U N A I D S JOINT UNITED NATIONS PROGRAMME ON HIV/AIDS

AIDS epidemic update:

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Joint United Nations Programme on HIV/AIDS
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Global summary of the HIV/AIDS epidemic, December 2000

People newly infected with HIV in 2000	**Total**	**5.3 million**
	Adults	4.7 million
	Women	*2.2 million*
	Children <15 years	600 000
Number of people living with HIV/AIDS	**Total**	**36.1 million**
	Adults	34.7 million
	Women	*16.4 million*
	Children <15 years	1.4 million
AIDS deaths in 2000	**Total**	**3 million**
	Adults	2.5 million
	Women	*1.3 million*
	Children <15 years	500 000
Total number of AIDS deaths since the beginning of the epidemic	**Total**	**21.8 million**
	Adults	17.5 million
	Women	*9 million*
	Children <15 years	4.3 million

Global overview

The human immunodeficiency virus (HIV) which causes AIDS has brought about a global epidemic far more extensive than what was predicted even a decade ago. UNAIDS and WHO now estimate that the number of people living with HIV or AIDS at the end of the year 2000 stands at 36.1 million. This is more than 50% higher than what WHO's Global Programme on AIDS projected in 1991 on the basis of the data then available.

The challenges thrown up by HIV vary enormously from place to place, depending on how far and fast the virus is spreading and on whether those infected have started to fall ill or die in large numbers:

- In all parts of the world except sub-Saharan Africa, there are more men infected with HIV and dying of AIDS than women. Men's behaviour – often influenced by harmful cultural beliefs about masculinity – makes them the prime casualties of the epidemic. Altogether, an estimated 2.5 million men aged 15-49 became infected during 2000, bringing the number of adult males living with HIV or AIDS at year's end to 18.2 million. Male behaviour also contributes to HIV infections in women, who often have less power to determine where, when and how sex takes place. ***Men make a difference*** – the theme of this year's *World AIDS Campaign* – acknowledges these factors and recognizes men's enormous potential to make a difference when it comes to curbing HIV transmission, caring for infected family members, and looking after orphans and other survivors of the epidemic.

- During the year 2000, more new HIV infections will have been registered in the Russian Federation than in all previous years of the epidemic combined. Taking into account the continuing expansion of the epidemic in Ukraine as well, a conservative estimate puts the number of adults* and children living with HIV or AIDS in Eastern Europe and Central Asia at 700 000 by end-2000, compared with 420 000 just a year ago. Unsafe drug-injecting practices are still the main driving factor.

- For the first time, there are signs that HIV incidence – the annual number of new infections – may have stabilized in sub-Saharan Africa. New infections in 2000 totalled an estimated 3.8 million, as opposed to a total of 4.0 million in 1999. However, if HIV infections start to explode in countries that have had relatively low rates up to now, such as Nigeria, regional incidence could start rising again.

  Africa's slight fall in new infections is probably a result of two factors. On the one hand, the epidemic in many countries has gone on for so long that it has already affected many people in the sexually active population, leaving a smaller pool of people still able to acquire the infection. At the same time, successful prevention programmes in a handful of African countries, notably Uganda, have reduced national infection rates and contributed to the regional downturn.

- Even as they face a daunting prevention challenge, African countries are buckling under the impact of large-scale disease and death. In South Africa, the epidemic is projected to reduce the economic growth rate by 0.3-0.4% annually, resulting by the year 2010 in a gross domestic product (GDP) 17% lower than it would have been without AIDS and wiping US$ 22 billion off

** Adults, as defined here, are those between 15 and 49 years old.*

Regional HIV/AIDS statistics and features, end of 2000

Region	Epidemic started	Adults & children living with HIV/AIDS	Adults & children newly infected with HIV	Adult prevalence rate (*)	% of HIV-positive adults who are women	Main mode(s) of transmission (#) for adults living with HIV/AIDS
Sub-Saharan Africa	late'70s-early '80s	25.3 million	3.8 million	8.8%	55%	Hetero
North Africa & Middle East	late '80s	400 000	80 000	0.2%	40%	Hetero, IDU
South & South-East Asia	late '80s	5.8 million	780 000	0.56%	35%	Hetero, IDU
East Asia & Pacific	late '80s	640 000	130 000	0.07%	13%	IDU, hetero, MSM
Latin America	late '70s - early.'80s	1.4 million	150 000	0.5%	25%	MSM, IDU, hetero
Caribbean	late '70s - early '80s	390 000	60 000	2.3%	35%	Hetero, MSM
Eastern Europe & Central Asia	early '90s	700 000	250 000	0.35%	25%	IDU
Western Europe	late '70s - early '80s	540 000	30 000	0.24%	25%	MSM, IDU
North America	late '70s - early '80s	920 000	45 000	0.6%	20%	MSM, IDU, hetero
Australia & New Zealand	late '70s - early '80s	15 000	500	0.13%	10%	MSM
TOTAL		**36.1 million**	**5.3 million**	**1.1%**	**47%**	

* The proportion of adults (15 to 49 years of age) living with HIV/AIDS in 2000, using 2000 population numbers.
# Hetero (heterosexual transmission), IDU (transmission through injecting drug use), MSM (sexual transmission among men who have sex with men).

the country's economy. Even in diamond-rich Botswana, the country with the highest per capita GDP in Africa, in the next 10 years AIDS will slice 20% off the government budget, erode development gains, and bring about a 13% reduction in the income of the poorest households.

- Scaling up the response to Africa's epidemic is imperative and affordable. Setting ambitious but achievable targets for coverage, countries would need at least US$ 1.5 billion a year for prevention measures to reduce the HIV risk to their population, including infants, young people, workers, and recipients of blood transfusions. For people with HIV and their families, the bill for palliative care for pain and discomfort, the treatment and prevention of opportunistic infections, and care for orphans would come to at least US$ 1.5 billion annually. Adding antiretroviral therapy would cost several billion dollars more a year.

Eastern Europe and Central Asia

The estimated number of adults and children living with HIV or AIDS in Eastern Europe and the countries of the former Soviet Union was 420 000 at the end of 1999. Just one year later, a conservative estimate puts the figure at 700 000. Most of the quarter million adults who became infected this year are men, the majority of them injecting drug users. During the year, new epidemics in drug injectors

emerged in Uzbekistan and in Estonia, a country which reported far more HIV cases in 2000 than in any previous year.

HIV shows no sign of curbing its exponential growth in the Russian Federation. Judging from the number of cases reported during the first nine months of the year, registered new infections during the year 2000 may well reach 50 000. This is far more than the total of 29 000 infections registered in the country between 1987 and 1999. However, even this massive rise understates the real growth in the epidemic: by Russian estimates, the national registration system captures just a fraction of the infections. Unsafe drug-injecting practices are still the major spur to HIV transmission in this huge nation.

