirect costs due to premature mortality continue to accumulate even when direct costs cease at the time of death. Thus Albert and Williams estimate the **total economic burden of HIV/AIDS in Canada to date at $36.3 billion**, of which $29.9 billion are indirect costs and $6.4 billion are direct costs (a ratio of nearly 5:1). They also estimate the **future economic burden associated with the current HIV population at $27.3 billion**, (reflecting a 4% discount rate), of which $23.3 billion are indirect costs and $4 billion are direct costs, a ratio of nearly 6:1.[30]

The indirect costs of HIV/AIDS in Canada are estimated here on an *annual* rather than lifetime episodic basis, first by multiplying the number of premature deaths to date by the annual per capita gross domestic product of Canada. GDP per capita ($31,414 in 1999) is used as a proxy for the potential annual productive contribution of deceased AIDS victims had they still been alive today. As the average age of death due to AIDS in 1990 was 36, it is assumed here that all AIDS victims would still be in the work force in 1999 had they not contracted the virus. Multiplied by the 12,088 AIDS deaths in the last 20 years, the indirect market loss to the economy of these premature deaths can be estimated at $380 million for 1999.[31]

Unlike conventional accounting mechanisms that consider only market values, the Genuine Progress also counts the value of unpaid voluntary and household work. Using Statistics Canada estimates of the replacement value of voluntary work ($16/hour) and household work ($10/hour) in Canada, it is estimated that the lost unpaid work contribution for 1999 due to the premature deaths of 12,088 AIDS victims is $347 million.[32] Total economic production losses due to premature deaths attributable to AIDS therefore amount to $727 million for 1999.

[29] Dr. David Elliot, Medical Consultant and Epidemiologist, Performance Monitoring and Evaluation, N.S. Department of Health, personal communication. Even though Dr. Elliot's figures monitor changes over time in Nova Scotia, they are used here to reflect changes in the country as a whole.
[30] Albert and Williams, op. cit., page 36.
[31] GDP per capita from Statistics Canada, *CANSIM* Database, Matrix M9219, "Canada - Selected Economic Indicators", Table D28609, "Gross Domestic Product per Person." It should be noted that GDP per capita includes the non-market-productive population (children, elderly, disabled, sick), and is therefore a conservative figure for the proxy estimation. Value of Statistical Life estimates based on "willingness to pay" / contingent valuation surveys yield much higher estimates, generally in the range of $3-$6 million per life.
[32] Statistics Canada, *Households' Unpaid Work: Measurement and Valuation,* 1995, catalogue no. 13-603E, #3, hourly rates converted to 1999 dollars and rounded; based on annual hours of unpaid work assessed through Statistics Canada's General Social Survey, *Overview of the Time Use of Canadians in 1998,* Table

Deaths avoided as a result of education and the successful prevention of new HIV infections as well as successful management of HIV, produce savings due to averted production losses and retained productive capacity. If AIDS deaths had continued at 1995 levels (1,427 for that year), there would be 3,906 fewer Canadians alive today. Multiplied by the per capita GDP, it can be estimated that the productive capacity of the Canadian economy is $123 million larger today than it would be without the lives saved through successful prevention and management of HIV.

In addition to indirect costs due to premature death, productive capacity is lost due to sickness and disability. For the purposes of this study, it has been assumed that all AIDS victims are absent from work and that 25% of the productive work time of HIV patients is lost due to the illness. This would yield economic losses due to work absence, sick days and long and short-term disability of $376 million. Lost volunteer time and unpaid household work time due to sickness and disability is estimated at $343 million, for total disability losses of $719 million.

Added to production losses due to premature death, **total economic production losses amount to $1,446 million for 1999 in indirect costs due to HIV/AIDS.** Added to the $600 million in direct costs, it can be seen that **HIV/AIDS cost Canadians more than $2 billion in 1999.**

4. Conclusion: Lessons from Canada for the Commonwealth and Beyond

As noted above, Health Canada states unequivocally that "the dollar cost of preventing a case of HIV/AIDS is only a fraction of the cost of treating and caring for someone once he or she becomes infected."[33] In addition, it has been noted that successful management of HIV can prolong life, and increase the quality of life of those with the virus, thus retaining productive capacity and reducing overall costs to the economy.

Education and prevention have sharply reduced new HIV infections in Canada, reversing the epidemic in a relatively short period of time. Successful management of HIV particularly through HAART treatments has even more dramatically reduced the number of new AIDS cases and deaths due to AIDS. In short, prevention and management work. Because of the enormous economic burden of HIV/AIDS, these strategies are highly cost effective, and will produce significant long-term direct and indirect cost savings to the Canadian economy.

However it is entirely unacceptable that Canadian successes in stemming the HIV/AIDS epidemic are accompanied by the unchecked and devastating spread of the disease in Africa and elsewhere. The enormous drain on the resources of developing nations, to say

1, special tabulation, and estimates in Colman, Ronald, *The Economic Value of Unpaid Housework and Child Care in Nova Scotia,* GPI Atlantic, Halifax, 1998, Table 7.1, page 93, and Colman, Ronald, *The Economic Value of Civic and Voluntary Work in Nova Scotia,* GPI Atlantic, Halifax, 1998, Table 7.1, p. 43.

[33] Health Canada, www.hc-sc.gc.ca/hppb/...ids/can_strat_admin/can_strat2.html, December 4, 2000

nothing of the immense burden of human suffering and premature death, demands that strategies proved successful in Canada be applied without delay where the need is greatest. Economic analyses clearly demonstrate that such investments can be highly cost effective, producing enormous savings in direct health care costs and retained productive capacity.

Rather than becoming complacent about HIV/AIDS due to successes at home, it is incumbent upon Canada and other wealthy nations to apply their successful experience abroad. It is essential for Canada and other wealthy countries to provide the necessary resources for education and prevention in the developing nations, and to facilitate the low-cost provision of drugs that can assist HIV patients to manage the disease successfully. That assistance should not be regarded as a "cost" but as an "investment" that will reduce the appalling costs of the disease and has already been proven to do so in Canada.

Closer to home, Canadians must recognize the changing profile of HIV/AIDS, particularly the increase in female infections and the high rates of infection among aboriginals and marginalized populations. Education and prevention strategies that have worked successfully in reducing HIV/AIDS prevalence in the male homosexual population will need to be adapted and modified to current needs and other populations increasingly at risk.

At a deeper level, and with a longer-term perspective, it must also be acknowledged that HIV-management techniques may be less successful in reaching vulnerable populations. Reducing social exclusion and advancing gender equality can be highly effective not only in combating HIV/AIDS among populations increasingly at risk, but in reducing the total burden of illness in Canada. Health Canada's *Second Report on the Health of Canadians,* 1999, emphasizes that poverty and poor educational attainment are the most reliable predictors of poor health. The changing profile of HIV/AIDS in Canada demonstrates that this illness is no exception.

In sum, the HIV/AIDS story, particularly in the last five years, is both a shocking account of unparalleled devastation in parts of the world, and a positive account of successful education, prevention and management in Canada and elsewhere. The challenge in the years ahead is to bring those contradictory trends together by applying the Canadian successes where the need is greatest. Economic cost analyses can demonstrate that this is not only the "right" thing to do, but an excellent and cost-effective investment that can successfully reduce the enormous economic burden of the illness.