In many countries of Eastern Europe and Central Asia, the fight against the epidemic is being waged against a complicated backdrop. Socioeconomic instability in the region is fuelling drug use and commercial sex, and thus increasing the spread of HIV. On a more positive note, however, political and legal reforms are creating more effective avenues to HIV prevention.

For instance, instead of relying on ineffective mass screening of the population to track and control HIV, most countries are using a range of channels to inform and educate their citizens about the virus. In Belarus, an interministerial committee brings 12 different ministries into an AIDS response that ranges from harm-reduction measures for injecting drug users to awareness-raising campaigns conducted by the national railways. The involvement of practically all ministries and state committees helped achieve a reduction in the overall number of infections reported annually between 1996 and 1999. Prevention efforts have been particularly successful among teenagers. In Kazakhstan, a small NGO in the capital, Astana, sends its 8-man prevention team (who also perform in a rock theatre) into the streets to deliver safer-sex information and condoms to the sex workers operating there. The team also escorts the sex workers to an outpatient clinic where their sexually transmitted infections can be treated confidentially and free of charge – a departure from the region's traditional approach of arrest and compulsory screening.

Increasingly, too, the region is turning to proper HIV surveillance in "sentinel" populations, for example, in sex workers, pregnant women, injecting drug users, or people with a sexually transmitted infection. The Czech Republic and Slovenia can already boast of excellent HIV sentinel surveillance systems – among the best in Europe.

While the annual number of new cases registered in Ukraine seems to have declined since 1997, the virus appears to be making inroads into the general population, to judge from the evidence of HIV infection recently found in pregnant women. Ukraine has implemented a high-quality sentinel surveillance system, which can be expected to yield a clearer picture of infection trends in the future.

A watershed law adopted in 1998 endorsed the principle of voluntary HIV testing and broad AIDS education in Ukraine. In perhaps the toughest test of the country's new approach to the epidemic, a recent survey has confirmed that Ukrainian prisons are no longer conducting compulsory screening of inmates or isolating those found HIV-positive. This turnaround was achieved through an innovative project that could be a model for AIDS and prison reform in the region. However, like many of its neighbours, Ukraine faces such stringent budgetary restrictions that it struggles to feed its prisoners, let alone supply them with condoms, disinfectant, syringes and needles.

Asia

An estimated 700 000 adults, 450 000 of them men, have become infected in **South and South-East Asia** in the course of the year 2000. These estimates are in line with known risk behaviour in this region, in which men not only form the majority of injecting drug users but help drive the earliest wave of sexual HIV transmission, much of it through commercial sex and some through sex between men. Overall, as of end-2000, the region is estimated to have 5.8 million adults and children living with HIV or AIDS.

Bangladesh has taken the impressive step of monitoring HIV and behavioural risk at a very early stage of its epidemic. Following a first round of surveillance two years ago, HIV and syphilis testing and behavioural surveys were conducted in a second round between August 1999 and May 2000. The work was carried out in collaboration with NGO and governmental partners, including clinics for sex workers, needle exchange programmes and drug detoxification centres. The studies turned up evidence of a range of risk factors, including unsafe drug-injecting practices and inadequate condom use, but extremely low rates of HIV infection so far.

The region of **East Asia and the Pacific** is still keeping HIV at bay in most of its huge population. Some 130 000 adults and children became infected in the course of the year. This brings the number of people living with HIV or AIDS at end-2000 to 640 000, representing just 0.07% of the region's adult population, as compared with the prevalence rate of 0.56% in South and South-East Asia.

However, the epidemic in East Asia has ample room for growth. The sex trade and the use of illicit drugs are extensive, and so are migration and mobility within and across borders. With a hundred million people or more on the move, China in particular is experiencing population movement that dwarfs any other in recorded history. In addition, having practically eradicated sexually transmitted infections by the 1960s, China is now seeing a steep rise in these rates which could translate into higher HIV spread down the road.

With the Asian epidemic simmering at low levels, there continues to be a risk of complacency about the danger of HIV. A major challenge will be to maintain high rates of condom use in places where these have already been achieved. High levels of condom use not only protect the individuals immediately involved but avert what could become a long chain of transmission. If condom use declines, countries like Thailand could again see an upsurge in HIV infections.

North Africa and the Middle East

Because of insufficient data, few new country estimates of HIV infection were produced for this region between 1994 and 1999. Recent evidence, however, suggests that new infections are on the rise. For example, localized studies in southern Algeria show rates of around 1% in pregnant women attending antenatal clinics, and surveillance sites in both northern and southern Sudan indicate that HIV is spreading among the general population.

With an estimated 80 000 new infections in the region during 2000, the number of adults and children living with HIV or AIDS had reached 400 000 by end-2000.

Latin America and the Caribbean

The epidemic in **Latin America** is a complex mosaic of transmission patterns in which HIV continues to spread through male-to-male sex,

Panel 1.
The interplay of factors driving sexual transmission

There is evidence from around the world that many factors play a role in kick-starting a sexually-transmitted HIV epidemic or driving it to higher levels. Among the **behavioural and social factors** are:

- little or no condom use
- large proportion of the adult population with multiple partners
- overlapping (as opposed to serial) sexual partnerships – individuals are highly infectious when they first acquire HIV and thus more likely to infect any concurrent partners
- large sexual networks (often seen in individuals who move back and forth between home and a far-off workplace)
- "age mixing", typically between older men and young women or girls
- women's economic dependence on marriage or prostitution, robbing them of control over the circumstances or safety of sex.

Biological factors include:

- high rates of sexually transmitted infections, especially those causing genital ulcers
- low rates of male circumcision
- high viral load – HIV levels in the bloodstream are typically highest when a person is first infected and again in the late stages of illness.

While all these factors help spread the virus, we do not know exactly how much each of them contributes and to what extent they need to be combined in order to fan the flames of the epidemic. The issue of male circumcision is a good example. Many countries in which all boys are circumcised before puberty have very limited epidemics, and in some countries with wider epidemics, circumcised men have lower HIV rates than uncircumcised men.

In the present state of the art, epidemiologists cannot predict with certainty how fast a given epidemic will expand and when it will peak, although short-term predictions can be made on the basis of HIV trends and information on risk behaviour. Fortunately, there is strong evidence showing that countries will ultimately reduce their new infections if they carry out effective prevention programmes encouraging abstinence, fidelity and safer sex. A crucial factor is promoting condoms, both the traditional kind and the female condom, and making good-quality condoms cheaply and conveniently available. Condoms are protective irrespective of the age or mobility of the partners, the scope of their sexual networks, or the presence of another sexually transmitted infection.

sex between men and women, and injecting drug use. In Latin America an estimated 150 000 adults and children became infected during 2000. In many countries, thanks to antiretroviral therapy, HIV-positive people are living longer, healthier lives. By year's end some 1.4 million adults and children in the region were estimated to be living with HIV or AIDS, as compared with 1.3 million at the end of 1999.

When HIV spreads mainly within a small population group, such as men who have sex with men, this puts a temporary cap on the number of people exposed (although bisexuality and drug use can provide bridges to the general population). In places where HIV is transmitted through sex between men and women, however, a far larger proportion of the whole population is immediately at risk. This is the transmission pattern in **the Caribbean**, where HIV rates are the highest in the world outside Africa.

Though ministries of health in the Caribbean have long been aware of the galloping epidemic and its implications for the region, a series of high-level meetings during the year 2000 have ushered in a new stage of public awareness and visibility of AIDS. At a meeting of the Caribbean Group on Cooperation in Economic Development organized by the World Bank in June, prime ministers and finance ministers looking at the time frame 2000-2020 focused on AIDS as a key development challenge. In July, the heads of government of the Caribbean Community (CARICOM) publicly recognized that the epidemic threatens to reverse the region's development achievements of the last three decades. This was followed by a high-level meeting on HIV/AIDS hosted by the Prime Minister of Barbados in September 2000. Attended by prime ministers and ministers from the region as well as by bilateral donors and officials from the World Bank and the United Nations system, the Barbados meeting achieved a breakthrough in political commitment to fighting the epidemic as well as new pledges of funding, notably from the Netherlands. To help scale up action, the World Bank announced a programme of new loans for HIV/AIDS interventions in the Caribbean amounting to US$ 85-100 million.

The Prime Minister of Barbados, who is about to take on the presidency of CARICOM, has put AIDS on the agenda of its February 2001 meeting. At that time, it is expected that CARICOM will officially launch a Caribbean partnership on HIV/AIDS.

High-income countries

The news from the richer countries of the world is that prevention efforts are stalled. Though HIV incidence is not tracked through national sentinel surveillance, available information indicates that the number of newly infected people is no lower this year than last. Altogether, in the course of the year 2000, 30 000 adults and children are estimated to have acquired HIV in **Western Europe** and 45 000 in **North America**. Overall HIV prevalence has risen slightly in both regions, mainly because antiretroviral therapy is keeping HIV-positive people alive longer.

Thousands of infections are still occurring through unsafe sex between men. In this era in which few young gay men have seen friends die of AIDS, and some mistakenly view antiretrovirals as a cure, there is growing complacency about the HIV risk, judging from reports of increased sexual risk behaviour, mainly in young men. An ongoing problem for prevention is the persistent stigma of homosexuality, which can make growing up difficult for boys who sense that they are "different"; many of them wind up exposed to needless risk and vulnerability.

If prevention is falling short, however, the repercussions are being felt above all by injecting drug users and their families, who are thought to account for the bulk of new infections in many high-income countries. Most of these infections could have been averted. Prevention programmes consisting of AIDS education, condom promotion, needle exchange and drug treatment (which can include maintenance on methadone, which is not injected) have proven their effectiveness not only in the highly industrialized countries but in transitional economies such as Belarus, where a harm reduction programme managed to avert over 2000 cases of infection by its second year of operation at a cost of around US$ 29 per infection prevented. In the USA, too, a recent study shows that averting HIV cases through harm reduction makes economic sense. What is needed is the political will to apply genuinely effective measures and to reach out to marginalized individuals and their partners.

Sub-Saharan Africa

In Africa south of the Sahara desert, an estimated 3.8 million adults and children became infected with HIV during the year 2000, bringing the total number of people living there with HIV/AIDS at year's end to 25.3 million. Over the same period, millions of Africans infected in earlier years began experiencing ill-health, and 2.4 million people at a more advanced stage of infection died of HIV-related illness. The region thus continues to face a triple challenge of colossal proportions:

- bringing health care, support and solidarity to a growing population of people with HIV-related illness
- reducing the annual toll of new infections by enabling individuals to protect themselves and others
- coping with the cumulative impact of over 17 million AIDS deaths on orphans and other survivors, on communities, and on national development.

Though sub-Saharan Africa once again heads the list as the region with the largest annual number of new infections, there may be a new trend on the horizon: regional HIV incidence appears to be stabilizing. Because the long-standing African epidemics have already reached large numbers of people whose behaviour exposes them to HIV, and because effective prevention measures in some countries have enabled people to reduce their risk of exposure, the annual number of new infections has stabilized or even fallen in many countries. These decreases have now begun to balance out the still-rising infection rates in other parts of Africa, particularly the southern part of the continent. Overall, therefore, new infections in 2000 totalled 3.8 million, slightly less than the 1999 regional total of 4.0 million. However, this trend will not hold if countries such as Nigeria begin experiencing a rapid expansion.

For the moment, overall HIV prevalence – the regional total of people living with HIV or AIDS – continues to rise because there are still more newly-infected individuals joining it each year than there are people leaving it through death. However, as people infected years ago succumb to HIV-related illnesses (average survival in the absence of antiretroviral therapy is estimated at around 8-10 years), mortality from AIDS is increasing. AIDS deaths in 2000 totalled 2.4 million, as compared with 2.2 million in 1999. In the coming years, unless there is far broader access to life-prolonging therapy, and providing that new infections do not start rising again, the number of surviving HIV-positive Africans can be expected to stabilize and finally shrink, as AIDS increasingly claims the lives of those infected long ago.

Panel 2. Knowledge is power

The HIV epidemic is driven by sex between an infected individual and a partner who is uninfected. Where the infection status of both partners is not known – and conservatively nine-tenths of HIV-positive individuals worldwide do not know they are infected – the only safe options are sex without penetration or sexual intercourse protected by condom use. However, condoms are not without their drawbacks, especially in the context of a stable partnership where pregnancy is desired or where it may be difficult for one partner to suddenly suggest using condoms. For many individuals and couples in Africa, where HIV prevalence rates are high, finding out their infection status could expand their basket of HIV prevention options.

One approach is to make voluntary testing services more convenient to clients. Uganda's AIDS Information Centre (AIC) is a Kampala-based NGO that has served 350 000 clients with confidential counselling and HIV testing since 1990. Since 1997 AIC has provided same-day services. Previously, clients had to wait two weeks to receive their HIV test results, and 25-30% did not return to get them. Research among AIC's clients confirms that 85% prefer same-day results and 76% are willing to pay more for the rapid service. On average, clients spend 2 hours at the centre, although the procedure can be completed within 30 minutes.

In sub-Saharan Africa, national HIV prevalence rates, as published in the UNAIDS *Report on the global HIV/AIDS epidemic – June 2000*, continue to vary widely between countries. They range from under 2% of the adult population in some West African countries to around 20% or more in the southern part of the continent, with countries in central and East Africa having rates midway between these. One must bear in mind, however, that prevalence rates do not convey people's lifetime risk of becoming infected and dying of AIDS. In the eight African countries where at least 15% of today's adults are infected, conservative analyses show that AIDS will claim the lives of around a third of today's 15-year-olds.

How is Africa coping with HIV?

As can be seen from the early sections of this Epidemic Update, HIV has penetrated every country across the globe. But the table on page 5 makes it painfully clear that one continent is far more touched by AIDS than any other. Africa is home to 70% of the adults and 80% of the children living with HIV in the world, and has buried three-quarters of the more than 20 million people worldwide who have died of AIDS since the epidemic began. Over and above the personal suffering that accompanies HIV infection wherever it strikes, the virus in sub-Saharan Africa threatens to devastate whole communities, rolling back decades of progress towards a healthier and more prosperous future.

In the next few sections, we look at how AIDS affects the lives and livelihoods of the men, women and children of the hardest-hit countries, especially those in southern Africa. The information presented reveals two things. The first is that the devastation wrought by HIV is very real, whether the impact is measured in terms of children's future prospects or companies' bottom line. The second thread running through this report is that the epidemic is stimulating a new resilience. Governments, businesses, families and communities are adapting – with more or less effort and pain – to the new landscape being sculpted by the epidemic. This illustrates the encouraging ability of people across Africa to rise to new challenges just when the situation seems hopeless.

Households: coping according to their ability

In countries that are worst affected by the epidemic, rising sickness and death often take place against a background of deteriorating public services, poor employment prospects and endemic poverty that are not directly related to the HIV epidemic, but that may be exacerbated by it. These factors not only reduce the capacity of communities to step in and help those most affected by AIDS but complicate the task of measuring the impact of AIDS at the household level. Many of the studies that look at AIDS-affected households do not simultaneously collect information from unaffected households, so they have difficulty distinguishing between the impact of sickness and death in a young adult and the impact of other shocks, such as drought, inflation, or a rise in school or health service fees. And since most household studies are conducted at a given point in time, they miss the households that have failed to cope, those that have been dissolved by AIDS, sending young people to the streets and old people to destitution and death.

What information there is available shows that households bear the brunt of misery caused by the epidemic. Nevertheless, new analyses of information collected at an earlier stage of the epidemic in the United Republic of Tanzania suggest that households and communities may be more resilient than once thought. A large study of rural households surveyed over a period of several years, at a time when HIV prevalence among young adults in the Kagera region was in the range of 10-25% and when AIDS had increased young adult mortality by two-thirds, casts doubt on some earlier assumptions about the consequences of a recent premature death. Very few households experiencing such a death were composed entirely of old and young people. Fewer than one household in 10 had no surviving member aged between 15 and 50. Old people were no more likely to suffer ill-health than those living in households unaffected by AIDS or other mortality, nor were they any more likely to be driven to do farming or take other jobs. Similarly, orphans were not significantly more likely to show signs of malnutrition than non-orphans, regardless of who was caring for them after their parents' death.

Another analysis in the same Tanzanian population looked in greater detail at what households do to cope financially with the loss of a young adult. The study found that there was a dramatic difference in coping ability depending on the wealth of the household. In poor households, spending on food fell by nearly a third and food consumption by about 15% in the 6 months following the death of a young adult, while in non-poor households both food spending and food consumption rose, possibly because of funeral feasting. The difference may be explained by wealthier households' better access to financial help. In the six months following a young adult death, non-poor households received an average of around 20 000 shillings per household member (around US$

25 at current exchange rates) from family, friends, or other private sources. Poor families, on the other hand, tend to receive virtually no help from friends and family, and are forced to borrow money or to rely on public assistance, which often does not arrive until several months after the death. This reinforces the importance of targeting AIDS alleviation measures at the households in greatest need.

A study of AIDS-affected households in Zambia drew similar conclusions about the need to target resources, arguing that different impact mitigation strategies would be needed for different segments of the population. This study found that children in AIDS-affected households in urban areas were likely to drop out of school because their carers did not have the cash to pay school fees – a problem that might be alleviated by subsidies for the education of orphans. In rural areas, on the other hand, where children were taken out of school to work the fields in the place of a sick or dying adult, one solution might be a pool of communal labour made available to AIDS-affected households.

Another challenge in rural areas is passing on knowledge to the younger generation. Studies have found that orphaned children

Panel 3.
Communities supporting orphans in their homes: a low-cost model for care

As projections of the number of AIDS orphans rise, some calls have been heard for an increase in institutional care for children. This solution is impracticably expensive. In Ethiopia, for example, keeping a child in an orphanage costs between US$ 300 and US$ 500 a year, over three times the national income per person. It is also tragic for children who are separated from their siblings, taken out of their communities, and raised in situations which do not prepare them for life as an adult. Institutionalization stores up problems for society, which is ill-equipped to cope with an influx of young adults who have not been socialized in the community in which they will have to live.

One solution developed by church groups in Zimbabwe is to recruit community members to visit orphans in the homes where they live – either with foster parents, grandparents, or other relatives, or in child-headed households. The visitors, who know their communities well, pay weekly or twice-monthly visits to the neediest families, ensuring that carers and children get the material and emotional support they need in order to keep the household together. Households caring for orphans are provided with clothing, blankets, school fees, seeds and fertilizer as necessary, and communities contribute to activities such as farming communal fields and generating income to support the programme. The programme has recruited some 180 volunteers, who between them help over 2 700 households with orphans. Overall, the programme costs under US$ 10 per family supported, funds that are provided by an NGO – the Family AIDS Caring Trust – and by local churches. This community-driven approach to orphan support has been reproduced all over Zimbabwe, and replicas are now sprouting up in other African countries including Kenya, Malawi and Zambia.

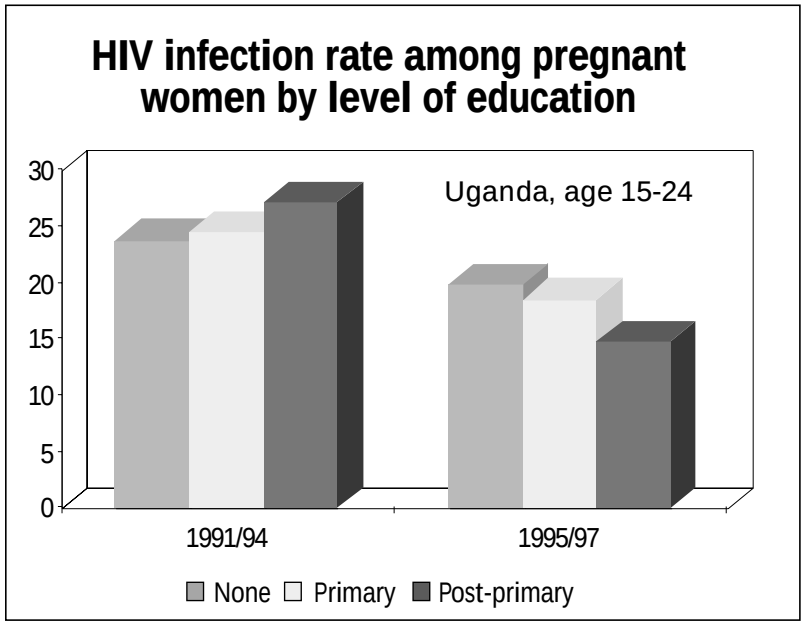
are rarely able to cope with the agricultural tasks left to them. In Namibia, children left with small livestock – chicken and goats – saw many of their animals die, simply because they did not have the experience to care for them properly. In a Kenyan study, four out of five orphans who were farming in one rural area said they did not know where to go for information about food production.

Unfortunately, the resources that might help these children get back on their feet are themselves being eroded by HIV. The Namibian study estimated that agricultural extension staff, whose job is to support farmers with information and skills training, spent at least a tenth of their time attending funerals. Similarly, in Gweru district, Zimbabwe, attendance at funerals brought about a 10% loss in salary for agricultural extension workers. In Malawi, employee deaths at the Ministry of Agriculture and Irrigation doubled from 5 per 1000 in 1996 to 10 per 1000 in 1998, an increase largely attributable to AIDS.

AIDS and education: complex links

Just as the better-educated segments of the population in the industrialized countries were the first to adopt health-conscious lifestyles featuring exercise, non-smoking and a healthy diet, a similar pattern seems to be emerging in sub-Saharan Africa with respect to HIV. An analysis of studies focusing on 15-19-year-olds found that teenagers with more education are now far more likely to use condoms than their peers with lower education, as well as less likely, particularly in countries with severe epidemics, to engage in casual sex. This was not the case early in the African epidemic. At that stage, education tended to go hand in hand with more disposable income and higher mobility, both of which increased casual sex and the risk of contracting HIV. But as information about HIV has become more widely available, education has switched from being a liability to being a shield. Because more-educated people are better equipped to act on prevention information, and because they have more options in life in general, they are now exposing themselves less to the risk of HIV.

The figure below shows the results of surveys in western Uganda of childbearing women aged 15-24. In the period 1991-94, young women with secondary education were more likely to be infected than their illiterate counterparts. By 1995-97, however, the infection rate of educated women had dropped by almost half, whereas it had fallen much less for women without formal schooling.



Kilian A. et al. (1999) "Reductions in risk behaviour provide the most consistent explanation for the declining prevalence of HIV-1 infection in Uganda." AIDS, 13 :3, 391-398.

If this is the good news, the bad news is that AIDS now threatens the coverage and quality of education. The epidemic has not spared this sector any more than it has spared, health, agriculture or mining.

On the demand side, HIV is reducing the numbers of children in school. HIV-positive women have fewer babies, in part because they may die before the end of their childbearing years, and up to a third of their children are themselves infected and may not survive to school age. Many children who have lost their parents to AIDS, or are living in households which have taken in AIDS orphans, may be forced to drop out of school to start earning money, or simply because school fees have become unaffordable.

On the supply side, teacher shortages are looming in many African countries. In Zambia, teachers are increasingly dying of AIDS and many more show up to teach class only sporadically because they are sick. Swaziland estimates that it will have to train more than twice as many teachers as usual over the next 17 years just to keep services at their 1997 levels. Without this extra teacher training, class sizes would balloon to over 50 pupils for every teacher. Together with sickness and death benefits for teachers, Swaziland's extra hiring and training costs are expected to drain the treasury of some US$ 233 million by 2016 – more than the 1998-1999 total government budget for all goods and services.

The high cost of HIV to business

HIV deals its most direct impact to companies by attacking their workforce. As far back as 1993, when HIV was just beginning to cause illness and death in the Côte d'Ivoire workforce, AIDS-related medical costs borne by four businesses in Abidjan ranged from US$ 1.8 to $3.7 million. In 1997, AIDS costs in Abidjan represented between 0.8% and 3.2% of the wage bill. A survey of five firms in Ethiopia conducted in the mid-1990s found AIDS responsible for more than half the burden of sickness over a five-year period, leading to increased absenteeism and medical costs. In the United Republic of Tanzania, in a survey of six firms, annual average medical costs per employee increased more than three-fold between 1993 and 1997 because of AIDS, while the companies' burial costs showed a five-fold increase.

After consulting with unions and workers, more and more companies are undertaking voluntary and anonymous surveys of HIV among their employees. These surveys do not reveal which individuals are living with HIV but they do give an idea of the rates of infection among workers at different skills levels. They help companies to target workplace prevention efforts more effectively, as well as to plan for future health care, pension, recruitment and training needs.

Some recent survey results show just how great the future impact of HIV is likely to be. A 1999 study among miners in southern Africa found that over a third of employees in their late 20s and 30s were infected with HIV, along with a quarter of young and older employees. Rates among workers in other sectors are similarly high, at least in South Africa. In a sugar mill, for example, 26% of all workers were living with HIV. There, as in the mining industry, HIV rates were higher among unskilled workers than among managerial-level workers. Nine-tenths of those found to be HIV-positive were married, and they had an average of 6-7 dependants. An examination of the health records of HIV-positive workers retiring for reasons of ill-health in the 1990s suggested that these employees visit the clinic over 20 times and take an average of 17 days off work in the last two years before retiring. The lost productivity associated with this level of absenteeism,

the clinic and hospital costs, and the training and pay for new workers to replace those who were sick cost the sugar mill an average of around 8 465 Rand (over US$ 1000) per sick worker. Because the number of workers currently infected with HIV far exceeds the number who have already left the workforce, it is expected that in just six years' time the company will find itself paying out 10 times as much for sick workers as it does now. These costs do not even take into account the likelihood that premiums on health insurance and life insurance for employees will rise dramatically in the near future.

Faced with lower productivity and higher costs, some companies are choosing to expand their dealings in countries less affected by the epidemic. Others are reported to be cutting unskilled labourers out of their workforce and contracting these services out to other companies, in part to avoid having to pay benefits to workers. This tactic obviously undermines the economic security of workers while shifting the costs of dealing with HIV on to households and governments. But it may well actually damage the interests of employers themselves. Investing in care to ensure longer, healthier lives for employees helps keep knowledgeable, experienced and loyal individuals contributing fully to the workforce for as long as possible.

The high costs of AIDS in the workforce – lost productivity, hiring and retraining, higher payments for insurance and medical care – strengthen the argument for investing in HIV prevention programmes for men and women at their place of work. However, private and government agencies that have had the foresight to confront HIV in their workforce remain few and far between. While business leaders may recognize the long-term threat of AIDS to their eventual profitability, their sights are often fixed on short-term survival in a climate of inflation, falling exchange rates, labour action, political turmoil, and electricity rationing.

Panel 4. Kenya invests in its future: prevention for government workers

In most African countries the biggest employer is not any private company, but the government. In Kenya, a number of government agencies, confronting a future in which they will lose key employees and see pension costs rise, have begun to invest in prevention programmes.

One example comes from Thika, a district not far from the Kenyan capital Nairobi, in which a third of pregnant women are currently testing positive for HIV – the highest rate in the country. Thika is home to Nairobi City Council's Ngethu water-processing plant. With the support of AMREF, a Nairobi-based NGO, the plant's management has recently trained workers to educate their colleagues about HIV prevention and care. Condoms and treatment for sexually transmitted infections are provided. The programme is doing well, and will probably be expanded to cover the 2 700 water department employees in Nairobi City.

Kenya's government has also begun HIV prevention initiatives among workers in the post office, the national tax collection agency, the ports authority and the police force.

Managers may be reluctant to embark on HIV prevention programmes in the workplace because they think they are expensive. In fact, they need not be. In one study, at a cost of just US$ 6 per worker, factory workers were trained to provide AIDS information and services in support of safer behaviour for their colleagues, cutting the number of new HIV infections by a third as compared with factories that did not make this prevention investment. For US$ 170 per company per year, these and other employers have now banded together to create an investment fund to pay for worker education and free counselling and HIV testing for workers who want it. Even better results may be achieved with a more comprehensive approach. A good example comes from a group of mines in South Africa, which expanded their HIV prevention activities beyond their own workforce. Using mobile clinics to reach the community of women likely to be selling sex to the miners, the project offered free screening and treatment for sexually transmitted infections, and promotion of condoms and other safe behaviour measures. Researchers estimate that this averted 235 HIV infections for the year, 195 of them among miners. The project cost some 268 000 Rand (around US$ 38 000 at current exchange rates), but saved the company 25 times that amount in health care, lost productivity and other costs. The programme is now being expanded in collaboration with the government's Department of Health.

AIDS hits investment, stalls economic growth

It remains exceptionally difficult to gauge the macroeconomic impact of the epidemic. Many factors apart from AIDS affect economic performance and complicate the task of economic forecasting – drought, internal and external conflict, corruption, economic mismanagement. Moreover, economies tend to react more dramatically to economic restructuring measures, a sudden fuel shortage, or an unexpected change of government, than to long, slow corrosions such as those wrought by AIDS.

Despite incomplete data, there is growing evidence that as HIV prevalence rates rise, both total and growth in national income – gross domestic product, or GDP – fall significantly. African countries where less than 5% of the adult population is infected will experience a modest impact on GDP growth rate. As the HIV prevalence rate rises to 20% or more (as it already has in a number of countries in southern Africa), GDP growth may decline up to 2% a year.

With adult prevalence rates of around 20% and 36% respectively, South Africa and Botswana are already feeling the impact of the epidemic. Worse is yet to come: in both countries, today's 15-year-olds have a greater than 50% chance of dying of HIV-related causes if current infection rates are not cut dramatically. Recent studies carried out or commissioned by these countries shed new light on the macroeconomic impact that is likely to result from illness and death of this magnitude.

Studies yield a somewhat bleak picture in South Africa, where per capita income is six times the average for sub-Saharan Africa and the national economy accounts for 40% of the region's total economic output. According to a comprehensive study by ING Barings Bank, the overall economic growth rate over the next decade is likely to be 0.3 to 0.4 percentage points lower every year than it would have been without AIDS. Cumulating the slower economic growth over time, a further study

finds that by 2010, the real gross domestic product (GDP) will be 17% lower than it would have been in the absence of AIDS. In today's terms, that would wipe US$ 22 billion off South Africa's economy – more than twice the entire national production of any other country in the region except Nigeria.

The latter study also projects that, by the start of the next decade, households will be spending far more on care for AIDS patients and orphans and, on average, will have 13% less disposable income per person. Investment will suffer as families – but also companies and the government – divert to health care expenditure the money that would otherwise have been saved and reinvested in the economy. On the other side of the investment equation, there may be an incentive to eliminate some HIV-related costs by replacing human beings – especially those without special skills – with equipment and machinery. In the case of South Africa, it is not clear to what extent this will happen. While HIV infection rates are highest among this section of the workforce, so are the unemployment rates – the latter stand at around 30%. Thus, unskilled workers dying of AIDS may simply be replaced by others who are not currently employed. At the same time, AIDS is likely to exacerbate the severe shortage of qualified men and women in most sectors of the economy, creating major bottle-necks in business and production. This is especially worrying since, as described above (pages 14-15), HIV is also undermining education and hence the potential to expand skills as quickly as they are needed.

The skills shortage is even more acute in neighbouring Botswana, which is already importing white-collar workers. One recent study predicts that wages among skilled workers will be pushed up by between 12% and 17% because of AIDS deaths. Dominated by the diamond mining industry, the country's economy is much more capital-intensive than most African economies. The ratio of capital to production is expected to rise by 18% over the next 25 years, helping the diamond industry to stay afloat and keeping investment levels healthy. Even under these conditions, Botswana's unskilled labour market will grow tighter, with unemployment among the unskilled falling by 8%, and production will decline in the diamond industry and other sectors. With around 1.5% sliced off the GDP growth rate every year, by 2025 the economy will be a dramatic 31% smaller than it would otherwise have been.

Even more striking in Botswana, however, is that AIDS will alter the distribution of the remaining income. At US$ 3240, Botswana has the highest per capita GDP in sub-Saharan Africa. By investing its diamond income wisely, the country has achieved high levels of literacy, good coverage of basic health services, and a reduction in the number of poor households. These gains will be eroded by the epidemic. A study of the effects of AIDS suggests that the number of destitute households (those earning less than US$ 5 per person per month) will rise over the next 10 years. Over the same period, the poorest households will experience a 13% drop in income and expand in size, as wage earners take on extra dependants because of AIDS.

Government budgets in Botswana will be affected, too. Spending on health is likely to rise dramatically, by some estimates more than tripling over the next 10 years. Some savings may be incurred in education, as HIV in young adults seriously dents the number of children born and reaching school age. But the cost of training teachers in numbers great enough to compensate for AIDS-related mortality will undermine these savings. Providing social support to families in greatest need will also weigh on government budgets. All this extra

spending comes on top of a shrinking tax base, the result of an economy a third smaller than it would otherwise have been. Overall, AIDS is likely to shrink the government budget in Botswana by more than 20% over the next 10 years.

These economic projections for both South Africa and Botswana assume that prevention programmes will not bring about any drastic changes in HIV infection rates in the immediate future. Since a large proportion of the people projected to sicken and die over the next 10-15 years are already infected, this assumption seems reasonable. If massive mobilization in southern Africa manages to bring about a fall in HIV infection among young people similar to that seen in Uganda – a prime aim of the International Partnership against AIDS in Africa (see Panel 5) – then the longer-term scenarios described here may overestimate the impact of AIDS at a macroeconomic level.

Making a difference: how much would it cost?

As the tide of illness and death from AIDS rose in Africa, some two decades ago, one or two countries reacted quickly, mobilizing people from all walks of life to join forces against HIV and the unprotected sex that spreads it. Other countries waited rather longer before moving into top gear, but they, too, are being rewarded for their efforts. Success stories, including those of Senegal, Uganda and Zambia, are described in the comprehensive *Report on the global HIV/AIDS epidemic* published in June 2000 and in other UNAIDS Best Practice documents (http://www.unaids.org).

The fact that these success stories are confined to a small number of examples which are cited over and over again is one of the great tragedies of the late twentieth century. Most countries in Africa – and indeed worldwide – lost valuable time because AIDS was not fully understood and its significance as a new epidemic was not grasped. Some action was taken, but not on the scale that would have been required to stem the tide of the epidemic.

Needless to say, the scale of action necessary to make a difference has increased exponentially along with the epidemic. Early on in a heterosexual epidemic, most new infections are acquired and passed on by a minority of people with an especially high turnover of partners. If condoms are used in most of these transactions, the epidemic can be contained relatively easily. But once HIV has become firmly established in the general population, most new infections occur in the majority of adults who do not have a specially high number of partners. This means that prevention campaigns have to be expanded greatly, making them harder and costlier, though still very worthwhile.

Most countries in Africa are at this stage. Yet few have expanded their HIV prevention programmes to the scale that would be needed to make a significant dent in the number of new infections. Since past prevention failures eventually turn into current care needs, failure to head off the epidemic early on also imposes a greater burden of care on countries where HIV prevalence is high. And as the HIV-infected fall ill and die, alleviating the impact on orphans, other survivors, families and communities becomes the third challenge.

Scaling up: imperative and affordable

Recently, researchers have tried to determine how much money would be needed to make a

real difference to the AIDS epidemic in Africa, both in terms of expanding prevention programmes to a level where they might be expected to be truly effective at a population level, and in terms of providing basic care and support for infected individuals and their families. The exercise is not an easy one. For one thing, it is not clear how much money buys how much prevention or care. For another, it is not easy to set prevention or care targets that are both achievable and realistic. Thirdly, it is hard to be sure of the exact relationship between behaviour change and new infection at different levels of HIV prevalence, and in different populations. Most of the available information on both costs and effectiveness of HIV prevention programmes comes from a small number of carefully implemented and evaluated projects. It is unlikely that either the unit costs or the outcomes of these small projects would remain the same if they were applied on a national scale.

Fortunately, different methods of estimating costs have generated remarkably similar estimates – and the good news is that the costs are affordable. If countries set ambitious but achievable targets for the period 2000 and 2005, according to current thinking they will need the following resources annually to expand the response to AIDS to a scale that might have a major impact on the African epidemic:

- At least US$ 1.5 billion a year could make it possible to achieve massively higher levels of implementation of all the major components of successful prevention programmes for the whole of sub-Saharan Africa. These would cover sexual, mother-to-child and transfusion-related HIV transmission, and would involve approaches ranging from awareness campaigns through the media to voluntary HIV counselling and testing, and the promotion and supply of condoms.

- In the area of care for orphans and for people living with HIV or AIDS, costs depend very much on what kind of care is being provided. It is estimated that, with at least US$ 1.5 billion a year, countries in sub-Saharan Africa could buy symptom and pain relief (palliative care) for at least half of AIDS patients in need of it; treatment and prophylaxis for opportunistic infections for a somewhat smaller proportion; and care for AIDS orphans. At the moment, the coverage of care in many African countries is negligible, so reaching coverage at these levels would be an enormous step forward.

- Making a start on coverage with combination antiretroviral therapy would add several billion dollars annually to the bill.

Of course, providing AIDS prevention and care services involves more than just these funds. A country's health, education, communications and other infrastructures have to be well enough developed to be able to deliver these interventions. In some badly-affected countries, these systems are already under strain, and they are likely to crumble further under the weight of AIDS. Then, too, money can only be used wisely if people are available to use it wisely. The shortage of men, women and young people trained in counselling, care and prevention skills is already acute. And skills in strategic thinking, planning and management are in high demand but not widely available. Already, local demand outstrips the local supply, and as more funds become available for expanding the response to HIV, the demand is likely to grow further still.

These are serious challenges that the International Partnership against AIDS in Africa must confront. African countries and their partners in the global community will have to do far more to build infrastructure and human capacity if they are to make a difference to the epidemic.

Panel 5. The importance of political leadership

Formed in 1999, the International Partnership against AIDS in Africa works to to mobilize a broader, intensified response to the epidemic by partners inside and outside the continent. One of its goals is to increase the number of African countries managing their AIDS response at the highest level. Experience shows that the prospects for success are brightest when a country has a top-level committee or body – often reporting to the president or prime minister – responsible for planning and managing action to combat the epidemic. Such a high-level body can draw in the many sectors that need to be involved, from the grassroots level through the education, defence and health ministries to the private agricultural, mining, industrial and service sector.

In the past 15 months, working through the Partnership, an impressive number of countries have set up a new top-level AIDS coordination body or strengthened an existing one. Among these are Ethiopia, Ghana, Mozambique, Nigeria, Swaziland, Uganda, United Republic of Tanzania, and Zambia.

At the same time, the global community can and must do more to help finance a credible assault on AIDS in Africa. With an investment of US$3 billion a year, the world can make a massive difference in the quality of life of millions of Africans. This seems like a small price to pay to help a whole continent avoid a future dominated by the social disruption that defines the “AIDS era” at the start of the third millennium. Indeed, the cost pales in comparison with spending on other preventable conditions. It is estimated, for example, that the United States alone spends around US$ 52 billion coping with the medical consequences of obesity – more than 15 times what would be needed to change the face of AIDS in Africa.

GRAPHICS

1. End-2000 global estimates : children and adults

2. Estimated number of adults and children newly infected with HIV during 2000

3. Adults and children estimated to be living with HIV/AIDS as of end 2000

4. Estimated adult and child deaths due to HIV/AIDS during 2000

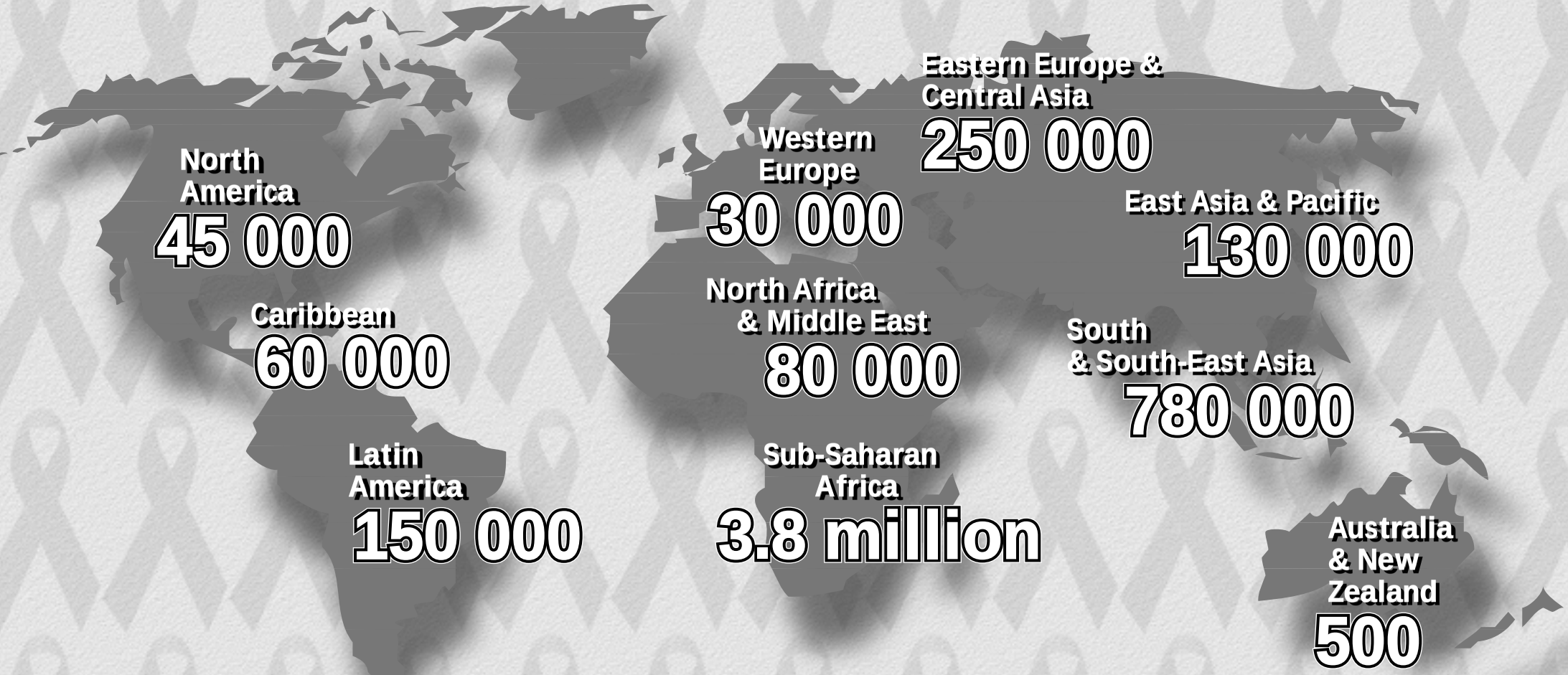
End-2000 global estimates children and adults

- People living with HIV/AIDS.....36.1 million
- New HIV infections in 2000..... 5.3 million
- Deaths due to HIV/AIDS in 2000.....3.0 million
- Cumulative number of deaths due to HIV/AIDS....21.8 million

UNAIDS
Joint United Nations Programme on HIV/AIDS
UNICEF • UNDP • UNFPA • UNDCP
UNESCO • WHO • WORLD BANK

World Health Organization

Estimated number of adults and children newly infected with HIV during 2000



Total: 5.3 million

Joint United Nations Programme on HIV/AIDS
UNAIDS
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UNESCO • WHO • WORLD BANK

World Health Organization

Adults and children estimated to be living with HIV/AIDS as of end 2000

Total: 36.1 million

Joint United Nations Programme on HIV/AIDS
UNAIDS
UNICEF • UNDP • UNFPA • UNDCP
UNESCO • WHO • WORLD BANK

World Health Organization

Estimated adult and child deaths due to HIV/AIDS during 2000

Total: 3.0 million

Joint United Nations Programme on HIV/AIDS
UNAIDS
UNICEF • UNDP • UNFPA • UNDCP
UNESCO • WHO • WORLD BANK

World Health Organization

Note about UNAIDS/WHO estimates

The estimates concerning HIV and AIDS in this document are based on the information available to UNAIDS and WHO at the current time. They are provisional. WHO and UNAIDS, together with experts from national AIDS programmes and research institutions, keep these estimates under constant review with a view to updating them as improved knowledge about the epidemic becomes available and as advances are made in the methods for deriving estimates.

For example, knowledge about the epidemic improves not only as better information becomes available about HIV spread (for example, through more representative sentinel surveillance), but also as more is learnt about the factors that help or hinder the spread of the virus (for example, the natural history of HIV infection in different parts of the world, the impact of HIV infection on fertility, and the effects of improved treatment). This improved knowledge together with methodological advances provide the basis for updated estimates of HIV incidence, prevalence and mortality. Because of these factors, the current estimates cannot be directly compared with those for earlier years, nor with those that may be published subsequently.

The purpose of publishing these estimates is to help governments, nongovernmental organizations and others who have a stake in bringing AIDS under control to gauge the status of the epidemic in their country and to monitor the effectiveness of the considerable efforts at prevention and care being made by all partners.

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